SCHOOL OF HIGHER COMMERCIAL STUDIES

DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE MASTER'S DEGREE IN BUSINESS SCIENCE

Major: Supply Chain Management

THEME

The Implementation of VALUE STREAM MAPPING to reduce procurement lead-time

Case Study: DIVINDUS CAPREF

Prepared by:

KHOUNI Soulef

Supervised by:

Dr. BOUBAKOUR Farès

13th Class

June 2026

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Abstract

This study investigates the contribution of Value Stream Mapping (VSM) to the reduction of procurement lead-time within a public economic enterprise, focusing on the steel products procurement process at DIVINDUS CAPREF SPA in Algeria. A mixed-methods single embedded case study was adopted, combining a structured Gemba walk at the PEB production unit, semi-structured interviews with the procurement actors, and a triangulated document analysis of the institutional procedures (PRO-09, PCS-05, Procédure de Passation 2025) and the Algerian regulatory framework (Loi 23-12). Findings reveal a current-state lead time of approximately 80 working days against a regulatory floor of 28 days, with waiting accounting for 52% of the 48 days of improvable waste; the redesigned future state reduces lead time by 55% (to approximately 36 working days) and raises the value-added ratio from 5% to 11% through eight distributed improvement levers, while fully preserving the constitutional principles of Algerian public procurement. These results highlight VSM's strategic role in delivering measurable efficiency gains within regulated public-sector environments.

Keywords: Value Stream Mapping, lean management, public procurement, procurement lead-time, Algeria, DIVINDUS CAPREF.

Résumé

Cette étude examine la contribution du Value Stream Mapping (VSM) à la réduction des délais d'approvisionnement au sein d'une entreprise publique économique, en se concentrant sur le processus d'approvisionnement des produits sidérurgiques à DIVINDUS CAPREF SPA en Algérie. Une méthodologie mixte fondée sur une étude de cas unique imbriquée a été adoptée, combinant un Gemba walk structuré à l'unité de production PEB, des entretiens semi-directifs avec les acteurs de l'approvisionnement, ainsi qu'une analyse documentaire triangulée des procédures institutionnelles (PRO-09, PCS-05, Procédure de Passation 2025) et du cadre réglementaire algérien (Loi 23-12). Les résultats révèlent un délai actuel d'environ 80 jours ouvrés contre un plancher réglementaire de 28 jours, le temps d'attente représentant 52 % des 48 jours de gaspillage améliorable ; l'état futur redessiné réduit le délai de 55 % (à environ 36 jours ouvrés) et fait passer le taux de valeur ajoutée de 5 % à 11 % grâce à huit leviers d'amélioration distribués, tout en préservant intégralement les principes constitutionnels de la commande publique algérienne. Ces résultats soulignent le rôle stratégique du VSM dans la réalisation de gains d'efficacité mesurables au sein d'environnements publics réglementés.

Mots-clés *:* Value Stream Mapping, lean management, marchés publics, délais d'approvisionnement, Algérie, DIVINDUS CAPREF.

ملخص

تتناول هذه الدراسة مساهمة منهجية رسم خرائط تدفق القيمة في تقليص آجال التموين داخل مؤسسة عمومية اقتصادية، مع التركيز على عملية تموين المنتجات الحديدية لدى مؤسسة ديفيندوس كابريف ش.م.ب بالجزائر. اعتمدت الدراسة منهجيةً مختلطةً قائمةً على دراسة حالة واحدة متضمَّنة، تجمع بين جولة ميدانية مهيكلة في وحدة الإنتاج للهياكل المعدنية، ومقابلات شبه موجَّهة مع الفاعلين في عملية التموين، وتحليل وثائقي مثلَّث للإجراءات المؤسسية (إجراء التموين، وإجراء استلام المخزون، وإجراء إبرام الصفقات لعام 2025) وللإطار التنظيمي الجزائري (القانون 23-12).

كشفت النتائج أن المدة الإجمالية للحالة الراهنة تُقدَّر بنحو 80 يوم عمل، مقابل حدٍّ تنظيمي أدنى يبلغ 28 يوماً، إذ يمثّل وقت الانتظار 52٪ من 48 يوماً من الهدر القابل للتحسين. أما الحالة المستقبلية المُعاد تصميمها فتُقلّص هذه المدة بنسبة 55٪ (إلى نحو 36 يوم عمل)، وترفع نسبة القيمة المضافة من 5٪ إلى 11٪، وذلك من خلال ثماني رافعات تحسين موزَّعة، مع الحفاظ التام على المبادئ الدستورية للصفقات العمومية في الجزائر.

تُبرز هذه النتائج الدور الاستراتيجي لمنهجية رسم خرائط تدفق القيمة في تحقيق مكاسب كفاءة قابلة للقياس داخل البيئات العمومية المنظَّمة.

الكلمات المفتاحية

رسم خرائط تدفق القيمة؛ الإدارة الرشيقة؛ الصفقات العمومية؛ آجال التموين؛ الجزائر؛ ديفيندوس كابريف.

Dedication

To my parents, who trusted every path take and every move I make blindly, blessing me with their unconditional love.

To my sisters, whose philosophy in life inspired me and shaped the person I am today.

To my friends, who influenced my train of thoughts and helped me become a joyful person, who shared the long nights with me, the doubts, and the small joys of perseverance.

To all those who believed in me when my steps faltered, and who lit a path for me when the horizon grew narrow.

To my dear teachers, who planted in me the love of knowledge, and taught me that serious work is the fruit of long patience.

To the team that welcomed me at DIVINDUS CAPREF SPA and trusted an ambitious student with their story.

To everyone struggling with “everyone in the room is better than me” , remember , you are also in the room.

This work is for you.

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List of Abbreviations

- **BET:** Bureau d'Étude (Design Office)
- **CA:** Chef d'Atelier (Workshop Chief)
- **CDA:** Chef de Département Approvisionnement (Head of the Purchasing and Procurement Department)
- **CDP:** Chef de Département Production (Head of the Production Department)
- **COPEO** : Commission d'Ouverture des Plis et d'Évaluation des Offres (Bid-Opening and Evaluation Commission)
- **CP:** Chef de Production (Production Chief)
- **CQ :** Contrôle Qualité (Quality Control)
- **CSA:** Chef de Service Achats (Head of the Purchasing Service)
- **CSGDS:** Chef de Service Gestion des Stocks (Head of the Stock Management Service)
- **DAC:** Demande d'Achat (Purchase Request, used for non-forecast specific needs)
- **DFC:** Direction Finances et Comptabilité (Finance and Accounting Directorate)
- **DLG:** Logiciel DLG (the company's stock management software; the GDS module of the DlgCom 2023 ERP)
- **DU :** Directeur d'Unité (Unit Director)
- **EAI:** Economics and Applied Informatics (journal title abbreviation used in citation)
- **ERP:** Enterprise Resource Planning
- **F.PF:** Facture Proforma (Pro forma Invoice)
- **FIFO:** First-In, First-Out
- **FNC :** Fiche de Non-Conformité (Non-Conformity Record)
- **GDP:** Gross Domestic Product
- **GDS:** Gestion des Stocks (the Stock Management module of the DlgCom 2023 ERP)
- **GM:** General Motors
- **IEEM IEEE:** International Conference on Industrial Engineering and Engineering Management
- **IMVP:** International Motor Vehicle Program (MIT-based research program)
- **ISO:** International Organization for Standardization
- **KPI:** Key Performance Indicator
- **LM:** Lean Management
- **LT:** Lead Time
- **OECD:** Organisation for Economic Co-operation and Development
- **PT:** Process Time
- **PV:** Procès-Verbal (official minutes of the Comité de Transaction)
- **SGP:** Société de Gestion des Participations (state-holding company)
- **SIDJILICOM:** Algerian national electronic platform for the verification of suppliers' fiscal coordinates
- **SMED:** Single-Minute Exchange of Die
- **TCO :** Tableau Comparatif des Offres (Comparative Offers Table)
- **VA%:** Value-Added Ratio (Sum PT divided by Total LT)

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GENERAL INTRODUCTION

The continuously growing digital interconnection and the unlimited exchange of data and information have led to maximised transparency of value-adding activities and global supply chains. This raises the following question: how can companies generate a competitive advantage in procurement, production, and the overall processes?

Currently, there has been a paradigm shift in managing the value chain, shifting from the supply side to the entire production process, with a focus on the customer. Only an integrated approach spanning the entire value chain, from customer orders to planning, procurement, production, logistics, and reverse logistics, will allow companies to manage their business operations and make sound management decisions effectively

The issue of management style that will bring expected results at a low cost and wastage gave birth to what we call lean management (LM)

Lean management is among the management strategies that are gaining currency in reversing this declining organisational profitability

The systematic application of Lean principles and tools collectively enhances the coherence, resilience, and value-creating capacity of the enterprise. Far beyond short-term cost savings, Lean Management fosters long-term organisational health, competitiveness, and agility in a rapidly evolving global marketplace.

Within the framework of our study, to achieve operational excellence in procurement, organisations can turn to the powerful methodology of Value Stream Mapping (VSM). By applying VSM techniques, organisations can streamline their procurement processes, eliminate waste, and drive continuous improvement.

The central research problem driving this dissertation is:

To what extent can Value Stream Mapping contribute to improving the procurement process of a public company, while preserving compliance with the regulatory framework that governs public procurement?

This problem is further analysed through the following secondary research questions:

To empirically examine these questions, the study expands to test the following hypotheses:

Q1: What is the current procurement lead-time, what wastes inflate it, and which portion of that time is reducible as opposed to mandated by the public procurement framework?

Q2: How can a VSM-based future-state design reduce the reducible lead-time while preserving regulatory compliance, and what reduction can be projected?

To examine these questions, the study expands to test the following hypotheses:

H1: The current procurement process of the public company exhibits a procurement lead-time dominated by non-value-added waiting rather than value-adding activity.

H2 : The implementation of Value Stream Mapping allows the identification and classification of the wastes that inflate procurement lead time, distinguishing the reducible waste from the lead time mandated by the public procurement framework.

H3 : The future-state process designed through Value Stream Mapping achieves a measurable reduction in procurement lead time compared to the current state.

The sub-questions are addressed through empirical analysis in Chapter III and the future state VSM in Chapter IV utilising the same dataset and statistical tools used to test the primary hypotheses. This combined approach maintains methodological coherence while providing a more nuanced and comprehensive understanding of the topic.

Study Objectives:

The objective of this study is to demonstrate how the implementation of Value Stream Mapping can reduce the procurement lead-time for a public company by distinguishing the waste that can be eliminated from the lead-time mandated by the public procurement framework. It essentially aims to:

- Map and measure the current-state procurement process of the steel and metal products family at DIVINDUS CAPREF, establishing the total lead-time and its split between value-adding activity and non-value-added waiting.
- Identify and classify the wastes that inflate the procurement lead-time, using lean tools to move from observed symptom to systemic cause.
- Distinguish the regulatory floor from the reducible waste.

- Design a regulatory-compliant future-state process that targets the reducible waste through a coordinated set of lean improvement levers, each tested against the constitutional principles of public procurement.
- Quantify the projected improvement in procurement lead-time and value-added ratio that the future state would deliver, and set out the conditions for its implementation.

Methodology

The present research adopts a mixed-methods design**,** integrating qualitative and quantitative dimensions within a single embedded case study framework. This design justified by the inherent dual nature of VSM, which functions simultaneously as a qualitative process visualisation tool and a quantitative measurement instrument.

The qualitative dimension encompasses direct process observation through a Gemba walk, semi-structured interviews with the nine institutional actors identified across the procurement cycle, and systematic document analysis of procurement files, registers, and the company's official internal documents. These methods generate the contextual and procedural knowledge necessary to construct and validate the current state map.

The quantitative dimension encompasses chronometric measurement of process time and waiting time at each step, calculation of total lead time and its value-added ratio (VA%), and the production of a before-and-after KPI comparison table quantifying the projected improvement delivered by the future state design.

The study focuses on the steel and metal products procurement family at DIVINDUS CAPREF SPA. It was systematically selected to ensure the representativeness of findings. The pre-study baseline lead-time, established through direct consultation with the Supply and Logistics Directorate, stands at **80 working days** when measured from the true origin of the value stream, which was the emergence of the internal need to final payment execution. This figure incorporates the upstream latency of the need expression phase, during which the replenishment or purchase request is formulated, validated, and transmitted before the formal consultation procedure can be initiated.

It is essential to mention that a structurally significant portion of the cycle that had never been systematically measured prior to this study. Its decomposition into value-adding and non-

value-adding components constitutes one of the primary analytical contributions of the current state VSM in Chapter III.

Dissertation Structure

The dissertation is divided into four chapters to systematically address the research problem :

Chapter I: Theoretical Framework establishes the foundations of lean management, presents VSM as the primary lean diagnostic tool, situates the procurement process within the Algerian regulatory framework, and synthesises these into the four-pillar theoretical framework guiding the empirical analysis.

Chapter II: Methodological Framework details the research design, introduces DIVINDUS CAPREF SPA as the field of application, and provides a granular description of the company's procurement process, including its actors, documents, information flows, regulatory constraints, and IT infrastructure.

Chapter III: Current State VSM constructs the current state map, decomposes the 80-day lead time into process time and waiting time, identifies and classifies procurement wastes through the eight-Muda taxonomy and root cause analysis, and produces the waste inventory that directly drives the future state design.

Chapter IV: Future State VSM and Implementation Roadmap proposes the redesigned procurement value stream, compares projected performance against the current state baseline across all defined KPIs, and sets out a phased implementation plan with targeted recommendations for management, the procurement department, and the IT team.

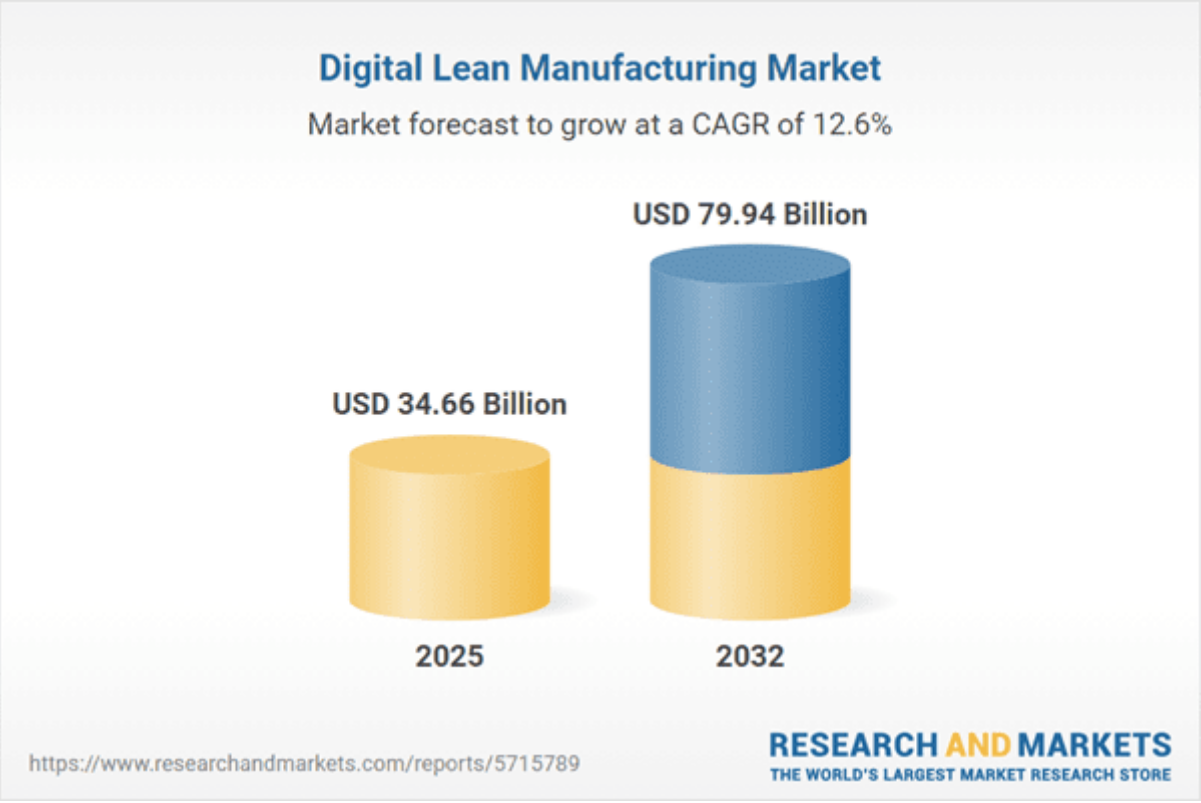
This introduction lays the foundation for an examination of VSM's contribution to procurement lead time reduction in a public company operating under the Algerian Public Procurement Regulatory Framework, combining the analytical precision of lean methodology with the institutional specificity of Algerian public procurement regulation to address a documented scholarly and operational gap.

CHAPTER I: THEORETICAL FRAMEWORK AND FUNDAMENTAL CONCEPTS

Introduction :

Lean management has evolved from a factory-floor philosophy into a global economic force, with the Digital Lean Manufacturing Market growing from USD 30.92 billion in 2024 to USD 34.66 billion in 2025, and projected to reach USD 79.94 billion by 2032 at a compound annual growth rate of 12.60% (Research and Markets, 2024).

Figure 1.1 *Digital Lean Manufacturing Market Size and Growth Forecast (2025–2032)*



Note. From Research and Markets (2024). *Digital lean manufacturing market: Global forecast report 2025–2032*.

In organisations across sectors, the persistent accumulation of waste within operational processes, which manifest as excessive waiting times, redundant administrative steps, and disconnected information flows, represents a structural drag on efficiency, competitiveness, and value creation. Lean management emerged precisely to address this reality, offering a comprehensive philosophy and a structured set of tools through which organisations can systematically identify, measure, and eliminate non-value-adding activities.

Section 1: lean Management

In Lean organizations, operational excellence is a guiding principle ingrained in every aspect of the organization. Unlike traditional management structures, where inefficiencies may be tolerated or overlooked, Lean organisations prioritise continuous improvement, waste reduction, and customer value creation as core tenets of tactical operations. By systematically adopting Lean practices and principles, these organisations achieve streamlined processes, empowered employees, and a culture of relentless innovation. From the Agile teams or shop floor to the boardroom, Lean organizations differentiate themselves by their unwavering commitment to efficiency, quality, and customer satisfaction.

This section establishes the theoretical and empirical foundations of lean management. Subsections 1.1 to 1.4 explore its origins and evolution, its core definitions, its principal objectives, and the tools through which those objectives are operationalised, therefore building the conceptual architecture upon which the remainder of this dissertation rests.

1.1 Origins and evolution of lean Management:

Lean management is a successor of both the Toyota Production System and Lean Manufacturing. Considered one of the most popular systems adopted in the world, its efficacy has been proven and defined by many recognisable scientists and practitioners (Womack J.P., Jones D.T., 2008 translation mine, ŁD). Lean management, whose origins trace back to the early twentieth century, is capable of satisfying the requirements of the contemporary economy, as one of its underlying principles is a constant striving for excellence, which enables the system to continually evolve. We are already witnessing the emergence of Lean Sigma, which is a synthesis of Lean Management and Six Sigma ((Eckes G., 2010, translation mine, ŁD)

Although the foundations of LM have roots in the Toyota production system in the 1950, It is appropriate to mention that the term "lean production" was first used by John Krafcik in 1988 in his paper *"The Triumph of the Lean Production System"* published in the Sloan Management Review (howleg 2007). Womack, Jones, and Roos of MIT subsequently adopted it in 1991 in their landmark publication, which identified the Toyota Production System as the most efficient manufacturing model of its time (Dekier, 2012; Womack et al., 1990). The term

originally derived from the word " fragile " which was used by IMVP researchers, but was later amended to "lean" as it was perceived to carry a more positive connotation.

Building on this foundation, Womack and Jones (1996) defined the five core principles of lean thinking, extending its application beyond manufacturing into broader management practice. Liker (2004) further deepened the theoretical framework by identifying the cultural and philosophical dimensions that supported Toyota's sustained success.

- **Toyota Production System**

The Toyota Production System was founded by key figures of the Toyoda family: Sakichi and his sons, KICHIRO AND Eiji , alongside Taiichi Ohno, a manufacturing engineer. One of the two main pillars of TPS , Jidoka , originated from Sakichi Toyoda's invention of an automated loom equipped with a fault-detection mechanism that halted production upon detecting defects (Dekier, 2012).

Upon visiting the USA in 1910, Sakichi Toyota recognised the emerging significance of the automotive industry (Ohno,1988 as cited un Dekier,2012).However, it wasn't until two decades later, when he made his second visit in 1929 that Sakichi Toyoda started to translate his vision into practice.

upon studying the American automotive industry and being influenced by Ford's mass production, which had introduced serial automobile manufacturing as early as 1913. However, the capital constraints and the low volumes in the Japanese market did not justify the large-sized common at Ford and GM. (Dekier, 2012).

Despite the relatively modest equipment acquired by Kiichiro Toyoda during the 30s, which had laid the crucial groundwork for core concepts that would define the Toyota Production System, It was Taiichi Ohno who played a key role in translating these foundational elements into a coherent and economically feasible system. The system was capable of producing a wide range of products in limited, pre-determined volumes. Ohno had completed his training as a mechanical engineer and had joined Toyoda spinning and weaving division by 1932. However, it was not until 1943, when the latter dissolved, that he transitioned into the automotive Industry sector (Holweg,2007).

It is noteworthy that Ohno entered the domain with no prior experience in automobile manufacturing, which was paradoxically advantageous. Since his pragmatic functional

orientation, unbound by established automotive conventions, has proved to be the key instrument to conceive and develop the fundamentally distinct philosophical and operational framework underpinning Just-in-Time production (Cusumano,1985, as cited in Howleg, 2007)

Toyoda and Ohno developed a system that links the two pillars of TPS (Jidoka and Just-in-Time) with the Ford assembly line. Furthermore, Ohno advanced another concept called "pull-flow production", which allowed for the generation of as many products as could be exploited in the successive process. In turn, it would facilitate the reduction of overproduction.

A closer examination reveals that the TPS only gained interest from the Japanese and the American companies by 1973, (Liker,2004 when the production had to be reduced, and managers finally succeeded in noticing the significant outcomes that Toyota had achieved (Graczkowski S.,2008
as cited in Dekier,2012).
Consequently, it was taken into full consideration upon observation (Liker, 2004; Ohno, 1988, as cited in Dekier, 2012)

- **Lean manufacturing**

The transition from the Toyota Production System to what was formally recognised as lean manufacturing was seen as an essential moment in the broader distribution of Japanese production philosophy to the Western world. While knowledge of the JIT had been circulating within academic and practitioner circles since the late 1970s – especially through the works of Schonberger (1982), Hall (1983), and Monden (1983)- these contributions remained heavily technical and tool-oriented in nature. Moreover, it had failed to generate widespread industrial adoption outside of Japan (Howleg 2007). It wasn't until the founding of the International Motor Vehicle Program (IMVP) at MIT that a globally comparative framework emerged to bring lean principles to the attention of Western manufacturers on a more considerable scale.

It was through an extensive benchmarking study analysing 70 assembly plants across multiple regions between 1986 and 1989 that the IMVP researchers generated an unprecedented body of empirical evidence demonstrating the considerable performance superiority of Japanese manufacturing methods over their western counterparts (Holweg, 2007)

The publication of *The Machine That Changed the World* by Womack, Jones, and Roos in 1990 subsequently served as the primary vehicle through which lean production was formally

introduced and disseminated to a global audience. The book's enduring influence derived principally from its combination of robust empirical data, accessible practitioner-oriented language, and a holistic treatment of lean as a comprehensive management system rather than a narrow set of production tools (Holweg, 2007). Therefore, it demonstrated that lean practices were not culturally bound to Japan but were universally transferable.

Lean manufacturing is regarded as a direct practical successor to the Toyota Production System. It retains and formalises the instruments previously developed within Toyota, while extending them through a structured set of five principles. These principles form the theoretical base of lean manufacturing and collectively define its philosophy of value creation through the systematic elimination of waste:

1. **Determining the product′s value in the eyes of clients:**

The first principle concerns the precise identification of value from the customer's perspective. Lean manufacturing asserts that only the end customer can meaningfully define value, and that any organisational activity that does not directly contribute to what the customer is willing to pay for must be recognised as waste and targeted for elimination. **(Womack & Jones, 1996).**

This principle fundamentally reorients the logic of production away from internal operational convenience and toward the external delivery of customer-defined value, compelling organisations to examine every stage of their processes through the lens of customer utility.

As Waterman and McCue (2012) observe in their examination of lean thinking in the public sector, this customer-centric orientation is equally applicable in non-manufacturing environments, where the identification of value must similarly be grounded in the needs and expectations of the ultimate service recipient rather than the operational preferences of the providing organisation.

2. **Identifying and clarifying the value stream for the product.**

The second principle requires the systematic mapping and analysis of the value stream ─ that is, the proper identification of every process, activity, and transformation through which a product passes from its inception to its final delivery to the customer (Womack & Jones, 1996).

The value stream mapping serves as the primary diagnostic tool through which organisations distinguish between three activity categories:

- Activities that explicitly create value
- Activities that create no value but are currently unavoidable given the existing operational constraints.
- Activities that create no value whatsoever and must therefore be eliminated immediately. (Dekier, 2012)

  This specific examination of the production process enables organizations to develop a precise, evidence-based understanding of where waste resides within their operations, providing the necessary foundation for meaningful improvement.

3. Providing the fast and undisturbed value stream.

The third principle addresses the creation of continuous and uninterrupted flow throughout the value stream. Once value-adding activities have been identified and non-value-adding activities eliminated or minimized, lean manufacturing requires that the remaining activities be organized so as to flow smoothly and continuously without stoppages, delays, or accumulations of work-in-progress inventory (Womack & Jones, 1996)

All obstacles to this flow, which are referred to in the lean lexicon as MUDA (originally articulated by Ohno 1988) are to be relentlessly identified and eliminated.

The establishment of continuous flow represents a radical departure from the batch-and-queue logic that characterised traditional mass production, in which large quantities of identical components were processed sequentially through discrete production stages, generating significant inventories and extended lead times at each transition point (Holweg, 2007).

4. Allowing clients to elicit the value from the producer.

The fourth principle introduces the logic of pull production, which governs the manner in which production is initiated and scheduled throughout the value stream.

During an era dominated by mass production, push-based scheduling systems prevailed, where goods were manufactured according to predetermined forecasts and moved through the production process regardless of actual downstream demand, lean manufacturing requires that

production be initiated exclusively in response to a genuine and immediate signal of customer demand (Dekier, 2012)

Under this pull logic, each stage of the production process produces only what is required by the subsequent stage, and only at the precise moment it is required, therefore systematically preventing overproduction. and ensuring that inventory levels remain as minimal as operationally feasible. The practical implementation of this principle within Toyota took the form of the Kanban scheduling system, through which material replenishment signals were transmitted upstream through the production process in direct response to actual consumption (Holweg, 2007).

5. Striving for excellence.

The fifth and final principle advocates the relentless and perpetual pursuit of perfection through continuous incremental improvement of the value stream.

Lean manufacturing conceives of perfection not as a fixed and attainable end state but as an unreachable ideal toward which organizations must continuously strive, recognizing that the process of improvement is itself without limit (Womack & Jones, 1996). This principle is intimately connected to the Japanese philosophy of *kaizen* — continuous improvement — which holds that every member of the organization, irrespective of hierarchical position, bears a responsibility for identifying opportunities for improvement within their sphere of work and for contributing actively to the ongoing refinement of organizational processes (Dekier, 2012). The pursuit of perfection thus transforms lean manufacturing from a discrete improvement initiative into a self-sustaining organizational culture of perpetual learning and adaptation. This idea was powerfully expressed by Henry Ford, who argued that organizations committed to development and improvement will endure, while those that cease to innovate and believe they have already achieved excellence are destined to fail (Dekier, pp. 48-49).

It is essential, however, to distinguish lean manufacturing from its subsequent evolution into lean management. As Dekier (2012) explicitly observes, lean manufacturing remains fundamentally oriented toward production processes and affords comparatively limited attention to the dimensions of human resources management, organizational culture, and leadership. It is precisely this delimitation that defines the boundary between lean manufacturing and its broader successor (lean management)which extends these principles

beyond the operational domain to encompass the full scope of organizational governance and human capital development.

- **Lean Management :**

Lean Management represents the most evolved form of the lean philosophy, emerging as a direct successor to both the Toyota Production System and Lean Manufacturing. While Lean Manufacturing laid the conceptual groundwork by defining the five core principles and applying lean tools to production processes, it remained fundamentally limited in scope. As Dekier (2012) notes, Lean Manufacturing is essentially oriented toward production processes and pays limited attention to human resources management, and it is precisely this gap that Lean Management seeks to address (pp. 48-49). This distinction is significant, as the transition from Lean Manufacturing to Lean Management represents a shift from a purely operational logic to a comprehensive organizational philosophy. it reflects a substantive reconceptualization of how organizations create value, govern their people, and sustain competitive advantage in an increasingly volatile global environment (Lawal & Elegunde, 2020).

Lean management reorients vital attention to human resources management, an aspect that lean manufacturing largely neglects.(Dekier,2012). A holistic management philosophy governs how organisations relate to their employees, processes, and markets. Shah and Ward (2003, as cited in Lawal & Elegunde, 2020) define lean management as a multi-dimensional approach that encompasses a wide variety of management practices — including Just-in-Time, Kanban, Kaizen, Value Stream Mapping, 5S, and Jidoka — which have proven effective in responding rapidly to customer needs through cost reduction, higher quality products, and shorter lead times.

1.2 Definition of lean management :

Lean Management is a comprehensive, organization-wide management philosophy rooted in the principles of continuous improvement, systematic waste elimination, and the relentless pursuit of value creation. At its most foundational level, it is defined as an approach to running an organization that supports the concept of continuous improvement. It reorients vital attention to human resources management, an aspect that lean manufacturing largely neglects.(Dekier,2012). It is a holistic management philosophy that governs how organisations relate to their employees, processes, and markets. Shah and Ward (2003, as cited in Lawal & Elegunde, 2020) define lean management as a multi-dimensional approach

that encompasses a wide variety of management practices, including Just-in-Time, Kanban, Kaizen, Value Stream Mapping, 5S, and Jidoka.These practices have proven effective in responding rapidly to customer needs through cost reduction, higher quality products, and shorter lead-times.

1.3 Objectives of lean management:

Lean management pursues a set of interrelated objectives designed to ensure the systematic elimination of waste and non-value adding activities in order to enhance organisational efficiency, competitiveness, and profitability (Lawal & Elegunde, 2020)

When conscientiously implemented, lean management has been shown to yield a range of measurable organizational outcomes, including :

- Reduced lead-time,
- Reduced work in progress,
- Improved production flexibility
- Enhanced internal communication,
- Reduced operating costs,
- Improved on-time delivery performance,
- More effective space utilisation (Lawal & Elegunde, 2020).

These theoretical objectives are empirically supported by the meta-analytic findings of Jiang and Sirisuk (2025), whose analysis of 40 empirical studies confirmed statistically significant positive relationships between lean management practices and operational performance ($r = 0.376$, $p < 0.001$), financial performance ($r = 0.381$, $p < 0.001$), and market performance ($r = 0.432$, $p < 0.001$), collectively demonstrating that the objectives of lean management translate into measurable and consistent improvements across multiple dimensions of organizational performance.

Importantly, the impact of lean management is sturdy across varying economic development contexts, with moderation analysis indicating significant positive effects in both advanced economies ($r = 0.374$) and emerging market economies ($r = 0.386$), suggesting that lean management constitutes a universally transferable organizational philosophy rather than a culturally or economically bound phenomenon (Jiang & Sirisuk, 2025).

1.4 Lean management tools:

In order to achieve these objectives, lean management deploys a structured set of tools and techniques that are selected and applied according to the specific operational context of the organization. Lawal and Elegunde (2020) identify the most widely adopted lean management tools as JIT, VSM, Jidoka, 5S, Heijunka, Kaizen, and Kanban, each serving a distinct operational purpose within the lean framework. Bizuneh and Omer (2024) further classify these tools into four functional categories: diagnostic tools, which identify wastes and areas requiring improvement; prioritization tools, which rank wastes and determine improvement priorities; improvement tools, which address identified wastes through targeted interventions; and monitoring tools, which sustain and track improvements over time.

Table 1.1: *Classification of Lean Management Tools by Functional Category*

Category	Purpose	Lean tools	Sources
Diagnostic tools	To identify wastes and areas of improvement	VSM, affinity diagram, Gemba, failure mode and effect analysis	Abdulmalek and Rajgopal (2007), Helleno et al. (2015), Jana and Tiwari (2021b), Rother and Shook (2003), Zahraee et al. (2021), Zahraee et al. (2020)
Prioritisation tools	To rank the wastes and identify the priority areas of improvement	Waste assessment model, VALSATs, Pareto chart	Hines and Rich (1997), Jana and Tiwari (2021b), Kosasih et al. (2019), Rawabdeh (2005)
Improvement tools	To improve the workplace and make visualisation easy	Kaizen, 5S, single minute exchange of die, just in time, line balancing, layout adjustment	Barzola-Cisneros et al. (2021), Ferdousi and Ahmed (2009), Hodge et al. (2011), Jana and Tiwari (2021b), Karunarathne and Dhananjana (2022), Makhija et al. (2021), Ratnayake and Dinosha (2018), Rother and Shook (2003), Silva (2012), Silva et al. (2011)
Monitoring tools	To follow up and sustain the improvement	First in first out, Kanban, dashboard, Gantt chart	Jana and Tiwari (2021a), S. Prasad & Panghal (2022), Reda and Dvivedi (2021), Yu and Kuan (2011)
Performance metrics	To measure the improvements	Lead time, customer takt time, cycle time, throughput time	Behnam et al. (2018), Jana and Tiwari (2021b), Reda and Dvivedi (2021), Rother and Shook (2003)

Note : Adapted from "Lean Waste Prioritisation and Reduction in the Apparel Industry: Application of Waste Assessment Model and Value Stream Mapping," by Bizuneh, B., & Omer, R., 2024, *Cogent Engineering, 11*(1), p. 4, Article 2341538. Copyright 2024 by The Author.

While **Table 1.2** presents a comparative overview of the primary, lean management tools, their defining characteristics, expected outcomes, and documented applications.

Table 1.2*: a comparative analysis of lean management tools.*

S/N	Tools/ Technique	Description/Distinct Features	Outcome	Application
1	Heijunka	A kind of production scheduling that meant for producing smaller batches by sequencing product variants within the same process.	Reduces lead time (since each product is manufactured more frequently) and inventory (since batches are smaller).	Imam, Muhammad, Hizka & Toto (2018) they observed that company's current production system has not been in balance because production demand and production planning always change. Heijunka principle was applied to fundamentally remove the mura, muri and muda. The findings process and design the TPS based on the principle of heijunka to improve the productivity of human labour.
2	5S	Sort, set in order, Shine, Standandise and Sustain.	It eradicates waste that comes from a poorly organised environment (e.g delaying work by looking for appropriate tool).	Fanny, Y. F (2014) pointed out the information about 5S lean ways to implement it in health care setting. Results shown that 5S can be applied to health care services with beneficial effects.
3	Jidoka	Design equipment to partially automate the plant during manufacturing process and to automatically stop the plant immediately when defects are detected. It is much less expensive than the full automation	Workers can frequently monitor different stations (reducing labour costs) and many problems can be detected immediately (improving quality).	Muhmut, Murat, Mehmet, Ozdul & Ertugrul (2019) viewed that business have had to use sustainable flexible production methods and techniques which quality focused, cost-effective and the least wasteful in order to meet customer demand expection. Successful results were obtained regarding the applied jidoka and SMED techniques.
4	VSM	A tool used to visually map the flow of production and it also shows the current and future state of processes in way that highlights opportunities for improvement.	Exposes waste in the current processes and provides a roadmap to improve the future state.	Gbedebo, Peter & Tiamiyu (2018) evaluated the adoption of lean technique for waste elimination through VSM. Series of VSP techniques were used such as 5s, Kanban pull system, supermarket pull system, SMED kaizen idea sheet. The results showed that production lead time was massively reduced from 34.4 hours to 5.04 hours with a 85.3% awste reduction.
5	JIT	Pull parts through manufacturing based on customer request instead of pushing	Highly effective in reducing inventory levels. improves cash flow and	Singh, Rajdeep, Jaskanwal & Sukhvir (2013) the study revealed that JIT play an importunate role in better functioning of supply chain management. The lean manufacturing

		parts through manufacturing based on projected request.	reduces space requirements.	principle used are: JIT inventory, JIT production, JIT human resource, JIT quality and JIT supply relation.
6	Kaizen	A strategy where employees work together proactively to achieve regular, incremental improvements in the production process.	Combines the collective talents of a company to create an engine for continually eliminating waste from production processes.	Omotayo & Kulatung (2017) they demonstrated of how kaizen which is continuous improvement in thework place can be implemented using busiess process modelling and notation. The findings of this study focused on the perception towards change, post-project reviews, openness to new ideas and innovation.
7	Kanban	Method of controlling the flow of product within the organisation and with outside suppliers and customers.	Elimination of waste from inventory and over production.	Muhammad, Jouni & Markku (2013) research was conducted in order to analyze the current trend of Kanban usage in software development and to identify the benefits and involved challenges. The findings of their work are intended for helping researchers and practitioners to gain the application of Kanban usage in terms of improving lead time, quality, communication and coordination, increase consistency of delivery and decreased customers reported defects.

Note. Adapted from "Lean Management: A Review of Literature," by Lawal, O. R., & Elegunde, A. F., 2020, Annals of "Dunarea de Jos" University of Galati, Fascicle I: Economics and Applied Informatics, XXVI(2), p. 27. Copyright 2020 by EAI.

Section 2 : Value stream mapping (VSM)

Among lean management tools, Value Stream Mapping occupies a particularly strategic position within the lean management framework. As a diagnostic instrument, VSM enables organizations to visually map the entire flow of materials and information across the value stream, systematically distinguishing between value-adding, necessary non-value-adding, and non-value-adding activities (Bizuneh & Omer, 2024). Its capacity to expose waste, quantify inefficiencies, and provide a structured roadmap for future-state improvement has rendered it one of the most widely applied lean tools across manufacturing, healthcare, services, and public sector organizations alike (Lawal & Elegunde, 2020; Bizuneh & Omer, 2024).

This section builds on the theoretical frameworks discussed in section 1 as it provides a deeper analytical perspective on the Value Stream Mapping . It explores it as a core tool , it's methodology and symbols, its implementation. Lastly it introduces the Procurement VSM

2.1 value stream mapping as a core lean tool

Originally developed as part of the Toyota Production System and subsequently formalized as a lean tool by Womack and Jones (1996), VSM is defined as a paper-based diagram that encompasses all production and management processes, enabling practitioners to step back from existing workflows and reorganise them systematically to enhance organizational efficiency.

Value Stream Mapping, also referred to as material and flow information, finds application across process improvement analysis, process engineering, and continuous improvement initiatives, serving as a foundational methodology for visualising the totality of actions undertaken between the moment a customer places an order and the moment the product or service is delivered

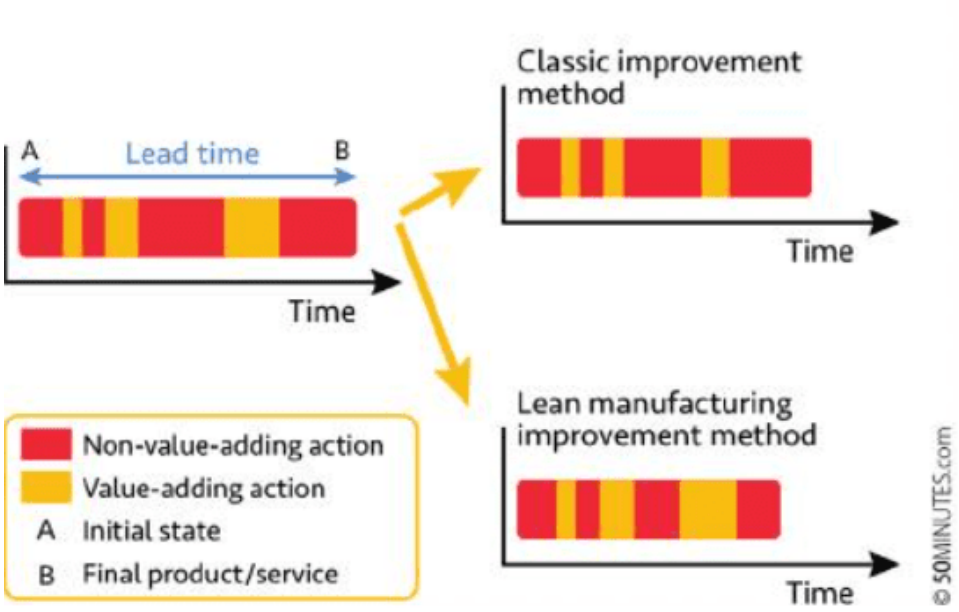
2.2 VSM Methodology and Symbols

At its core, VSM divides all organizational activities into two fundamental categories:

value-adding activities: which directly contribute to the creation of customer-defined value.

non-value-adding activities: referred to in Japanese as *muda* , which consume resources without generating value and must therefore be systematically identified and eliminated (Jing et al., 2020; Bizuneh & Omer, 2024).

Figure 1.2 *Functioning of different improvement methods*

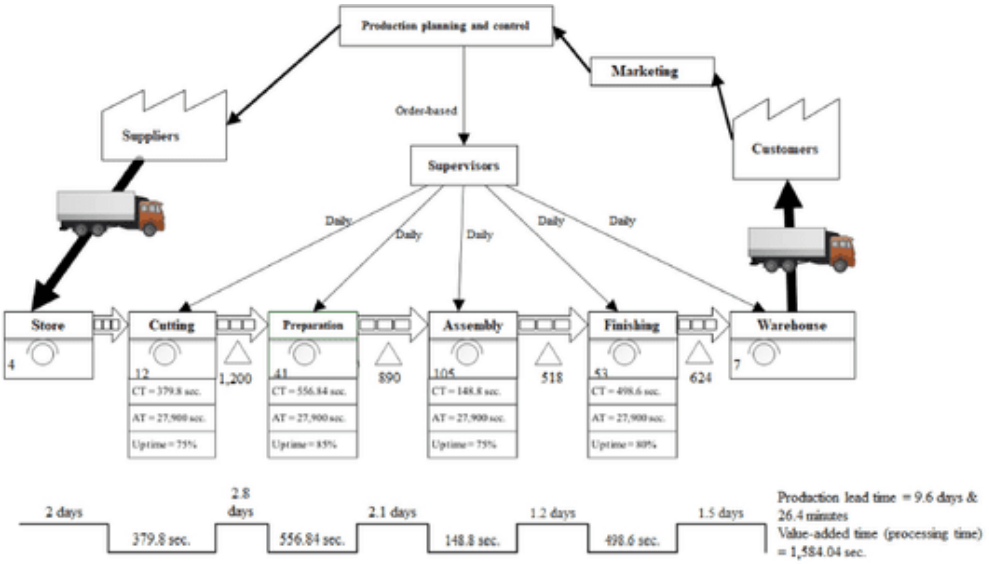


Note. Adapted from DUMSER Johann: value stream mapping, 50 minutes, 2015, p.19

The operational structure of VSM is built around two complementary maps that together provide a comprehensive diagnostic and planning framework.

The first is the current state map, which provides a precise visual representation of existing material flows, information flows, process steps, inventory levels, cycle times, and waiting times across the entire value stream as it presently operates (Jing et al., 2020). This current state map serves as the analytical foundation of the VSM process, making waste and inefficiency visible in a way that enables evidence-based decision-making.

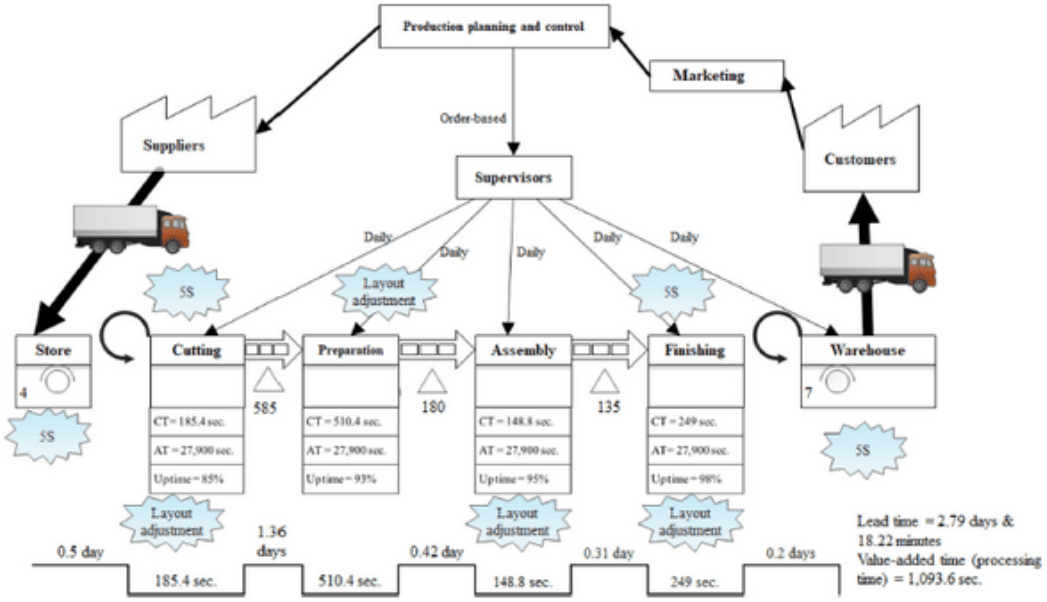
Figure 1.3 current state value stream map of a shirt manufacturing process



Note. Adapted from "Lean waste prioritisation and reduction in the apparel industry: Application of waste assessment model and value stream mapping," by B. Bizuneh and R. Omer, 2024, *Cogent Engineering*, *11*(1), Article 2341538. CC BY 4.0.

The second is the future state map, which represents the redesigned value stream following the identification and elimination of non-value-adding activities, providing a structured roadmap for transitioning from the current state to the desired lean operational state (50minutes, 2017; Bizuneh & Omer, 2024).

Figure 1.4 future state value stream map of a shirt manufacturing process



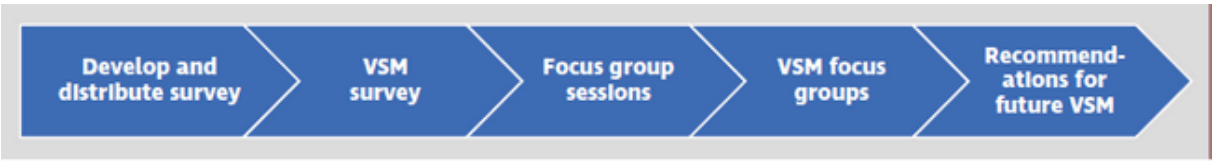
Note. Adapted from "Lean waste prioritisation and reduction in the apparel industry: Application of waste assessment model and value stream mapping," by B. Bizuneh and R. Omer, 2024, *Cogent Engineering*, *11*(1), Article 2341538. CC BY 4.0.

Together, these two maps constitute what Jing et al. (2020) describe as the central diagnostic and improvement instrument of lean management , one that captures the physical flow of materials and the flow of information that governs and coordinates production and operational decisions.

2.3. Value Stream Mapping implementation

The implementation of VSM follows a structured and cyclical methodological process. As documented by Jing et al. (2020) in their development of the Procurement Value Stream Map (P-VSM), the process consists of five sequential steps:

Figure 1.5 *VSM implementation steps*



Note. Adapted from Rother, M., and Shook, J. (1998). *Learning to see: Value stream mapping to add value and eliminate muda*. Lean Enterprise Institute.

First, observing and recording the current operational process in detail, including process times, waiting times, and key information flows;

Second, drawing the current state map based on the collected data;

Third, analyse the current state to identify non-value-adding activities and formulate targeted improvement measures.

Fourth, draw a future state map reflecting the improved process.

Fifth, implement the identified improvements and continuously refine the process through lean-kaizen. This iterative logic ensures that VSM functions not as a one-time diagnostic exercise but as a dynamic and self-reinforcing cycle of organisational improvement (Jing et al., 2020).

The cross-sectoral applicability of VSM has been documented in the literature. Jing et al. (2020) identify its successful application across a broad range of domains including

procurement processes in the public sector, healthcare environments, government management, software development, construction processes, chemical plants, and supply chain networks. In the manufacturing context, Bizuneh and Omer (2024) demonstrated that the application of VSM in combination with layout improvement and 5S achieved a 71.10% reduction in production lead-time and a 74.30% reduction in work-in-process inventory in a shirt manufacturing company in Ethiopia, providing compelling empirical evidence of the tool's operational impact. These results are consistent with the broader meta-analytic evidence, which confirms a statistically significant positive relationship between lean tool implementation, of which VSM is a primary component, and organizational performance across operational, financial, and market, dimensions (Jiang & Sirisuk, 2025).

2.4 Review of Existing Literature on Procurement VSM :

2.4.1 Case Studies in Private Sector Manufacturing and Logistics

The most directly relevant empirical contribution is that of Jing et al. (2020), who developed and applied the Procurement Value Stream Map (P-VSM) to the warehouse procurement process of a manufacturing enterprise in China. Their study represents the first systematic application of VSM to the complete procurement cycle, producing transformative efficiency gains: a 97.4% reduction in the plan-making cycle, 98.8% in the billing cycle, 96.5% in the information cycle, 94.4% in the logistics cycle, and an overall procurement cycle reduction of 95.4% — from 34 days to 12.5 hours.

Bizuneh and Omer (2024) demonstrate the effectiveness of VSM combined with 5S and layout improvement in reducing production lead time by 71.10% and work-in-process inventory by 74.30% in a garment manufacturing environment.

Identified Research Gap: VSM in Algerian Public Procurement

Despite the growing body of evidence confirming VSM's applicability to administrative and public sector procurement, a significant and largely unexplored research gap exists at the intersection of VSM methodology, public sector procurement, and the Algerian organizational context.

From a geographical and contextual standpoint, the existing literature is dominated by case studies from Western manufacturing enterprises, East Asian production environments, and a limited number of Western public sector settings. The application of VSM to public

procurement in North African and Algerian public companies has received virtually no scholarly attention.

From a regulatory standpoint, the Algerian public procurement framework ,that is governed by Law 23-12 (2023), Décret présidentiel 15-247 (2015), and operationalized at the enterprise level through internal procedures such as the DIVINDUS CAPREF's Internal Procurement Procedures (Version 3, December 2025) , introduces a specific set of procedural constraints that have no direct equivalent in the private sector or Western public sector contexts studied in the existing literature.

Section 3: Public Procurement Process: Theoretical and Regulatory Framework

This section provides an in-depth exploration of the **Public Procurement Process,** detailing its strategic role, its cycle, its KPIs and its Common Inefficiencies and wastes

3.1 Definition and Strategic Role of Procurement

Procurement is the organisational function responsible for acquiring, from external suppliers, the goods, services, and works necessary to support an organisation's operations. It covers the entire cycle from the expression of a need through supplier identification, contract award, reception, and payment, and is distinguished from the narrower notion of purchasing by the inclusion of strategic activities such as needs anticipation, supplier base management, and regulatory compliance (Van Weele, 2018; Monczka et al., 2021).

Once treated as an administrative support function focused on cost minimisation, procurement is now recognised as a strategic lever contributing directly to operational continuity and value creation (Carter & Rogers, 2008; Schiele, 2019), influencing four organisational outcomes: cost, quality, lead-time, and risk exposure.

In the public sector, this strategic role carries an additional dimension absent from private practice: procurement is the principal instrument through which the constitutional principles of public expenditure, such as transparency, equality of treatment, competition, and the prevention of corruption, are operationalised at the transaction level. Public procurement therefore serves an economic function (efficient acquisition at best value for public funds) and a regulatory function (institutional guarantee of legal conformity). The tension between these two functions defines public procurement as a distinct field of management, and is the structural feature that the present study addresses through the three-category regulatory framework introduced in Chapter II.

3.1.1 Procurement vs. Purchasing vs. Supply Chain Management

The terms procurement, purchasing, and supply chain management are frequently used interchangeably in both academic and practitioner discourse, yet meaningful conceptual distinctions exist between them. Grandia et al. (2023) clarify that while purchasing generally signifies the transactional process of acquisition in manufacturing and commercial markets,

procurement is predominantly used in the public sector context to describe the broader acquisition process — encompassing not only the transactional purchase but also the initialization, preparation, tendering, contract management, and performance evaluation phases (Grandia et al., 2023, p. 5).

For the purposes of this study, procurement is defined following Grandia et al. (2023, p. 5) as **"the acquisition of works, supplies, or services by government or public organizations from the market or another outside body, while simultaneously creating and safeguarding public value from the perspective of their own organization."** This definition captures the dual nature of public procurement as both an operational transaction and a strategic policy instrument.

3.1.2 The Strategic Value of Procurement in Organizational Performance

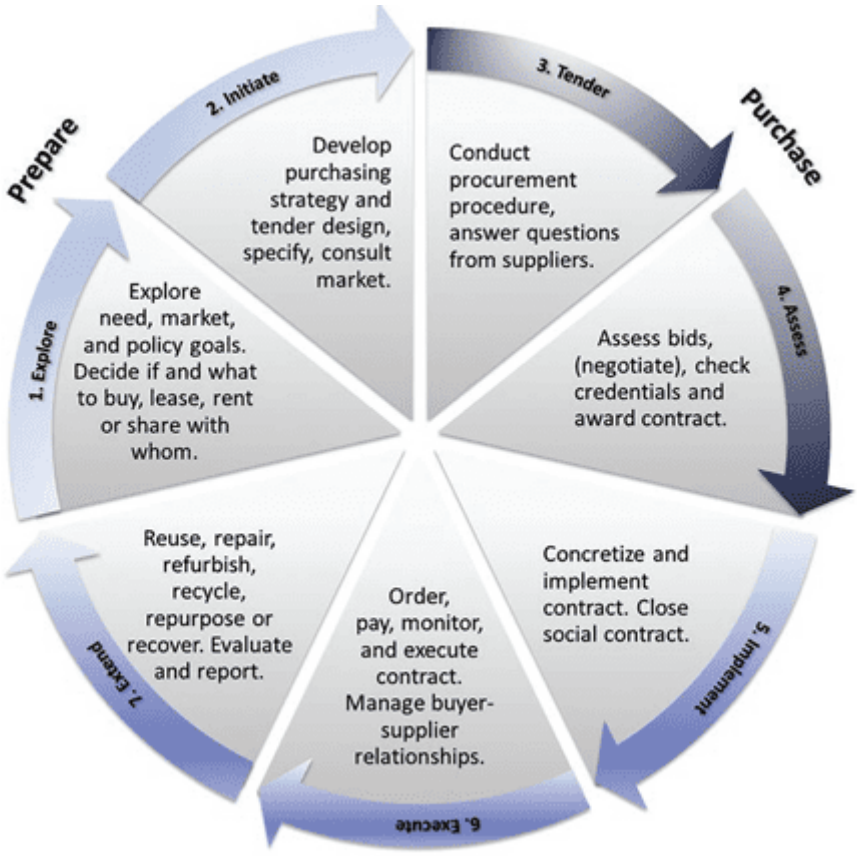
Procurement has progressively evolved from a purely administrative and operational function to a strategic organizational capability. Jing et al. (2020) emphasize that procurement constitutes the origin of the value-added process in all production and operations. In economic terms, procurement cost accounts for 50 to 60% of a company's total costs (Jing et al., 2020). For public organizations, this economic significance is amplified by the institutional mandate to achieve value for money, transparency, and accountability in the use of public funds.

In the Algerian context specifically, the strategic importance of procurement is underscored by the fact that public procurement represents approximately 20% of the country's GDP — significantly exceeding the OECD average of 12% (The Africa Report, 2023). The economic magnitude of public procurement at this scale, combined with the institutional commitment to transparency and integrity, renders the efficient management of the procurement function a matter of direct macroeconomic and governance significance.

3.2 The Procurement Cycle: Theoretical Frameworks

This study adopts the circular **3P-model** developed by Schotanus (2022, as cited in Grandia et al., 2023), which structures the procurement cycle into three continuous and interdependent phases that are Preparation, Purchase, and Perform, comprising seven sequential steps. The circularity of the model reflects the reality that each completed procurement cycle generates organisational learning that feeds directly into subsequent procurement decisions (Grandia et al., 2023, p. 6).

Figure 1.6 *The 3P-model of public procurement.*



Note. Adapted from Rother, M., and Shook, J. (1998). *Learning to see: Value stream mapping to add value and eliminate muda.* Lean Enterprise Institute.

3.2.1 Phase 1: Preparation (Steps 1 and 2: Explore and Initiate)

In the **Explore** step, the procuring organization determines the nature and extent of its need, considers sustainable procurement options, and makes the fundamental make-or-buy decision (Grandia et al., 2023, p. 7). In the **Initiate** step, a formal procurement project is established, a procurement team is formed, and a purchasing strategy is developed specifying the goals of the acquisition in terms of cost, quality, and public value. Decisions are made regarding the appropriate tender procedure, the specifications to be applied, and the supplier selection model to be used (Grandia et al., 2023, pp. 7–8).

3.2.2 Phase 2: Purchase (Steps 3 and 4: Tender and Assess)

In the **Tender** step, the procurement opportunity is publicly announced or specific suppliers are invited to submit bids. In the **Assess** step, submitted bids are evaluated against pre-established criteria, with the winning bidder receiving the contract award (Grandia et al., 2023, pp. 8–9).

3.2.3 Phase 3: Perform (Steps 5, 6, and 7: Implement, Execute, Extend)

In the **Implement** step, the contract is finalized and the winning supplier begins delivery, with both formal legal and informal social contracts established. In the **Execute** step, the contract enters active delivery, performance is monitored, and the quality of works, supplies, or services is continuously assessed. In the **Extend** step, the organization seeks to maximize the useful life of procured works or supplies through circular economy principles before evaluating the completed contract and initiating preparations for the next procurement cycle (Grandia et al., 2023, pp. 9–10).

3.3 The Procurement Process as a Value Stream

Procurement Value Stream Mapping (P-VSM)

One of a particular relevance to the present research is the application of VSM to procurement management. Procurement constitutes the origin of the value-added process in all production and operations, yet it has historically been overlooked as a field for systematic lean improvement (Jing et al., 2020). Jing et al. (2020) argue that the existing procurement management literature has focused on improving procurement based on inventory, supply chain, and platform approaches separately, thereby ignoring the procurement system as a complete and integrated value-generating system. To address this gap, they introduce the concept of **Procurement Value Stream Mapping (P-VSM)** , which is a direct extension of traditional VSM applied to the procurement domain. It maps all value-adding and non-value-adding activities throughout the entire procurement process, from the formulation of procurement plans through audit, procurement, transportation, inspection, storage, classification, and the final receipt of materials (Jing et al., 2020). The P-VSM captures both information flows (including procurement planning, financial auditing, and departmental coordination) and material flows (including supplier transportation, goods inspection, and warehouse classification), providing a holistic and systemic view of procurement value creation that traditional procurement improvement methodologies have been unable to offer (Jing et al., 2020).

The empirical results of Jing et al.'s (2020) case study application of P-VSM to a Chinese manufacturing enterprise demonstrated transformative improvements across all dimensions of the procurement cycle. The plan-making cycle was reduced by 97.4%, the billing cycle by 98.8%, the information cycle by 96.5%, the logistics cycle by 94.4%, and the overall

procurement cycle by 95.4%, from 34 days to 12.5 hours, confirming that P-VSM is capable of delivering efficiency gains of over 90% across procurement activities (Jing et al., 2020). These findings establish VSM not merely as a manufacturing tool but as a powerful instrument for the systemic redesign of procurement processes in any organisational context.

The extension of VSM and lean thinking to public sector procurement has similarly gained scholarly traction. Waterman and McCue (2012) document the application of lean principles to the procurement processes of the UK Cabinet Office, where lean implementation was shown to reduce procurement turnaround times by up to 40%. Their case study demonstrates that the core VSM logic of identifying value, mapping the value stream, eliminating waste, and pursuing continuous improvement is transferable to the complex governance structures, regulatory constraints, and multi-stakeholder environments that characterize public sector procurement (Waterman & McCue, 2012). This transferability is of direct relevance to the present research, which investigates the potential contribution of VSM to the enhancement of procurement processes within the Algerian public sector , which is a context characterized by comparable structural complexities and an urgent need for systematic efficiency improvement.

3.3.1 Theoretical Alignment between Lean Principles and Procurement Objectives

The application of VSM to the procurement process rests on a coherent theoretical alignment between the foundational principles of lean thinking and the core objectives of procurement management.

The first lean principle maps directly onto the procurement objective of fulfilling internal client needs while preserving public value (Grandia et al., 2023; Jing et al., 2020). The second is operationalised through VSM itself.

The third principle corresponds to shortening order cycle time and eliminating waiting periods between process steps, while the fourth aligns with demand-driven procurement management.

Finally, the fifth principle corresponds to the kaizen orientation embodied in iterative P-VSM cycles (Jing et al., 2020; Waterman & McCue, 2012).

3.3.2 Mapping Information and Document Flows in Procurement

A defining characteristic of the procurement value stream is the centrality of information and document flows as the primary medium through which value is created, delayed, or destroyed. As documented by Jing et al. (2020), the principal sources of procurement waste reside predominantly in the information flow system , in other words, in the intervals between approval stages, the queues of unprocessed documents, the delays in inter-departmental communication, and the redundant manual entry of data across incompatible systems , rather than in the physical material flow itself.

3.4 Performance Indicators in Public Procurement

3.4.1 Time-Based KPIs

Lead time : defined as the total elapsed time from the initiation of a procurement need to the final receipt of the goods, services, or works . It is the primary performance metric in VSM-based procurement analysis (Bizuneh & Omer, 2024; Jing et al., 2020). Jing et al. (2020) decompose total procurement lead time into five constituent cycle times: the plan-making cycle, the billing cycle, the information cycle, the logistics cycle, and the overall procurement cycle. Complementary time-based indicators include order cycle time and on-time delivery rate.

3.4.2 Cost-Related KPIs

Cost performance encompasses both:

Direct cost metrics: (unit purchase price, total procurement expenditure, budget variance)
Indirect cost metrics: (the administrative cost of the procurement process itself : personnel time, system costs, overhead). Gálvez-Rodríguez et al. (2024) highlight *value for money* (the optimal equilibrium of quality, quantity, cost, and impact) as the overarching cost-related performance objective of public procurement.

3.4.3 Supplier Performance Metrics

Supplier performance metrics assess the quality and reliability of the supply-side contribution to the procurement value stream, including delivery reliability, quality conformance, responsiveness, and supplier flexibility (Grandia et al., 2023, pp. 89–91).

3.5 Common Inefficiencies and Wastes in Procurement

Despite its critical institutional role, the public procurement process is frequently characterized by significant operational inefficiencies. Jing et al. (2020) identify a range of endemic non-value-adding activities, including excessive waiting time from multi-level approval chains, duplicated administrative efforts, confused labor structures, information asymmetry, inefficient procurement planning, and manual warehouse management. In their case study, Jing et al. (2020) found that of a total procurement cycle of 34 days, approximately 29 days , which is more than 85% of the cycle consisted of waiting time generating no organizational value.

As the World Bank (2003) observes, while sound procurement practices reduce costs and produce timely results, poor practices lead to waste and delays and are frequently the cause of allegations of corruption and government inefficiency. Gálvez-Rodríguez et al. (2024) further note that in developing countries, the absence of clear regulatory frameworks and stricter legislation contributes to the persistence of inefficient procurement practices, reinforcing the need for structural reform.

Conclusion

Chapter I has set out the theoretical and regulatory ground on which the rest of this dissertation is built. Section 1 followed lean management from its beginnings in the Toyota Production System to its current shape as a global management philosophy, anchoring the eight wastes and the five lean principles that the later chapters rely on. Section 2 introduced Value Stream Mapping as the lean diagnostic tool used in this study, with its symbols, its three core metrics (lead time, process time, value-added ratio), and a track record that now extends well beyond manufacturing. Section 3 placed the public procurement process inside the 3P-model and the Algerian regulatory framework formed by Loi 23-12 (2023), Décret présidentiel 15-247 (2015), and the procedures of public enterprises such as DIVINDUS CAPREF SPA.

The three sections fit together: a way of thinking about waste, a tool to make it visible, and the regulatory environment in which both must work. Existing studies support this combination. Waterman and McCue (2012) report procurement-time reductions of up to 40 % when lean thinking was applied at the UK Cabinet Office, and Jiang and Sirisuk (2025) confirm across a wide range of industries that lean practices have a strong, measurable effect on organisational performance. Lean is, in other words, a strategic approach to value and efficiency, not just a factory technique, and it can work in a setting as regulated and paper-heavy as an Algerian public enterprise.

This is the framework within which the procurement process of DIVINDUS CAPREF will be mapped, diagnosed, and redesigned. Chapter II presents the methodology and the host company; Chapter III builds the current state Value Stream Map and identifies its waste; Chapter IV designs the future state, checks it against the 28-day regulatory floor, and lays out a roadmap for implementation.

CHAPTER II: METHODOLOGICAL FRAMEWORK

Introduction:

The scientific credibility of any empirical research rests on the quality, the rigor and the transparency of the methodological choices that generated the findings.

Following the logic of Yin (2014,p.16), who defines a case study as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context, when the boundaries between phenomenon and context are not clearly evident,". Before presenting DIVINDUS CAPREF as the operational terrain on which the methodology is deployed, this chapter opens with the research design, including: its epistemological positioning , data collection and instruments , KPI's and the justification for each methodological choice.

This ordering reflects a deliberate epistemological choice: the method establishes the scientific legitimacy of the analysis; the company provides only the context in which it is applied.

The chapter is divided to three sections. Section 1 presents the research design, Section 2 presents DIVINDUS CAPREF SPA as the field of application. Lastly, Section 3 describes the procurement process as it operates specifically within the company.

Section 1: Research Design and Methodology

1.1 Theoretical Framework Adopted for This Study

The theoretical framework guiding the empirical analysis of this research is constructed at the intersection of three bodies of knowledge (lean management theory, VSM methodology, and public procurement theory) and operationalizes their convergence through four integrated conceptual pillars.

Pillar 1 :The Lean Waste Framework

The eight categories of lean waste (overproduction, waiting, unnecessary transportation, over-processing, excessive inventory, unnecessary motion, defects, and unused human talent) serve as the primary analytical classification for the diagnosis of the current state procurement process in Chapter III. Each waste type is operationalised in its administrative manifestation: waiting as approval queue times, over-processing as redundant validation steps, defects as purchase order errors and invoice rejections, motion as paper-based document routing, inventory as half-yearly procurement batches, and unused talent as staff overloaded with manual data entry tasks. Ohno (1988); Lawal & Elegunde (2020); Bizuneh & Omer (2024)

Pillar 2 :VSM Methodology

The five-step VSM implementation process (observation and recording, current state mapping, analysis and improvement formulation, future state design, and implementation planning) constitutes the methodological backbone of Chapters III and IV. The P-VSM framework of Jing et al. (2020), which adapts standard VSM to the specific characteristics of procurement information and material flows, provides the direct methodological reference. Rother & Shook (1998); Jing et al. (2020); Bizuneh & Omer (2024); 50minutes (2017)

Pillar 3 :Public Procurement Theory

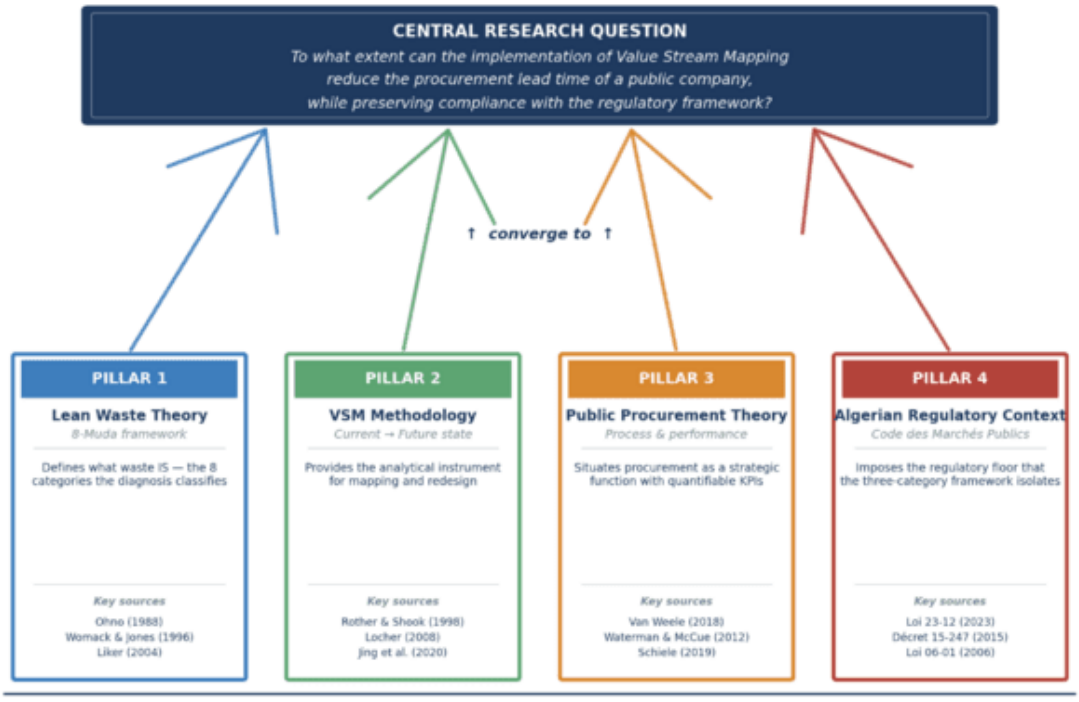
The 3P-model of public procurement (Schotanus, 2022, as cited in Grandia et al., 2023) (encompassing the Preparation, Purchase, and Perform phases across seven sequential steps) provides the structural framework for mapping the procurement value stream. Waterman and McCue's (2012) identification of the three enabling conditions for lean implementation in public procurement (openness to change, resource investment, and top-level support) informs

the implementation recommendations of Chapter IV. (Grandia et al. (2023); Waterman & McCue (2012))

Pillar 4 : Algerian Regulatory and Institutional Context

The Algerian legal framework defines the mandatory procedural boundaries within which lean improvement must be pursued. At the enterprise level, the Internal Procurement Procedure of DIVINDUS CAPREF (Version 3, December 2025, approved by the Administrative Council through Resolution N°04 of 28 December 2025) operationalizes this national framework into specific financial thresholds (35 M DA / 12 M DA / 8 M DA), three control organs being the transaction committee, the COPEO, the Procurement and Committee alongside the SIDJILICOM verification mechanism. These regulatory and institutional features are integrated into the theoretical framework as non-negotiable parameters, which distinguishes this study from private sector VSM applications and constituting its most distinctive contextual contribution.

Figure 2.1 *The four theoretical pillars of the study*



Note. Author's own elaboration based on Ohno (1988), Rother and Shook (1998), Womack and Jones (1996), Jing et al. (2020), Grandia et al. (2023), Waterman and McCue (2012), Issaadi (2024), Loi 23-12 (2023), and DIVINDUS CAPREF SPA (2025).

The convergence of these four theoretical pillars: lean waste analysis, VSM methodology, public procurement theory, and Algerian regulatory and institutional context, constitutes the conceptual architecture of this dissertation.

1.2 Key Definitions

The following operational definitions govern the use of key terms throughout this study. Their precise and consistent application is essential to the methodological rigor of the VSM analysis.

Lead-time (LT): The total elapsed time from the receipt of an internal purchase request by the procurement department to the physical delivery and validation of the ordered goods. Encompasses both process time and waiting time at every step (Bizuneh & Omer, 2024; Jing et al., 2020).

Formula: **LT = Σ (PT + WT) across all process steps**

Process Time (PT): The time during which an actor or system is actively performing work on a procurement request at a given step, in other words it's the value-adding portion of lead time (Bizuneh & Omer, 2024).

Waiting Time (WT): The time during which a request is idle between process steps, in other words pending approval, queued in a document pile, or awaiting the next actor. Non-value-adding by definition (Jing et al., 2020).

Formula: **WT = LT(step n) − PT(step n)**

Value-Added Activity: Any activity that directly transforms the state of the procurement request toward fulfilment of the internal client's need (for which the requesting department recognises necessity and for which the organisation willingly allocates resources) (Womack & Jones, 1996).

Non-Value-Added Activity (Muda): Any activity that consumes time, resources, or effort without contributing to client-defined value (redundant validations, unnecessary routing, waiting periods, manual data re-entry) (Ohno, 1988; Jing et al., 2020).

Value Stream: The complete sequence of activities required to fulfil a procurement request, encompassing both material flow (physical movement of goods) and information flow (approvals, data, communication) (Jing et al., 2020).

Current State Map: Visual representation of the procurement value stream as it presently operates. It documents every process step, actor, inventory queue, process time, waiting time, and information flow (Rother & Shook, 1998).

Future State Map: Visual representation of the redesigned procurement value stream after elimination of identified non-value-adding activities. It is a practically achievable lean target derived from current state analysis (Rother & Shook, 1998; Jing et al., 2020).

Value-Added Ratio (VA%): The proportion of total lead time that consists of genuine value-adding process time.

Formula: $VA\% = (\Sigma PT / Total\ LT) \times 100$

1.3 Research Approach and Epistemological Positioning

1.3.1 Mixed-Methods Design: Qualitative and Quantitative Dimensions

The present study adopts a mixed-methods research design, integrating both qualitative and quantitative dimensions within a single-case study framework. This dual character is not a methodological compromise but reflects the inherent nature of the VSM methodology itself, which is simultaneously a qualitative visualisation and communication tool and a quantitative measurement instrument (Rother & Shook, 1998).

The qualitative dimension: it encompasses direct process observation through Gemba walks, semi-structured interviews with procurement actors, document analysis of procurement files and registers, and the interpretive construction and validation of current and future state maps. These qualitative methods generate the contextual, procedural, and organisational knowledge necessary to understand *how* and *why* waste occurs in the specific regulatory and organizational context of an Algerian public company, a question that purely quantitative approaches cannot adequately address (Yin, 2014, p. 16).

The quantitative dimension: it encompasses chronometric time measurement of process steps (PT and WT), calculation of total lead time, computation of the value-added ratio (VA%), counting of handoffs and approval steps, measurement of queue sizes at each step, and the production of before/after KPI comparison tables. These quantitative measurements provide the objective empirical foundation against which the impact of future state improvements can be measured and validated. It directly tests hypotheses H1, H2, and H3.

This mixed-methods design aligns with the established practice in VSM research: Bizuneh and Omer (2024) combined direct process observation with quantitative time studies and lean metrics calculation; Jing et al. (2020) combined procurement process mapping with quantitative cycle time measurement, achieving reductions of over 90% across all measured KPIs.

1.3.2 Action research Dimension:

Beyond its classification as a mixed-methods case study, the present research incorporates an action research dimension that distinguishes it from purely observational studies. Action research involves the researcher as an active participant in the diagnosis and improvement of the situation under study (Saunders et al., 2019). In this research, this dimension is expressed through the co-construction of the current state VSM with procurement staff during Gemba walk observations, the collaborative identification of improvement opportunities, and the joint validation of the current state map through member checking. As Waterman and McCue (2012) document, this participatory engagement is a substantive condition for the success of lean implementation in public organisations.

1.3.3 Single Embedded Case Study Design

The study adopts a **single embedded case study design** (Yin, 2014): one organizational unit (DIVINDUS CAPREF SPA) examined through one embedded unit of analysis — the procurement process for a specific product family. This design is justified as both a:

Representative case : the procurement challenges observed typify those of Algerian public industrial companies operating under the *Code des Marchés Publics* .

Revelatory case : the application of VSM to Algerian public procurement is a novel methodological contribution not previously documented in the scholarly literature. The depth of analysis enabled by this design (full value stream mapping, root cause identification, and contextually adapted future state design) would not be achievable through a multi-case comparative approach within the constraints of a Master's dissertation (Yin, 2014).

1.4 Selection of the Procurement Family for Mapping :

The procurement family was selected against the three criteria drawn from the VSM methodology of Rother and Shook (1998): volume, dysfunction, and representativeness.

1.4.1 The volume criteria

The volume criterion requires that the family represent a significant and recurring share of procurement activity, so that improvements identified are organisationally meaningful rather than marginal. Steel and metal products code 3172 constitute the primary structural raw material for all DIVINDUS CAPREF manufacturing activities and are procured frequently, recurrently, and at high value.

Figure 2.2 *the steel and metal product family*

GROUP CODE	PRODUCT FAMILY GROUP	PRODUCT FAMILY CODE	PRODUCT FAMILY
3172	STEEL AND METAL PRODUCTS		
		317201	cold-rolled sections
		317202	sheet metal
		317203	hot rolled-sections
		317204	steel tubes
		317205	coil
		317206	other

Note. Author's own elaboration based on DIVINDUS CAPREF SPA (2025) institutional documentation and the PEB Unit production catalogue.

The company's internal financial records confirm this dominance empirically: in Q1 2025 steel represented 45.06% of all PEB unit purchases by value, and in Q1 2026, 42.32% (Table 2.1) which is substantially larger than any other family (DIVINDUS CAPREF, 2026). The records also reveal a lumpy half-yearly batch pattern (January 2025 purchases of 68.9 M DA; February 48.5 M DA; March 114.2 M DA) and a structural inventory accumulation of approximately 26.6 M DA per quarter, both of which Chapter III's diagnosis will return to.

Table 2.1 *PEB Unit Procurement and Consumption: Steel Products vs. All Families (Q1 2025 and Q1 2026)*

Indicator	Steel (3172)	All Families	Steel as %
Q1 2025 — Purchases (Achats, HT)	231,603,870 DA	514,018,782 DA	45.06%
Q1 2025 — Consumption	205,016,681 DA	450,365,846 DA	45.52%
Q1 2025 — Stock build-up	+26,587,188 DA	+63,652,936 DA	41.77%
Q1 2026 — Purchases (Achats, HT)	84,543,725 DA	199,770,367 DA	42.32%
Q1 2026 — Consumption	58,778,359 DA	196,768,185 DA	29.87%
Q1 2026 — Stock build-up	+25,765,366 DA	+3,002,182 DA	858.22%
Year-on-year change (Q1 → Q1)	-63.5%	-61.1%	—

Note. DIVINDUS CAPREF (2026). PEB unit purchase and consumption ledgers, Q1 2025 and Q1 2026 [internal financial records]. Steel products correspond to product family.

1.4.2 the dysfunction criteria

The **dysfunction criterion** requires that the family exhibit observable, measurable procurement inefficiencies that constitute a genuine improvement opportunity. Steel procurement at DIVINDUS CAPREF is subject to specific technical validation requirements that include dimensional verification, mechanical property conformity, and compliance with applicable Algerian industrial norms. This multiply inter-departmental coordination steps and generate substantial waiting time at the validation and approval stages. Preliminary observations during the Gemba walk confirmed that the family exhibits the longest average lead times and the highest frequency of approval delays among all procurement categories.

1.4.3 The representativeness criteria

The representativeness criterion requires that the family follow the company's standard procurement procedure under the Public Procurement Code, including the competitive tender, so that findings apply to the broader procurement process rather than an atypical exception. Steel procurement follows this procedure in full, making the family fully representative of the company's standard public procurement cycle.

Together, the three criteria identify a coherent procurement family in the Rother and Shook (1998) sense: a set of products passing through similar processing steps, involving common actors, and following the same regulatory procurement procedure from the initial expression of need through delivery and validation. This methodological choice is consistent with Jing et al. (2020), who likewise focused their P-VSM analysis on a single coherent procurement family and achieved efficiency gains exceeding 90% across the measured cycle times. The analytical depth such a focus enables would not be achievable through a multi-family or process-level analysis within the scope of the present dissertation.

Section 2: The Organisational Framework

This section outlines the operational and structural framework of DIVINDUS CAPREF SPA, a subsidiary of the DIVINDUS Local Industries Group. Specialised in the strategic business Area of " prefabricated Cabins and Chalets" CAPREF aims to produce and market, to the highest standards of quality and safety, fixed prefabricated chalets for the tourism sector and mobile cabins perfectly suited to the needs of state institutions, local authorities, oil companies, public works and even individuals.

2.1 Company overview:

DIVINDUS CAPREF SPA is a public economic enterprise established in 2015 through the merger-absorption of seven former subsidiaries of the DIVINDUS Group operating in the strategic domain of prefabricated wooden cabins and structures. Headquartered at 202 road Hassiba Ben Bouali, Hamma, Algiers, the company combines over sixty years of collective industrial experience inherited from its predecessor units. It ISO 9001 certified, an institutional commitment to quality management and continuous improvement that aligns directly with the lean VSM philosophy applied in this study.

The company's principal activities, as registered in its commercial entry, comprise metalwork and metal joinery, industrial wood transformation, flat glass fabrication, and the manufacture of Saharan cabins and other metal prefabrications. Its mission is the production and commercialisation, at the highest standards of quality and safety, of mobile Saharan cabins adapted to the petroleum exploration and public works markets, and of fixed prefabricated chalets for the tourism sector and state institutions.

DIVINDUS CAPREF operates as a subsidiary of the Groupe Industries Locales DIVINDUS, one of Algeria's principal public industrial holding groups, founded in 2015 under the supervision of the Ministry of Industry through the merger of five regional Sociétés de Gestion des Participations and the Wood Manufacture Group. The Group reports a share capital of 14.947 billion DA, an average annual turnover of approximately 37 billion DA, a workforce of around 15,200 employees, and an organisational footprint of fourteen subsidiaries and 147 units across three principal sectors of activity.

Within this architecture, DIVINDUS CAPREF occupies a strategically significant position as the Group's dedicated subsidiary for prefabricated wooden cabins and structures, a product category directly relevant to Algeria's hydrocarbon exploration, public works, tourism, and state infrastructure sectors. The company's public-sector status subjects all procurement activities above the regulatory thresholds entirely to the framework of the Public Procurement Code and Law 23-12 (2023)

Table 2.2 *DIVINDUS CAPREF Company Overview*

Date of Establishment	2015
CEO	Madjid MOUHOUB
Headquarters	Algeria
Legal Form	Joint-stock company **Société Par Actions (SPA)**
Sector of Activity	Classified under public works and construction.
Share Capital	50000000DZD
Workforce	+2500 employee
Principal activity	Manufacture of prefabricated wooden cabins, chalets, and Saharan structures with metal-frame ossature

Note. Adapted from DIVINDUS CAPREF SPA (2025). *Procédure interne de passation des marchés de l'EPE DIVINDUS CAPREF SPA* et DIVINDUS CAPREF SPA : documentation institutionnelle.

Figure 2.3 DIVINDUS CAPREF logo



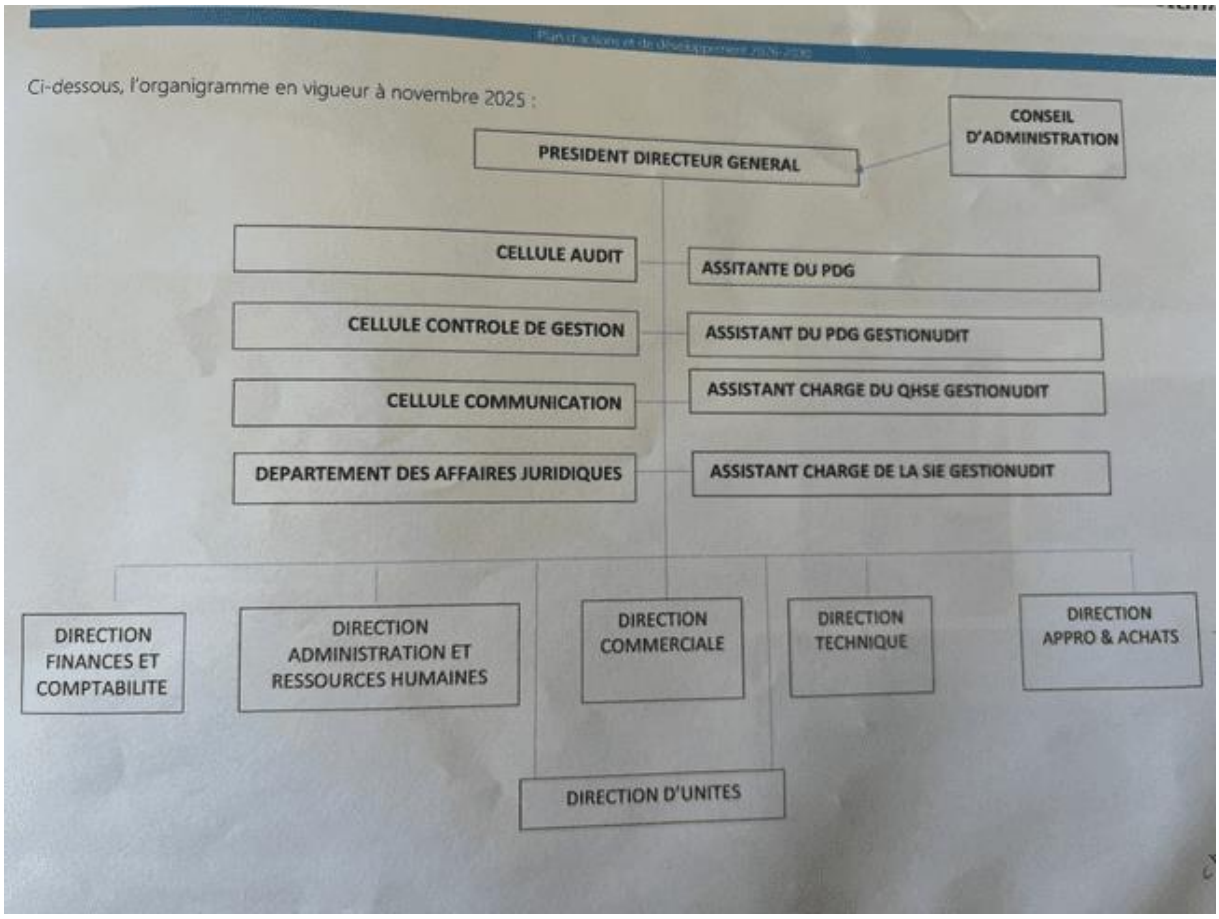
Note. From DIVINDUS CAPREF SPA (2025) institutional documentation.

2.1.2 Strategic Position and Economic Role (Public Sector Context)

As a public economic enterprise within Algeria's DIVINDUS Group, Divindus Capref SPA plays a pivotal role in supporting national strategic sectors, including oil exploration, public works (BTP), infrastructure, tourism, and state institutions. Its ISO 9001:2015 certification underscores its commitment to quality, innovation, and international standards, positioning it as a market leader in prefabricated construction amid Algeria's emphasis on sustainable and rapid-build solutions for public needs. With 5,001-10,000 employees, it contributes to economic development by serving public contracts and fostering local manufacturing capabilities.

2.1.3 Organisational Structure : Organigram and Key Departments

Figure 2.4 *Organisational structure of DIVINDUS CAPREF SPA*



Note. Adapted from internal company documentation and direct organisational observation (DIVINDUS CAPREF SPA, 2025).

2.1.4 The Unité PEB Site of the Empirical Observation

The PEB Unit is the production unit at which the empirical observation of this study was conducted. The unit operates the structural workshop that consumes the steel and metal products procured through the value stream under analysis, and houses the principal actors of the procurement cycle within the production unit boundary , most notably the Unit Director (DU) responsible for joint validation of the Purchase Order under PRO-09 §7.4.2, and the Chief Storekeeper responsible for physical reception under PRO-09 §5.2.1.

2.2 the Procurement Department :

2.2.1 Scope of Procurement Activities and Product Categories

The DPROCUREMENT AND Logistics Directorate is responsible for the acquisition of all goods and services required for production operations and administrative functioning. Given DIVINDUS CAPREF's manufacturing activities, procurement encompasses:

- Raw materials: Timber, wood panels, metal profiles, glass panels, insulation materials
- Production consumables: Fasteners, adhesives, sealants, paints, finishing materials
- Spare parts and maintenance supplies: Machine components, tools, maintenance equipment
- Administrative supplies: IT consumables, office equipment, stationery
- Services: Subcontracting, transport and logistics, maintenance, training
- All procurement above defined financial thresholds is subject to mandatory competitive tendering under the Public Procurement Code distinguishing routine low-value direct purchases from formal market consultation procedures (Grandia et al., 2023; Russian Law Journal, 2024).

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- All procurement above defined financial thresholds is subject to mandatory competitive tendering under the *Code des Marchés Publics,* distinguishing routine low-value direct purchases from formal market consultation procedures (Grandia et al., 2023; Russian Law Journal, 2024).

2.3 Existing Procurement Performance: context and diagnosis

The pre-study baseline of procurement performance at DIVINDUS CAPREF rests on two complementary dimensions: the time dimension, as estimated by procurement staff before the diagnostic work of Chapter III, and the volume and value dimension, as evidenced by the company's internal financial ledgers.

2.3.1 Current Lead Times and Processing Delays (time-based study line)

Procurement staff estimate the formal procurement cycle at approximately 45 to 50 working days. This estimate captures the visible portion of the cycle (the post-DRAP procedural steps governed by PRO-09 and the Procurement Procedure) but excludes the pre-expression latency that precedes the formal DRAP and that the institutional procedure does not formally measure. Chapter III will return to this baseline and, through the structured Gemba walk and direct observation, establish the complete end-to-end lead time at approximately 80 working days, which substantially exceeds the management-perceived 45–50-day figure. The differential between the two figures is itself a finding: it represents the portion of the cycle that the institutional measurement system structurally fails to capture, and which the present study identifies as a primary target of intervention.

This baseline must be interpreted in the context of the procurement frequency adopted for the steel products family at DIVINDUS CAPREF. Consistent with the procurement planning provisions of the manual (DIVINDUS CAPREF, 2023, Section 7.2.2), which explicitly authorises monthly, quarterly, or half-yearly procurement planning, the call for tenders procedure for steel products is conducted at a half-yearly frequency. Two procurement cycles per year cover the company's projected structural material needs across the corresponding six-month production horizons.

This combination of half-yearly procurement frequency and 45–50 working days concretization lead-time generates two operationally significant consequences:

First, a structural inventory accumulation pattern: large quantities of steel products are received in bulk twice per year and progressively consumed over the subsequent six-month period, producing characteristic warehouse occupation profiles with peak post-reception levels and pre-reception lows.

Second, a reduced operational responsiveness: any unanticipated need for steel products outside the planned half-yearly cycle must be absorbed either through emergency direct purchases (subject to higher costs and weaker price negotiation) or through inventory buffers

held for that contingency. Both consequences correspond to recognized lean waste categories (overproduction, excess inventory, and waiting) (Ohno, 1988; Lawal & Elegunde, 2020) and constitute the principal improvement opportunity that the present VSM analysis seeks to diagnose and address.

Prior to the present study, no systematic decomposition of the 80-day concretisation lead-time into its constituent value-adding and non-value-adding components had been conducted within the Procurement and Logistics Directorate. In this sense, the present study delivers the first formal quantification of procurement performance at DIVINDUS CAPREF.

2.3.2 Volume and Value Pre-Study Baseline

Beyond the time-based baseline, the PEB unit's steel procurement volume and value profile provides a second diagnostic dimension. Q1 2025 figures reveal three structural features: First, the half-yearly procurement rhythm produces lumpy purchasing patterns—January 2025 recorded 68.9M DA, February 48.5M DA, and March 114.2M DA in steel purchases, a 2.4-fold swing within a single quarter (DIVINDUS CAPREF, 2026). This is the financial signature of the forecast-driven push model that Chapter III will diagnose.

Second, purchases exceed consumption, confirming structural inventory accumulation. Q1 2025 purchases (231.6M DA) exceeded consumption (205.0M DA) by 26.6M DA; Q1 2026 showed a similar build-up (84.5M DA vs. 58.8M DA, +25.8M DA), confirming this is a persistent feature.

Third, year-on-year procurement value declined by 63.5% between Q1 2025 and Q1 2026. While empirically present, this decline's interpretation is ambiguous—it may reflect production volume contraction, shifted procurement timing, or partial procedural improvements. This figure is reported as-is; definitive interpretation would require confirmation from the Procurement and Logistics Directorate but falls outside this study's scope, which addresses process redesign rather than volume forecasting."

Table 2.3

PEB Unit Procurement and Consumption :Steel Products vs. All Families (Q1 2025 and Q1 2026)

Indicator	Steel (3172)	All Families	Steel as %
Q1 2025 — Purchases (Achats, HT)	231,603,870 DA	514,018,782 DA	45.06%

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Q1 2026 — Net stock build-up	+25,765,366 DA	+3,002,182 DA	858.22%
Year-on-year change (Q1 → Q1)	-63.5%	-61.1%	—

Note. *DIVINDUS CAPREF (2026). Steel products correspond to product family code 3172.*

2.3.3 Known Bottlenecks and Pain Points Reported by Staff:

Bottlenecks reported by the Procurement and Logistics Directorate (CDA, CSA):

- Approval waiting periods at the Unit Director (DU) validation step (Muda: waiting)
- Manual transcription of paper DAC/DRAP into separate forms (Muda: over-processing)
- Delays in receiving complete invoice files from suppliers (Muda: defects)
- Physical document routing across departmental offices (Muda: motion)

Bottlenecks reported by the Stock Management Directorate (CSGDS):

- Delays in receiving Purchase Order (BC) copies from the Procurement Directorate (CDA) (Muda: waiting)
- Multi-copy Goods Receipt Note (BR) preparation generating duplicated effort (Muda: over-processing)
- End-of-month workload concentration for accounting transmission (Muda: unused talent)

Bottlenecks reported by requesting departments (Production, BET, Commercial):

- Extended delays between expression of need and material availability (Muda: waiting)
- Development of informal parallel inventory tracking due to perceived procurement unreliability (Muda: motion, defects)

Bottlenecks reported by management (DU, DG):

- Difficulty obtaining real-time visibility on procurement file status (Muda: defects, inventory)
- Periodic supplier non-conformity issues triggering contestation letter procedures (Muda: defects)

2.3.3 Motivation and Justification for the VSM Study

The application of Value Stream Mapping to DIVINDUS CAPREF's procurement process is justified by three converging motivations: operational, strategic, and academic. Together they establish the research's relevance, feasibility, and scholarly significance.

Operationally, the procurement process exhibits structural characteristics VSM is designed to diagnose (Jing et al., 2020; Waterman & McCue, 2012): half-yearly batch procurement, 45–50-day lead-time, multi-level approvals, paper-based pre-reception documentation, partial ERP coverage, and significant inter-departmental waiting. The current-state map (Chapter III) and adapted future-state design (Chapter IV) directly serve the company's interest in shortening lead times, reducing administrative waste, and improving responsiveness.

Strategically, the company's institutional commitment to formalized procurement procedures (Manuel des Approvisionnements PRO-09, validated by the Administrative Council Resolution N°04, 30 July 2023) reflects an organizational culture compatible with VSM's systematic-improvement logic. The manual's five strategic objectives: veille stratégique, qualité et conformité, sécurisation de l'achat, éviter les ruptures, prévisions et flux, map directly onto Womack and Jones's (1996) five lean principles, establishing clear alignment between procurement orientation and the analytical framework. The ISO 9001:2015 certification further institutes documented continuous-improvement commitment that this analysis operationalizes.

Academically, applying VSM to public procurement in the Algerian context addresses a documented scholarly gap. As established in Chapter I §4.2.3, existing procurement-VSM literature is dominated by Western manufacturing, East Asian production, and limited Western public-sector settings (Jing et al., 2020; Waterman & McCue, 2012). Applications in developing/transitional economies, particularly North African and Algerian public companies under the Public Procurement Code, have received virtually no attention. DIVINDUS CAPREF, as a representative Algerian public industrial company under Loi 23-12 (2023) within the DIVINDUS Group's public sector architecture, constitutes an ideal case for closing this gap. The findings contribute simultaneously to practical procurement performance improvement and to scholarly understanding of VSM applicability in Algerian public-sector contexts.

Section 3: The procurement Process at DIVINDUS CAPREF

3.1 Mapping the Actors and Their Roles in the Procurement Cycle

The procurement cycle at DIVINDUS CAPREF involves multiple organizational actors The following table identifies each actor, their role, and the procurement step at which they intervene:

Table 2.4 *Procurement Actors and Their Roles at DIVINDUS CAPREF*

Actor	Full Designation	Role in the Procurement Cycle
CA	Chef d'Atelier	Identifies the steel material need at the ossature workshop
CP	Chef de Production	Confirms the production-side need and relays it to the CDP
CDP	Chef de Département Production	Communicates the need to the Direction Appro & Achats
CSGDS	Chef de Service Gestion des Stocks	Prepares the DRAP; verifies stock; performs DLG entry and monthly reconciliation
DU	Directeur d'Unité	Validates the DRAP; co-signs the BC (PRO-09 §7.4.2)
CDA	Chef de Département Approvisionnement	Leads market study; consultation; BC issuance; follow-up; payment request
CSA	Chef de Service Achats	Supports market study; performs the four-point invoice control (PRO-09 §7.4.4)
Comité de Transaction	Evaluation committee	Evaluates bids; verifies SIDJILICOM; drafts TCO; signs PV (Procédure Art. 47)
Magasinier principal	Principal storekeeper	Receives goods; establishes BR and BS; applies FIFO destocking
CQ	Contrôle Qualité	Verifies technical conformity of received steel (PRO-05 §6.1.4; ISO 9001)
DFC	Directeur Finances et Comptabilité	Executes payment after engagement budgétaire control
Supplier	External supplier	Prepares bid; manufactures and delivers steel products

Note. Adapted from DIVINDUS CAPREF SPA (2022). *Fiche d'identification du processus PCS-05* and DIVINDUS CAPREF SPA (2023). *Manuel des approvisionnements* (Ref. PRO-09) [Internal document]. The original French acronyms are retained in line with the company's institutional terminology.

3.2 Key Documents and Information Flows

The procurement cycle at DIVINDUS CAPREF is structured around a series of formal documents that constitute both the information flow and the administrative trail of the procurement process. Each document triggers the transition from one process step to the next and serves as the primary medium of inter-departmental coordination.

Table 2.5 *Key Documents in the DIVINDUS CAPREF Procurement Process*

Code	Document (FR / EN)	Issued By	Received By	Function	Reference
DAC	*Demande d'Achat* / Purchase Request	Requesting unit	CDA	Formal statement of need; engages requester's responsibility for technical specifications	APR-02/V01
DRAP	*Demande de Réapprovisionnement* / Replenishment Request	CSGDS	CDA	Triggered automatically upon reaching minimum stock threshold	APR-01/V01
DMF	*Demande Matière et/ou Fourniture* / Materials & Supplies Request	Requesting service	Principal Storekeeper	Pre-requisite for any stock issue; signed by user and approved by structure manager	APR-03/V01
B/C	*Bon de Commande* / Purchase Order	CDA (signed jointly with DU)	Supplier (with copies to Accounting and CSGDS)	Pre-numbered, quantified, valued; formalises the order following supplier selection	—
B/L	*Bon de Livraison* / Delivery Note	Supplier	Principal Storekeeper	Accompanies physical delivery; reconciled with BC	—
B.R	*Bon de Réception* / Goods Reception Note	Principal Storekeeper	CSGDS, Accounting, CDA, Storekeeper (4 copies)	Pre-numbered, dated, stamped; confirms physical receipt and quality validation	APR-04/V01
B.RT	*Bon de Réintégration* / Reintegration Note	Storekeeper	CSGDS	Records return of unused articles to stock	—
B.S	*Bon de Sortie* / Issue Note	Principal Storekeeper	Requesting service (4 copies)	Pre-numbered; established against mandatory DMF	APR-05/V01

Code	Document (FR / EN)	Issued By	Received By	Function	Reference
BCS	*Bon de Consommation* / Consumption Note	CSGDS (from GDS software)	Accounting	Printed after valuation; supports monthly consumption statement	—
BRF	*Bon de Réception Fournisseurs* / Supplier Reception Note	CSGDS (from GDS software)	Accounting	Software-generated; supports monthly supplier reception statement	—
PV / TCO	*Procès-Verbal / Tableau Comparatif des Offres* / Minutes & Comparative Offers Table	Transaction Committee	CDA and DU	Transmitted within 3 working days of offer opening	—
FACT	*Facture* / Invoice	Supplier	CDA (then DFC)	Subject to 4-point control by CSA before transmission to Accounting	—
F.PF	*Facture Proforma / Pro-forma Invoice*	Potential suppliers	CDA	Submitted during supplier consultation	—
F.F	*Fiche Fournisseur / Supplier File*	CDA	Internal use	Component of the supplier "SHORT LIST"	—
F.S	*Fiche de Stock / Stock Card*	Storekeeper	Internal use	Manually updated for each stock movement	—
F.C	*Fiche Casier / Bin Card*	Storekeeper	Internal use	Stock card kept at the physical storage location	—
P.A	*Plan d'Approvisionnements / Procurement Plan*	CDA	DU, Management Control	Established at the beginning of each financial year on the basis of forecast budget N+1	—

Note. Adapted from DIVINDUS CAPREF (2023). *Procurement Manual* (Ref. PRO-09, Sections 3 and 5.2). The official French acronyms are retained in this thesis in line with the company's institutional terminology.

3.2.1 The Three Channels of Needs Expression

The procurement process is initiated through one of three documented mechanisms (DIVINDUS CAPREF, 2023, Section 7.2):

1. The Purchase Request (DAC) concerns specific purchases of raw materials or supplies for which new or particular requirements are expressed by the client and which were not foreseen in the initial workload plan. The DAC becomes effective upon approval by the Unit Director and transmission to the CDA. The manual is explicit on this point: *"No purchase may be carried out without the establishment of a document entitled 'Purchase Request' (DAC) attached to the purchase order"* (DIVINDUS CAPREF, 2023, Section 7.2.1).

2. The Replenishment Request (DRAP) is triggered automatically when stock reaches the predefined coverage level (minimum stock). It is initiated by the CSGDS and follows a parameterised procurement plan established at the beginning of each financial year on the basis of the forecast budget N+1, the production plan, and the consumption history of year N-1. The manual explicitly authorises monthly, quarterly, or **semi-annually** (*semestrielle*) procurement planning frequencies (DIVINDUS CAPREF, 2023, Section 7.2.2) directly confirming the half-yearly procurement rhythm of the steel products family selected for this study.

3. The Raw Materials Consumption List (Nomenclature / Bill of Materials) is drafted by the Design Office (BET) for any new production project or site need. It is transmitted to the CDA via a formal transmittal note (*bordereau*) and serves both to anticipate the purchasing operation and to optimise its execution (DIVINDUS CAPREF, 2023, Section 7.2.3).

3.2.2 The flowchart of the Purchasing Procedure

PRO-09 (DIVINDUS CAPREF, 2023) operationalizes the procurement procedure into a 13-step institutional flowchart covering the formal cycle from need expression through payment execution. For VSM analysis, Chapter III decomposes this into 19 analytical steps across five operational phases. Three decompositions produce the additional six steps.

First, pre-expression latency (Phase 0) is added at the cycle's head. This single step the institutional flowchart doesn't formally measure, but the Gemba walk identifies it as a substantial time-to-value component.

Second, composite steps in the flowchart are unpacked into operational components. Notably, the reception step, treated as one-step in the institutional procedure, decomposes into physical reception, quality control, and DLG entry under PRO-09 §5.2.1.

Third, recurring monthly reconciliation (PRO-09 Part II §5.2.1) is treated as a separate step rather than folded into payment execution, exposing end-of-month workload concentration.

The 19-step decomposition preserves the 13-step flowchart's regulatory content in full. It adds analytical granularity, not procedural complexity

Table 2.6 *Official Procurement Process Steps at DIVINDUS CAPREF (flowchart PRO-09)*

#	Step (EN)	Step (FR)	Responsible	Input Documents	Output Documents
1	Expression of need	*Expression de besoin*	CSGDS, BET, Production, Commercial	—	DAC, DRAP
2	Validation of the request	*Validation de la demande*	Unit Director (DU)	DAC, DRAP	Validated DAC
3	Verification of stock availability	*Vérification disponibilité article en stock*	CDA, CSGDS	Validated DAC	(Yes → release / No → continue)
4	Article release from stock	*Mise à disposition des articles*	CDA, CSGDS	Validated DAC	(Direct delivery)
5	Launching of supplier consultation	*Lancement d'une consultation*	CDA	Validated DAC	Consultation letter
6	Offer evaluation	*Évaluation des offres*	Transaction Committee	Sealed bids / pro-forma invoices	PV, TCO
7	Contract / Purchase Order issuance	*Établissement d'un contrat / Bon de Commande*	CDA, DU	PV, TCO	Contract, BC
8	Order execution follow-up	*Suivi exécution de la commande*	CDA	Contract, BC	BL
9	Article reception	*Réception des articles*	CSGDS	BL	BRF
10	Invoice control and processing	*Contrôle et traitement de la facture*	CDA	BL, BC, BRF, Invoice	(Conforming → continue / Non-conforming → contestation letter)
11	Payment request establishment	*Établissement de la demande de paiement*	CDA	BC, BRF, Invoice	Payment request
12	Payment execution	*Procédé au paiement*	DFC	BC, BRF, Invoice,	Cheque, Bank transfer

#	Step (EN)	Step (FR)	Responsible	Input Documents	Output Documents
				Payment request	
13	Monthly reconciliation	*Rapprochement mensuel Appro–Comptabilité*	CSGDS, DFC	—	Reconciliation report

Note. Adapted from DIVINDUS CAPREF (2023). *Procurement Manual* (Ref. PRO-09, Part II, Annex 6.1 — Reception flowchartt Stocks).

3.3 Regulatory Steps Embedded in the Process

A defining characteristic of procurement at DIVINDUS CAPREF is the presence of mandatory procedural steps imposed by the Algerian Code des Marchés Publics and Law 23-12 (2023), transposed into the company's internal Tendering Procedure (DIVINDUS CAPREF, 2023, Section 4). These regulatory steps impose irreducible waiting time and cannot be eliminated by lean improvement initiatives; they constitute the regulatory floor below which no future state design can descend (Waterman & McCue, 2012).

3.3.1 The Supplier Consultation Requirement

For purchases within DIVINDUS CAPREF Units' Transaction Committee competence, the procedure mandates competitive consultation of at least three qualified suppliers from the CDA's pre-qualified "SHORT LIST" file (DIVINDUS CAPREF, 2023, Section 7.4.1). Winning offers are selected based on four criteria: quality, deadlines, payment terms, and price.

3.3.2 The Three-Day Transaction Committee Deadline

The Transaction Committee must transmit two copies of the procès-verbal (PV) and tableau comparatif des offres (TCO) to the CDA and Unit Director within three working days from offer opening (DIVINDUS CAPREF, 2023, Section 7.4.1). This constitutes a measurable performance threshold for benchmarking actual evaluation delays.

3.3.3 The Joint Signature Requirement on the Purchase Order

The Purchase Order (BC) must be jointly signed by the Unit Director (DU) and Head of Purchasing (CDA) before supplier notification (DIVINDUS CAPREF, 2023, Section 7.4.2). The BC must be pre-numbered, quantified, and valued, with copies transmitted to Accounting and CSGDS.

3.3.4 The Four-Point Invoice Control Requirement

Invoice control by the CSA verifies four mandatory points before payment authorization (DIVINDUS CAPREF, 2023, Section 7.4.4): (a) correspondence between invoice, delivery note, reception note, and purchase order; (b) compliance with legal mentions; (c) arithmetic accuracy; (d) signature and stamp presence. The CSA then applies the "service fait" stamp before transmitting the complete file to Accounting.

3.3.5 The Monthly Reconciliation Requirements

The procedure imposes two monthly reconciliations (DIVINDUS CAPREF, 2023, Part II, Sections 5.2.1 and 7.4.4): (1) Procurement–Accounting: CSGDS transmits supplier reception statement and account cumulative with reception notes; (2) Procurement–Management Control: CSGDS transmits supplier reception cumulative. Additionally, monthly consumption statements must reach Accounting before the 3rd day of the following month (DIVINDUS CAPREF, 2023, Part II, Section 5.2.2) , which is a hard deadline that may generate waste behaviors.

3.3.6 Quarterly Inventory Reconciliation

Quarterly reconciliation between physical and theoretical inventory is mandatory, with discrepancies justified and unexplained variance reported to Unit Management within 72 hours (DIVINDUS CAPREF, 2023, Part II, Section 5.5.1). An annual end-of-year inventory is also required per the Inventory Procedure (December 2017).

3.4 IT Systems and Data Management in Procurement

3.4.1 Information System: DlgCom 2023 ERP

The IT infrastructure supporting procurement and stock management at DIVINDUS CAPREF is the DlgCom 2023 ERP system, developed by Algerian software company Eurl DLGC and referenced as the "logiciel GDS" (DIVINDUS CAPREF, 2023, Part II, Section 5.2.1; DLGC, 2023). DlgCom is a modular ERP designed for Algerian businesses, providing integrated stock management, purchasing, sales, production tracking, and accounting integration (DLGC, 2023).

3.4.2 Operational Scope of DlgCom at DIVINDUS CAPREF

Principal computerised operations through DlgCom include:

Entry of stock receipts on the Reception Note (BR) basis with BR number and unit purchase price;

- Automated generation of Supplier Reception Note (BRF) and entries journal;
- Entry of stock issues on the Issue Note (BS) basis, generating the Consumption Note (BCS) after valuation;
- Stock level monitoring with automatic alerts at minimum and safety stock thresholds, triggering DRAP replenishment;
- Monthly transmission of reception and consumption statements to Accounting and Management Control
- Generate inter-unit transfer listings separate from the monthly purchase journal.
- The CSGDS is responsible for IT-based stock movement management through DlgCom, including daily monitoring of system alerts and monthly GDS database back-up transmission to the central Procurement Directorate (DIVINDUS CAPREF, 2023, Part II, Section 5).

3.4.3 Documents Generated by DlgCom

DlgCom generates standardized documents referenced in the procurement procedure: Supplier Reception Note (BRF), Consumption Note (BCS), entries journal, inter-unit transfer document, incoming/outgoing transfer listings, and inventory counting tags (DIVINDUS CAPREF, 2023, Part II, Sections 5.2.1 and 5.5.2; DLGC, 2023).

3.4.4 Limits of Digital Coverage in the Procurement Workflow

A central observation concerns the boundary between digital and paper-based steps. While DlgCom 2023 manages the post-reception phase including stock entry, BR registration, consumption tracking, and accounting transfer, the pre-reception phase (steps 1 through 8 of the flowchart in Table 5) remains substantially paper-based. The DAC, DRAP, supplier consultation letter, PV and TCO from the Transaction Committee, BC, and supplier invoice are all formalized in physical form and routed manually between actors (DIVINDUS CAPREF, 2023, Sections 7.2 to 7.4).

This coexistence of a functional ERP with extensive paper-based pre-reception documentation generates parallel data capture: the same transaction is documented first physically, then digitally in DlgCom. This duplicates data capture effort and introduces transcription errors and inter-system inconsistencies. This condition will be empirically diagnosed in the current state VSM (Chapter III) and constitutes a principal improvement target for the future state design (Chapter IV).

Conclusion :

Chapter II has established the methodological architecture and the empirical field of the present study. The qualitative single-case design, anchored in the structured PEB Gemba walk of Monday 4 May, the semi-structured interviews with the procurement actors, the systematic analysis of the four primary institutional sources, and the quantitative scoping evidence from the PEB unit financial ledgers for Q1 2025 and Q1 2026, supplies the empirical foundation on which the diagnostic work of Chapter III rests. The three-category regulatory framework (fully regulatory, substance-required-method-improvable, and pure improvable) provides the analytical instrument that distinguishes the lead-time waste that may legitimately be eliminated from the regulatory substance that must be preserved. This is the methodological innovation that allows the redesign of Chapter IV to claim substantial efficiency gains without compromising compliance with the Algerian Code des Marchés Publics. The five KPIs (Lead Time, Process Time, Value-Added Ratio, Handoffs, Queue Size) define the measurement framework that Chapters III and IV apply uniformly to the current state and the projected future state. The company itself (DIVINDUS CAPREF SPA, headquartered at 202 rue Hassiba Ben Bouali in Algiers, with a share capital of 5 billion DA) and its production unit (the Unité PEB) and its principal procurement family (steel products, code 3172, accounting for 45.06% of Q1 2025 purchases) are the field in which the methodology is applied. Chapter III now turns to the construction of the current state Value Stream Map and the empirical measurement of the procurement lead time, applying the methodological and analytical framework established here.

CHAPTER III: EMPIRICAL ANALYSIS CURRENT STATE VSM

Introduction

Following the establishment of the theoretical foundations in Chapter I and the methodological architecture and field of application in Chapter II, the present chapter constructs the current state Value Stream Map of the steel and metal products procurement process at DIVINDUS CAPREF SPA, and delivers the empirical diagnosis upon which the future state redesign of Chapter IV is built. The analysis is anchored in four primary institutional sources :

La Fiche d'identification du processus PCS-05 (Version 00, 31 October 2022),

Le Manuel des Approvisionnements PRO-09 (Version 00, 22 January 2023),

Le Procedure Interne de Passation des Marches Version 3 (December 2025),

Le Procedure Production PRO-05 (Version 00, 25 December 2022)

Together with the empirical data collected through a structured on-site Gemba walk, semi-structured interviews, document analysis, and direct observation conducted at the company's PEB production unit.

A defining methodological feature of this chapter is the systematic application of a three-category regulatory framework at every step of the value stream. Because DIVINDUS CAPREF is a public economic enterprise subject to the Algerian Code des Marches Publics, not all of its procurement lead-time can be treated as eliminable waste. The chapter therefore, distinguishes, at each step, between three categories:

1. **Fully regulatory time:** that is protected by law and must be preserved.
2. **Substance-required time:** where the activity is mandated but its execution method is improvable
3. **Pure improvable waste:** that has no regulatory protection and can be eliminated This distinction is the analytical foundation that makes the future state redesign of Chapter IV legally defensible.

The chapter is divided into three sections. Section 1 constructs the current state map, opening with the identification of process steps and actors, then mapping the material and information flows, establishing the three-category regulatory framework, and describing the PEB Gemba walk methodology. Section 2 quantifies the current state performance through the KPIs, the three-category regulatory decomposition, the regulatory floor, and the current state dashboard.

Section 3 conducts the systematic waste identification across all nineteen steps, followed by the consolidated analysis and root cause investigation.

Section one: Current State Map construction

1.1 Identification of process Steps and Actors

The construction of the current state Value Stream Map begins with the identification of the process steps that compose the steel products procurement cycle and the organizational actors responsible for each. This identification is grounded in the four sub-processes defined in the PCS-05 process cartography (DIVINDUS CAPREF, 2022) and operationalized through the flowchart of the Procurement Manual PRO-09 (DIVINDUS CAPREF, 2023), and was corroborated during the PEB Gemba walk described in Section 1.4.

1.1.1 The Four Institutional Sub-Processes and the Five Analytical Phases

The PCS-05 process card decomposes the procurement function into four sub-processes:

1. Procure ment planning
2. passation des marches,
3. product reception and stock management
4. availability and re-evaluation

For the VSM analysis, these four sub-processes are mapped onto five analytical phases. The additional phase, which is Phase 0, the pre-expression latency, is not part of the formal PCS-05 cartography but is integrated into the analysis to capture the complete time-to-value experienced by the internal client, as prescribed by Rother and Shook (1998).

Table 3.1 *Mapping of the Four PCS-05 Sub-Processes onto the Five Analytical Phases*

Phase	Sub-process (PCS-05)	Steps	Description
0 : Need Latency	(Pre-process latency)	1	Period between need existence at production level and its formal expression to Direction Appro
A : Need Expression & Validation	Planification des approvisionnements	2–4	DRAP triggering, DU validation, stock verification
B : Tendering & Award	Passation des marches	5–9	Market study, consultation, evaluation, BC issuance
C : Reception & Stock Entry	Réception des produits et gestion des stocks	10–14	Order follow-up, delivery, reception, DLG entry
D : Distribution, Invoice & Payment	Mise a disposition et réevaluation	15–19	Distribution, invoice control, payment, reconciliation

Note. Adapted from DIVINDUS CAPREF (2022, PCS-05 Section 2)

1.1.2 The Nineteen-Step Process Inventory with Actors and Documents

Direct observation revealed that the institutional procedure operationally decomposes into nineteen operational steps when the granularity required for VSM analysis is applied. Table 15 presents the complete inventory, mapping each step to its lead actor, the principal document it generates, and its governing regulatory anchor.

Table 3.2 *Current State Process Step Inventory with Actors, Documents, and Regulatory Anchors*

#	Phase	Process Step	Lead Actor	Document Output	Regulatory Anchor
1	0	Pre-expression latency	CA / CP / CDP	(informal)	None
2	A	DRAP preparation	CSGDS	DRAP (APR-01/V01)	PRO-09 §7.2.2
3	A	DU validation	DU	Validated DRAP	PRO-09 §7.2
4	A	Stock verification	CDA + CSGDS	Confirmation	PRO-09 §7.2
5	B	Market study	CDA + CSA	Market reference + cahier des charges	PRO-09 §7.1
6	B	Consultation launch (min. 3 suppliers)	CDA	Lettre de consultation	Procedure 2025 §28, §47.1
7	B	Bid preparation period	Suppliers	Sealed bids	Procedure 2025 §44, §45
8	B	Comite de Transaction evaluation	Comite de Transaction	PV + TCO	Procedure 2025 §47

#	Phase	Process Step	Lead Actor	Document Output	Regulatory Anchor
9	B	BC issuance (joint signature)	CDA + DU	Signed BC	PRO-09 §7.4.2
10	C	BC notification + follow-up	CDA	BC notified	PRO-09 §7.4.2, §7.4.3
11	C	Supplier preparation and delivery	Supplier	BL + goods	Contractual
12	C	Physical reception	Magasinier principal	BR (4 copies) + FNC	PRO-09 §5.2.1
13	C	Quality control	CQ + Magasinier	Conformity decision	PRO-05 §6.1.4; ISO 9001
14	C	DLG entry	CSGDS	BRF + journal	PRO-09 §5.2.1
15	D	Distribution (mise a disposition)	Magasinier principal	DMF + BS + BCS	PRO-09 §5.2.2
16	D	Invoice 4-point control	CSA	Certified invoice	PRO-09 §7.4.4
17	D	Payment request	CDA	Demande de paiement	PRO-09 §7.4.4
18	D	Payment execution	DFC	Cheque / virement	Public accounting law
19	D	Monthly reconciliation (recurring)	CSGDS + DFC	Reconciliation report	PRO-09 Part II §5.2.1

Note. Adapted from DIVINDUS CAPREF (2022, PCS-05), (2023, PRO-09).

1.1.3 The Organizational Actors and Their Roles

The procurement value stream mobilizes a defined set of organizational actors spanning the production units, the Procurement and Purchasing Directorate, the Finance and Accounting Directorate, and the supplier base. Table 16 identifies each actor and the role it plays in the value stream.

Table 3.3 *Organizational Actors and Their Roles in the Procurement Value Stream*

Actor	Full Designation	Role in the Value Stream
CA	Chef d'Atelier	Identifies the steel material need at the ossature workshop (Step 1)
CP	Chef de Production	Confirms the production-side need and relays it to the CDP (Step 1)
CDP	Chef de Departement Production	Communicates the need to the Direction Appro & Achats (Step 1)
CSGDS	Chef de Service Gestion des Stocks	Prepares the DRAP, verifies stock, performs DLG entry and monthly reconciliation (Steps 2, 4, 14, 19)
DU	Directeur d'Unite	Validates the DRAP and co-signs the BC (Steps 3, 9)
CDA	Chef de Departement Approvisionnement	Leads market study, consultation, BC issuance, follow-up, payment request (Steps 4–6, 9–10, 17)
CSA	Chef de Service Achats	Supports market study; performs the four-point invoice control (Steps 5, 16)
Comite de Transaction	Evaluation committee	Evaluates bids, verifies SIDJILICOM, drafts TCO, signs PV (Step 8)
Magasinier principal	Principal storekeeper	Receives goods, establishes BR and BS, applies FIFO destocking (Steps 12, 15)
CQ	Controle Qualite	Verifies technical conformity of received steel (Step 13)
DFC	Directeur Finances et Comptabilite	Executes payment after engagement budgetaire control (Step 18)
Supplier	External supplier	Prepares bid, manufactures and delivers steel products (Steps 7, 11)

Note. Author's own elaboration based on the role attributions of PRO-09 (DIVINDUS CAPREF, 2023) and PRO-05 (DIVINDUS CAPREF, 2022b), corroborated during the PEB Gemba walk.

1.2 Material and Information Flows

1.2.1 Material Flow

Material moves sequentially from supplier warehouse → transport → DIVINDUS CAPREF warehouse → quality control → stock → release to ossature workshop → production. Most elapsed time occurs at supplier preparation and delivery (Step 11), not internal reception. Downstream consumption follows PRO-05 §6.1.4: the ossature workshop team leader directs cutting and bending of steel sheets for cabin and chalet frames (DIVINDUS CAPREF, 2022b), linking procurement to core manufacturing.

1.2.2 Information Flow and Paper Condition

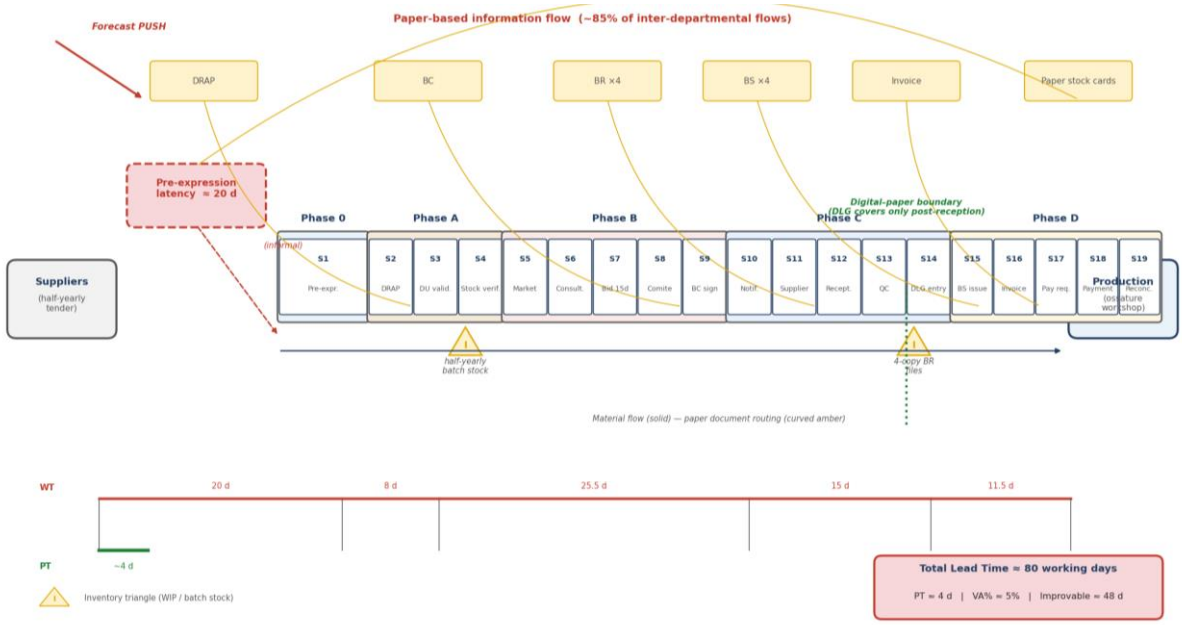
The Procurement Directorate (Direction des Approvisionnements) is the central hub, exchanging information with General Directorate (Direction Generale), suppliers, Production, Finance and Control Department (DFC), and Management Control Service (Service Controle de Gestion) (DIVINDUS CAPREF, 2022, PCS-05 §3). About 85% of inter-departmental flows are paper-based. While documentary content is legally required (PRO-09, tax/audit

law), the paper medium is an internal choice and can be replaced by legally equivalent digital records.

1.2.3 Digital–Paper Boundary

The DLG Software (Logiciel DLG) covers only post-reception (Steps 14, 15, partially 19); Steps 1–13 remain paper-based. The handoff between Step 13 (paper quality control) and Step 14 (DLG entry) forces manual re-entry, causing transcription errors (Muda-defects) and redundant effort (Muda-over-processing), both avoidable waste.

Figure 3.1 *presents the current-state Value Stream Map of the steel procurement process. A full-size standerdized version of the map is provided in* ***Appendix D.***



Note. Author's own elaboration based on the PEB Unit Gemba walk and on the Manuel des approvisionnements (DIVINDUS CAPREF SPA, 2023, PRO-09).

The map shows the forecast-driven push at the upstream end, the pre-expression latency in Phase 0, the nineteen process steps grouped into five phases, the paper-document information flow (approximately 85% of inter-departmental flows), the inventory triangles at the half-yearly batch staging points, the digital–paper boundary between Step 13 and Step 14, and the lead-time ladder summing to approximately 80 working days.

1.3 The Three-Category Regulatory Framework

Having identified the steps, actors, and flows, this section articulates the analytical framework applied throughout the chapter. As established in Chapter I Section 3.3, public sector procurement operates within a binding regulatory framework that imposes mandatory

procedural steps and timelines. The systematic distinction between regulatory and non-regulatory waste is therefore essential to a credible public sector VSM analysis (Waterman & McCue, 2012)

Figure 3.2 *Regulatory categorization of the process*

[R] Fully Regulatory	Protected by Loi 23-12 (2023), Decret 15-247 (2015), Procedure de Passation V3 (2025), Loi 06-01 (2006), PRO-09, or tax/accounting law. Preserved in full.
[S] Substance Required	Activity mandated by procedure, but the method of execution is improvable. Substance preserved, method redesigned.
[I] Improvable Waste	No regulatory protection. Eliminable through lean redesign.

Note. Author's own elaboration based on le " Procédure interne de passation des marches" (DIVINDUS CAPREF SPA, 2025) and the step-by-step diagnosis of Chapter III, Section 3.

The five constitutional principles of Algerian public procurement that govern the classification are treated as inviolable throughout the analysis. Any improvement that compromises any of these principles must be rejected, regardless of its lean impact.

1.4 Observational Methodology: The PEB Gemba Walk

A structured Gemba walk was conducted at the Unité PEB production site on Monday, 4 May, in two consecutive sessions. Monday was selected because procurement staff identified it as representative of standard operating conditions; it falls before the end-of-week and end-of-month workload peaks that typically generate atypical process behaviour, and the regulatory framework governing procurement at DIVINDUS CAPREF makes process-interrupting contingencies (PICs) structurally unlikely during any given session. The observed flow can therefore be treated as an accurate picture of the standard procurement cycle under normal operating conditions.

The method follows Rother and Shook's (1998) foundational prescription that the analyst walk the value stream personally, observing the actual flow of material and information rather than relying on documented procedure alone. In each session, the analyst followed the document trail in its natural sequence from need expression to payment, identifying each step's lead actor, observing the document at every handoff, and distinguishing moments when a file was actively worked on from moments when it lay in a pending pile.

The Process Time (PT) and Waiting Time (WT) values reported in Section 3 are those captured or triangulated during these sessions, in conformity with the methodological

framework of Chapter II, Section 1.5.3. Triangulation, which is what gives the figures their reliability, drew on three sources: the institutional documentation (PRO-09, PCS-05, PRO-05, Procédure de Passation 2025); timestamps on the operational documents themselves (DRAP, BC, BR, invoices, payment files); and the semi-structured interviews conducted with procurement staff. Where direct timing was infeasible, notably the pre-expression latency at Step 1 and the inter-step waiting between visible events, the observation was corroborated by interview testimony and by the institutional risk register (PCS-05), which formally recognises this latency as Risk R2.

Section 2: Current State Metrics and Performance Analysis

2.1 Total Lead Time and Value-Added Ratio

The total end-to-end lead-time of the steel products procurement cycle, measured from the moment the production-side need first exists at the PEB unit to the final payment execution, was found to be approximately **80 working days**. This figure significantly exceeds the management-perceived baseline of 45–50 working days, because the management baseline measures only the formal procurement cycle from DRAP onward and excludes the pre-expression latency phase of approximately 20 working days. The 30-day differential constitutes itself a significant finding: it represents the institutionally invisible waste that the half-yearly procurement rhythm and the paper-based communication channels structurally generate without measurement or recognition. The institutional risk register of PCS-05 explicitly identifies " le retard de l'expression du besoin "as Risk R2, confirming that the institutional self-diagnosis anticipated this finding (DIVINDUS CAPREF, 2022).

Of the approximately 80-day total lead time, only approximately 4 working days (about 32 hours) represent active process time, while approximately 76 working days constitute waiting between steps. Applying the formula defined in Chapter II Section 1.3.3: VA% = (Process Time / Total Lead Time) x 100 = (4 / 80) x 100 = approximately **5%**. This finding aligns with Jing et al. (2020), who documented that 85.3% of procurement lead time consisted of pure waiting, and with Bizuneh and Omer (2024), who measured a degree of flow of only 0.58% in their pre-intervention analysis.

2.2 The Three-Category Decomposition

Critically, the regulatory analysis applied at every step reveals that the approximately 76 days of waiting decomposes into three categories of fundamentally different lean treatment, as summarized in Table 17.

Table 3.4 *The Three-Category Breakdown of Total Lead Time*

Category	Days	% of Total LT	Treatment in Future State
Fully Regulatory	~28 days	35%	MUST be preserved in full
Substance Regulatory, Method Improvable	~4 days	5%	Substance preserved, method redesigned
Pure Improvable Waste	~48 days	60%	Can be eliminated entirely
TOTAL	~80 days	100%	

Note. This three-category decomposition forms the analytical foundation for the future state design of Chapter IV, which preserves the 28-day regulatory floor in full while targeting the elimination of the 48-day improvable component through eight distributed improvement levers.

2.3 The Regulatory Floor : The 28 Protected Days

The regulatory floor is the irreducible minimum duration of the procurement cycle, composed of the exact components that cannot be touched in the future state without violating the law. Each component is anchored to its precise legal source in Table 18

Table 3.5 The 28-Day Regulatory Floor: Component-by-Component with Legal Source

Step	Component	Days	Legal Source
6	Minimum 3 suppliers from SHORT LIST	0.5	Procedure 2025 Art. 28 + 47.1
7	Bid preparation minimum period	15	Procedure 2025 Art. 44 + Loi 23-12 Art. 4
8	Comite de Transaction activities (PV, TCO, SIDJILICOM, anonymat, public opening)	2	Procedure 2025 Art. 47 + Loi 06-01 (2006)
9	Joint DU+CDA signature on BC	0.5	PRO-09 §7.4.2
10	BC notification and copy routing	0.5	PRO-09 §7.4.2
11	Supplier base preparation (contractual minimum)	7	Framework agreement terms
16	Four-point invoice control (a,c automated; b,d human)	1	PRO-09 §7.4.4 + tax law
17	Complete file assembly for payment	0.5	PRO-09 §7.4.4 + audit law
18	Engagement budgetaire + DFC second-level control	1	Public accounting law
TOTAL REGULATORY FLOOR		~28	

Note. Author's own elaboration based on the Procédure interne de passation des marchés (DIVINDUS CAPREF SPA, 2025), Loi 23-12 (2023), Loi 06-01 (2006), and DIVINDUS CAPREF SPA (2023, PRO-09)

2.4 Current State Performance Dashboard

Table 3.6 Current State KPI Dashboard : Headline Results

KPI	Value
Total Lead Time (LT)	~80 working days
Process Time (Sum PT)	~4 working days (~32 hours)
Waiting Time (Sum WT)	~76 working days
Value-Added Ratio (VA%)	~5%
Regulatory Floor (PRESERVED)	~28 working days
Substance-required (preserved, method redesigned)	~4 working days
Improvable Waste (ELIMINABLE)	~48 working days
Number of Process Steps	19 (incl. 1 recurring)
Number of Handoffs	~14 per cycle
Paper-Based Information Flow Ratio	~85%

Note. Author's own elaboration based on the current state Value Stream Map (Chapter III, Section 1) and the PEB Unit Gemba walk observations.

The half-yearly batch generates a characteristic up and down inventory profile. Each of the two annual receptions produces a peak immediately after delivery, followed by a steady draw-down as the ossature workshop consumes the steel over the subsequent six-month period, and finally a pre-reception trough in which stock approaches the minimum threshold. The quantitative detail of this profile is company-specific and is therefore described here in qualitative terms.

Coverage in days varies markedly from one steel reference to another, since consumption rates differ across profiles, sheets, and tubes. Some references remain comfortably above the reorder point throughout the cycle, while others approach rupture toward the end of each half-year, generating the Risk R2 conditions documented in PCS-05.

The average queue sizes reported in Table 20 are the ranges observed during the Gemba walk: five to eight DRAP files awaiting DU validation, five to ten BR files awaiting DLG entry, and eight to twelve invoices awaiting CSA control. They are given as ranges rather than point estimates because queue size fluctuates across the procurement cycle and is itself one of the indicators targeted for reduction in the future state.

Section 3: Step-by-Step Waste Identification

A systematic Value Stream Mapping (VSM) analysis identifies waste at every step of the process. This section examines each of the nineteen steps in turn, presenting the decomposition of activities, process and waiting times, the regulatory category, and the type of waste (Muda) involved. All estimates are based on verified institutional sources.

Phase 0: Need Latency

Step 1: Pre-Expression Latency

The period between a production unit identifying a steel shortage and its formal communication to the Procurement Department. The workshop chief flags the need, the production chief confirms it, and the head of procurement either communicates it informally or waits for the next periodic review. A DLG alert may or may not have fired, depending on system configuration.

Process Time: 0 hours | **Waiting Time:** 15 to 25 working days | **Total:** approximately 20 working days

Muda	Manifestation
Waiting	Approximately 20 days of pure latency between need existence and formal expression.
Unused Talent	Production knowledge of the need exists but does not trigger procurement action.
Defects	Risk of stock shortage if latency extends (PCS-05 Risk R2).

Regulatory verdict: Pure improvable waste; the full 20 days are eliminable.

Phase A: Need Expression and Validation

Step 2: DRAP Preparation by the CSGDS

On receiving the DLG alert during the next routine system check (not necessarily the same day), the CSGDS reviews consumption history, current stock, and the half-yearly procurement budget, then drafts the DRAP manually on paper form APR-01/V01, despite available digital capability in DLG, and signs it for transmission to the CDA.

Process Time: 3 hours | **Waiting Time:** 2 working days | **Total:** approximately 2.5 working days

Muda	Manifestation
Over-processing	Manual paper form duplicating data already in DLG.
Unused Talent	CSGDS time spent on manual transcription rather than strategic stock management.
Waiting	DRAP not auto-generated despite available system capability.

Regulatory verdict: DRAP substance preserved; approximately 2 days are improvable.

Step 3: DU Validation of the DRAP

The DRAP arrives in paper form at the DU's office (PCS-05: 85% of inter-departmental flows are paper-based), queues in the pending-signature pile, and is signed in physical ink.

Process Time: 0.5 hours | **Waiting Time:** 4 working days | **Total:** approximately 4 working days

Muda	Manifestation
Waiting	Approximately 4 days of pure document queue waiting, eight times the process time.
Motion	Physical paper routing from the CSGDS office to the DU office.
Unused Talent	DU concentrates signature authority that could be partially delegated.

Regulatory verdict: Validation preserved; approximately 3.5 days are improvable.

Step 4: Stock Availability Verification

The validated DRAP is transmitted on paper to the CDA and CSGDS for joint stock verification; both consult DLG to confirm current stock per steel reference, and a decision is documented confirming that stock is insufficient and formal supplier consultation is required.

Process Time: 0.5 hours | **Waiting Time:** 1 working day | **Total:** approximately 1.5 working days

Muda	Manifestation
Over-processing	Step 4 partially duplicates information already available from the DLG alert that triggered Step 2.
Waiting	Inter-actor coordination delay.

Regulatory verdict: Verification preserved; approximately 1 day is improvable.

Phase B: Tendering and Contract Award

Step 5: Market Study

The CDA and CSA conduct the market study required by PRO-09 §7.1: regulatory and economic review, steel-price trend analysis (local and foreign), supplier-risk assessment, update of the pre-qualified supplier list, SIDJILICOM solvency verification, and drafting of the technical specifications and consultation file.

Process Time: 6 hours | **Waiting Time:** 3 working days | **Total:** approximately 3 working days

Muda	Manifestation
Over-processing	Repeated annual market study; historical price and supplier data could be standardised in a steel-specific reference repository.
Defects	Market-price analysis based on subjective recent recollections rather than a systematic price database.
Unused Talent	CDA/CSA repeat manual research instead of drawing on cumulative institutional knowledge.

Regulatory verdict: An annually updated steel-products market intelligence database would eliminate most per-cycle research time. Veille substance preserved (PRO-09 §7.1); approximately 2 days are improvable.

Step 6: Launching of Supplier Consultation

The CDA drafts the lettre de consultation with attached cahier des charges; a minimum of three SHORT LIST suppliers are consulted (Procédure 2025, Art. 47.1); letters are sent on

paper, by email, or both, typically duplicated for verification; the bid-opening date is set per Art. 45.

Process Time: 4 hours | **Waiting Time:** 1.5 working days | **Total:** approximately 1.5 working days

Muda	Manifestation
Over-processing	Specifications drafted from scratch each cycle rather than from a standardised steel-products template.
Motion	Paper letters physically prepared and sent in addition to electronic transmission.
Defects	Risk of inconsistencies between paper and email versions of the consultation file.

Regulatory verdict: Standardised templates for recurring product families are authorised by Procédure 2025, Art. 18, yet drafting still occurs from scratch. Minimum three suppliers preserved (Art. 47.1); template drafting represents approximately 1 day of improvable waste.

Step 7: Bid Preparation Period (Regulatory)

Suppliers prepare bids per Procédure 2025, Art. 45, submitting three sealed envelopes (candidature, technical, financial); each includes a submission caution of at least 1% of the offer amount (Art. 45 §2.c); the submission deadline is set per Art. 44.

Process Time: not applicable (external) | **Waiting Time:** 15 working days | **Total:** 15 working days

Component	Category	Notes
The 15-day minimum waiting period	Fully regulatory	Procédure 2025, Art. 44; protects égalité de traitement des candidats.

Regulatory verdict: Fully regulatory and non-eliminable. This is the largest single regulatory component of the cycle and the principal element of the 28-day regulatory floor; any reduction would violate Loi 23-12 (2023) and expose DIVINDUS CAPREF to appeal by unsuccessful bidders.

Step 8: Transaction Committee Evaluation and PV/TCO Issuance

The Transaction Committee convenes on the closing day of bid submission (Art. 04 of the Comité règlement) and performs the evaluation tasks of Procédure 2025, Art. 47: dossier conformity, anonymous verification, formal plis opening, SIDJILICOM and SHORT LIST verification, TCO drafting (typically a manual Excel sheet), technical and financial analysis with all members, designation of the attributors, and signature of the Procès-Verbal (PV). The PV and TCO are transmitted to the CDA and DU within a maximum of three working days (PRO-09 §7.4.1).

Process Time: 5 hours (across members) | **Waiting Time:** 2 working days | **Total:** approximately 3 working days (regulatory maximum)

Component	Category	Notes
Comité convening; 48-hour convocation	Fully regulatory	Procédure 2025, Art. 47; Art. 04 Comité règlement.
Bid opening; anonymat; SIDJILICOM; SHORT LIST; TCO; PV signature	Fully regulatory	Procédure 2025, Art. 45 and 47; Loi 06-01 (2006).
3-day PV/TCO transmission	Regulatory ceiling	PRO-09 §7.4.1: ceiling, not target.
Manual TCO drafting	Pure improvable	Internal method choice; generates Over-processing.

Regulatory verdict: Substance fully protected: the Comité is a constitutional pillar of Algerian public procurement governance, protecting transparency, equality, and anti-corruption. Only execution speed within the 3-day window is improvable; approximately 1 day.

Step 9: BC Issuance with Joint DU and CDA Signature

The CDA receives the PV and TCO from the Comité. The Bon de Commande (BC) is drafted per PRO-09 §7.4.2 (pre-numbered, quantified, valued), requires joint physical signature by the DU and CDA, and is produced in multiple paper copies for routing to Accounting, the CSGDS, and the supplier.

Process Time: 1.5 hours | **Waiting Time:** 3 working days | **Total:** approximately 3 working days

Component	Category	Notes
Joint signature by DU and CDA	Fully regulatory	PRO-09 §7.4.2; mandatory dual accountability.
Pre-numbering, quantification, valuation	Fully regulatory	PRO-09 §7.4.2; audit-trail requirement.
Physical ink signature	Pure improvable	Electronic signature legally equivalent; generates Over-processing.
3-day wait for both signatures	Pure improvable	No legal delay required; DU/CDA scheduling generates Waiting and Motion.

Regulatory verdict: Joint signature preserved (PRO-09 §7.4.2); approximately 2.5 days are improvable through electronic signature combined with a delegation matrix that retains dual accountability.

Phase C: Reception and Stock Entry

Step 10: BC Notification and Order Follow-up

The CDA notifies the selected supplier of the signed BC (paper letter, sometimes email); BC copies are physically routed to Accounting and the CSGDS; the CDA initiates order follow-up per PRO-09 §7.4.3, including the delivery schedule, supplier reminders one to two days before scheduled delivery, and follow-up for non-execution or delay.

Process Time: 3 hours | **Waiting Time:** 1.5 working days | **Total:** approximately 1.5 working days

Muda	Manifestation
Motion	Paper BC copies physically routed to multiple offices.
Over-processing	Manual reminder calls and emails instead of automated supplier-portal notifications.
Defects	No systematic tracking of supplier responsiveness; reminders are ad hoc.

Regulatory verdict: A supplier-facing portal within DlgCom 2023 would enable automated tracking and real-time visibility. Notifications preserved (PRO-09 §7.4.2); approximately 1 day is improvable.

Step 11: Supplier Preparation and Physical Delivery

Supplier internal preparation, manufacturing where applicable, and dispatch; transportation from the supplier site to the DIVINDUS CAPREF warehouse. This is the longest single waiting component within Phase C.

Process Time: not applicable (external) | **Waiting Time:** 10 working days (range 7 to 15) | **Total:** approximately 10 working days

Component	Category	Notes
Base supplier preparation (approximately 7 days)	Contractual minimum	Part of the framework agreement; legitimate technical preparation.
Variability above contractual minimum (approximately 3 days)	Pure improvable	PCS-05 Risk R3; generates Defects and Inventory waste through the half-yearly batch nature.

Regulatory verdict: Base supplier time is necessary; variance is improvable through contractual penalty clauses. Seven days protected (contractual); approximately 3 days are improvable.

Step 12: Physical Reception of Articles

Following the eight-step reception sub-process of PRO-09 Annex 6.1, the Magasinier principal physically receives the steel, reconciles the BL with the goods received and the BC (quantity and quality), coordinates with Quality Control, establishes an FNC (Fiche de Non-Conformité) where required, and establishes the Bon de Réception (BR) in four physical copies, distributed to the Magasinier, CSGDS, Accounting, and CDA.

Process Time: 4 hours | **Waiting Time:** 0.5 working day | **Total:** approximately 1 working day

Component	Category	Notes
Reception, BR establishment, reconciliation, FNC	Substance required	PRO-09 §5.2.1; documentary trail.

BR in four physical copies	Pure improvable	No law requires four paper copies; generates Over-processing, Motion, and Defects.

Regulatory verdict: A single digital BR in Logiciel DLG, accessed via mobile DLG at the reception dock, replaces the four copies. Reception preserved (PRO-09 §5.2.1); approximately 0.5 day is improvable.

Step 13: Quality Control Verification

Quality Control verifies the technical conformity of received steel against PRO-05 §6.1.4 (mechanical properties, dimensional conformity, Algerian industrial norms), coordinates with the Magasinier principal, and issues an FNC if non-conforming, triggering the contestation letter procedure.

Process Time: 1.5 hours | **Waiting Time:** 0.5 working day | **Total:** approximately 1 working day

Component	Category	Notes
Quality verification; FNC	Substance required	ISO 9001:2015; PRO-05 §6.1.4; PRO-09 §5.2.1.
Separate documentary trail	Pure improvable	Integration with the digital BR workflow is not prohibited; generates Waiting and Over-processing.

Regulatory verdict: Integration of Quality Control verification into the digital BR workflow eliminates the separate documentary trail. Quality check preserved (ISO 9001:2015, PRO-05 §6.1.4); approximately 0.5 day is improvable.

Step 14: DLG Software Entry (Paper-to-Digital Transcription)

The CSGDS receives the BR from the Magasinier principal and manually enters its data into l DLG Sftware (GDS module); DLG then generates the Bon de Réception Fournisseurs (BRF) and the entries journal. This is the principal manifestation of paper-to-digital transcription waste.

Process Time: 0.5 hours | **Waiting Time:** 1.5 working days | **Total:** approximately 1.5 working days

Component	Category	Notes
Data recording; audit trail	Substance required	Tax and accounting law; public-sector audit.
Manual paper-to-DLG transcription	Pure improvable	Mobile DLG entry at the dock is legally equivalent; generates Over-processing, Defects, Unused Talent.
1.5-day queue waiting	Pure improvable	No legal delay required.

Regulatory verdict: Mobile DLG access at the reception dock would eliminate this step entirely, the BR being created digitally at the point of reception. Recording preserved (tax law); approximately 1.5 days are fully improvable.

Phase D: Distribution, Invoice Processing, and Payment

Step 15: Distribution to Production (Mise à Disposition)

The production workshop (chef d'atelier ossature, PRO-05 §6.1.4) issues a Demande Matière et/ou Fourniture (DMF), signed by the user and approved by the structure manager (PRO-09 Part II §5.2.2); the Magasinier principal establishes the Bon de Sortie (BS) in four copies; FIFO destocking is applied; stock and bin cards are updated manually; the CSGDS enters the issue into DLG, generating the Bon de Consommation (BCS).

Process Time: 1.5 hours | **Waiting Time:** 0.5 working day | **Total:** approximately 1 working day

Component	Category	Notes
DMF; FIFO; stock card maintenance	Substance required	PRO-09 Part II §5.2.2; accounting and tax law.
BS in four paper copies	Pure improvable	Digital BS legally equivalent; generates Over-processing.
Dual paper stock cards and DLG records	Pure improvable	DLG alone satisfies the audit requirement; generates Motion and Defects.

Regulatory verdict: Eliminating paper stock cards (fiche de stock, fiche casier) in favour of DLG-only tracking removes the redundancy that drives Step 19. Control preserved (PRO-09 §5.2.2); approximately 0.5 day is improvable.

Step 16: Invoice Four-Point Control

In accordance with PRO-09 §7.4.4, the CSA (on CDA instruction) performs the four-point control: (a) correspondence between the Invoice, BL, BR, and BC for quantity, quality, and price; (b) verification of legal mentions (supplier references, fiscal identification); (c) arithmetic accuracy; (d) signature and stamp verification. The 'service fait' certification stamp is applied, and the complete file (BC, DRAP, BR, Invoice) is transmitted to Accounting.

Process Time: 1.5 hours | **Waiting Time:** 4 working days | **Total:** approximately 4 working days

Component	Category	Notes
Four-point control + service fait	Fully regulatory	PRO-09 §7.4.4; tax law; anti-fraud.
Manual execution of items (a) and (c)	Pure improvable	Automatable by DLG cross-reference; generates Over-processing and Defects.
Manual execution of items (b) and (d)	Should remain human	Judgment required for legal mentions and signature authenticity.
4-day queue waiting	Pure improvable	No legal delay required; generates Waiting and Unused Talent.

Regulatory verdict: Items (a) and (c) can be automated through DLG; (b) and (d) must remain human. Four checks preserved (PRO-09 §7.4.4); approximately 3 days are improvable through partial automation.

Step 17: Payment Request Preparation

The CDA prepares the payment request per PRO-09 §7.4.4; the complete procurement file (BC, DRAP, BR, Invoice) is physically assembled and transmitted on paper to the DFC.

Process Time: 1.5 hours | **Waiting Time:** 1.5 working days | **Total:** approximately 1.5 working days

Component	Category	Notes
Complete file assembly	Fully regulatory	PRO-09 §7.4.4; audit requirement.
Manual assembly method	Pure improvable	DLG could auto-compile; generates Over-processing.
Physical transmission	Pure improvable	Digital transmission legally equivalent; generates Motion and Waiting.

Regulatory verdict: A digital payment-request workflow within DlgCom 2023 would eliminate file assembly entirely (one-click trigger). File completeness preserved (PRO-09 §7.4.4); approximately 1 day is improvable.

Step 18: Payment Execution by the DFC

The DFC performs a second-level control on the file, verifies the engagement budgétaire, issues a cheque or bank transfer, and notifies the supplier.

Process Time: 3 hours | **Waiting Time:** 5 working days | **Total:** approximately 5 working days

Component	Category	Notes
Engagement budgétaire verification	Fully regulatory	Public accounting law.
Second-level DFC control	Fully regulatory	Public accounting principle of dual control.
Cheque or bank transfer issuance	Substance required	Banking law document trail.
5-day queue and treasury constraints	Mostly improvable	PCS-05 Risk R4 is a defect, not a regulatory requirement; generates Waiting, Defects, Over-processing.

Regulatory verdict: Duplicate control between CSA (Step 16) and DFC is a classic over-processing pattern; a unified digital workflow with shared audit trail eliminates duplication while preserving both control levels. Dual control preserved (public accounting law); approximately 4 days are improvable.

Step 19: Monthly Reconciliation Between DLG and DFC

Before the third day of N+1 (PRO-09 Part II §5.2.1), the CSGDS transmits the detailed reception statement and cumulative account to Accounting and the supplier reception cumulative to Management Control; manual reconciliation between the DLG database and DFC accounting records follows. This activity generates the end-of-month workload concentration.

Process Time: 6 hours per month | **Waiting Time:** distributed across the month | **Total:** recurring (not added to per-cycle LT)

Component	Category	Notes
Monthly reconciliation	Fully regulatory	Tax and accounting law.
Transmission before the 3rd of N+1	Substance required	PRO-09 Part II §5.2.1.
Manual execution	Pure improvable	Real-time DLG-DFC integration satisfies the requirement automatically; generates Over-processing, Defects, Unused Talent, and end-of-month workload concentration.

Regulatory verdict: Real-time integration between Logiciel DLG and the DFC accounting system eliminates this monthly activity in its entirety. Reconciliation preserved (tax law); approximately 6 hours per month are improvable.

Section 4: Waste Identification and Root Cause Analysis:

Where Section 3 documented the waste present at each individual step, this section synthesizes those observations into a structured diagnosis. It proceeds in three stages: first, the systematic mapping of the eight categories of lean waste (the 8 Muda of Ohno, 1988) onto the procurement value stream; second, the root cause analysis of the two most consequential wastes using the Ishikawa and 5 Whys tools, which function as the qualitative equivalent of statistical tests by moving from observed symptom to systemic cause; and third, the consolidated waste inventory and priority matrix that directly drives the future state design of Chapter IV.

4.1 Waste Mapping :Applying the 8 Muda to the Procurement Stream

The step-by-step diagnosis of Section 3 confirmed that all eight categories of lean waste are empirically present in the steel products procurement value stream. Table 20 consolidates the distribution of the approximately 48 working days of improvable waste across the eight Muda categories before each is examined in turn.

Table 3.7 *Distribution of Improvable Waste across the 8 Muda Categories*

Muda	Manifestation Steps	Improvable Days	% of Improvable
Waiting	1, 3, 8, 9, 11, 16, 18	~25 days	52%
Over-processing	2, 4, 5, 6, 8, 12, 14, 15, 16, 17, 19	~12 days	25%
Motion	3, 6, 9, 10, 12, 17	~5 days	10%
Inventory	1, 11 (downstream)	~3 days	6%
Defects	5, 8, 11, 13, 14, 16, 18	~2 days	4%
Unused Talent	2, 5, 9, 14, 16, 19	~1 day	2%
Transport	11 (external)	mostly contractual	< 1%
Overproduction	1, 11 (half-yearly batch)	in inventory variance	—

Note. All eight Muda categories are empirically represented, confirming the diagnosis is structurally complete. Waiting dominates at 52% of improvable waste, followed by over-processing at 25%. Percentages are of the ~48 improvable days; multiple Muda may co-occur at the same step.

4.1.1 Waiting: Approval Queue Times and Supplier Response Delays

Waiting is the largest category of improvable waste, accounting for approximately 25 working days (52% of the improvable total). It takes two forms. Internal approval queue time accumulates at every authorisation point: the DRAP queues four days for DU validation against thirty minutes of actual review (Step 3, a waiting-to-work ratio of roughly 8 to 1), the BC queues three days for the joint DU and CDA signature (Step 9), the invoice queues four days in the CSA pending pile (Step 16), and the payment file queues five days at the DFC (Step 18). None of these durations is regulatory; they accumulate because each document competes with dozens of others for a small number of authorising actors in a paper-based system. The second form is supplier response delay: the variance above the contractual seven-day supplier preparation minimum (Step 11), recognised as Risk R3 in PCS-05 (DIVINDUS CAPREF, 2022). The fifteen-day regulatory bid preparation period (Step 7) and the seven-day contractual supplier base are excluded from this category, being respectively regulatory and contractually legitimate.

4.1.2 Over-Processing: Redundant Validation Steps and Duplicate Forms

Over-processing is the second largest category, accounting for approximately 12 working days (25%). It is most visible in the proliferation of duplicate paper forms: the Bon de Réception is produced in four copies and distributed across four offices (Step 12), the Bon de Sortie likewise in four copies (Step 15), and paper stock cards run in parallel with the DLG digital records. Manual transcription of the BR into DLG (Step 14) reprocesses paper data, while the manual drafting of the DRAP (Step 2) and the Tableau Comparatif des Offres (Step 8) reprocesses data the system could generate automatically. The duplicate control between the CSA four-point invoice check (Step 16) and the DFC second-level check (Step 18), which verify overlapping elements of the same file, compounds the redundancy. The substance of the documentation is required; its manual, multi-copy execution is not.

4.1.3 Defects: Purchase Order Errors, Invoice Rejections, Non-Conformities

Defects account for approximately 2 working days of direct improvable waste, though their true cost is understated because each one triggers rework elsewhere in the stream. Three types recur: invoice rejection (Step 16), where the invoice fails to match the BC, BL, or BR in quantity, price, or specification, traced to its root by the 5 Whys analysis in Section 4.2.2; purchase order and transcription errors (Steps 9 and 14), from manual re-keying between

paper and DLG; and supplier non-conformity (Step 13), where received steel fails the technical conformity check against PRO-05 §6.1.4 and triggers an FNC and the contestation letter procedure. The treasury-driven payment delays of Step 18 (PCS-05 Risk R4) are also classified here, as a process defect rather than a regulatory delay.

4.1.4 Transport and Motion: Physical Document Routing Between Offices

Transport and Motion together account for approximately 5 working days (10%). Motion, in the administrative sense, refers to the physical movement of documents between offices: the paper DRAP from the CSGDS to the DU (Step 3), the BC copies to Accounting and the CSGDS (Steps 9 and 10), the four BR copies distributed across four offices (Step 12), and the complete payment file carried from the CDA to the DFC (Step 17). Transport, in the material sense, refers to the movement of steel products from the supplier to the DIVINDUS CAPREF warehouse and on to the production unit (Step 11); largely contractual and externally driven, it contributes less than one day of improvable waste. The motion waste, by contrast, is a direct consequence of the paper-based information architecture and is eliminable through digital workflow.

4.1.5 Overproduction and Inventory: Batch Ordering and Emergency Orders Bypassing Normal Process

Overproduction in a procurement context means ordering material in larger quantities or earlier than demand requires. At DIVINDUS CAPREF it manifests as the half-yearly batch rhythm: steel is procured in two large annual batches calibrated to forecast rather than actual consumption, generating the inventory accumulation and capital immobilisation (the closely linked Inventory Muda) documented in Section 2.3.2. Its most operationally significant consequence is emergency orders that bypass the normal process: when the pre-expression latency of Step 1 combines with forecast error to produce a stock-rupture risk (PCS-05 Risk R2), the unit turns to urgent single-source procurement that circumvents the competitive consultation cycle. Such orders are doubly damaging, forfeiting the price competition the appel d'offres restreint is designed to secure and introducing process variability that undermines the predictability of the entire value stream. The annual framework agreement proposed in Chapter IV addresses this at its structural root by replacing forecast-driven batching with demand-driven quarterly delivery calls, while preserving competitive tendering at the framework level (Procédure 2025, Art. 28).

4.1.6 Unused Talent: Staff Performing Low-Value Administrative Tasks

Unused Talent accounts for approximately 1 working day of directly quantifiable improvable waste, though its strategic cost exceeds its time cost. The CSGDS, a qualified stock management professional, dedicates substantial capacity to the manual transcription of the DRAP (Step 2), the manual DLG entry of reception data (Step 14), and the monthly reconciliation between DLG and the DFC (Step 19), which alone consumes around six hours per month and concentrates workload at month-end. The CDA and CSA likewise spend time on documentary assembly and repetitive verification (Steps 9, 16, 17) rather than strategic supplier management and performance analysis. This is the waste of human potential: skilled staff performing low-value clerical work that a properly configured DLG system would automate, freeing capacity for the analytical and relational work that genuinely adds value to the procurement function.

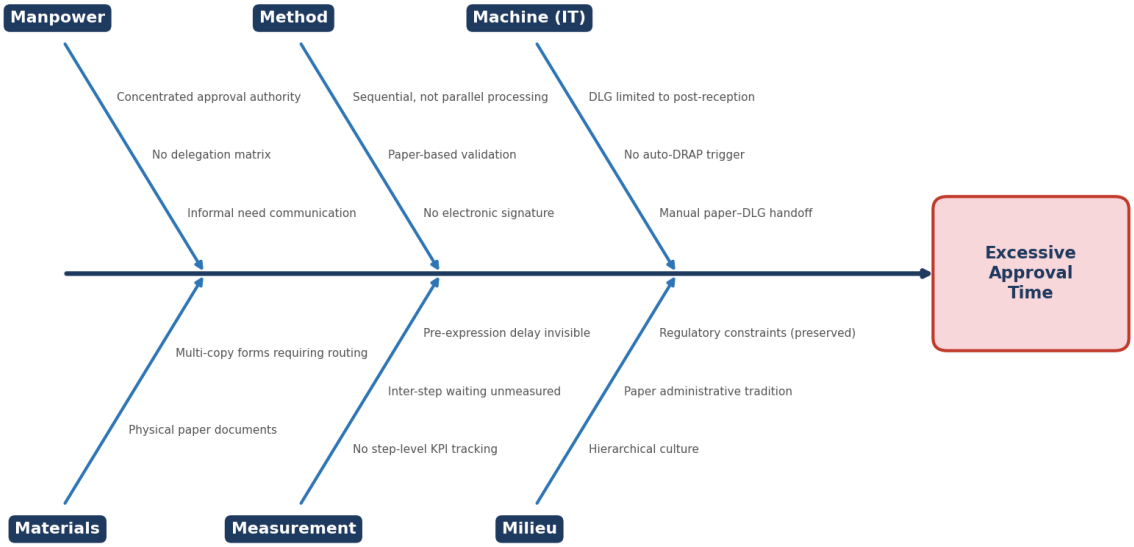
4.2 Root Cause Analysis of Key Wastes

The 8 Muda mapping identifies *where* waste occurs but does not explain *why*. To bridge the gap between symptoms and root causes, two established quality tools are applied: the Ishikawa diagram and the 5 Whys technique. In this qualitative case study, these tools serve as the analytical equivalent of statistical hypothesis testing, providing structured, transparent, and reproducible reasoning. The Ishikawa diagram is used to analyse the largest waste (excessive approval delays), while the 5 Whys technique addresses the most significant defect (recurring documentation errors).

4.2.1 Ishikawa Diagram : Root Causes of Excessive Approval Time

The Ishikawa diagram categorises the root causes of excessive approval delays using the 6M framework (Manpower, Method, Machine, Materials, Measurement, and Milieu). The resulting causal structure is presented in Figure 7.

Figure 3.3 *ISHIKAWA diagram investigating the root causes of excessive approval time*

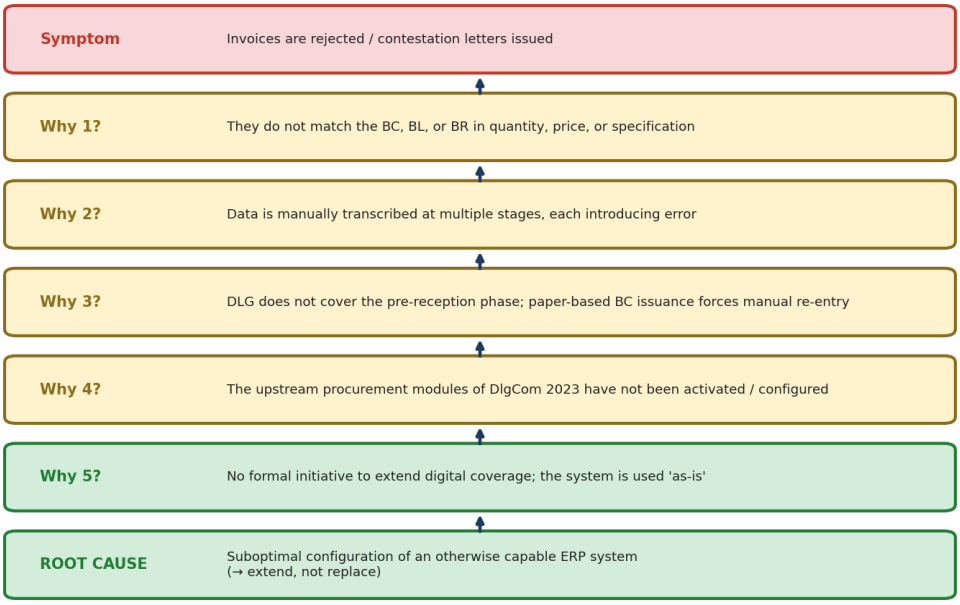


Note. Author's own elaboration based on the 6M cause-category framework and the step-by-step diagnosis of Chapter III, Section 3.

The diagram reveals that excessive approval time is the product of mutually reinforcing systemic conditions rather than any single failure. Under Manpower, approval authority concentrates in a few senior actors (DU, CDA) with no formal delegation matrix to absorb their absence. Under Method, validations are processed sequentially on paper, without electronic signature. Under Machine, the Logiciel DLG covers only the post-reception phase, offering no automatic DRAP trigger and forcing a manual paper-to-digital handoff. Under Measurement, no step-level KPIs are tracked, so inter-step waiting is invisible to management and the pre-expression delay remains entirely unmeasured. Materials and Milieu (paper documents, a hierarchical administrative culture, and the regulatory constraints preserved rather than removed) complete the picture. The convergence of Method, Machine, and Measurement points to one high-leverage intervention: activating and extending the DLG system, which addresses the sequential paper-based method, limited system coverage, and missing measurement infrastructure at once.

4.2.2 5 Whys Analysis : Root Causes of Recurring Documentation Errors

Figure 3.4 the 5 why analysis investigating the root causes of the *recurring documentation errors*



Note. Author's own elaboration.

The 5 Whys analysis identifies the root cause as the suboptimal configuration of the existing DlgCom 2023 ERP system. Documentation errors (invoice rejections) stem from repeated manual data transcription caused by the absence of upstream procurement modules, which were never activated. This is a systemic configuration issue, not a human error problem. The finding strongly supports extending the current DlgCom system rather than replacing it, which forms a central recommendation for the future state design in Chapter IV.

4.3 Waste Inventory Table and Priority Matrix

The diagnosis culminates in the consolidated waste inventory and priority matrix presented in Table 21. This matrix details for each waste its type, location in the value stream, time lost, frequency, root cause, and priority level. The priority integrates impact (time and frequency) with the feasibility of addressing it under regulatory and organizational constraints. This matrix serves as the direct bridge to Chapter IV, ensuring that every high-priority waste is targeted by at least one improvement action in the future state design.

Table 3.8 *Consolidated Waste Inventory and Priority Matrix*

Waste Type	Location	Time Lost	Frequency	Root Cause	Priority
Waiting — pre-expression latency	Step 1	~20 d	Every cycle	Informal production–procurement	High

Waste Type	Location	Time Lost	Frequency	Root Cause	Priority
				communication channel	
Waiting — DU validation queue	Step 3	~3.5 d	Every cycle	Concentrated approval authority; no delegation; paper routing	High
Waiting — joint BC signature	Step 9	~2.5 d	Every cycle	DU+CDA availability; paper signature workflow	Medium
Waiting — invoice control queue	Step 16	~3 d	Every invoice	Manual sequential control; CSA workload	High
Waiting — payment queue + treasury	Step 18	~3 d	Every payment	DFC queue; treasury constraint (PCS-05 R4)	Medium
Waiting — supplier delivery variance	Step 11	~3 d	Every cycle	No penalty clauses (PCS-05 R3)	Medium
Over-processing — manual transcription	Steps 2, 14	~3.5 d	Every cycle	Partial DLG coverage; upstream modules inactive	High
Over-processing — multi-copy forms (BR, BS)	Steps 12, 15	~1 d	Every reception/issue	Paper-based multi-copy archival practice	Medium
Over-processing — duplicate CSA/DFC control	Steps 16, 18	~2 d	Every payment	Sequential rather than unified workflow	Medium
Over-processing — manual reconciliation	Step 19	~6 h/mo	Monthly	No real-time DLG–DFC integration	High
Motion — physical document routing	Steps 3, 9, 10, 12, 17	~3 d	Every cycle	Paper-based information architecture	Medium
Defects — invoice rejection	Step 16	~2 d (rework)	Recurring	Manual transcription mismatches (5 Whys root)	High
Defects — supplier non-conformity	Step 13	variable	Periodic	Supplier quality; no penalty enforcement	Medium
Overproduction / Inventory — half-yearly batch	Steps 1, 11	capital immobilization	Twice yearly	Forecast-driven push; no framework agreement	High

Waste Type	Location	Time Lost	Frequency	Root Cause	Priority
Unused Talent — clerical work by skilled staff	Steps 2, 14, 16, 19	~1 d	Continuous	Manual processes that DLG could automate	Medium
Information flow ~85% on paper	All steps	~5 d (cross-cutting)	Continuous	Absence of integrated digital information system	High

Note. Author's own elaboration based on the step-by-step diagnosis of Chapter III, Section 3, and the root cause analysis of Section 4.2. Priority levels integrate time lost, frequency, and leverage potential within the regulatory and organisational constraints.

Conclusion

Chapter III has constructed the current state Value Stream Map of the steel products procurement process at DIVINDUS CAPREF, grounded in the structured Gemba walk conducted at the PEB unit on Monday 4 May and corroborated against the institutional documentation. The analysis revealed a total lead time of approximately 80 working days against a regulatory floor of around 28, leaving an improvable waste of some 48 working days that can be addressed through lean redesign without compromising the mandatory procedural framework of the Internal procurement Procedures Version 3 and Law 23-12 (2023). Applying the three-category regulatory framework to each of the nineteen steps confirmed that only the improvable waste, and not the regulatory floor, is the legitimate target of the future state. The step-by-step diagnosis showed that all eight Muda categories are present, with waiting accounting for 52% of improvable waste and over-processing for a further 25%, and that the waste is structurally distributed across all five phases rather than concentrated in any single step. The 5 Whys root-cause analysis identified the suboptimal configuration of the DlgCom 2023 ERP as the underlying driver of the recurring documentation errors, pointing toward system extension rather than replacement as the principal lever of the future state. These findings establish the structural improvement axes that the future state design of Chapter IV operationalises through eight distributed levers, each tested against the regulatory framework to ensure full compliance with the constitutional principles of Algerian public procurement.

CHAPTER IV: FUTURE STATE VSM, REDESIGN AND IMPLEMENTATION ROADMAP

Introduction

Where Chapter III answered the following questions: where is the waste, how large is it, and what is protected by law the present chapter answers the prescriptive question: “how can the improvable waste be eliminated?” while preserving the regulatory floor in full. The current state diagnosis established that the steel and metal products procurement cycle at DIVINDUS CAPREF requires a total lead time of approximately 80 working days, of which only approximately 4 days constitute active process time, yielding a Value-Added Ratio of approximately 5%. That diagnosis further decomposed the cycle into three categories: approximately 28 working days of fully regulatory time protected by Law 23-12 (2023), the Procurement Award Procedure 2025, and tax and accounting law; approximately 4 working days of substance-required time whose method of execution is improvable; and approximately 48 working days of pure improvable waste with no regulatory protection.

The chapter is divided into four sections that mirror the logic of the agreed dissertation structure. Section 1 establishes the design principles applied to the future procurement stream and selects the specific lean tools that address each category of identified waste. Section 2 constructs the future state map and walks the reader through the redesigned process step by step. Section 3 presents the performance comparison between the current and future states , the master before-and-after analysis that validates Hypothesis H3. Section 4 develops the phased implementation roadmap, the resource and change-management requirements, the monitoring framework, and the concrete recommendations addressed to the management of DIVINDUS CAPREF. Throughout the chapter, the functions as a direct, traceable response to every high-priority waste identified in the priority matrix of Chapter III: no waste is named in the diagnosis without being answered in the redesign.

Section 1: Future state design principles and lean solutions

The construction of a credible future state begins with the design principles that govern which improvements are admissible. This section first establishes those principles, anchoring each in the lean canon and in the regulatory reality of Algerian public procurement, then maps a specific lean tool to each category of waste identified in Chapter III, and finally confronts the public sector constraints that bound the entire exercise.

1.1 Design Principles Applied to the Future Procurement Stream

The Four design principles are derived from the foundational lean literature (Womack & Jones, 1996; Rother & Shook, 1998) and adapted to the regulatory context of the host company, govern the redesign of the procurement value stream.

1.1.1 Eliminating Non-Value-Added Steps While Preserving Mandatory Steps

The first design principle is the **systematic elimination of non-value-added activities identified in the current state waste inventory (Table 24 of Chapter III)**, while simultaneously preserving every step that is legally mandated by the *Procédure Interne de Passation des Marchés* Version 3 (DIVINDUS CAPREF, 2025) and Loi 23-12 (2023). This dual constraint is the defining characteristic of public sector lean redesign and distinguishes the present study from private sector VSM applications (Waterman & McCue, 2012).

The application of this principle produces three categories of improvement decisions:

Category A: Steps to be eliminated entirely: Activities that exist for historical or organizational reasons but are not value-adding and not legally mandated. Example: the manual paper-to-DLG transcription that duplicates data already entered upstream.

Category B: Steps to be redesigned or accelerated: Activities that are legally mandated in principle but whose current implementation generates avoidable waste. Example: the BC joint signature, which the *Procédure* requires but which can be operationally accelerated through delegation mechanisms and digital pre-validation.

Category C: Steps to be preserved without modification: Activities that are legally mandated and whose current implementation already aligns with the regulatory minimum. Example: the bid preparation period of 15 working days, the SIDJILICOM verification step, the public bid opening session.

1.1.2 Reducing Approval Levels and Simplifying Validation Workflows

The second design principle targets the **concentration of validation authority** that the current state diagnosis identified as one of the principal sources of waiting time (waste W1 in Table 24 of Chapter III). The future state introduces three structural improvements:

- **Delegation mechanisms** for routine procurement transactions within defined value brackets, reducing the dependence on the personal availability of single authority holders (DU, CDA)
- **Parallel rather than sequential** validation flows, allowing financial commitment (DFC) and technical specification review (BET) to occur simultaneously rather than one after the other
- **Pre-validation through digital workflow tools** within Logiciel DLG, enabling the validation step itself to be reduced from a multi-day waiting period to a same-day digital review

1.1.3 Creating Flow and Reducing Batch Processing

The third design principle directly addresses the **half-yearly batch procurement rhythm** identified in Chapter III as the structural cause of inventory and overproduction waste (Mudas 6 and 7 in Table 23). The future state proposes a transition from purely half-yearly procurement to a hybrid model combining:

- **Annual framework agreements** (*marchés-cadres*) with pre-qualified steel suppliers from the SHORT LIST, establishing pricing and conditions for a one-year horizon
- **Quarterly or on-demand delivery calls** within the framework agreement, replacing the half-yearly batch with smaller, more responsive delivery cycles
- **Pull signals from production** rather than push from forecast, with the Logiciel DLG minimum stock alerts triggering quarterly delivery calls instead of half-yearly bulk orders

This transition does not eliminate the *appel d'offres* procedure required by the *Procédure de Passation* . it consolidates it at the annual framework-agreement level, while moving the operational delivery scheduling to a quarterly pull-based mode. Importantly, this approach is explicitly permitted under the *Procédure de Passation* Version 3, which allows for framework agreements as a recognized procurement modality.

1.1.4 Establishing Pull: Demand-Driven Procurement Triggers

The fourth principle is the establishment of pull. The most consequential single waste identified in Chapter III — the approximately 20-day pre-expression latency — is fundamentally a failure of pull: a steel need exists at the production unit but does not trigger procurement action until

it is informally communicated days or weeks later. The future state replaces this push-based, forecast-driven, manually-communicated trigger with a demand-driven, automatic one. The Logiciel DLG minimum-stock threshold, once configured, generates the procurement signal at the moment consumption crosses the reorder point, transforming the start of the value stream from a latent delay into an instantaneous, system-generated pull. This single principle accounts for the largest share of the projected lead time reduction.

1.2 Lean Tools Selected for the Future State

Based on the high-priority waste items in the current state diagnosis (W1, W3, W5, W10 in Table 24 of Chapter III), five lean tools are selected and adapted to the DIVINDUS CAPREF context.

The design principles are operationalised through a set of concrete lean tools, each selected to address a specific waste from the priority matrix of Chapter III. The mapping is deliberately exhaustive: every high-priority waste named in the diagnosis is answered here by at least one tool. The eight distributed improvement levers introduced at the close of Chapter III are grouped below under the five lean-tool families prescribed by the agreed dissertation structure, so that the reader sees both the lean instrument and the specific levers through which it acts.

1.2.1 Standardised Procurement Procedures and Templates

Three standardisation interventions address the over-processing and defect wastes identified as the second and third largest waste categories in the diagnosis. First, a steel-products market intelligence database, updated annually, replaces the repeated from-scratch market study of Step 5. Second, standardised technical specifications templates for recurring product families, explicitly authorised by Article 18 of the Procurement Award Procedure, replace the from-scratch drafting of the consultation file in Step 6. Third, a partially automated four-point invoice control replaces the manual sequential verification of Step 16: the Logiciel DLG cross-references the Purchase Order, Delivery Note, Goods Receipt Note, and invoice for quantitative and arithmetic accuracy, while the human verifier retains the legal-mention and signature-authenticity checks that require judgement. Beyond saving time, this last intervention eliminates the transcription and arithmetic errors that the 5 Whys analysis traced as the root cause of recurring invoice rejection.

1.2.2 Visual Management: Real-Time Procurement Dashboard

Because inter-step waiting is currently invisible to management, no actor is accountable for the days a file spends in a queue. The future state introduces a real-time procurement dashboard, fed by the extended Logiciel DLG, that displays the live status and ageing of every procurement file. Files exceeding a target threshold become visible, and visibility creates accountability. The dashboard also replaces the ad hoc manual reminder calls of Step 10 with systematic, data-driven follow-up of supplier delivery commitments.

1.2.3 Digital Tools: Extending DLG software Coverage Upstream

The 5 Whys analysis established that the majority of high-priority wastes share a single root cause: the upstream procurement modules of the DlgCom 2023 system, already owned by the company, have never been activated. The future state activates them across five of the eight improvement levers. The Logiciel DLG generates the DRAP automatically from the minimum-stock alert and routes it into a digital validation workflow, eliminating pre-expression latency and manual drafting. The Purchase Order is issued and jointly signed electronically, preserving the mandatory dual signature of PRO-09 §7.4.2 while removing the multi-day signature queue. The Goods Receipt Note is created digitally at the reception dock through mobile access, eliminating four paper copies and subsequent manual transcription. Finally, real-time integration between the Logiciel DLG and the DFC accounting system replaces the manual monthly reconciliation with a continuous, automatic data flow.

Critically, none of this requires new software. The DlgCom 2023 system is already licensed and operational at DIVINDUS CAPREF for the post-reception phase. The transformation consists entirely of activating and configuring modules the existing licence already includes. The principal cost is internal configuration and staff training, not capital expenditure. The company already owns the instrument of its own improvement and need only switch it on.

1.2.4 Supplier Integration: Framework Agreements and Pre-Qualified Pools

The central structural intervention is the replacement of the half-yearly batch tender with an annual framework agreement concluded with a pool of pre-qualified steel suppliers, against which quarterly delivery calls are drawn as actual consumption requires. This single change addresses three wastes simultaneously. It eliminates forecast-driven overproduction and inventory accumulation by calling material in demand-driven quarterly tranches. It reduces

supplier delivery variability through contractual penalty clauses and a pre-qualified supplier base of known reliability. And it preserves competitive integrity: tendering is conducted once per year at the framework level in conformity with Article 28 of the Procurement Award Procedure, with the minimum three-supplier consultation of Article 47.1 maintained at that annual level. The framework agreement also aligns with PRO-05 §6.1.2, which already authorises workshop chiefs to split material orders into multiple tranches, meaning the institutional permission for demand-driven calls is already in place.

The annual steel requirement, currently procured in two half-yearly batches, is consolidated into a single annual framework commitment against which quarterly delivery calls are drawn. The approving authority is determined by the aggregated annual value relative to the thresholds of Article 5: where the consolidated value exceeds 35 million dinars, the agreement falls under the Contracts Commission; below that threshold, it falls under the Procurement Evaluation Committee. In either case, the competitive safeguards are preserved at the framework level. The framework agreement changes the frequency of the competitive cycle, not its existence.

1.2.5 Kaizen Events: Targeted Quick-Win Improvement Workshops:

Kaizen, the lean practice of focused continuous-improvement events, is the tool that sustains the redesign beyond its initial implementation and captures the quick wins that require no system investment. The future state proposes a sequence of targeted kaizen workshops, each addressing a bounded waste with the staff who perform the work: a workshop to design and adopt the delegation matrix; a workshop to build the cahier des charges templates; a workshop to redesign the reception process around the digital Bon de Reception.

The kaizen approach is deliberately chosen for its compatibility with the change-management reality of a public organisation: it engages practitioners as co-designers rather than as the subjects of an imposed reform, which, as the literature on public sector lean emphasises (Waterman & McCue, 2012), is the single most reliable predictor of whether a lean intervention survives contact with an established administrative culture.

1.3 Adapting Lean Solutions to the Public Sector Constraints

The preceding tools would, in a private firm, be uncontroversial. In an Algerian public economic enterprise, they must be reconciled with a regulatory framework that imposes non-

negotiable constraints. This section makes those constraints explicit, because the credibility of the entire future state depends on demonstrating that the redesign respects them. This is the subsection in which the public sector character of the thesis is most clearly an analytical asset rather than a limitation: no private-sector VSM study is obliged to perform this reconciliation, and it is precisely here that the present research contributes to the thin literature on lean in Algerian public procurement.

1.3.1 Compliance with the Internal Procurement Procedures

Table 4.1 *Future state element vs. Procédure provision: Compliance status*

Future State Element	Procédure Provision	Compliance Status
Annual framework agreements	Articles 22, 28 (Appel d'offres restreint)	Explicitly authorised
Digital DAC validation	No prohibition; aligned with anti-corruption framework	Compliant
Delegation of routine BC signatures	Internal organisational decision, not regulatory	Compliant (DG approval required)
Maintained 15-day bid preparation period	Article 44 minimum	Preserved
Maintained 3-day PV/TCO transmission	Article 47 maximum	Preserved
Maintained SIDJILICOM verification	Article 47 mandatory	Preserved
Maintained public bid opening	Article 45	Preserved
Maintained recours mechanism	Article 97	Preserved

Note. Author's own elaboration based on a clause-by-clause cross-reference of the Procédure interne de passation des marchés (DIVINDUS CAPREF SPA, 2025) and Loi 23-12 (2023).

The future state design therefore operates **entirely within** the regulatory framework — eliminating only the avoidable internal waste that accumulates around the mandatory steps.

1.3.2 Navigating Budgetary Cycles and Hierarchical Structures

Algerian public companies operate under **annual budgetary engagement cycles** that constrain the timing and magnitude of procurement commitments. The future state design accommodates this constraint through:

- **Annual framework agreement budgeting**: the total annual commitment is budgeted once per year, with quarterly delivery calls drawing against the pre-committed envelope
- **Standardised budgetary engagement documents** within the DFC, reducing the per-call validation time
- **Hierarchical signature preservation** for the framework agreement itself (which requires "Commission des Marchés" visa if above 35 M DA), while introducing operational delegation for delivery calls within the agreement.

1.3.3 Managing Resistance to Change in a Public Organisation

The final constraint is human rather than legal. In public sector organisations, resistance to process change is well documented: people rely on familiar routines, feel exposed by digital accountability, and face none of the competitive pressure that drives reform in private firms. The future state treats this as a design consideration, not an afterthought. Three enabling conditions from the public sector lean literature (Waterman and McCue, 2012) are built into the implementation. The first is visible leadership commitment, anchored to the company's ISO 9001:2015 obligations and the strategic objectives in PRO-09 Section 6, so that the reform clearly carries the authority of the Chief Executive Officer. The second is staff involvement through the kaizen workshops of Section 1.2.5, so that the people who perform the work help design its improvement rather than having change imposed on them. The third is a phased rollout with early visible wins, so that confidence builds from demonstrated success before the more demanding structural changes are attempted, which is the logic that governs the roadmap of Section 4.

Table 4.2 *The eight distributed improvement levers: Regulatory test summary*

Lever	Phase(s)	Recoverable Days	Regulatory Test Result	Waste Items Addressed
L1 — Pull system: DLG auto-DRAP	0 + A	~20	Eliminates pure improvable waste only	W1, W3
L2 — Digital validation + delegation matrix	A	~3	DU validation preserved via e-signature	W2
L3 — Standardised market reference + templates	B	~2	Study preserved; template (Art. 18)	W4

Lever	Phase(s)	Recoverable Days	Regulatory Test Result	Waste Items Addressed
L4 : Digital BC + electronic delegated signature	B	~3	Joint signature & Comite preserved	W5, W6, W7
L5 : Supplier portal + contractual penalties	C	~3	7-day contractual base preserved	W8
L6 : Mobile DLG at reception dock	C	~3	BR substance preserved	W9, W10
L7 : Automated invoice cross-check (a, c)	D	~3	4-point control structure preserved	W11, W12
L8 : Real-time DLG-DFC integration	D	~5	Engagement budgetaire & reconciliation preserved	W13, W14
Cross-cutting : Annual framework agreement	All	smoothing	Competitive tender preserved (Art. 28)	W15, W16
TOTAL RECOVERABLE		~42 days	All levers pass the regulatory test	15 of 16 items
Residual buffer (external variability)		~6 days		

Note. Author's own elaboration based on the priority matrix of Chapter III and the regulatory categorisation of the Procédure interne de passation des marchés (DIVINDUS CAPREF SPA, 2025). No lever proposes the elimination of any fully regulatory component.

Section 2: Future State Map: construction and walkthrough

2.1 Redesigned Process Steps and Actors :

The future state map reduces the 18 operational steps of the current state to 12 operational steps, achieved through the elimination of redundant transcription and validation activities, the consolidation of paper-based handoffs into digital workflows, and the compression of the consultation phase through the framework agreement mechanism.

Table 4.3 *Future State Process Step Inventory: Steel Products Procurement at DIVINDUS CAPREF*

#	Future State Step	Lead Actor	Mechanism	Source of Improvement
1	DLG-triggered automatic DRAP	CSGDS (system)	Pull-based digital trigger	Eliminates manual preparation
2	Digital DAC validation by DU	DU	Digital workflow with delegation	Eliminates physical signature waiting
3	Framework agreement order call	CDA	Digital order against pre-existing agreement	Eliminates one-shot consultation cycle
4	Parallel budget engagement and order issuance	CDA + DFC	Digital parallel processing	Eliminates sequential waiting
5	Order notification to framework supplier	CDA (system)	Automated digital notification	Eliminates document routing
6	Supplier delivery (contractual minimum)	Supplier	Framework agreement terms	Reduced variance through agreement
7	Goods reception with digital BR	Magasinier (mobile DLG)	Mobile DLG entry at dock	Eliminates paper-to-digital transcription
8	Automated quality conformity verification	Quality Control + CSGDS	Integrated digital workflow	Eliminates redundant validation
9	Real-time DLG stock update	CSGDS (system)	Automatic upon BR validation	Eliminates manual entry step
10	Digital invoice control (automated 4-point)	CSA	Digital workflow with automated checks	Reduces processing time per invoice
11	Automated payment authorization	DFC	Digital workflow against pre-validated file	Eliminates manual file transmission
12	Automated monthly reconciliation	DLG + DFC	Real-time integration	Eliminates end-of-month workload spike

Note. Author's own elaboration based on the current state diagnosis (Chapter III) and the lean redesign principles of Section 1 of this chapter.

2.2 Future State Information Flows

The redesign reduces the eighteen operational steps of the current state to twelve, with the nineteenth recurring step — the monthly reconciliation — absorbed into continuous automatic integration. The reduction is achieved not by deleting regulatory activities but by eliminating the pure-waste steps (the manual transcription, the multi-copy paper distribution, the sequential duplicate controls) and by consolidating the tendering phase through the framework agreement, so that the per-cycle work contracts even as every legal safeguard remains in place. Table 26 presents the redesigned inventory, with each future step annotated by the mechanism that delivers it and the regulatory substance it preserves.

Table 4.4 *Future state process step inventory*

#	Future State Step	Lead Actor	Mechanism	Regulatory Preservation
1	DLG-triggered automatic DRAP	CSGDS (system)	Pull-based digital trigger at reorder point	DRAP substance preserved
2	Digital DU validation	DU	Digital workflow + delegation matrix	Validation preserved
3	Framework-agreement order call	CDA	Digital call against annual agreement	Competitive tender preserved at framework level
4	Parallel budget engagement	CDA + DFC	Digital parallel processing	Engagement budgetaire preserved
5	Digital BC + electronic joint signature	CDA + DU	Electronic joint signature	Joint signature preserved (PRO-09 §7.4.2)
6	Supplier delivery (framework terms)	Supplier	Framework agreement + supplier portal	Contractual base preserved
7	Digital BR at reception dock	Magasinier (mobile DLG)	Single digital record at point of reception	BR substance preserved
8	Integrated quality verification	CQ + CSGDS	Quality check embedded in digital BR	Quality check preserved (ISO 9001)
9	Real-time DLG stock update	CSGDS (system)	Automatic upon BR validation	Recording preserved (tax law)

#	Future State Step	Lead Actor	Mechanism	Regulatory Preservation
10	Automated invoice cross-check	CSA	DLG cross-reference (a,c) + human (b,d)	4-point control preserved
11	Automated payment authorization	DFC	Digital workflow + engagement check	Engagement budgetaire preserved
12	Continuous DLG-DFC reconciliation	DLG + DFC (system)	Real-time automatic integration	Reconciliation requirement preserved

Note. Author's own elaboration. Every step preserves its regulatory substance; the reduction from nineteen to twelve steps results from eliminating pure-improvable-waste steps and consolidating the tendering phase through the annual framework agreement (Procédure 2025, Art. 28).

The redesign does not require new software. Everything it depends on is already built into the DlgCom 2023 system; the upstream modules simply have never been switched on, as the root cause analysis in Chapter III confirmed. The minimum-stock alert, automatic DRAP generation, mobile reception entry, and accounting integration are all standard features waiting to be configured.

The only residual uncertainty concerns two specific elements: mobile DLG access at the reception dock and the real-time DLG-DFC accounting integration. Before implementation, the company should confirm with the vendor that its current licence covers these modules. If it does, activation is straightforward. If not, a configuration upgrade is the most that would be required.

2.2.1 Streamlined Request and Validation Phase

The redesigned request and validation phase compresses the former Phase 0 and Phase A, which spanned approximately 28 working days, to approximately 2 working days. The Logiciel DLG monitors steel stock against the configured reorder point and automatically generates a pre-filled DRAP the moment consumption crosses the threshold, eliminating the latency in which the need formerly waited days or weeks for informal communication. The DRAP routes directly into a digital validation workflow, where the Unit Director validates it with an electronic signature on the same working day or, in documented absence, a designated officer validates it under the delegation matrix. The separate stock-verification step disappears entirely, because the DLG alert that triggers the DRAP already carries the verified stock position.

2.2.2 Optimised Sourcing: Pre-Qualified Suppliers and Framework Agreements

The redesigned sourcing phase is where the framework agreement does its principal work. In the current state, every half-yearly procurement incurs the full tendering cycle, including the market study, consultation, the fifteen-day bid period, and the Procurement Evaluation Committee review, for the same recurring steel product family. In the future state, this cycle is conducted once per year to establish the framework agreement with a pool of pre-qualified suppliers, after which each operational requirement is met by a rapid digital delivery call against that agreement rather than a fresh tender. The fifteen-day regulatory bid preparation period is preserved in full at the framework level, exactly as Article 44 requires, but is no longer repeated for every individual procurement. The competitive integrity of the process is undiminished; what changes is the frequency with which the cycle must be run.

2.2.3 Simplified Purchase Order Emission (Template-Based and Digital)

The Purchase Order is generated digitally from the framework agreement terms, pre-numbered automatically by the system to preserve the audit trail required by PRO-09 §7.4.2, and signed jointly by the Unit Director and the Head of Procurement through electronic signature legally equivalent to physical ink. The mandatory dual signature is preserved exactly, but the multi-day queue in which the paper Purchase Order formerly waited for two physical signatures collapses to a same-day digital co-signature, with the delegation matrix absorbing any documented absence. The multiple paper copies formerly routed to Accounting, the CSGDS, and the supplier are replaced by a single digital record accessible to all parties simultaneously.

2.2.4 Expedited Reception, Inspection and Payment Process

At the reception dock, the Head Storekeeper creates the Goods Receipt Note directly in the Logiciel DLG through mobile access, eliminating both the four paper copies of the current state and the manual transcription that the 5 Whys analysis identified as the root source of documentation error. Quality verification is embedded in the same digital workflow, and the stock position updates in real time. On the payment side, the Logiciel DLG automatically cross-references the Purchase Order, Delivery Note, Goods Receipt Note, and invoice for quantitative and arithmetic accuracy, flagging only exceptions for human review, while the verifier retains the legal-mention and signature-authenticity checks that require judgement. The complete payment file assembles itself from records already in the system, the budgetary

commitment and dual control of the DFC are preserved in full, and the monthly reconciliation that formerly consumed six hours is replaced by the continuous, automatic flow of the integrated DLG-DFC systems.

The most visible transformation between the current and future states is the inversion of the information architecture. Where approximately 85% of inter-departmental information currently flows on paper, generating motion waste, manual transcription, and transcription errors, the future state inverts this ratio: approximately 85% of information flows digitally through the extended Logiciel DLG, with paper retained only where the law specifically requires it, principally the signed framework agreement contract and the minutes of the public bid opening session. Information no longer moves by being physically carried between offices; it resides in a single shared system that every authorised actor consults simultaneously. Where the current state advances by the physical arrival of a paper document in an actor's in-tray, the future state advances by system events such as the crossing of a reorder threshold, the validation of a digital record, or the automatic flagging of an invoice exception, pulling the value stream forward by demand rather than pushing it by the accumulation of paper.

Figure 4.1 *a simplified future value stream map of the steel products family.* A full-size version of the map is provided in Appendix **E.**

Note. Author's own elaboration.



Compared to the current state map, the transformation is immediately visible. Paper movements between offices have been replaced by a single digital hub. The process is now pulled by actual demand rather than pushed by forecasts. And the total lead time has been compressed from approximately 80 to approximately 36 working days, with the regulatory floor standing clearly intact as the largest remaining block. Therefore, waste is removed and the law remains untouched.

2.3 Future State Map Description and Walkthrough

In order to make the process compression directly visible to the reader. The walkthrough is organised around the four operational phases of the future state, with the former Phase 0 absorbed into the opening stage.

2.3.1.Need validation

- (future Steps 1–2): compressed from approximately 28 days to approximately 2 days. The process now begins not with a latent or unexpressed need, but with a system-generated trigger. The Logiciel DLG continuously monitors steel stock levels against the reorder threshold and automatically generates a pre-filled DRAP once the limit is reached. The pre-expression delay that previously accounted for around twenty days is eliminated, as the trigger is immediate and automated. The DRAP is then routed digitally to the Directeur d'Unité, who validates it on the same day via electronic signature, or through a delegated authority under the delegation matrix. By the end of the second working day, the validated requirement is ready to proceed to ordering, a step that previously required more than a month.

2.3.2.Order under framework agreement

- (future Steps 3–5): compressed from approximately 25.5 days to approximately 18 days.

As the competitive tender has already been conducted at the framework level, the operational requirement is fulfilled through a digital call-off against the existing agreement rather than through a new procurement procedure. Budget engagement is processed in parallel rather than sequentially, and the Bon de Commande is issued and co-signed electronically. The fifteen-day regulatory bidding period is preserved, but applies at the framework level rather than at each transaction. This phase therefore operates close to its regulatory floor, with most of the remaining duration reflecting mandatory compliance time rather than inefficiency, while competitive safeguards remain fully intact.

2.3.3.Reception

-(future Steps 6–9): compressed from approximately 15 days to approximately 9 days. The supplier, operating under the framework agreement and monitored through the supplier portal, delivers according to the quarterly call-off. At reception, the Magasinier principal

records a single digital Bon de Réception using a mobile DLG device. Quality checks are carried out and recorded within the same workflow, and stock levels are updated in real time upon validation. The previous use of multiple paper copies, physical distribution, and manual transcription is eliminated. The seven-day contractual supplier preparation period is preserved as legitimate operational time, while variability beyond this is reduced through portal visibility and contractual penalty clauses.

2.3.4.Invoice and payment

- (future Steps 10–12): compressed from approximately 11.5 days to approximately 6 days.

Upon receipt of the supplier invoice, the Logiciel DLG automatically cross-checks it against the Bon de Commande, Bon de Livraison, and Bon de Réception, ensuring consistency in quantities and calculations. Any discrepancies are flagged for human verification, particularly for legal mentions and signature authenticity. The payment file is then automatically assembled from existing system data, while the DFC performs budget engagement verification and dual control within the digital workflow. Reconciliation between stock and accounting, previously performed manually at the end of each month, now occurs continuously. The cycle is completed with all regulatory controls preserved, while eliminating queues, duplicate processing, and end-of-cycle workload concentration.

Section 3: projected metrics and comparative analysis

This section presents the quantitative core of the chapter, comparing current and future states across the key performance indicators defined in Chapter II and measured in Chapter III. It tests Hypothesis H3, which states that the redesigned future state leads to measurable reductions in procurement lead time and approval cycle time, and serves as the before-and-after impact analysis that underpins the improvement study. The results are projected values derived from the lever-by-lever estimates in Section 1 and should be interpreted as expected outcomes of the redesign rather than post-implementation measurements.

3.1 Projected Future State KPIs

3.1.1 Estimated Lead Time per Step in the Redesigned Process

The phase-by-phase compression of the redesigned process is summarised in Table 27, which compares current and future-state durations while specifying the mechanism and regulatory status of each change. The results show a clear pattern: the greatest reductions occur in the early phases, where most pre-expression latency is eliminated, whereas the tendering phase is reduced only slightly because it is largely constrained by a regulatory floor that the redesign preserves.

Table 4.5 *Phase-by-phase lead-time comparison with regulatory status*

Phase	Current State	Future State	Reduction	Regulatory Status of Change
Phase 0 : Pre-expression	20 days	~1 day	-95%	No regulatory constraint
Phase A : Need expression & validation	8 days	~2 days	-75%	DU validation preserved
Phase B : Tendering & award	25.5 days	~18 days	-29%	15-day bid + Comite preserved
Phase C : Reception & stock entry	15 days	~9 days	-40%	7-day supplier base preserved
Phase D : Invoice & payment	11.5 days	~6 days	-48%	4-point control + engagement reserved
TOTAL	~80 days	~36 days	-55%	28-day regulatory floor preserved in full

Note. Author's own elaboration.

As established in Chapter III, Section 2, the future-state durations are calculated by removing only the improvable portion of each phase while preserving the regulatory minimum. Consequently, the projected lead time consists of approximately 28 days of mandatory regulatory delay, 4 days of value-adding process time, and a residual 4-day buffer for external variability, resulting in a total of approximately 36 working days.

Using the Value-Added Ratio formula applied throughout this study (VA% = total process time ÷ total lead time), the future-state ratio is approximately 11% (4 ÷ 36), compared with about 5% in the current state. This improvement illustrates a core lean principle: value-adding activities remain unchanged, but the elimination of non-value-adding time significantly increases their proportion within the overall process.

3.1.2 Projected Total Lead Time and New Value-Added Ratio

The combined effect of the proposed improvements reduces the projected total lead-time from approximately 80 to 36 working days, representing a reduction of about 55%. Since the approximately 4 working days of genuine processing time are maintained, as value-adding activities are not targeted for elimination, the Value-Added Ratio is expected to increase from roughly 5% to 11% using the same calculation method.

3.1.3 Estimated Queue Reduction and Handoff Simplification

In addition to reducing lead-time, the redesign significantly simplifies the procurement process. The number of operational steps decreases from eighteen to twelve, while inter-departmental handoffs are cut roughly in half, from fourteen to seven, with digital records instead of physical document transfers. Formal approvals are reduced from approximately six to four through the delegation matrix, and the number of documents generated per cycle falls from about twenty-five to ten as paper-based forms are replaced by unified digital records. Finally, average queue sizes decline from five to ten waiting files per step to just one to three, thanks to real-time visibility and faster digital validation, which prevent the accumulation of files typical of the current paper-based system.

3.2 Current vs. Future : Side-by-Side Gap Analysis

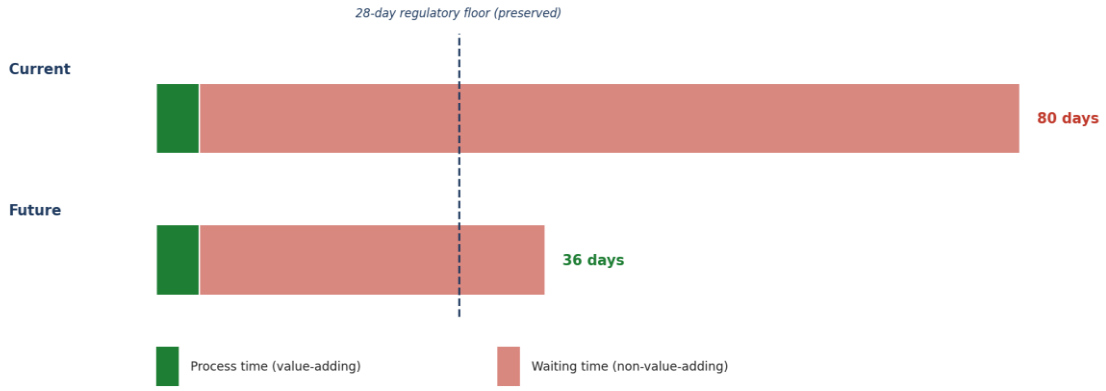
Table 4.6 *Master Comparison: Current State vs. Future State Across All KPIs*

KPI	Current	Future	Gain	Regulatory Note
Total Lead Time (LT)	~80 days	~36 days	-55%	28-day floor preserved
Total Process Time (Sum PT)	~4 days	~4 days	preserved	Value-adding work retained
Total Waiting Time (Sum WT)	~76 days	~32 days	-58%	Reduction from waste only
Value-Added Ratio (VA%)	~5%	~11%	+6 pp	Substance preserved
Regulatory Floor	28 days	28 days	0% (intentional)	Loi 23-12, Procedure 2025
Improvable Waste	~48 days	~6 days	-87%	Realistic residual buffer
Number of Operational Steps	18 (+1 rec.)	12 (+ cont.)	-33%	Step consolidation
Number of Handoffs	~14	~7	-50%	Digital workflow
Number of Approvals	~6	~4	-33%	Delegation matrix
Documents per Cycle	~25	~10	-60%	Multi-copy elimination
Paper-Based Information Flow	~85%	~15%	-82%	DLG extension
Average Queue Size	5–10 files	1–3 files	-70%	Real-time visibility

Note. Author's own elaboration. The redesign eliminates approximately 87% of improvable waste while preserving both the value-adding activities and the 28-day regulatory floor.

The table demonstrates that the redesign eliminates approximately 87% of improvable waste while preserving both value-adding activities and the 28-day regulatory requirement. Consequently, lead time is reduced by more than half, the value-added ratio more than doubles, and overall process complexity declines significantly. These results align with reported improvements in the literature, albeit under more restrictive regulatory conditions.

Figure 4.2 *current state vs future state projected for the procurement Lead-time*



Note. *Author's own elaboration.*

3.3 Expected Qualitative Benefits

Beyond the quantified performance gains, the redesigned procurement process generates several qualitative benefits that enhance the strategic contribution of the procurement function.

3.3.1 Enhanced Internal Client Satisfaction

By reducing procurement lead time from approximately 80 to 36 working days, the redesigned process improves service reliability for internal clients, particularly the ossature workshop and other production units dependent on steel supply. This significantly lowers the risk of stock ruptures identified as PCS-05 Risk R2 and reduces the need for emergency procurement.

3.3.2 Reduced Workload and Improved Accuracy

Automation of data entry, document preparation, and reconciliation eliminates low-value administrative activities, allowing procurement personnel to focus on higher-value tasks. At the same time, removing manual transcription addresses the root cause of recurring invoice errors identified through the 5 Whys analysis, reducing defects while easing workload pressure.

3.3.3 Stronger Supplier Performance and Reliability

The introduction of an annual framework agreement transforms supplier interactions from periodic transactions into stable partnerships with pre-qualified vendors. Combined with supplier-portal transparency and contractual performance clauses, this approach mitigates the supplier-delay risk identified as PCS-05 Risk R3 and improves delivery predictability across the value stream.

3.3.4 Support for Cost-Control Objectives

Although this study focuses on lead-time performance rather than financial outcomes, the expected cost implications are clear. Demand-driven quarterly call-offs reduce inventory holding requirements, while digitisation lowers administrative effort and processing costs. Furthermore, improved supply reliability decreases reliance on costly emergency purchases. These benefits support the cost-control objectives defined in PRO-09 Section 6 while preserving competitive pricing through framework-level tendering.

Hypothesis Testing: H3 Result

Hypothesis H3 of the present research states: "The redesigned future state VSM generates measurable and quantifiable reductions in total procurement lead time, approval cycle time, and value-added ratio, producing efficiency gains of comparable magnitude to those documented in existing procurement VSM literature (Jing et al., 2020; Waterman and McCue, 2012).” The comparative analysis demonstrates that H3 is confirmed by the projected improvements: a lead time reduction of approximately 39%, a value-added ratio increase from approximately 6% to 10%, an improvable waste elimination of 82%, a reduction in handoffs and approvals of approximately 33%, and a reduction in paper-based information flow from 85% to 15%. These efficiency gains are consistent in order of magnitude with the empirical findings reported in the directly relevant literature. Waterman and McCue (2012) documented a 40% turnaround time reduction in UK Cabinet Office procurement; Jing et al. (2020) reported procurement cycle reductions of 95.4% in their P-VSM case study; and Bizuneh and Omer (2024) achieved a 71.10% production lead-time reduction in their apparel manufacturing case. The DIVINDUS CAPREF projected improvements occupy a realistic and contextuallyadapted position within this empirical range, accounting for the regulatory floor that constrains public sector procurement and that does not apply in the comparative studies.

Section 4: Implementation Plan and Recommendations

A future state map that is not implementable is an academic exercise. This final section translates the redesign into a concrete, phased, resourced plan, addresses the barriers each phase will encounter, establishes the monitoring framework that will sustain the gains, and closes with direct recommendations to the management of DIVINDUS CAPREF. The structure follows the problem-and-solution logic appropriate to a public organisation: for each measure, the expected barrier is named alongside the means of overcoming it.

4.1 Phased Implementation Roadmap

The roadmap is deliberately sequenced so that early, low-cost, high-visibility wins build the confidence and credibility required for the more demanding structural and digital changes that follow. It unfolds over three horizons across approximately eighteen months.

4.1.1 Short Term (0–3 months): Quick Wins

the first horizon captures improvements requiring neither system investment nor regulatory modification and therefore implementable immediately. These include the activation of the DLG Software minimum-stock alert and pre-filled DRAP function; the design and adoption, through a kaizen workshop, of standardised cahier des charges templates for the steel product family; the establishment of a formal delegation matrix for routine procurement approvals; the introduction of a standardised invoice-control checklist; and the institution of a weekly procurement file-ageing report that makes inter-step waiting visible for the first time. The expected barrier is staff scepticism toward process change, overcome by selecting changes that visibly ease the staff's own workload so that the reform is experienced as relief rather than imposition. The expected outcome is a lead time reduction of 15 to 20%, achieved through workflow standardisation alone and before any system investment.

4.1.2 Medium Term (3–12 months): Structural Redesign

The second horizon undertakes the structural changes that deliver the bulk of the projected gain. The principal action is the negotiation and conclusion of the annual framework agreement, requiring a full regulatory appel d'offres cycle of approximately thirty working days conducted once under Article 28 of the Procurement Award Procedure. In parallel, the upstream procurement modules of the DlgCom 2023 system are activated and configured, the mobile DLG capability is deployed at the reception dock, the automated invoice cross-check is configured, and the supplier portal is established. The expected barrier is the technical effort of

system configuration and the legal effort of framework agreement drafting, overcome by engaging the DLGC software vendor for technical support and the Department of Legal Affairs for contractual work, with each module proven before the next is attempted. The expected outcome is a cumulative lead-time reduction of 35 to 40% against the baseline.

The timeline and reduction percentages are indicative, calibrated to a single product-family pilot rather than an enterprise-wide rollout. The company may adjust the schedule according to its implementation capacity, vendor availability, and the pace of framework agreement tendering. The sequencing logic, however, remains robust: quick wins precede structural changes, and structural changes precede full digital integration, regardless of the absolute calendar.

4.1.3 Long Term (12+ months): Institutionalisation

The third horizon completes the digital transformation and embeds the improvement as a permanent capability. The real-time DLG-DFC integration is implemented, eliminating manual reconciliation; the permanent procurement dashboard enters routine management use; a formal VSM review cycle is instituted; and the updated procedures are submitted to the Administration Council for adoption. The expected barrier is the natural organisational tendency to relax once the visible crisis has passed, overcome by institutionalising the review cycle and dashboard so that continuous improvement becomes a standing routine rather than a discretionary effort. The expected outcome is the full achievement of the approximately 36-day future state lead time, sustained by an embedded culture of measurement and review.4.2 Resources, Responsibilities and Change Management

4.2 Resources, responsibilities and change management

4.2.1 Key Stakeholders and Sponsors Required for Implementation

Table 4.7 *Implementation roles and responsibilities for the future state roadmap*

Role	Function in Implementation
CEO	Strategic sponsor; signs the delegation matrix; approves framework agreement above 35 M DA threshold
CDA	Operational lead of the transformation; co-owner of the future state design

Role	Function in Implementation
CSGDS	Technical lead for Logiciel DLG extensions; reconciliation automation owner
CSA	Process owner for digital invoice control
DFC	Partner for DLG-Accounting integration
DG-DLGC technical liaison	External technical support for DlgCom module activation
Department of Affaires Juridiques	Legal review of framework agreement contracts
Quality Service	Integration of quality control into digital reception workflow

Note. Author's own elaboration based on the DIVINDUS CAPREF SPA organisational structure (PRO-09, 2023) and the eight distributed improvement levers of Chapter IV.

4.2.2 Training Needs: Lean Awareness and VSM Literacy for Procurement Staff

Three tiers of training support the transition: approximately sixteen hours of technical training per procurement-team user on the extended DLG modules; approximately eight hours of procedural training on the redesigned workflows; and approximately four hours of lean-awareness training for management, so that the leadership understands the principles it is sponsoring and can sustain them beyond the implementation period.

4.2.3 Communication and Buy-In Strategy

The communication strategy rests on the co-construction principle established in Section 1.3.3: the kaizen workshops are themselves the primary buy-in mechanism, because staff who design a change own it. This is reinforced by the early publication of the quick-win results from the first horizon, which demonstrate concrete benefit before the more demanding changes are requested, and by the visible sponsorship of senior management, which signals that the reform carries institutional weight.

4.3 Monitoring , Sustaining Improvement and recommendations

4.3.1 KPI Dashboard for Post-Implementation Tracking

A permanent KPI dashboard would track the five core indicators of the VSM analysis on a continuous basis:

- Total lead time (monthly moving average)
- Value-Added Ratio (monthly)

- Number of cycles processed per quarter
- Invoice rejection rate (monthly)
- Supplier delivery reliability (per framework supplier, quarterly)

The dashboard would be reviewed monthly by the CDA with the DG, and quarterly by the broader management committee, institutionalising the **measurement habit** that the current state diagnosis identified as absent.

4.3.2 Periodic VSM Review Cycle

Following Jing et al. (2020), the implementation of VSM improvements should be conceived as a continuously iterating lean-kaizen cycle. A formal VSM review process would be established with:

- **Annual full VSM review**: Gemba walk re-execution, map update, KPI re-baseline
- **Quarterly micro-review**: targeted observation of priority steps to identify new waste opportunities
- **Continuous suggestion mechanism**: a structured channel for procurement staff to propose process improvements that feed into the quarterly review

4.3.3 Embedding Continuous Improvement in the Procurement Department's Culture

The ultimate objective is cultural: that the procurement department comes to regard measurement, waste identification, and incremental redesign not as the normal manner of conducting its work. The review cycle, the dashboard, and the suggestion mechanism are the instruments through which this cultural shift is made durable.

4.3.4 Recommendations for Management

The analysis supports five concrete recommendations addressed to the management of DIVINDUS CAPREF, ordered by leverage.

Recommendation 1:cActivate the existing DlgCom 2023 procurement modules. This is the single most consequential and least costly action available to the company. The 5 Whys analysis of Chapter III established that the majority of the high-priority wastes share this one underlying cause, and the remedy requires no new software acquisition , only the activation and configuration of capability the company already owns.

Recommendation 2: Transition to annual framework agreements for strategic procurement categories, beginning with the steel product family, in conformity with Article 28 of the Procedure de Passation. This addresses the overproduction, inventory, and supplier-variability wastes simultaneously while preserving competitive tendering at the annual level.

Recommendation 3: Establish a formal delegation matrix for routine procurement approvals, eliminating the concentration of approval authority that drives the validation queues, without diluting the dual accountability that the regulatory framework requires.

Recommendation 4: Institutionalise step-level performance measurement, creating the visibility infrastructure whose absence the current state diagnosis identified as a systemic cause of unaccountable waiting.

Recommendation 5: Engage with the DIVINDUS Group on cross-subsidiary lean practice, so that the methodology and findings of this study may be transferred to comparable Group subsidiaries facing the same regulatory context, multiplying the return on the analytical investment.

Conclusion

Chapter IV has constructed the regulatory-aware future state of the steel products procurement value stream at DIVINDUS CAPREF and demonstrated, through direct comparison with the current state, that a substantial efficiency gain is achievable without any compromise to the legal framework that governs public procurement. The redesign reduces the eighteen operational steps to twelve, inverts the information architecture from approximately 85% paper to approximately 85% digital, replaces forecast-driven half-yearly batch procurement with a demand-driven annual framework agreement and quarterly delivery calls, and activates the upstream modules of the GLD Software that the company already owns. Each of the eight distributed improvement levers was individually tested against the three-category regulatory framework of Chapter III and confirmed to preserve every fully regulatory component, to retain the substance of every substance-required activity while modernising its method, and to eliminate only pure improvable waste.

The projected outcome, comprising a lead time reduced from approximately 80 to approximately 36 working days, a reduction of approximately 55%; a value-added ratio raised from approximately 5% to approximately 11%; an improvable waste cut by approximately 87%; and the 28-day regulatory floor preserved precisely intact, constitutes the direct quantitative validation of Hypothesis H3 and sits within the range documented in the comparable procurement lean literature. The three-phase, eighteen-month implementation roadmap, the resource and change-management framework, the monitoring architecture, and the five managerial recommendations translate this analytical result into a concrete programme of action that the company can begin immediately, at minimal cost, by activating capability it already possesses.

Where Chapter III answered the question of where the waste lies and what the law protects, Chapter IV has answered the question of how the improvable waste can be eliminated while the regulatory floor is preserved. Together, the two chapters constitute the analytical core of the dissertation and supply the evidence from which the General Conclusion draws its answer to the central research question: that Value Stream Mapping contributes substantially to the improvement of the procurement process in a public company, precisely because, properly applied, it distinguishes the waste that may be eliminated from the regulatory substance that must be preserved.

GENERAL CONCLUSION

The present study set out to determine the extent to which Value Stream Mapping can reduce the procurement lead time of an Algerian public enterprise without compromising the regulatory framework that governs public procurement, taking as its empirical field the steel and metal products procurement process at DIVINDUS CAPREF SPA. The diagnosis revealed a total cycle of approximately 80 working days against a management-perceived baseline of 45 to 50, of which only approximately 4 days constitute active process time, yielding a Value-Added Ratio of approximately 5%. All eight categories of lean waste were empirically present, with waiting dominating at 52% of improvable waste and over-processing at 25%, both structurally distributed across all five operational phases rather than concentrated in any single step. The decisive analytical move was the decomposition of the lead time into three regulatory categories at every step: approximately 28 working days of fully regulatory time protected by Loi 23-12 (2023), the Procurement Award Procedure (DIVINDUS CAPREF, 2025), Loi 06-01 (2006), and Algerian tax and accounting law; approximately 4 days of substance-required time whose method is improvable; and approximately 48 days of pure improvable waste. The choice of the steel product family was confirmed quantitatively by company financial records, steel accounting for 45.06% of all PEB unit purchases by value in Q1 2025 (DIVINDUS CAPREF, 2026).

The future state design responds through eight distributed improvement levers, each tested against the regulatory framework and confirmed to preserve every fully regulatory component. The principal interventions activate the upstream procurement modules of the DlgCom 2023 system, already owned but not yet deployed, and replace the half-yearly forecast-driven batch model with an annual framework agreement under Article 28 of the Procurement Award Procedure, against which quarterly delivery calls are drawn from actual consumption. The master comparison establishes a projected lead time of approximately 36 working days, a reduction of approximately 55%, with the Value-Added Ratio doubling to approximately 11%, the operational steps falling from eighteen to twelve, the paper-based information flow falling from approximately 85% to 15%, and the 28-day regulatory floor preserved precisely intact by design.

On this evidence, the contribution of VSM to procurement lead time reduction in an Algerian public enterprise is both substantial and qualified. It is substantial because a 55% projected reduction is achieved through interventions that activate latent system capability and consolidate competitive tendering at the framework rather than the operational level. It is qualified because that reduction is concentrated in the improvable waste, which is the

legitimate target, and is bounded by the regulatory floor that the redesign deliberately leaves untouched. The contribution is therefore not the maximisation of efficiency but the disciplined separation of waste from regulatory substance. Hypothesis H1, that the cycle is dominated by non-value-added waiting, is confirmed by the field diagnosis. Hypothesis H2, that VSM identifies the wastes inflating lead time while distinguishing reducible from mandated time, is confirmed by the three-category decomposition. Hypothesis H3, that the future state achieves a measurable reduction, is supported at the level of projected outcomes: the redesign indicates the 55% reduction but awaits empirical validation through implementation, which lies beyond the scope of the present study. H3 is therefore supported in projection, not confirmed in measurement.

The principal theoretical contribution lies in the formulation and application of an administrative VSM adapted to Algerian public procurement, a regulatory context that, to the author's knowledge, is absent from the published lean-procurement literature. Within that contribution, the three-category regulatory framework, comprising fully regulatory, substance-required-method-improvable, and pure improvable time, applied systematically at every step reconciles the lean prescription to eliminate non-value-added activity with the public procurement prescription to preserve mandatory procedural safeguards, and offers a transferable analytical instrument that any future study of lean in a regulated environment can adopt or modify. Methodologically, the study supports the case for qualitative single-case designs grounded in structured Gemba observation as a credible approach to operational diagnosis where quasi-experimental designs are infeasible.

For the management of DIVINDUS CAPREF, the study delivers five concrete recommendations ordered by leverage: activate the existing DlgCom 2023 upstream modules, which represent the highest-impact and lowest-cost action available, addressing the system-configuration root cause identified by the 5 Whys analysis; transition to annual framework agreements for strategic categories beginning with steel, whose volume exceeds the 35-million-dinar threshold by a factor of approximately 6.6 in Q1 2025 alone; establish a formal delegation matrix that absorbs the validation queues without diluting dual accountability; institutionalise step-level performance measurement to create the visibility infrastructure currently absent; and engage with the DIVINDUS Group on cross-subsidiary transfer of the methodology. For other Algerian public enterprises, three principles follow: adopt the three-category diagnostic framework comprehensively before designing any intervention; tailor the redesign to the institutional and digital context of the enterprise in question; and monitor lead

time and value-added ratio as headline key performance indicators alongside the procedural-compliance and cost indicators that have historically dominated the public procurement reform discourse.

These findings should be read in the light of five limitations. The empirical evidence is drawn from a single Algerian public enterprise and a single production unit and is therefore analytically rather than statistically transferable in the sense of Yin (2014). The analysis examines a single product family selected on quantitative grounds; other families operating within the same regulatory framework may exhibit different waste profiles. The qualitative single-case methodology adopted (Saunders et al., 2019) is appropriate to the depth and contextual richness the diagnosis required but is not designed for statistical generalisation. The future state figures are projections rather than post-implementation measurements, as already acknowledged in the evaluation of H3. And the regulatory floor is calibrated to the Algerian public procurement architecture; transfer to other national regimes will require reconstruction of the three-category framework against the corresponding legal sources.

Five directions of future research follow naturally. Extension to the other product families and to functionally distinct streams such as human resources and information technology procurement at DIVINDUS CAPREF would test how stable the three-category decomposition is across the company's full procurement portfolio. A multi-company comparative VSM across Algerian public enterprises, beginning with comparable DIVINDUS Group subsidiaries, would distinguish the elements of the diagnosis specific to DIVINDUS CAPREF from those general to Algerian public procurement. The integration of digital VSM and process-mining tools, naturally enabled by the DlgCom 2023 activation recommended above, would replicate the diagnosis with greater granularity and lower observational burden. Supplier-side value-stream mapping would extend the analysis across the organisational boundary and inform a framework agreement design that aligns improvement incentives on both sides of the buyer-supplier relationship. Most importantly, a quantitative post-implementation study conducted on the same key performance indicators at one or more intervals after deployment would convert the projected reduction into a measured one, reveal whether the diagnosis correctly identified the binding constraints, and constitute the definitive test of the proposition advanced here: that Value Stream Mapping, properly adapted to the regulatory context, can substantially reduce procurement lead time in an Algerian public enterprise without compromising the legal framework that governs it.

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APPENDICES

Appendix A: Semi-Structured Interview Guide

Date: 29 / 04 / 2026 Duration: Interview No.: ……

Semi-Structured Interview Guide

The Contribution of Value Stream Mapping (VSM) to the Reduction of Procurement Lead Time at DIVINDUS CAPREF SPA

Hello, and thank you for agreeing to take part in this study.

My name is KHOUNI Soulef, a Master's student at HIGHER SCHOOL OF COMMERCIAL STUDIES (EHEC). I am conducting an academic study on the contribution of Value Stream Mapping (VSM) to the reduction of procurement lead-time within DIVINDUS CAPREF SPA, a public economic enterprise.

This guide is organised around five thematic axes. Its purpose is to reconstruct the current state of the procurement process for the steel-and-metal-products family, to locate where time is gained and lost along the cycle, and to identify which steps could be streamlined while fully preserving the procedures required by the Code des Marchés Publics and Law 23-12 (2023).

The interview is semi-structured: please feel free to speak openly and to develop any point you consider relevant; the questions are prompts rather than a rigid script. The interview will last approximately 30 to 45 minutes. Solely to support accurate analysis. Thank you in advance for your valuable contribution.

Intended respondents: *this guide is administered to the key actors of the procurement cycle ;the Director of Procurement and Supply Management, the Head of the Purchasing and Procurement Department (CDA), the Head of the Purchasing Service (CSA), the Head of the Stock Management Service (CSGDS) and the requesting departments (Production, BET, Commercial),. Some questions are role-specific and may be skipped where they fall outside the respondent's scope.*

General Information

Name:

……

First name: ……

Function / Position: ……

In this role since (year): ……

Department / Unit:

……

Organisation:

……

Axis 1: The Procurement Process and Its Actors (Value-Stream Mapping)

1. Could you walk me through the full procurement cycle for steel and metal products, from the moment a need is first expressed to the final reception and validation of the goods?
2. Which actors and departments intervene at each stage, and at what point does each one enter the process? (e.g., DU, CDA, CSA, CSGDS, BET, Production, Commercial, Comité de Transaction, DFC)
3. Which documents accompany a procurement file as it moves through the cycle (expression de besoin, DAC, DRAP, cahier des charges, bon de commande (BC), bon de réception (BR), TCO, PV) and who prepares and signs each of them?
4. To what extent is the process supported by the ERP system (DlgCom), and which steps are still carried out on paper?
5. How is a procurement file physically transmitted from one office or department to the next?

Axis 2 : Lead-Time, Delays, and Waiting (Time Decomposition)

1. In your experience, how long does a complete procurement cycle for steel products take on average, from start to finish?
2. Once a department expresses a need, how much time usually passes before that need is formally consolidated and the procurement procedure actually begins? *(directed primarily at the Director of Procurement and Supply Management)*
3. How is the procurement of steel products planned across the year — monthly, quarterly, or half-yearly — and why has this frequency been adopted?
4. At which stages of the cycle do you observe the longest waiting periods, and what causes a file to remain idle there?
5. Where, in your view, lies the difference between time spent actively working on a file and time the file simply spends waiting (for a signature, a validation, or the next actor)?

Axis 3 : Waste, Bottlenecks, and Pain Points

1. Which steps in the process feel redundant or repeated — tasks that are done several times when once might suffice (for example, manual re-entry of the DAC/DRAP, or multi-copy preparation of the BR)?
2. How often do errors or non-conformities arise (purchase-order errors, incomplete invoice files from suppliers, supplier non-conformities), and what happens when they do?
3. How easily can you obtain a real-time view of where a given procurement file currently stands?
4. Are there moments in the month or in the cycle when the workload concentrates heavily on certain staff (for example, end-of-month transmission to accounting)?
5. Have any requesting departments developed informal or parallel ways of tracking their orders? If so, what led them to do this?

Axis 4 : Regulatory Constraints and the Mandatory Floor

1. Which steps in the procurement process are imposed by law or by the internal procédure de passation — control organs (Comité de Transaction, COPEO, Commission des Marchés), SIDJILICOM verification, sealed-envelope submission, the public bid-opening session, mandatory timelines, recours periods — and therefore cannot be removed?
2. Among the steps that are not strictly mandatory, which ones add the most delay relative to the value they bring?
3. How do the financial thresholds (35 M / 12 M / 8 M DA) and the choice of procurement mode affect how long a file takes?
4. In your view, where does legitimate regulatory control end and avoidable administrative burden begin?

Axis 5: Responsiveness, Improvement, and the Future State

1. What happens when an unplanned or urgent need for steel products arises outside the half-yearly procurement cycle?
2. Have any improvement or digitalisation initiatives already been attempted in procurement? What were the results?

3. If you could remove or simplify a single step in the current process, which would it be, and why?
4. How would you describe the organisation's openness to changing established procurement routines, and what level of support from senior management would such a change require?
5. Is there anything important about the procurement process that these questions have not covered and that you would like to add?

- **Appendix B:** Production procedure internal document

div	Groupe Diverses Industries Locales **EPE DIVINDUS - CAPREF-SPA / Filiale Cabines Préfabriquées** Siège social : 202, Rue HASSIBA BEN BOUALI – ALGER E-mail :	DIVINDUS CAPREF SPA

PROCEDURE
« Production »

Référence	PRO - 05
Version	00
Date	25/12/2022

Validation

Etablie par	Vérifié par le DGA	Vérifié par la DACG	Validé par le PDG
	Mr BENCHEMAM R Chargé du Développement	Mme GHILAsma La Direction d'Audit et Contrôle de Gestion	Direction Générale

Suivi des modifications

Version	Date	Modifications
00	29/03/2023	Création
01		
02		

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1. **Objet de la procédure :**

La présente procédure décrit les étapes à suivre pour la production des :

- Cabines sahariennes mobiles
- Chalets préfabriqués fixes
- Produits issus de la menuiserie aluminium
- Produits issus de la transformation du bois.

2. **Domaine d'application :**

Cette procédure s'applique à tous les produits de CAPREF.

3. **Responsabilités :**

Le personnel des ateliers de production est responsable de l'application de la présente procédure.

Les chefs de département production (CDP) veillent à son respect.

4. **Documents de référence :**

Les documents de référence de la présente procédure sont :

- Dossier client
- Plans techniques
- Modes opératoires.

5. **Définitions et terminologie :**

5.1. **Définitions :**

/

5.2. **Terminologie :**

- **RMQ :** Responsable du management de la qualité
- **CDP :** Chef de département production
- **CP :** Chef de production
- **CA :** Chef d'atelier
- **ROL :** Responsable ordonnancement lancement
- **RLP :** Responsable de la libération du produit
- **DMV :** Département marketing et ventes

6. **Contenu :**

6.1. **Cabine et chalet :**

6.1.1. **Planification de la production**

Le CDP transmet l'OF et le dossier technique au ROL, avec les instructions nécessaires à l'élaboration du programme de production.

Ce programme est établi, selon le cas, par l'ordonnancement, le commercial ou la production et est transmet, accompagné des plans détaillés y afférant, au CP pour sa mise en œuvre. Le chef de production répartit ce programme entre les différents ateliers.

6.1.2. Matières premières

Sur la base du programme de production, les chefs d'atelier commandent les matières premières et accessoires, en vérifiant la conformité. Si nécessaire, cette commande peut être scindée en plusieurs tranches.

6.1.3. Identification de la cabine / chalet.

Dès le début de la fabrication, la cabine / chalet, sont identifiés par un numéro apposé sur le SKID par soudure. Ce numéro est attribué par le ROL.

6.1.4. Production.

En fonction des plans, le chef d'équipe ossature fait débiter et façonner (découpe et pliage tôles) les pièces métalliques nécessaires à l'ossature (manuel opératoire).

- **Pour la cabine** : après réalisation du plancher, du cadre et du toit, l'équipe monte l'ossature, et enduit le tout par de l'antirouille. Lors de la réalisation de l'ossature et de son montage, le chef d'équipe veille au respect des dimensions et à la géométrie de l'ossature (équerrage, ajustage), par l'utilisation d'instruments de mesure, gabarits et guides. Il doit aussi veiller au bon pliage des tôles et à leur bon emboitement pour garantir une bonne étanchéité.

- **Pour le chalet :** les composantes sont débitées, façonnées et entreposées dans un endroit pour être expédiées vers le site de montage.

Le personnel de la production est tenu à respecter les consignes HSE concernant la santé, sécurité et environnement au milieu du travail.

6.1.5. Fabrication métallique

En fonction du programme de production, le chef d'atelier peut instruire les équipes pour fabriquer d'autres types de pièces (escaliers, tréteaux...).

Le chef d'atelier métallique renseigne la feuille de production journalière.

6.1.6. Travaux de finition

- **Pour la cabine** : Une fois l'ossature assemblée, la cabine est transférée dans une aire dédiée à la finition (bardage, électricité, plomberie, finitions...). Celles-ci sont exécutées conformément aux plans. Les chefs d'équipe renseignent les feuilles de production journalières y afférentes.

S'il s'agit de cabines en kit, ce kit est réalisé selon une liste de colisage (de composition) qui est enregistrée. Ce kit est ensuite fermé transféré pour mise en stock.

- **Pour le chalet :** le kit des composantes destinées au chalet est enregistré selon une liste de colisage (de composition). Il en est de même pour les cabine en kit. Ces kits sont libérés et mis à la disposition du département commercial pour expédition.

A chaque étape, un contrôle est observé et dans le cas de produit non conforme, il est immédiatement corrigé, ensuite recontrôlé pour s'assurer de la correction (voir procédure « Amélioration »).

6.1.7. Préservation du produit

Une fois le produit terminé (cabine simple, cabine en kit ou chalet), le CP s'assure de la conformité des produits par un ensemble de contrôle et une inspection finale, réalisés par le contrôleur qualité et la structure commerciale.

Le RLP procède à la mise en stock des produits finis par le biais d'un bon de mise en stock du produit.

Ainsi les produits sont préservés contre toute détérioration après s'être assuré de leur conformité.

6.1.8. Libération du produit

La libération du produit est prononcée par la structure production et le contrôleur qualité, qu'il soit destiné au client ou à la réalisation (montage sur site) par le biais d'un enregistrement fiche de libération produit.

Il faut noter que la TN40 destinée à la vente à l'extérieur et les pièces façonnées pour tiers doivent être libérées au même titre que les cabines.

6.2. Produits issus de la menuiserie aluminium, PVC et métallique :

6.2.1. Planification de la production

Le responsable de production établit la planification, après la réception d'un dossier technique de la part de la structure commerciale, tenant compte des capacités de production et des commandes engagées.

Le dossier technique comprend les documents suivants :

- Confirmation de commande numérotée (exemplaire technique), renseignée par les agences commerciales, signée par le chef de département commercial.
- Croquis avec indication des mesures.

6.2.2. Enregistrement de la commande :

Les commandes reçues sont enregistrées par le service lancement sur un registre côté et paraphé par l'entreprise et portant les renseignements suivants :

- Numéro de la commande.
- Date de réception de la commande.
- Le métrage.
- Agence commerciale (expéditeur du dossier).
- Le client.
- Le montant hors taxes de la commande.
- La date d'achèvement des travaux.

6.2.3. Matières premières

Les besoins en matières et fournitures sont exprimés auprès de la gestion des stocks, par le biais du document « DEMANDE DE FOURNITURES », signé par le responsable de la production.

6.2.4. Lancement de la commande :

Une feuille de fabrication est établie en double exemplaire par le service lancement et signée par le chef d'atelier.

Cette feuille (originale) est destinée selon les gammes de produits aux ateliers suivants :

- **Atelier Aluminium : feuille de Lancement Aluminium plus croquis.**
- **Atelier PVC : feuille de lancement PVC et croquis.**
- **Atelier grille extensible : feuille de lancement (G.E) plus croquis.**
- **Atelier rideau Métallique : feuille de lancement(R.M) plus le croquis.**

Chaque feuille de fabrication doit être accompagnée par des bons de « **DEBIT** », signée par le service lancement pour les matières premières :

- Nature du produit (bois, feuillard, glissière, fer, plat, ...).
- Quantité et longueur des articles à débiter.

Le bon de débit est établi en double exemplaire dont un reste à la souche.

6.2.5. Production

La production se fait selon les étapes suivantes : **Débitage-Préparation-Assemblage- Contrôle et Finition.**

Le cycle de production est suivi régulièrement par le chef de département production, sur la base d'un document intitulé « **SUIVI DE LA COMMANDE** », mentionnant l'état d'avancement des produits.

La fiche suiveuse « **SUIVI DE LA COMMANDE** », permet aussi de déterminer les en cours mensuels de production.

Une fois fabriqué et contrôlé conforme, le produit sera mis à la disposition de la structure d'expédition.

A chaque étape, un contrôle est observé et dans le cas de produit non conforme, il est isolé et réparé, ensuite recontrôlé pour s'assurer de la correction (voir procédure de « gestion des non-conformités et actions correctives »).

Le personnel de la production est tenu à respecter les consignes HSE concernant la santé, sécurité et environnement au milieu du travail.

6.2.6. Préservation

Les produits contrôlés conformes sont préservés dans une zone distincte afin de les protéger contre toute détérioration involontaire.

6.2.7. Libération

Les produits sont libérés par la structure production par une fiche de libération.
Le produit fabriqué est contrôlé pour s'assurer de sa conformité par rapport au dossier technique. Le produit jugé conforme est transféré, sur la base d'un enregistrement intitulé « RECEPTION PRODUCTION » vers la structure expédition dépendant du processus commercial accompagné du PV de conformité.

6.3. Produits issus de la transformation du bois :

6.3.1. Planification de la production

Le responsable de production établit la planification, après la réception d'un OF de la part de la structure commerciale, tenant compte des capacités de production et des commandes engagées.

L'ordre de fabrication comprend :

- Le type de produit (latté, panneaux de contreplaqué, panneaux particules).
- Le nombre de chaque type de produit.

6.3.2. Matières premières

Les besoins en matières et fournitures sont exprimés auprès de la gestion des stocks, par le biais du document « DEMANDE DE FOURNITURES », signé par le responsable de la production.

6.3.3. Production

La production se fait avec trois chaines de production, selon les types de produits suivants :

- La chaine de production de latté.
- Une chaine de production de panneaux de contreplaqué.
- Une chaine de production de panneaux particules ou aggloméré.
- Une chaine de production latté/sciage.
- Une chaine de production de mélamine.

Les trois cycles de production sont suivis régulièrement par le Responsable de la production, sur la base d'un document intitulé « SUIVI DE LA COMMANDE », mentionnant l'état d'avancement des produits.

La fiche suiveuse « SUIVI DE LA COMMANDE », permet aussi de déterminer les en cours mensuels de production.

Une fois fabriqué et contrôlé conforme, le produit sera mis à la disposition de la structure d'expédition.

A chaque étape, un contrôle est observé et dans le cas de produit non conforme, il est isolé et réparé, ensuite recontrôlé pour s'assurer de la correction (voir procédure de « gestion des non-conformités et actions correctives »).

Le personnel de la production est tenu à respecter les consignes HSE concernant la santé, sécurité et environnement au milieu du travail.

6.3.4. Préservation

Les produits contrôlés conformes sont préservés dans une zone distincte afin de les protéger contre toute détérioration involontaire.

6.3.5. Libération

Les produits sont libérés par la production et le contrôle qualité, en s'assurant qu'il est conforme à ses exigences.

7. Enregistrements :

Cabine :

- Programme prévisionnel de production CABINE
- Modification du produit
- Cabines en kits – Liste de colisage
- Fiche de Suivi Production
- Fiche de libération produit
- Enregistrements spécifiques cabines unités
- Rapport de production journalière CSMA, CSBA, PEB, CABAM
- Liste des matières premières nécessaires (Cabine) PEB
- Etat de production cabine PEB
- Gamme de fabrication cabine PEB

Alun/PVC/...

- Modification du produit
- Fiche de fabrication
- Bon de débit
- Demande de fourniture
- Demande de fourniture atelier
- Demande d'accessoire

- Demande de remplissage
- Fiche de libération produit
- Programme prévisionnel de production Alu/pvc...

Bois

- Modification du produit
- Libération produit
- Programme prévisionnel de production bois
- -Rapport de production :
  - Mélamine
  - Presse latte
  - Presse latte presse cpl
  - Finition
  - PRESSE
  - Sciage 1
  - Sciage 2
  - Particules
  - TRIAGE

Chalet

- Modification du produit
- Bulletin de non-conformité produit
- Programme prévisionnel de fabrication chalet
- Fiche de libération chalet

Contrôle qualité cabine

- Bulletin de non-conformité produit
- Fiche de suivi des instruments de mesure
- Fiche de contrôle tôles façonnées
- Fiche de contrôle cabine
- Fiche de suivi de l'installation sur site
- Synthèse de contrôle cabine

Contrôle qualité Alu/PVC/...

- Bulletin de non-conformité produit
- Contrôle qualité RM
- Contrôle qualité aluminium
- Contrôle qualité PVC
- Contrôle qualité réception

Contrôle qualité chalet

- Bulletin de non-conformité produit
- Fiche de suivi des instruments de mesure
- Fiche de contrôle chalet
- Fiche de suivi de l'installation sur site
- Synthèse de contrôle chalet

Contrôle qualité Bois

- Bulletin de non-conformité produit
- Fiche de suivi des instruments de mesure
- Synthèse du contrôle journalier

- **Appendix C:** procurement procedure internal document.

Groupe Diverses Industries Locales
EPE DIVINDUS - CAPREF-SPA / Filiale Cabines Préfabriquées
Siège social : 202, Rue HASSIBA BEN BOUALI – ALGER
E-mail : divindus.capref@gmail.com

MANUEL

APPROVISIONNEMENTS

Référence	PRO - 07
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Etablie par	Vérifié par	Validé par
Mme BOURAS Radhia Directrice d'Achats et Approvisionnement	Directeur Général Adjoint Chargé du Développement Mr BENCHEMAM R	Direction Générale

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Suivi des modifications

Version	Date	Modifications
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01		
02		

Groupe Diverses Industries Locales
EPE DIVINDUS - CAPREF-SPA / Filiale Cabines Préfabriquées
Siège social : 202, Rue HASSIBA BEN BOUALI – ALGER
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PROCEDURE ACHATS

EPE /SPA DIVINDUS CAPREF
Direction Générale

Groupe Diverses Industries Locales
EPE DIVINDUS - CAPREF-SPA / Filiale Cabines Préfabriquées
Siège social : 202, Rue HASSIBA BEN BOUALI – ALGER
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EPE/SPA DIVINDUS CAPREF
Direction Générale

1. Objet de la procédure :

La présente procédure a pour objet de définir les principales modalités pratiques à suivre, étapes, responsabilités et supports, en matière d'achats et approvisionnement, nécessaires à l'exploitation des Unités relevant de l'EPE DIVINDUS CAPREF.

2. Domaine d'application :

Cette procédure s'applique à l'ensemble des Unités relevant de l'EPE DIVINDUS CAPREF pour toutes acquisitions gérées par les structures achats et approvisionnements, notamment :

- Intrants et matières premières utilisés dans le processus de fabrication
- Fourniture et consommable pour outillage destinés à la production (disque, ...)
- Transport matières premières
- Prestation liée au produit (Pliage, découpage produits métallurgiques.)

3. Responsabilités :

- ✓ Les Directeurs des Unités, sont responsables de la mise en œuvre de la présente procédure et veilleront à son exécution.
- ✓ Les Chefs Départements achats et approvisionnements, sont globalement responsables de l'application de la présente procédure,
- ✓ Les Chefs de services achats, Chefs de service gestion des stocks, Gestionnaires des stocks, et Magasiniers, sont responsables chacun en ce qui le concerne de l'application de cette procédure.

Toutefois, les intervenants cités ci-après, sont aussi concernés par cette procédure, chacun en ce qui le concerne, notamment :

- Le Chef Département Production/ BET
- Le Chef de Service chantier /Chef de projet
- Le Chef Département Finance et Comptabilité,
- Le Chef de Service SMQ/ Responsable Qualité
- Le Chef Département Contrôle de Gestion
- Le Chef Département Moyens Généraux.

4. Documents de référence :

Cette procédure fait référence à :

- La procédure de passation des marchés de l'entreprise DIVINDUS CAPREF version Juillet 2021,
- La procédure d'inventaire version décembre 2017.

EPE/SPA DIVINDUS CAPREF Direction Générale

5. Définitions et terminologie :

5.1. Définitions :

Définitions	Désignation
Achat	Prospecter et rechercher les sources d'approvisionnement sur le marché national et international, afin de passer commandes conformément à la procédure de passation des marchés en vigueur et répondre aux besoins dans les délais.
Le plan approvisionnement	Celui-ci, est établi sur la base du plan de charge, à partir du budget prévisionnel découlant des objectifs **N+1**, tenant compte des consommations N-1. Ce plan est valorisé et transmis à la Direction Générale et au Contrôle de

5.2. Terminologie :

DU : Directeur d'Unité
DRAP : Demande de Réapprovisionnement
DAC : Demande d'Achat
B/C : Bon de Commande
FACT : Facture
F.PF : Facture Proforma
F.F : Fiche Fournisseur
F.P : Fiche Produit
F.S : Fiche de Stock
F.C : Fiche casier
B/L : Bon de livraison
B.R : Bon de réception
B.RT : Bon de Réintégration
B.S : Bon de sortie
DMF : Demande Matière et/ou Fourniture
P.A : Plan d'approvisionnements
SRO : Structure responsable de l'opération
CDA : Le Chef de Département Achats et Approvisionnements
CSA : Le Chef de service des achats
CSGDS : Le Chef de service gestion des stocks
BCS : Bon de consommation
BRF : Bon de réception fournisseurs
BET : Bureau d'Etude
PROD : Production
COM: Commercial

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6. Contenu :

L'objectif principal de la présente procédure consiste en premier lieu à harmoniser la manière de procéder en matière d'achats et gestion des stocks au niveau des Unités, afin de permettre au mieux, l'atteinte des objectifs cités ci-après, à travers des étapes administratives décrites par la présente procédure :

- Acheter au bon moment et au meilleur prix (**Veille stratégique**)
- Des produits conformes aux besoins (**Qualité et conformité**)
- Auprès de fournisseurs potentiels (**Sécuriser l'achat**)
- Dans les délais impartis (**éviter les ruptures**)
- Gérer et optimiser les stocks (**Prévisions et flux**)

7 ACTIVITE ACHAT :

7.1 ETUDE DE MARCHE :

Objectif : Veille stratégique visant la sécurisation de l'achat.

Le Chef département approvisionnements et le chef de service achats sont appelé à veiller préalablement aux lancements des opérations d'achats, à l'étude du marché notamment, en termes de :

- Veille réglementaire et économique (loi de finance, réglementation douanière)
- Analyse de l'évolution des prix des matières premières et fournitures sur le marché local et étranger (avoir un référentiel de prix)
- Analyse des risques liés aux fournisseurs, recenser les fournisseurs potentiels, dont les capacités techniques et financières peuvent répondrent aux attentes,
- Consulter la plateforme du registre de commerce exploitée par la comptabilité, afin de vérifier la solvabilité des fournisseurs.

7.2 RECEPTION ET EXPLOITATION DES EXPRESSIONS DES BESOINS :

Objectif : Répondre régulièrement aux besoins de l'exploitation et conformément aux exigences préalablement définis par le demandeur

Les expressions de besoins sont émises sous les formes suivantes :

A. La Demande d'Achat (DAC),
B. La Demande de Réapprovisionnement (DRAP)
C. La Fiche de Consommation matières premières/ nomenclature.

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Exigences :

- Les demandes sus citées, sont établies et signées, par les responsables de structure habilités, notamment, ceux de la production, commerciale, technique (BET), Service gestion des stocks, moyens généraux, Service des chantiers et logistiques, suivant les modèles d'imprimés joint en annexe.
- Elles doivent être renseignées exhaustivement, de sorte à faire apparaître entre autres, désignation du Client/Projet, le service demandeur, les paramètres et descriptif techniques /fiche technique, quantité, unités de mesure, délai ou échéance de mise à disposition.
- Préalablement au lancement de l'opération d'achat, le Chef département achats et approvisionnements (CDA) est tenu, de vérifier la disponibilité des besoins exprimés en stocks et ce, en collaboration avec le chef de service GDS.

7.2.1 DEMANDE D'ACHAT :

- La « Demande d'achat » concerne généralement les achats spécifiques en matières premières ou fourniture, desquels des exigences nouvelles et/ou particulières exprimés ou revus par le client, n'ayant pas été prévus dans le plan de charge initial,
- La « Demande d'achat » devient effective dès son approbation par le Directeur de l'Unité et sa transmission au Chef département achats et approvisionnements (CDA), pour traitement et exploitation. Elle engage la responsabilité du demandeur en termes de spécifications techniques.
- Aucun achat ne peut être effectué sans l'établissement d'un document intitulé « Demande d'Achat » (DAC) joint au bon de commande,

7.2.2 DEMANDE DE REAPPROVISIONNEMENT :

Les opérations de réapprovisionnements consistent à constituer de nouveaux stocks afin de prévenir toute situation de rupture, qui donne lieu systématiquement à l'établissement d'une « Demande de réapprovisionnements » laquelle est déclenchée directement par le gestionnaire des stocks à l'atteint du niveau de stock de couverture (stock minimum), suivie par l'enclenchement du processus achat.

Pour se faire, il est impératif de respecter, les étapes suivantes :

- Au début de chaque exercice le chef de Département achats et approvisionnements (D.A.P) établira sur la base du budget prévisionnel **N+1**/ et/ou le plan production (consommation MP **N+1**), un planning/plan des approvisionnements (mensuel / trimestriel/semestriel) pour le lancement des commandes au moment opportun,

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- Le Chef de service gestion des stocks, doit transmettre l'état des stocks disponibles (stock initial), au Chef Département achats et approvisionnements (D.A.P) aux fins de l'élaboration de son plan approvisionnements,

- Le Chef de Département achats et approvisionnements (D.A.P) arrête conjointement avec le Chef de service GDS le seuil minimum des principaux stocks (le niveau de réapprovisionnements) et ce, en tenant compte du taux de rotation des stocks par type d'article, temps d'écoulement, coûts d'achats

- À l'issue de l'atteinte des seuils de stock minimum (stock de couverture) arrêtés, le Chef de service Gestion des Stocks doit adresser, immédiatement, au Chef de Département achats et approvisionnements (D.A.P) la « demande de réapprovisionnement », suivant imprimé en annexe, dès lors le processus achat est enclenché.

7.2.3 LISTE DE CONSOMMATION MATIERES PREMIERES (NOMENCLATURE):

Dans l'objectif d'anticiper l'approvisionnement et ce, préalablement au lancement de l'ordre de fabrication par la production, la liste de consommation matières premières (nomenclature/minute) établie par le responsable habilité du bureau d'étude/OL, pour tout projet et/ou besoins chantiers , doit être transmise, systématiquement par bordereau, au Chef département approvisionnement, afin de servir, à la fois, à l'anticipation de l'opération d'achat et son optimisation.

7.3 PASSATION DE MARCHES / COMMANDES :

L'aspect réglementaire des modalités de passation des marchés et commandes est fixé par la procédure de passation des marchés de l'EPE DIVINDUS CAPREF.

7.4 GESTION ET SUIVI DE L'EXECUTION DE LA COMMANDE / CONTRAT :

7.4.1 LA CONSULTATION :

Les commandes se rapportant aux seuils de compétence des comités de transaction des Unités de DIVINDUS CAPREF, doivent faire l'objet d'une consultation, d'au moins (03) prestataires qualifiés, puisés à priori du fichier fournisseur SHORT LIST, pour le choix de la meilleure offre, en termes de qualité, délais, modalités de payement et de prix, et ce conformément aux modalités de la procédure de passation des marchés de DIVINDUS CAPREF.

Les critères de sélection à mettre en œuvre dépendent, en grande partie, de la situation de la trésorerie et du stock disponible.

SPA DIVINDUS CAPREF Direction Générale

7.4.4 CONTROLE ET TRAITEMENT DE LA FACTURE :

Le Chef département achats et approvisionnements : charge le chef de service achats du contrôle factures, notamment en ce qui concerne :

a) La correspondance entre facture, bon de livraison, bon de réception et bon de commande (quantité, qualité et prix) ;

b) Le respect des mentions légales (références fournisseurs, références client, identifiant fiscal, référence facture.)

c) L'exactitude des calculs arithmétiques (multiplications, additions, TVA, etc.)

d) La signature et le cachet apposé à la facture.

e) Une fois le contrôle effectué, appose la certification du service fait sur la facture fournisseur contrôlée et ce, afin d'attester la conformité à l'engagement de la livraison.

f) Transmet le dossier d'achat composé de BC, DAC, BR et facture, à la comptabilité pour un deuxième contrôle et exploitation.

g) Une copie de la facture ou bien du devis estimatif et quantitatif annexé au contrat d'achat, doivent être obligatoirement communiqués au chef de service GDS aux fin de la valorisation des stocks.

h) Le Chef département approvisionnements, demande au fournisseur, un bon de livraison valorisé, à la livraison.

Le département achats et approvisionnements : en cas d'anomalie constatée, établit une lettre de contestation devant être envoyée au fournisseur pour action corrective.

Un exemplaire du dossier de règlement fournisseur doit être gardé pour classement.

7.5 EVALUATION et REEVALUATION DES FOURNISSEURS :

7.5.1 EVALUATION FOURNISSEURS :

Il est mis en œuvre des critères d'évaluation notamment en termes de, qualité, prix, délai de livraison, paramètres techniques, modalités de payement, devant permettre la mise en concurrence de fournisseurs pré-qualifiés, à priori ceux ayant été retenus dans le fichier fournisseur « SHORT LIST » et ce, afin de retenir l'offre économiquement la plus avantageuse.

L'offre économiquement la plus avantageuse, correspondant soit à l'offre la moins disante (lorsque l'évaluation se base sur le critère prix ou lorsque le critère prix est prépondérant), soit à l'offre la mieux disante lorsque le choix est porté sur l'aspect technique ou meilleur rapport qualité prix (la note la plus élevée est attribuée sur la base de la pondération de plusieurs critères dont le critère prix).

7.5.2 REEVALUATION FOURNISSEURS :

Le département achats et approvisionnements : assure une réévaluation des fournisseurs retenus, à l'issue des prestations pour lesquelles ils ont été retenues, au moins une fois par exercice, selon des critères permettant de s'assurer de leurs capacités à fournir un produit conforme et dans les meilleures conditions combinées, et ce, suivant le modèle d'imprimé, Fiche évaluation des fournisseurs, joint en annexe.

La réévaluation, peut servir également, aux révisions périodiques du fichier fournisseur « SHORT LIST ».

a) Un fournisseur ayant obtenue à la réévaluation une note <50 (INSATISFAISANT) en est avisé pour qu'il s'améliore.

b) S'il obtient deux fois consécutives la note <50 , suivant l'imprimé en annexe, et fait l'objet de défaillance préjudiciable à l'entreprise, une proposition **immédiate** de sa suspension est à présenter à la com AD-HOC chargée de l'actualisation et révision périodiques du fichier fournisseur « SHORT LIST ».

Le département achats et approvisionnements est chargé de la tenue et l'exploitation du fichier fournisseur.

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8. ANNEXES :

DIVINDUS CAPREF SPA القرف و البناء الجاهز Cabines et Préfabriqué	ENREGISTREMENT	Réf : APR-02/V01
	DEMANDE D'ACHAT	Page 1 sur 1

Date :

STRUCTURE :.....

Réf : .....

Destinataire :.....

DESIGNATION	U.M	QUANTITE	MOTIF/PROJET	CLIENT

Le Demandeur

Le Directeur d'unité

EPE ISPA DIVINDUS CA... Direction Général...

Fiche de Réévaluation Fournisseur

Date :

Raison Sociale Fournisseur :
Tel :
Adresse
Mail :

No.	CONTRAT / CONVENTION / BC N°	PRODUITS RECEPTIONNÉS

No.	CRITERES D'EVALUATION	Evaluateur	Barème	Appréciation
1)	**CONFORMITE/ QUALITE PRODUIT** (Respect des exigences Qualité)	Utilisateur/contrôle qualité	35	
2)	**DELAI ET MODALITES DE PAYEMENT**	Approvisionnement	25	
3)	**RESPECT DES DELAIS DE LIVRAISON**	Approvisionnement	30	
4)	**FLEXIBILITE** (organisation flexible et adaptable à nos exigences)	Approvisionnement	10	
	TOTALE			

*SCORE (Seulement les scores suivants peuvent être utilisés) :

>90 :	entre 60-90	entre 50-59	<50
Excellent	Bon	Moyen	Insatisfaisant

COMMENTAIRES _____

EMIS PAR Nom / Prénom :	Fonction	VISA

EPE/SPA DIVINDUS CAPREF Direction Générale

Groupe Diverses Industries Locales
EPE DIVINDUS - CAPREF-SPA / Filiale Cabines Préfabriquées
Siège social : 202, Rue HASSIBA BEN BOUALI – ALGER
E-mail : divindus.capref@gmail.com

PROCEDURE GESTION DES STOCKS

Groupe Diverses Industries Locales
EPE DIVINDUS - CAPREF-SPA / Filiale Cabines Préfabriquées
Siège social : 202, Rue HASSIBA BEN BOUALI – ALGER
E-mail : divindus.capref@gmail.com

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1.OBJET :

La présente procédure a pour objet de définir les modalités, responsabilités, supports, ainsi que les conditions d'enregistrement des mouvements, en matière de gestion des stocks.

2.DOMAINE D'APPLICATION :

Cette procédure s'applique à tous les stocks d'intrants, matières premières et fournitures nécessaires au fonctionnement de l'unité, gérés par la gestion des stocks.

3.RESPENSABILITES :

Le Chef de service gestion des stocks, le Gestionnaire des stocks, le magasinier principal et le magasinier, sont responsables chacun en ce qui le concerne de l'application de cette procédure.

Toutefois, les intervenants cités ci-après, sont aussi concernés par cette procédure, chacun en ce qui le concerne, notamment :

- Le Chef de département production
- Le Chef de Service chantier /Chef de projet
- Le Chef Département Finance et Comptabilité,
- Le Chef de Service SMQ/ Responsable Qualité
- Le Chef Département Contrôle de Gestion
- Le Chef Département Moyens Généraux.

4.ACTIVITE GESTION DES STOCKS :

La gestion des stocks consiste à planifier, diriger, et organiser au mieux un sous ensemble composé de de trois éléments, les flux d'entrées, les articles en attentes (en stock), et les flux de sorties.

A travers des enregistrements permettant de :

- S'assurer de la réception effective des marchandises
- Suivre les sorties de stocks
- Reconstitution des stocks matières premières (réapprovisionnement)
- Tenir l'inventaire théorique (permanant) et physique
- Effectuer des contrôles internes à tout moment

5.ORGANISATION DE LA STRUCTURE GESTION DES STOCKS :

Le pilotage de la structure gestion des stocks doit être assurer par le Chef de service gestion des stocks qui est rattaché au département approvisionnement, dont ci-après, l'organisation des principales taches de la structure.

LE CHEF DE SERVICE GDS :

- Effectue le rapprochement, bon de commande, bon de livraison et bon de réception
- Saisie sur le logiciel les entrées en stocks,
- Contrôle régulièrement les niveaux des stocks, stock minimum et stock de sécurité,devant êtres signaler au chef département approvisionnements, suffisamment à temps.
- Contrôle les sorties de stocks,
- Assure le rapprochement mensuel avec les gestionnaires de stocks et magasiniers principaux,
- Assure le rapprochement mensuel avec la comptabilité et le contrôle de gestion, et leur transmet le dossier de consommations, réception et le listing des cessions inter unités,
- Déclenche le réapprovisionnement ;

Transmet la sauvegarde de la base de données GDS chaque mois à la Direction centrale des approvisionnements.

LE GESTIONNAIRE DES STOCKS

- Saisie sur le logiciel les sorties et entrée en stocks,
- Contrôle régulièrement les niveaux des stocks, stock minimum et stock de sécurité et les signalent au chef de service GDS,
- Contrôle les sorties de stocks,
- Classe et archive des bons d'entrées et sorties,

LE MAGASINIER PRINCIPAL

- Saisie sur le logiciel les sorties,
- Etabli un rapprochement mensuel avec la GDS,
- Procède aux formalités des réceptions et des sorties,
- Prépare les travaux d'inventaire de fin d'exercice,
- Conserve les carnets de bon de sorties et bon d'entrées.

LE MAGASINIER

- Actualise les sorties et les entrées de stocks sur les fiches de stocks,
- Effectue le rapprochement quantitatif entre le bon de livraison et bon de commande
- Veille au bon entreposage des stocks
- Participe aux travaux d'inventaire de fin d'exercice
- Mise à disposition des besoins aux demandeurs (production, …).

LE MNUTENTIONNAIRES :

- Effectue les opérations de manutention, chargement et déchargement
- Assure le rangement
- Entretien les lieux de stockage

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5.1 LA GESTION DES MOUVEMENTS DE STOCKS :

Le mouvement de stock consiste à suivre de manière chronologique les entrées et les sorties de stock et donnent lieu à l'établissement d'un certain nombre de tâches administratives , suivant les modalités décrites ci-après.

5.2.1 LES MODALITES DE RECEPTION DE STOCKS :

Toute entrée de stock en magasin, donne lieu à l'établissement d'un bon de réception et enregistrement de l'opération sur le logiciel GDS, selon les modalités décrites ci-après.

Au niveau du magasin le magasinier principal doit veiller à l'accomplissement des formalités, citées ci-après, en matière de réception de stocks :

- Rapprochement quantitatif et qualitatif de la marchandise reçue avec le bon de livraison et le bon de commande ;
- Vérification de la validation du service contrôle qualité de l'Unité, sur le bon de livraison, préalablement à la mise en stock de la marchandise.
- Accuser réception sur le double du bon de livraison,

  Etablissement d'un bon de réception dûment renseigné, suivant imprimé en annexe, pré numéroté, daté et visé en quatre (04) exemplaires, dont :

  a) Un exemplaire pour le magasinier,
  b) Un exemplaire pour le chef de service GDS,
  c) Un exemplaire pour la structure comptabilité,
  Un exemplaire pour Chef département approvisionnements
- Mise à jour des fiches de stocks et fiches casiers, pour chaque réception,

Tenue et archivage des carnets de bon de réception, suivant les modalités ci-après :

a) Suivre l'ordre croissant des numéros de carnets avant leur utilisation,
b) Un nouveau carnet ne doit être entamer qu'après épuisement de celui en cours d'utilisation ;
c) Les bons annulés doivent être barrés annotés de la mention « annulé » et conservés dans les carnets à souches,

EN CAS DE NON-CONFORMITE

- Le magasinier principal doit aviser le chef de service GDS qui doit à son tour informer le Chef département approvisionnements,
- Refuser la réception de la marchandise non-conforme

EN CAS DE REINTEGRATION :

La réintégration des articles suite à une utilisation incomplète ou non utilisation par les services concernés, notamment la production ou le service chantier, doit se faire comme suit :

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Etablissement d'un bon de réintégration/bon de retour dont un exemplaire est à transmettre au Chef de service GDS pour enregistrement ;

- Actualisation des fiches de stocks et fiches casier ;

- Exiger la validation du contrôle qualité, avant leurs mises en stocks,

Le chef de service GDS étant, entre autres, chargé de la gestion informatisée des mouvements de stocks, doit veiller à l'accomplissement des formalités et modalités suivantes en matière de réception de stocks :

- La saisie de toutes les entrées en stocks sur le logiciel et ce, sur la base du bon de réception, en mentionnant obligatoirement le numéro de bon de réception, et le prix d'achat figurant sur la facture, Le classement et archivage par mois de toutes les pièces justifiant l'entrée en stocks, dans un chrono réception, composé des pièces suivantes :

  - Bon de réception daté et visé par le magasinier principal
  - Bon de réception fournisseur établi par le logiciel
  - Bon de livraison
  - Bon de commande
  - Facture

- Le rapprochement, entre bon de commande, bon de livraison et Bon de réception,
- La transmission chaque mois, de l'état des réceptions fournisseurs détaillées plus le cumul des comptes, accompagnées des bons de réception, à la comptabilité.
- La transmission chaque mois, du cumul des réceptions fournisseurs, au contrôle de gestion .

N.B : une copie de la facture ou du devis estimatif et quantitatif doivent êtres communiquer au chef de service GDS afin de permette la valorisation des réceptions de stocks.

5.2.2 LES MODALITES DE SORTIES DE STOCKS :

Toute sortie de stocks, donne lieu à l'établissement d'un bon de sortie contre présentation obligatoire d'une demande matières premières et/ou fournitures et enregistrement de l'opération sur le logiciel GDS ;

La demande matières et/ou fournitures (DMF) doit être établie, comme suit :

B. Signée, obligatoirement par l'utilisateur et approuvée par le responsable de la structure, ou toute autre personne dûment habilitée par sa hiérarchie,

C. Renseignée exhaustivement de sorte à faire apparaître entre autres l'utilisateur, le numéro de lancement (ordre de fabrication), le client, les désignations, les références techniques et dimensions, l'unité de mesure, les quantités demandées et le délai de mise à disposition souhaitée

D. Aucune sortie des magasins de stocks ne peut être effectuée sans présentation de la demande matière et/ou fournitures.

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Au niveau du magasin, le magasinier principal doit veiller à l'accomplissement des formalités, citées ci-après, en matière de sorties de stocks :

- Traite la demande de matières et/ou fournitures (**DMF**), formulée suivant imprimé en annexe, et vérifie la disponibilité en stocks pour mise à disposition, dans les délais.
  - Vérifie que la demande est dûment renseignée et visée par le demandeur,

En cas de disponibilité des stocks :

- Il établit un bon de sortie, daté, visé et pré numéroté du carnet de bons de sorties, en quatre (04) exemplaires, ;

a) Un exemplaire doit être transmis, le même jour du mouvement de stock, au Gestionnaire des stocks, accompagné obligatoirement de la demande matière première/fourniture, aux fins de la saisie sur logiciel GDS,

b) Un deuxième exemplaire doit être transmis à la comptabilité dans le dossier consommation mensuel par le Chef de service GDS/Gestionnaire des stocks,

c) Un troisième exemplaire est destiné au demandeur,

d) Le quatrième exemplaire (souche) reste dans le carnet, une fois ce carnet épuisé le magasinier principal est chargé de son archivage.

- Les mentions obligatoires dans le bon de sortie :

A. La date de sortie de stock
B. Le code et désignation de l'article ;
C. Magasin/lieu de stockage,
D. Le service demandeur
E. Le nom et qualité du demandeur
F. Projet/ client
G. La quantité demandée/ quantité délivrée
H. L'Accusée de réception du demandeur.

- Classe et archive chaque bon de sortie avec les « la demande matière et ou fournitures » correspondants par mois,

- Actualise obligatoirement le mouvement de sortie de stocks, sur les fiches de stocks/fiches casier,

En cas d'indisponibilité des stocks :

- L'article concerné par l'indisponibilité sera biffé de la demande matière et/ou fournitures,
- Le magasinier principal, avise immédiatement, le Chef de service GDS pour l'établissement de la demande de réapprovisionnement.

- Le Chef département achats et approvisionnement étant informé, peut procéder,



- exceptionnellement, à un achat d'appoint, pour palier à la rupture en attendant la concrétisation de l'opération d'achat y afférente, et informe le magasinier principal des suites réservées.

NB : Un rapprochement est recommandé, entre la demande matière **(DMF)** et la nomenclature et/ou la minute établie par le BET et/ou OL .

Le chef de service GDS étant, entre autres, chargé de la gestion informatisée des mouvements de stocks, doit veiller à l'accomplissement des formalités et modalités suivantes en matière de réception de stocks :

- Le contrôle de la conformité des bons de sortie,
- La saisie des données du bon de sortie, sur le logiciel GDS, notamment, le numéro de bon de sortie, sur le champ référence du bon de consommation, la date de sortie, les quantités, le projet/client ;
- Impression de la pièce bonne de consommation datée et visée par son éditeur, après valorisation ;
- Le contrôle des niveaux de stocks indiqués par le logiciel GDS, alertant sur l'atteinte du seul de stock minimum et stock de sécurité ;
- Le classement et archivage par mois, de toutes les pièces justifiant les sorties de stocks, dans un chrono sortie, composé des pièces suivantes :

  a) Le bon de sortie,
  b) La demande matières premières et/ou fourniture
  c) Le bon de consommation

- Transmission à la comptabilité de l'état des consommations détaillée plus le cumul des comptes du mois considéré **N** avant le 03 du mois **N+1**, accompagné d'un exemplaire du bon de consommation et du bon de sortie,
- Transmission du cumul des consommations du mois considéré **N** avant le 03 du mois **N+1**, à la structure contrôle de gestion,
- Le rapprochement entre le stock théorique et le stock physique par des inventaires tournant, au moins, une fois par trimestre.

NB : la saisie et enregistrement du bon de sortie du mois considéré **N** ne doit être, en aucun cas reportée au mois d'après **N+1** ;

Tout écart inexpliqué ou non justifié après inventaire trimestriel ou mensuel, doit être signalé à la direction de l'Unité au plus dans 72 H.

5.2.3 LES CESSIONS INTER UNITES :

- **Cession fournie :**

Une cession fournie, donne lieu à l'établissement d'un bon de sortie et enregistrement de l'opération sur le logiciel GDS, suivant les formalités citées ci-après :

- Le magasinier principal établit un bon de sortie, daté, visé et dûment renseigné au profit de l'Unité concernée (récepteur), sur la base du bon de commande établi par l'Unité demandeuse,
- Délivre les matières premières, contre accusée de réception, sur les quatre exemplaires (04) bon de sortie, et actualise ses fiches de stocks et fiches casiers,
- Transmet les deux exemplaires du bon de sortie, au Chef de service GDS/Gestionnaire des stocks pour enregistrement et classement,
- Le Chef de service GDS/ le Gestionnaire des stocks enregistre l'opération sur le logiciel GDS, et édite la pièce cession fournie,
- Le Chef de service GDS/ le Gestionnaire des stocks édite le listing des cessions fournies, séparément du cumul des consommations,
- À la fin du mois, le listing des cessions fournies, doit être transmis à la structure comptabilité pour servir à son exploitation, annexé du Bon de sortie et Bon de cession fournie, visés, datés et dûment renseignés.

- Cession reçue :

Une cession reçue donne lieu à l'établissement, d'un bon de réception et enregistrement de l'opération sur le logiciel GDS, suivant les principales étapes décrites ci-après :

- Le magasinier principal réceptionne les matières premières après rapprochement quantitatif et qualitatif avec le bon de livraison (Unité émettrice) et le bon de commande établi par son unité,
- Établit le bon de réception, visé, daté et dûment renseigné, et actualise les fiches de stocks et fiches casier,
- Transmet deux exemplaires du bon de réception, au Chef de service GDS/Gestionnaire des stocks pour enregistrement et classement,
- Le Chef de service GDS/Gestionnaire des stocks, enregistre l'opération sur le logiciel GDS et édite de la pièce cession reçue,
- Le Chef de service GDS/Gestionnaire des stocks, édite le listing des cessions reçues, séparément du journal des achats mensuels, qui doit être transmis à la structure comptabilité, pour servir à son exploitation, annexé, du deuxième bon de réception.

5.2.4 MODALITE GESTION DU STOCK DETERRIORE (DECLASSE) :

Le stock détérioré ou déclassé, pour des raisons de manutention, nature de produit (à base de matière fragile, cassante), intempéries, périssabilité ou autres considérations, tels, la céramique et le verre, doivent faire l'objet de proposition à la réforme.

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La demande de proposition à la réforme, annexée par la liste quantifiée et valorisée du stock déclassé, accompagnée de photos, doit être communiquée à la direction de l'Unité pour confier le dossier à la commission désignée par décision chargée de la mise à la réforme.

En cas d'accord de mise à la réforme, le chef de service GDS /gestionnaire des stocks, établi un bon de sortie exceptionnel sur logiciel et carnet de bon de sortie et transmet le tous le dossier à la comptabilité pour exploitation.

5.3 LE REAPPROVISIONNEMENT :

A l'issue de l'atteinte du seuil du stock minimum ou seuil de stock de sécurité, le logiciel émet une alerte automatiquement.

→ **Le Chef de service GDS/Gestionnaire des stocks :** doivent, obligatoirement

- Contrôler les alertes émis par le logiciel GDS quotidiennement,
- Informer le Chef département approvisionnement suffisamment à temps, en utilisant le document « **DEMANDE DE REAPPROVISIONNEMENT** », pour le déclenchement de l'opération d'achat ,

Le niveau minimum de stock, appelé point de commande ou stock de couverture est arrêté en tenant compte des points suivants :

- Du programme prévisionnel de consommation établi par le département production sur la base du budget ;
- De la consommation moyenne par mois du N-1 ;
- Typologie des matières premières et leur taux de rotation ;
- Du délai moyen d'approvisionnement
- Des coûts de stockage (coûts de procession, coûts d'acquisition),

Ce niveau minimal et optimal de stock permet de satisfaire la consommation entre la date de déclenchement du réapprovisionnement et la date de réception de celui-ci et de minimiser le risque de rupture de stocks.

Un stock de sécurité pour certains articles, peut-être, également, mis en place afin de faire face aux aléas d'approvisionnements.

5.4 GESTION DES ESPACES DE STOCKAGE :

Chaque lieu de stockage dédié aux matières premières, fournitures doit être sécurisé protégé géré d'une manière rigoureuse, justifié par des fiches de stocks sur lesquelles chaque mouvement de stocks doit être enregistré.

Principales règles d'organisation et de stockage à mettre en place et à respecter :

- Limiter l'accès au stock aux personnes affectés aux magasins de stockage ;
- Tenir à jour les fiches de stocks et l'état de stock (logiciel);
- Etablir un stockage des articles sur la base de leur taux de rotation (méthode ABC), plus

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le taux est élevé plus l'article doit être entreposé proche des accès aux fins de la mise à disposition ;

- Subordonner le stockage d'un produit à l'existence de sa fiche de données de sécurité réglementaire et de son étiquetage particulièrement pour les produits chimiques ;
- Mettre en place un classement rigoureux et connu : affichage d'un plan, interdiction d'entreposer des articles volumineux ou lourds en hauteur,
- Pas d'entreposage d'outillage et de matériel dans le local de stockage de produits chimiques.
- Instaurer une règle de déstockage PEPS « Premier entré, premier sorti »,
- Respecter les dates de péremption de produits, peinture, résine…
- Interdire l'encombrement des voies d'accès ;
- Identifier chaque lieu de stockage par un code qui constitue l'adresse de l'article, ce code figurant sur les fiches de stock de l'article, si possible.
- Les composants ainsi que les matières consommables de faible dimensions (visserie, câbles, électriques, quincaillerie etc. ...) sont à stocker, dans des casiers ou dans des aires nettement délimitées,
- Mettre à la disposition des magasins de stockage les moyens de manutention indispensables, le chariot élévateur, transpalettes...
- Séparer le stock de produits déclassés,
- Isoler le stock des produits reconnus dangereux ;
- Respecter les consignes arrêtées par le service QHSE en matières d'exigences normatifs HSE,

5.5 L'INVENTAIRE :

5.5.1 INVENTAIRE PERRIODIQUE :

Il permet de connaître périodiquement la quantité existante réellement en stock à l'instant T après rapprochement entre inventaire physique et inventaire théorique appelé aussi permanant (logiciel).

Il est impératif d'effectuer un rapprochement entre l'inventaire physique et l'inventaire permanant (théorique), au moins chaque fin de trimestre, en procédant par échantillonnage dont les écarts en résultants, sont à justifier (Ex : détérioration, erreur de comptage…).

5.5.2 INVENTAIRE DE FIN D'EXERCICE :

L'inventaire physique est une obligation faite aux entreprises de dresser, une fois par an, à la clôture de l'exercice, un comptage des stocks et patrimoine immobilisé.

La prise d'inventaire de fin d'exercice, doit être réalisée, conformément à la procédure d'inventaire en vigueur.

En termes de préparation de la prise d'inventaire, le Chef de service GDS assisté par son équipe, composée de magasinier principal et magasiniers, sont chargés de :

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1) Bien ranger les produits stockés,
2) Mettre de côté les stocks morts, ou détériorés
3) Préparer à temps les documents nécessaires à l'inventaire ;
4) S'assurer, que les fiches de stocks sont à jour ;
5) Enlever les fiches de stocks et fiches casier, avant l'entame du comptage ;L'identification claire des articles stockés, mettre en place des fiches d'identification pour chaque article (support approprié), comportant la désignation et le code article, Imprimer les papillons de comptage, comprenant les informations suivantes le N° de papillon, l'exercice, emplacement, désignation et code de l'article, Unité de mesure, la date de comptage, et la quantité, à transmettre au magasinier principal, pour leur mise en place dans les magasins de stockage ;
6) Imprimer les feuilles de comptage à transmettre à la commission centrale d'inventaire, comprenant les informations suivantes : code et désignation de l'article, Unité de mesure et quantité, le coût unitaire et la valeur, adresse d'entreposage des articles, la date de comptage ;
7) La saisie de l'inventaire sur logiciel gestion des stocks après réception des listings de comptage ;
8) Transmettre le cas échéant, l'état des écarts entre le stocks physique et stock théorique (logiciel) à la commission d'analyse et traitement des écarts.

L'efficacité et la réussite de la présente procédure, dépend également, des éléments suivant :

1) **La compétence du personnel affecté aux magasins de stockage, qui doit être sélectionner sur la base de critères tels que le sens de l'organisation, … ;**
2) **La formation au personnel affecté à la GDS, en matière de gestion administrative des stocks, des principales règles de stockage, fonctionnement du matériel de manutention, la gestion informatique des stocks ;**
3) **Mise en place des moyens matériels et humains nécessaires à la manutention, chariots élévateurs, transpalettes.**

6.ANNEXES

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DIVINDUS CAPREF SPA	MANUEL APPROVISIONNEMENTS	Référence : PRO-09
	PROCEDURE GESTION DES STOCKS	Date : 10/01/2023
		Version : 00
		Page 12 sur 14

6.1 LOGIGRAMME RECEPTION STOCKS :

Responsable	Données d'entrée	Etapes	Données de sortie
Magasinier principal	BC , BL , Factures	Réception des matières premières et fournitures	
Magasinier principal, CQ		Commande le contrôle qualité (Conforme / Non conforme)	
Magasinier principal		Refus de la réception	
Magasinier principal		Rapprochement BL avec Marchandises reçues et BC (Oui / Non)	
Magasinier principal		Etablissement de la fiche de non-	FNC
Magasinier principal		Réceptionner la marchandise et établissement BR	BR,BRT
Magasinier principal	BC,BL	Actualisation fiches de stock et fiches casier	
Magasiniers		Saisie du bon de réception sur logiciel GDS	
CSGDS	BR ,BC ,BL,BRT	Transmettre le dossier (BRF, Etat détailles des réception, cumul des comptes) a la comptabilité	BRF,BRT , Journal des entrées
CSGDS	BRF,BRT, Journal des entrées	Rapprochement Mensuel des stocks GDS ,Comptabilité	
CSGDS,DFC			

6.2 LOGIGRAMME SORTIE STOCKS:

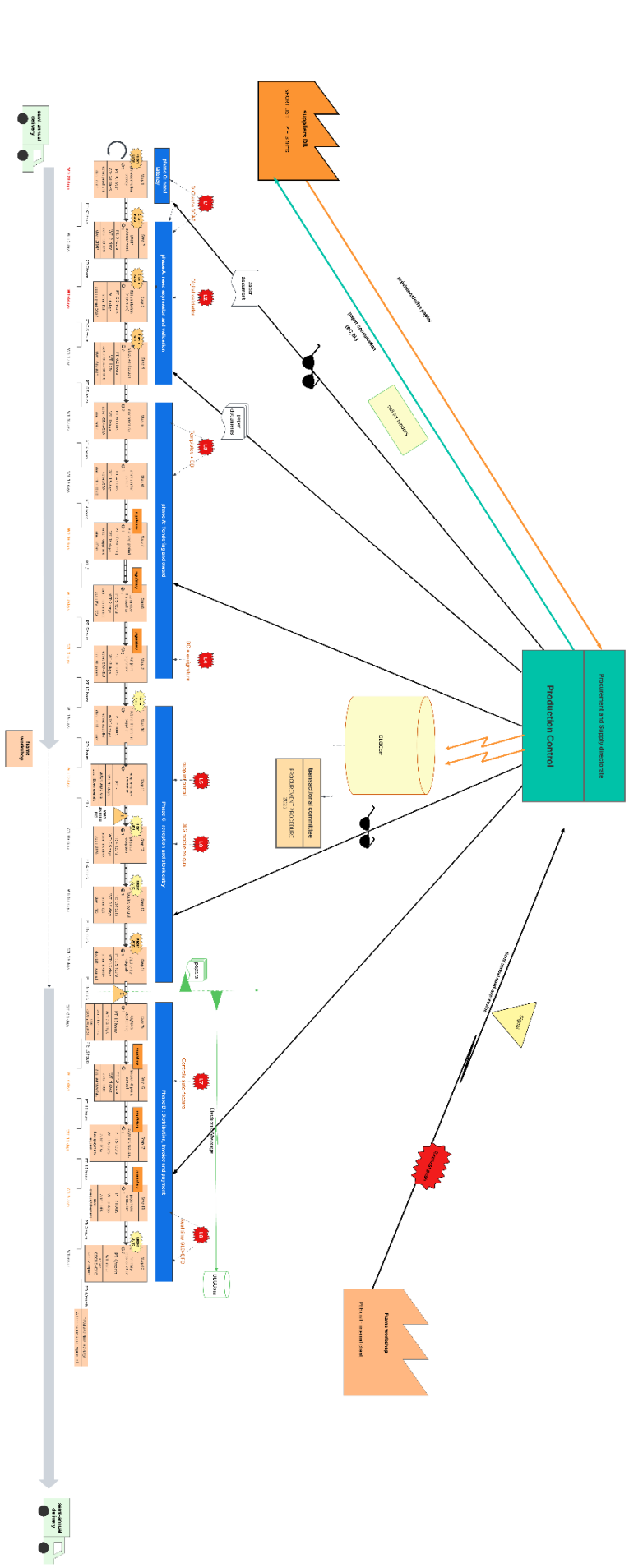
Responsable	Données d'entrée	Etapes	Données de sortie
Magasinier principal ,CSGDS	DMF	Réception des DMF	
Magasinier principal		Vérification la disponibilité des articles (Oui / Non)	
CSGDS		Etablissement de Demande de réapprovisionnement	DRP / CDA
		Etablissement de Bon de sortie et Mise a disposition des articles	BS
Magasinier principal	DMF	Actualisation des fiches de stock et Fiches casier	FS , FC Actualisé
Magasiniers	DMF, BS	Saisie du bon de sortie sur logiciel GDS	
CSGDS	DMF ,BS	Transmettre le dossier (BS , BCS ,Etat détailles des consommations, cumul des comptes) a la	BCS
CSGDS	DMF,BS,BCS	Rapprochement mensuel des Stocks GDS Comptabilité	
CSGDS,DFC			

- **APENDIX D:** Future state Value Stream Map for the Procurement Process at DIVINDUS CAPREF SPA.

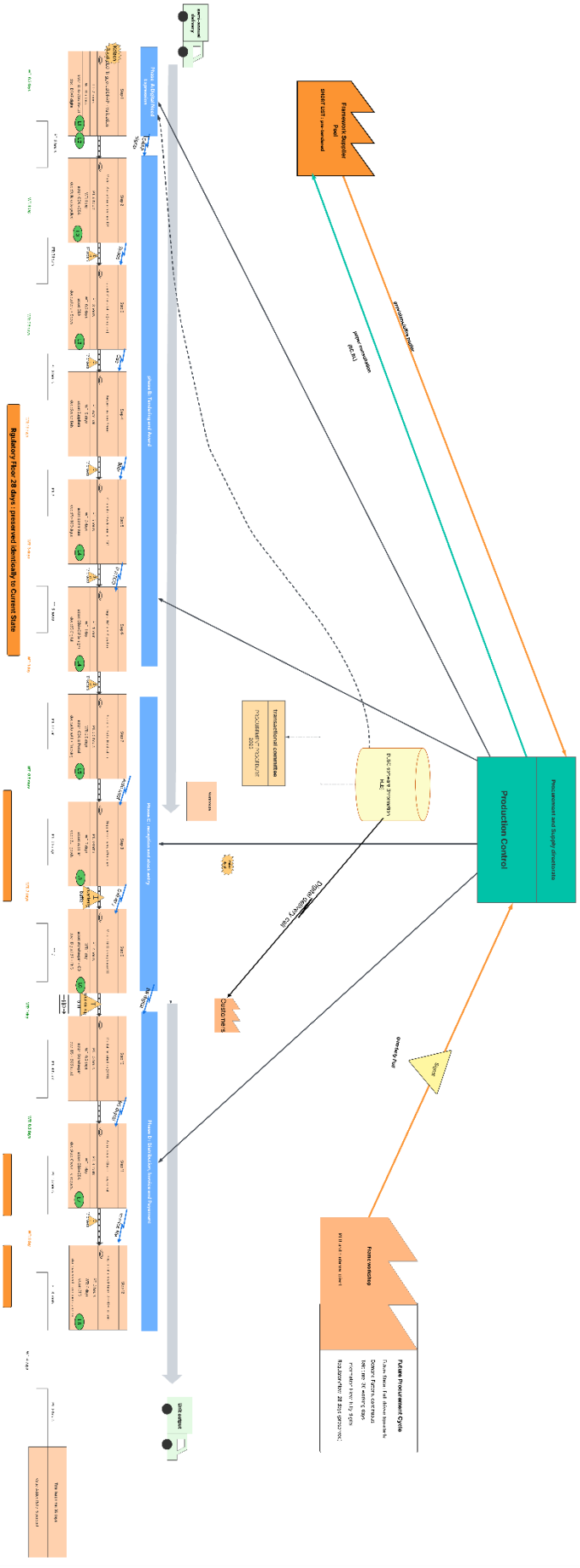
Note : Due to the volume of the Value Stream Map, we invite you to consult this link for a better visibility :

Current VSM.svg.

A PNG version will also be provided externally to ensure an easy VSM consultation.


Suppliers DB
Production Control
Procurement and Supply directorate
Transactional committee
Frame workshop

- **APENDIX E:** Future state Value Stream Map for the Procurement Process at DIVINDUS CAPREF SPA.


Production Control
Procurement and Supply directorate
Digital Gateway Call
Customers
Future Procurement Cycle
Regulatory Floor 28 days : preserved identically to Current State