Procurement Maturity: A tool for Supply Chain improvement

Master Thesis

Alexandre Bloch
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Abstract

The level of efficiency and organization of a procurement service of a company can be described as its *Procurement maturity*. Procurement Maturity Assessment (PMA) hence describes the method used to define a company’s procurement maturity index. It is calculated based on a matrix which gives the description of 5 levels of mastery of some purchasing-related macro-processes, representing a grade. These levels can then be compared to best-practices, in order to draw an improvement plan.

The application of this methodology to a real company gives the possibility to pinpoint the major gaps in its procurement organization compared to a defined goal, and to draw a specific chain of actions for improvement. Applied to a specific company (major car equipment manufacturer), an integrated software solution was implemented to improve the overall supply chain value by reducing procurement costs and improving visibility on opportunities for globalization.
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Introduction

When talking about Supply Chain value, one usually thinks about improving a production process by reducing its costs, or developing a new technology, more efficient or faster. But a Supply Chain is composed of many other links, from the acquisition of materials to the delivery to the final customer. All of these steps are candidates for creating value to the overall Chain.

As markets become global and competitiveness more aggressive, room for improvement on a production or distribution level has become more and more little, therefore companies have targeted other links as opportunities to save money. Among those links, procurement may possibly be one of the most appropriate, as it is the root of the whole Supply cycle and is linked directly or indirectly to every step of the network: it is commonly said that procurement represents between 50% and 80% of the total costs incurred inside a company (for Profit & Loss results (P&L)).

As a result, finding means to optimize the performance and the efficiency of a company’s procurement process, while matching to its strategy (in terms of costs, flexibility, products, etc.), has become one of the main industrial issues of this new century in terms of Supply Chain Management. But to improve an overall procurement process, one has to be able to qualify it, to know where the weaknesses are or what improvements can be done, compared to best practices. Such vision is called *Procurement Maturity Assessment* (PMA).

The aim of this paper is thus, after having presented what a procurement process is and what its impacts on a Supply Chain are, to define what procurement maturity is and to see how it is assessed. We will then see how it was use in a real case and to what solutions for improvement it led, to finally explain how the implementation of these solutions was done and what the results were.

This Master Thesis report is based on an internship I did at IBM Company, inside Supply Chain consulting department. PMA was done as part of a mission for one of its clients. I will therefore also emphasize on IBM’s methodology, on the project itself and its organization.
However, as a lot of elements are confidential between IBM and its client, they will not appear in this paper. Furthermore, as this client doesn’t want to be known, it will be referred to as *Company C*.

*The accent will not be put in this paper on procurement specifics or purchasing methods, but rather on procurement as a whole and its implications on a Supply Chain, as well as the means to improve the process. For further and deeper information about purchasing, please refer to the references given at the end of this report.*
Reason of choice for this topic

I chose Supply Chain Management as an option during my second year of Master course because I am interested in this topic. Raising an issue about one of the links of a supply chain was a way to improve my knowledge while using what I had learned during my studies. Besides, procurement is a topic seldom taught in general masters in universities, therefore it was an opportunity for me to discover a new discipline.

Furthermore, PMA is a very actual and useful topic as procurement is thoroughly impacted by worldwide economical and environmental issues (such as raw materials costs and speculation), thus trying to assess the maturity of a procurement process and to improve its robustness can be paramount, from a Supply Chain efficiency point of view.
1. Theoretical study

1.1. Procurement in a Supply Chain

1.1.1. Procurement process

1.1.1.1. Definition

Procurement can be defined as the process of acquisition of goods and/or services, at the best possible cost, while meeting the needs of the purchaser in terms of quality, quantity, time and location.

Procurement doesn’t represent the action of buying goods to a supplier, but rather the process of choosing what product, to what supplier and under what conditions to source. It is thus different from replenishment (or acquisition), which is the action of buying the quantity needed at the right time and place. Purchasing, on the other hand, regroups all processes related to buying goods or services. Procurement takes place, in case of an industry, right after the conception phase. The needs have been addressed, the technical requirements calculated and the design done.

Two types of procurements are defined:

- Direct procurement, for goods directly involved in the manufacturing process
- Indirect procurement, for all remaining goods and services (furniture, computers, consultants, etc.)

1.1.1.2. Process steps

Procurement processes vary a lot between industries, sectors or companies, yet common general basic steps can be identified.

- Identify potential suppliers. It can happen sometimes that a final customer asks for a specific supplier, but generally speaking a company will have to look for available
existing suppliers that meet existing requirements (products, quality, volumes, etc.) and would therefore be candidates for attribution.

- **Contact selected suppliers.** Some potential suppliers having been identified, a Request For Quotation/Proposal/Information (RFQ/P/I) is sent. Their answers will be compared, and the best offers will be short-listed.

- **Negotiation.** For short-listed offers, negotiation is performed on various subjects, the objective being mainly to reduce costs.

- **Attribution.** On-going sourcing is given to one or several suppliers, which can start preparation, formation, investment or whatever clause is required by the purchaser.

- **Fulfillment.** At this point, a contract with suppliers is running, and replenishment process is performed for contract duration.

- **Renewal.** At the end of the contract, contract renewal is negotiated.

### 1.1.2. Impact of procurement on a Supply Chain

Procurement process is deeply connected to overall Supply Chain value. The purchasing costs for goods or services negotiated with suppliers will directly impact the price of the final product delivered to the client. Thus saving money on procurement directly leads to higher profit, if prices are kept still. Besides, Incoterms (transportation clauses), logistics, packaging, material and other costs are also negotiated during procurement processes. Optimization of those elements means optimal procurement cost per unit produced (Porter). Furthermore, as it is the root of manufacturing and more generally production processes, optimized procurement system allows better handling of risks and quality insurance as it starts early, on supplier side. It brings strong support to production and distribution, and is also source of innovation if partnerships with suppliers are built (Forker et al.)

As companies and markets grow worldwide and competitiveness grows stronger, firms have centered their activities on their core competencies, which means they do only what they are best at. This results a higher level of outsourcing of primary tasks and thus a higher level of purchasing. A company will buy products or services it outsources. This phenomenon increases the importance of procurement.
On the top of that, globalization brings new issues on supply chain values, such as currency conversion, border tolls or raw materials costs. Handling these issues contributes to having an efficient procurement process and can lead to important savings. Global markets grant opportunities for bundling (volumes consolidation over several geographical zones) or deeper negotiation. Competition among suppliers is now effective on a global scale, which drives prices down and quality up. Procurement is hence a major element of Supply Chain performance (Porter, Forker et al., Keough).

1.1.3. Typical purchasing organizations

1.1.3.1. Fundamentals

Whether it is for small/medium companies or for major firms, a purchasing organization will include several segmentations. A segmentation can be defined as a set of groups of elements, regrouped together with respect to common features. An example of segmentation could be, among football player, forwards, midfielders, defenders and goalkeepers. A segmentation can include several levels, with at each level a thinner repartition along common features. For example, midfielders can be divided between playmakers, wingers and defensive midfielders.

As far as Purchasing is concerned, segmentations are applied to:

- Products (in that case a segment is often called a commodity). E.g. steel, aluminum, plastic, etc.
- Suppliers. E.g. localization or relationships with the company.
- Sites localization (in case of a global company).
- Site type. E.g. Production, R&D, office, etc.

Combinations can also be made between several segmentations. For example, Production sites can be broken down into commodities if a main commodity is assigned to them.

Segmentations will have an impact on the purchasing organization of a company.
1.1.3.2. Organizational charts

Organizations can differ quite a lot between companies. However, some general charts can be drawn. Purchasing organizational chart for a small/medium company looks as follows.

A purchasing director is set for the whole company. He will be responsible for the whole purchasing department, as well as for global results. He refers directly to Financial Director. Under him are Procurement and Overhead managers, who coordinate the activities. Procurement Manager also leads all company’s buyers.

It is thus a very classical organization as generally small and medium companies are not expanded worldwide and are very centralized. In case of the presence of several sites in different countries, the organization looks much alike the one for a firm, which is as follows:
Two levels are displayed: group managers and sites managers. Group managers handle purchasing for the group on a global scale, and consolidate common items required for several sites together. They have high visibility but are quite disconnected from real needs. Various group buyers exist, and refer to their direct manager. All those group leaders refer to the GPD.

For purchasing particular to each individual site, the same type of organization is displayed for each location. The equivalent of the GPD is the SPD (Site Purchasing Director), who manages all purchasing-related issues in his site, as well as replenishment. He has several buyers under his lead. Commodity directors are sometimes found, but are less frequent. They are responsible for a specific commodity (such as casted aluminum parts for example).

Project leaders and buyers are generally assigned to a particular site or commodity, as a project is most generally linked to a site and a commodity. They are at the same hierarchal level as Site Directors and both of them are “under” group leaders but do not necessarily refer to them, although they do most of the time.
1.1.3.3. Centralized / Decentralized

As soon as a company is international and does business on a global scale, their organization can be centralized or decentralized. A centralized firm will handle its purchasing/procurement on a company scale with site directors handling replenishment and particular purchasing, whereas in a decentralized organization each site behaves as a single small autonomous entity.

An in-between organization, called “decentralized with coordination”, can also sometimes be found. Sites are autonomous and independent but still somehow communicate together and coordinate their procurement with information and experience sharing.

Pros and cons of each solution are summed up in the following table.

<table>
<thead>
<tr>
<th>Type</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decentralized</td>
<td>- Proximity of purchasing departments with clients&lt;br&gt;- Decisions related to local needs&lt;br&gt;- Simple, reactive and flexible organization</td>
<td>- Local negotiations (no volumes consolidation)&lt;br&gt;- No information and experience sharing&lt;br&gt;- Several potential contacts for one supplier</td>
</tr>
<tr>
<td>Decentralized with coordination</td>
<td>- Globalization possible&lt;br&gt;- Shared information and experience&lt;br&gt;- Decisions related to local needs</td>
<td>- Unclear tasks and roles between site and group leaders&lt;br&gt;- Complicated organization&lt;br&gt;- Several potential contacts for one supplier</td>
</tr>
<tr>
<td>Centralized</td>
<td>- Easy globalization&lt;br&gt;- Very structured organization&lt;br&gt;- One supplier, one contact for the group</td>
<td>- Low reactivity, every decision has set on a group level&lt;br&gt;- Buyers far from clients. Specific needs may be ignored</td>
</tr>
</tbody>
</table>

Table 1 - Centralized/Decentralized pros and cons
1.2. Literature review for Procurement Maturity Assessment (PMA)

Procurement Maturity can be defined as the level of performance, effectiveness, efficiency and organization of a procurement department, compared to best practices. PMA is a powerful multi-dimensional tool used to assess the level of development such department is at, according to several major procurement-related topics. “Multi-dimensional” implies all aspects of a procurement department and their interconnections are investigated.

The origins of PMA lie in the end of the twentieth century, with the works of Keough, Rozemeijer and Van Weele.

1.2.1. Keough

During the last two decades, globalization and high levels of competitiveness have led industries to reduce their incurred costs to the maximum. It is often said that procurement costs represent between 50% and 80% of direct and indirect costs incurred in Profits & Losses accounts (P&L or P/L), hence it was highlighted as being the new major source of improvement, as production and distribution processes were already well optimized. Procurement organization then started to evolve thoroughly.

In 1993, Keough argued that the level of development of a purchasing (or procurement) function can vary between completely undeveloped, with only basic cost negotiations done individually with each supplier, to a rather complex and global system. This is the birth of the notion of Maturity. Keough identified five stages of development (see appendix 1):

- **Serve the factory.** It is the simplest form of purchasing. It generally involves small businesses or factories, with low order variation. The tasks are mainly supplier search and order placement.
- **Lowest unit cost.** At this stage a certain form of purchasing department exists. Main tasks are to do costs analysis and prices negotiation.
- **Coordinated purchasing.** Procurement is an organized function and contracts are established with the suppliers.

- **Cross-functional purchasing.** Procurement function is advanced and centralized. Cross functional teams are used, suppliers are being helped in their development and decisions whether to make or buy are made.

- **World-class Supply Chain management.** Cross functional teams are used to work together with suppliers to achieve the best possible outcome. Continuous improvement measures of supplier performance are used for follow up.

The idea of Keough was to map the different states a procurement organization could be at in order to draw a roadmap for improvement, which means the evolution from one stage to another. Keough claimed that savings from 5 to 10 percents could be achieved each time a stage was passed.

### 1.2.2. Rozemeijer and Van Weele

In 1998, Rozemeijer and Van Weele used Keough’s model and improved it by reshaping it and adding a new level. The notions of “Internal and External integration” appear, as well as the notion of “Value Chain”. They argued that a procurement organization will be the most efficient when it will be considered as part of the overall supply chain and integrated into it. This integration is done in three steps (internal, external and value chain focus), and involves as tight relationships with suppliers as possible, but also with other departments inside the company (such as logistics or production). The decisions are made while trying to optimize the overall value chain from the goods delivered by the suppliers to the final customer.

Their work is illustrated in the following figure.
They separated the six levels between functional and cross-functional focuses. The integration of procurement department inside the supply chain corresponds to cross-functional focus. Stages 1 to 5 are equivalent to the ones described by Keough.

They argued that the overall effectiveness of the procurement process, and more generally of the global supply chain was much higher if some integration of the process was done. In the final stage suppliers and customers collaborate, customer needs are transferred to suppliers who become dedicated to the company and intelligent procurement and sourcing is performed depending on the final needs as well as the diverse requirements (Quality, location, lead time, etc.).
1.2.3. Bruel and Petit

With the existence of procurement maturity, a new issue appeared. A random company would like to know how mature it is compared to its competitors or in general, and to set some objectives for improvement. To do so, a scale or a reference is needed: the assessment will be done and the objectives set with respect to this reference. There are usually three ways to identify a reference when wanting to assess the performance of a system:

- **Historical comparisons.** The objectives will be defined as an improvement of anterior values, e.g. “Improve sales by 5% compared to last year”.
- **Internal benchmark.** In groups composed of several business units, the objectives will be set compared to the “best in class”.
- **External benchmark.** Performance will be assessed compared to other companies, and objectives will be set to evolve towards the organization of “best in class” companies.

There are three major drawbacks to those methods. First, comparisons with historical data, other business units inside the company or other companies do not guarantee optimal results. Second, statements and actions that take roots in those methods are just short-term discrete visions and performance. Third, performed actions may not be coherent with the actual strategy of the company.

It is to cope with those drawbacks that Potage (1998) created the concept of Maturity matrix, with the following rules:

- A function can be modeled using several macro domains (In case of procurement: Political choices, Procurement practices, Human Resources, Communication, etc.)
- Some maturity levels can be defined for those domains, allowing to identify some evolution steps for this function
- Characteristics of each domain have to be perfectly defined for every maturity level

In 2005, Bruel and Petit used this concept to create the following Procurement Maturity Matrix.
<table>
<thead>
<tr>
<th>LEVELS</th>
<th>General principle</th>
<th>Procurement policy / internal levers</th>
<th>Procurement policy / supplier levers</th>
<th>Processes / Tools / Practices</th>
<th>Information and decision-making support system</th>
<th>Procurement H.R. (buyers)</th>
<th>Comm. / Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Standardise level 4 – Global governance</td>
<td>Integrate SD into Procurement as part of the strategy; systematic Life Cycle Analysis of the products and services purchased</td>
<td>Business model coherence; co-created relationship</td>
<td>All procurement processes include SD criteria</td>
<td>Same as Level 4</td>
<td>Same as Level 4 with internal dissemination of units</td>
<td>Systematic internal and external communication (based on facts and figures)</td>
</tr>
<tr>
<td>4</td>
<td>&quot;External&quot; optimisation – Cross-functional focus (upstream procurement)</td>
<td>60% of expenditure material and analysis, map of counterparty risks; estimate preventative measures; extension to supply chain; e.g. design/ innovation; reverse logistics; reuse</td>
<td>Bread the sustainability approach; sustainable economic development</td>
<td>All procurement processes include SD criteria (supplier selection, social ratings, ISO 26000, etc.)</td>
<td>Supplier dashboards; establish and disseminate all TCOs, supplier satisfaction indicators: global database</td>
<td>Create an SD department within the Procurement Department; all buyers have a measured result obligation: recruitment; internal mobility</td>
<td>Standardised communication: comprehensive dashboard (additional quantifiable results); measure supplier satisfaction</td>
</tr>
<tr>
<td>3</td>
<td>&quot;Internal&quot; optimisation – Procurement Department – Functional focus (downstream procurement)</td>
<td>Standardise level 2 – Collaborative approach with suppliers</td>
<td>Extend the expenditure covered (50% of the portfolio); same as level 2 regarding requirements and specifications</td>
<td>Standardise &quot;core panel&quot; approach; SD criteria in the approval and offer rating processes; jointly define improvement plans</td>
<td>Supplier dashboards</td>
<td>Train all buyers; integrate SD into individual performance plan</td>
<td>Standardised communication: comprehensive dashboard (quantitative action indicators)</td>
</tr>
<tr>
<td>2</td>
<td>Minimise risks, compliance approach</td>
<td>12% to 20% of expenditure covered; list risks and social standards: formal rating; use specific indicators (major risks)</td>
<td>Focus on &quot;core&quot; suppliers, SD charter, self-declaration evaluation; supplier commitment declaration</td>
<td>SD risk assessment of the portfolio, SD-oriented HR; dedicated contractual clauses</td>
<td>Adopted supplier files</td>
<td>Train &quot;leading SD&quot; buyers; informs others</td>
<td>Inform internal clients and suppliers, external supplier communication (ISO charter); initial indicators</td>
</tr>
<tr>
<td>1</td>
<td>&quot;Basic&quot; transactional approach</td>
<td>Supply management; &quot;passive&quot; procurement</td>
<td>Insufficient procurement maturity</td>
<td>Insufficient procurement maturity</td>
<td>Insufficient procurement maturity</td>
<td>Insufficient procurement maturity</td>
<td>Insufficient procurement maturity</td>
</tr>
</tbody>
</table>

Table 2 - Bruel and Petit procurement maturity matrix
They thus created a universal reference (or scale) that can be used by any company in any field to assess its performance and define some objectives for improvement. Based on Keough, Rozemeijer and Van Weele works, the higher the level in the matrix, the better the integration of the procurement department in the overall Supply Chain.

In this matrix, five levels and seven domains were identified (cf. figure 2). In order to perform a PMA the methodology, described by Bruel and Petit, is as follows:

- Perform an audit of the existing procurement organization of a company
- Identify the actual level of performance of every domain that constitutes the procurement organization for this company, using the matrix
- Set the objectives (the aimed level of performance), using the matrix
- Draw a roadmap with milestones and metrics for the transformation

Aimed levels of performance depend on particular needs of the company. Those needs generally come from identified issues in the existing system. Ways to cope with those issues and actually do the transformation are numerous and will not be detailed in this paper. For further information about this topic, please refer to the references given at the end of this document.

Best practices have been determined by interviewing an important set of managers in the field of procurement. This table has been created in 2005, so they may have changed nowadays.
1.3. IBM PMA Methodology

1.3.1. IBM PMA Matrix

Bruel and Petit developed a basic and fundamental maturity matrix. It can be used in any situation, and will provide a good insight of the level of maturity of the procurement department considered. However, it is general and will often need a great deal of adaptation.

The maturity matrix IBM uses is of course based on their work, but has been further improved. It is an evolving table, modified at will to best fit the client’s needs. It consists in five levels of maturity (Innocence, Awareness, Understanding, Competence, Excellence / Leadership), and at least four domains. Most often used domains are:

- **Business and Procurement Policy.** Does the Procurement vision and strategy clearly reflect Business & Strategic Objectives? Do sourcing strategies fully exploit supply chain opportunities? Are vision, mission and values clearly communicated and understood across the enterprise? Is procurement aligned with business units? Does procurement play an active role in annual business plan development? Is top management actively participating in the procurement concept?

- **Enterprise Spend Management.** How are supply sources selected and managed? Does an effective contract management process exist? Do relations with suppliers reflect the importance of these partners to the business? How is performance measured? Is fair value assessment and total cost analyzed when choosing sources? Is strategic sourcing a process methodology understood throughout the organization as a competitive advantage?

- **Supply Chain Management Process.** Is automation a goal to increase efficiency? Are preferred vendors fully utilized? Do strategic alliances exist and are they actively managed? Do clearly defined procurement controls exist? Is an efficient and accurate invoice approval process in place? Is procurement involved in early marketing and technical development?

- **Procurement Infrastructure.** Are roles and objectives clearly understood within the Procurement organization? Does staff have the necessary skills? Are appropriate
tools available to maximize efficiency? Is necessary data accurate and readily available? Do enabling technologies exist to efficiently enable procurement processes?

As shown in the following picture, there can be between 4 to 8 domains, and between 20 and 150 capabilities in the overall matrix. A capability is a specific aspect of one domain. A capability is characterized by some features for every level of maturity. The level of maturity the company is at will be the one corresponding to the “cell” describing an organization as close from current state as possible. The level is not necessarily an integer (it almost never perfectly fits).

![IBM PMA matrix structure](image)

It is important to note that although a basic matrix exists, its final form will always be adapted to the client’s needs. Some domains will be emphasized while others will barely be raised. It will also be focused on the fields where a competitive advantage can be achieved.
for the company. Assessments are generally done with a 2-year desired state as well as a 5-year desired state, as shown in the following picture.

**Figure 5 - IBM PMA matrix sample**

This matrix is always used together with metrics to quantify the objectives as well as current state, and with interviews with managers, stakeholders, suppliers and clients, to have a more precise view and knowledge.

Best practices, and more generally all features for every capability have been set using benchmarking tools.

### 1.3.2. Method

Generally, IBM is not only involved into PMA assessment, but also leads the transition (or transformation) period that comes from set objectives. The process generally goes in two phases: a **Diagnostic phase** and an **Implementation phase** (see following figure).
1.3.2.1. Analyze / Design

In this step, the panel of possibilities is narrowed to best meet the client’s needs. Interviews and small audits are performed, general objectives of the project are set, and communication is done about the methodology, schedule, timeframe, etc.

1.3.2.2. Envision

During this step, the actual PMA process is performed. The matrix has been adapted using results of previous step and benchmark metrics set. The result of this process is a set of specific points that will need improvement in order to get competitive advantage with respect to the client original objectives.

1.3.2.3. Develop and Implement

Using the results from PMA, a set of required actions is created. A transition plan (or transformation roadmap) is designed as well as a business case. The final step is of course the implementation of this transformation (phase 2). A summary of the overall process is given in the following picture.
All that was previously said in this paper was about the first phase. In the following sections, we will see the application of PMA to a real case, see what solutions were chosen and how they were implemented.

The methodology previously explained is exactly the one that was used during my internship. Once again, the company will be referred as *Company C* and no specific results or information will be displayed, for confidentiality reasons.
2. Practical case

2.1. Company C procurement organization

2.1.1. Company C presentation

Company C is a worldwide car equipment manufacturer present in 27 countries. It manages 120 production sites, 61 R&D sites, 10 distribution platforms and almost 58 thousands employees. It has more than 150 clients all over the globe and thousands of suppliers. It sells to almost all major car manufacturers worldwide. Its revenues were in 2010 almost 10 billion euro with 365 million euro profit.

Company C’s activity is divided into four Business Groups and 9 product families (or Product Group PG):

- Comfort and Driving Assistance Systems
  - Interior Controls
  - Security Systems
- Powertrain Systems
  - Engine and Electrical Systems
  - Transmissions
- Thermal Systems
  - Climate Control
  - Engine Cooling
  - Compressors
- Visibility Systems
  - Wiper Systems
  - Lighting Systems

Elements belonging to Product Groups are called Product Lines (PL). Company C developed their competitiveness and renown by achieving almost zero quality incident whichever the product and wherever it has been manufactured. It is known as a reference worldwide in terms of purchasing and procurement.
2.1.2. **Company C current procurement organization**

*Company C* has a very horizontal organization, from every point of view, although we will only detail the purchasing part. Each site functions individually almost as a single small company. It manages its own procurement, its logistics, its purchasing, negotiates with its suppliers, assesses their performance, makes sourcing decisions, produces, ensures quality, and finally distributes to clients or other sites. Each site has to do monthly reports to group departments and top managers, but site managers have all freedom to manage their tasks, as long as the objectives set by the board are reached. They have their own P&L accounts, their budget, their spend, and so on.

From a procurement organizational point of view, each site has a Site Purchasing Manager (SPM) who manages Buyers for the site. Each buyer has a particular purchasing perimeter (for specific projects, locations, or suppliers) and a commodity perimeter (e.g., Aluminum parts, rolled steel, etc.). SPMs of course belong to the group purchasing department and refer to group managers.

### 2.1.2.1. **Group, Regions, Commodities, Segments, Sites**

*Company C* Purchasing organization is rather complicated, as there are many aspects that are managed in completely different ways. It is crucial to well understand the difference between Group, Regions, Commodities, Segments, and Sites and their interrelations.

At the bottom of the scale, there are sites. Sites manage their supplies, product, and process, have buyers who handle sourcing and are managed by SPM. Sites, whether they are Production or R&D, are regrouped with respect to the Business Group (BG) they belong to, as one site tends to manufacture (or develop) products belonging to only one BG. For matters involving a business group, SPM refer to Region Business Group Purchasing Director (RBGPD). Sites are also regrouped in regions which are managed by Region Purchasing Directors (RPD). RBGPD refer to RPD, and RPD refer to Group Purchasing Director (GPD), the top purchasing manager inside *Company C*. This vision can be defined as topological vision.
The other vision is Commodity vision. As a reminder, commodities can be defined as the type of elements being sourced (e.g. electronic elements, wires, plastic parts, etc.). Those elements are of course classified, and such classification is called Segmentation. Company C’s segmentation has 4 levels:

- **Commodity.** Commodity is the most general products or parts classification and is generally related to the type of material the component is made of.
  For example: A - Steel, C - Plastic elements, K - Assembled elements, etc.

- **Segment.** Segment level generally corresponds to the manufacturing process the components have been manufactured with.
  For example: AA - Casted Steel, CA - Injected Plastics, etc.

- **Category.** Category level generally corresponds to the function of the considered component.
  For example: AA2 - Fastening devices, CA4 - Heat dissipaters, etc.

- **Technology.** Technology is the finest level of classification. It corresponds to what the corresponding component actually is.
  For example: AA21 - Screws

From an organizational point of view, every buyer is attached to a specific purchasing perimeter, corresponding to a set of commodities he is responsible of. SPM is responsible for all commodities for his site. There are two types of top managers when it comes to segmentation: Commodity directors (who manage commodities) and Segment directors (who manage segments). SPM refers to Region Segment Leaders (RSL). RSL refer to Group Segment Directors (GSD) and Group Commodity Director (GCD), as well as to RBGPD. GSD and GCD refer to the Business Group Commodity Director (BGCD) and Business Group Segment Leader (BGSL), who manage commodity and segment issues for all Business Groups. BGPD and BGSL of course refer to GPD. BGPD manage Product Group Product Line Project Purchasing Directors (PG PL PPD), who are responsible for all matters and buyers related to PG and PL, but only for project matters. The difference between project and non project will be detailed later on in this paper.

These two ways of focusing (region and commodity segment) makes Company C’s organization complex, as the manager varies depending on the matter you have to address.
The following table sums up previous considerations

<table>
<thead>
<tr>
<th>Position</th>
<th>Function</th>
<th>Limited to a Purchasing perimeter</th>
<th>Limited to a region (or organizational) perimeter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buyer</td>
<td>Manages procurement, suppliers, risk and part of quality on a specific perimeter</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>SPM</td>
<td>Manages Buyers on a site, ensures the performance and that objectives are achieved, ensures quality and mitigates risks on a site</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>RBGPD</td>
<td>Manages projects on a region for all business groups, participate in negotiation process, manages operations on site</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>RPD</td>
<td>Pilots purchasing and performance for all sites for a given region, enhances Purchasing synergies across Business Groups in the region, deploys commodity strategy in the region</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>RSL</td>
<td>Manages some particular segments for all sites for a region. Responsible for finding opportunities for cost reduction on its segments</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>GSD</td>
<td>Defines and implement strategy per Segment and Supplier, for all regions and Business Groups to deliver expected performance</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>GCD</td>
<td>Defines and implement strategy per Commodity, for all regions and Business Groups to deliver expected performance</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>BGPD/BGSL</td>
<td>Applies Commodity strategy inside the Business Group through Region commodity network, manages site purchasing within each Region through RBGPDs, manages product line projects purchasing to enhance competitiveness</td>
<td>N/Y</td>
<td>N</td>
</tr>
<tr>
<td>PG PL PPD</td>
<td>Fostering the deployment of standards across the P0 P1 P2 P3 buyers’ network of the PG/PL and anticipates needs of the PG/PL to the segments organization</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>GPD</td>
<td>Responsible for all purchasing performance and activities for the whole group</td>
<td>N</td>
<td>N</td>
</tr>
</tbody>
</table>

Table 3 - Company C top management overview
There are three types of purchases and thus three types of buyers for *Company C*. Indirect Buyers, who manage procurement for non-production elements such as furniture, paper, pencils, etc., Project Buyer (three types, P0, P1, P2) who manage projects (e.g. a specific car or a specific set of equipments), and Productivity Buyers who manage procurement for components already on production or elements not part of projects. Projects represent more the 80% of *Company C*’s procurement.

In general, Group and Region directors are pretty far away from suppliers and clients, and more generally from day to day matters and specific issues. Their task is to pilot purchasing and its performance throughout the whole group or the region, and to ensure that the objectives are met on their perimeter. Day to day matters are handled at site level.

The following organizational chart gives a complete view of Company C purchasing organization.

2.1.2.2. Organizational chart

![Organizational Chart](image)

*Figure 8 - Company C organizational chart*
**2.1.2.3. Typical processes**

In the most general situation, top managers will only issue objectives to “lower” ones, such as “Reduce prices on Steel by 3%” or “Increase Productivity in Eastern Europe by 2%”. Those general objectives will be broken down into sub-objectives by Regions or Commodity directors depending on the needs, relatively to segments, countries or other elements. But once again, the only thing that an SPM is going to receive is an objective.

It is he who has to find means to achieve those objectives, with complete freedom of action to do so. Sites are thus completely independent entities, which only refer to the group with monthly reports about performance. As long as SPMs get sure that the objectives are achieved, no boundary is set by the group.

**2.1.3. Raised issues**

With this organization, following issues were raised by Company C’s managers:

- Productivity and performance indicators for buyers are not optimal and not homogeneous between sites
- Follow up on SPM actions and sites activities is very difficult to perform for top managers
- Suppliers appear different times in balance sheets, for different sites
- Small different transactions and deliveries are done for the same component but for different sites
- No control is possible over running processes
- Process and methodology variations exist between sites, buyers or suppliers. There is a lack of process standardization

In order to evaluate the root cause if those issues, the application of PMA was decided. Before going any further into the results of this assessment, we will try to explicit every steps of Company C’s procurement process.
2.2. *Company C* procurement process

In this section we will try to present as precisely as possible *Company C’s* purchasing process, although we will not be able to go into specific details and explanations, for confidentiality reasons. Therefore color codes and process descriptions introduced with the following slides will not be explained. Only the general ideas of the process will be presented.

2.2.1. Overview

*Company C’s* purchasing process consists in six major phases. Supplier management, where supplier assessments and follow up will be covered, Commodity strategy where sourcing objectives for the group are set, Project purchasing for sourcing related to projects, Serial life for other types of sourcing, Productivity Action Plans, broken down into Budget construction and Productivity reservoir, where money saving plans over the global production cycle of the components are designed, Contract & Tooling issues and finally quality control process for global lifecycle.

![Company C procurement process overview diagram](image-url)
All of these phases will be detailed in the following sections.

2.2.2. Company C needs and suppliers benchmark

Not mentioned above, Company C’s future needs assessment is the root phase for all future products or projects, as it consists in the need analysis for future innovation and competition. Since it is not essentially part of purchasing process, we will not detail it any further.

Supplier benchmark, on the other hand, consists in the analysis of the global sourcing offer for every supplier on the market. They are analyzed and classified in terms of field, commodities, level of technology and automation, level of innovation, opportunities for partnership and improvement, available production volumes, location and quality standards. Please note that scorecards are not done at this level yet. We are here only talking about research for new potential suppliers.

2.2.3. Commodity strategy management

It is a key step which is done periodically for every commodity individually. It consists in the definition of the means to achieve purchasing objectives set by the board for all commodities.

This phase is composed of several steps. At first, the list of commodities and segments for the group is redefined if needed, and the strategy is set. This strategy can sometimes lead to reorganizations and a new display of positions for the group. Starting from this point, individual strategies for all commodities are built through a 10 steps process and are then validated. A detailed action plan is created, and the evolutions are monitored during the whole cycle until a new strategy is set.

The frequency can vary a lot, but it goes from half a year to two years, depending on economical and environmental events.
These commodities strategies are used to create a supplier target panel. A set of targeted suppliers will be set among already introduced suppliers (see next section for further details), with various panel statuses related to best potential achievement of set objectives. The more a supplier will be rated, the better it will allow the achievement of set objectives.

2.2.4. Suppliers management

This phase covers all supplier-related topics. It consists in four individual sub-processes:

- New supplier introduction
- Supplier Scoring
- Supplier development
- Risk Management

2.2.4.1. New supplier introduction

This step aims at evaluating and validating or invalidating a supplier for the group. After a supplier has been assessed in suppliers benchmark phase, it will have to go through this process in order to be available for sourcing. The action of adding a supplier to the list of potential candidates for sourcing is called Introduction.

Supplier introduction process can be broken down into three sub processes:

- **Agreement.** The necessity to enter a new supplier will be assessed. Various criteria exist, among which a specific reason for introduction, the fitting to on-going projects, the forecasted dates, etc.
- **Evaluation.** Supplier compliance to Company C’s requirements will be evaluated through audits and evaluation reports.
- **Validation.** Final step of the process, aiming at adding the supplier to the list of potential candidates.
2.2.4.2. Supplier Scoring

The aim of this step is to assess supplier performance and improve supplier relationships. It is articulated around the use of scorecards.

The creation of scorecards is based on individual sites supplier scorings. Each Company C site scores the suppliers it is involved with, through a well established process. All of those individual scorings are gathered and reviewed to create a unique individual scorecard for all suppliers. An “action plan to be requested for supplier” is derived for each scorecard, and is submitted to corresponding supplier. Evolutions and transformations are monitored, and scorecard is updated regularly.

Awards are given each year for “best” suppliers, meaning suppliers having the best scores or having done important efforts.

2.2.4.3. Supplier development and Risk management

For suppliers best aligning with Company C’s requirements, development measures are proposed which may lead to partnerships. Identified potential suppliers to be developed have their potential for progress assessed and a development plan is created, validated, and submitted for signature.

For all introduced suppliers, a level of risk is defined. This risk level (or ARGP) regroups all organizational, economical or environmental risks. A supplier risk sheet is created mitigation plan is derive from it. ARGP is a major component of sourcing decisions made.

2.2.5. Productivity Action Plans (PAP)

Productivity Action Plans are measures aimed at doing savings on a supplier, specific parts or commodity. Doing a PAP is declaring an action related to a particular lever
(negotiation, raw materials, technical productivity, market effects, etc.) in order to achieve a set savings level.

PAPs are proposed by buyers on their perimeter. While doing so, a fulfillment risk level has to be set in order to qualify how likely the realization of the action is. There are three levels:

- **Potential.** Action fulfillment is unlikely.
- **To be approved.** Action fulfillment is likely but hasn’t been realized yet.
- **Done.** Action is realized and its effects are taken into account for performance indexes.

The sum of all potential and to be approved actions constitutes the “reservoir”, which is basically the evolution margin available for purchasing departments on running sourcings.

**2.2.6. Project & Sourcing (P&S)**

As previously mentioned, Projects represent more than 80% of Company C’s spend amount. Being so crucial, project-related sourcing follows a well-determined process that we are going to present roughly in the following sections. We will also briefly talk about other types of sourcing.

**2.2.6.1. Overview**

There are basically two distinct parts inside global project sourcing process: project management part and sourcing part or RFx. Project Management regroups all information related to projects (components, prices, schedule, etc.), which will be used during the sourcing process itself, meaning the process of looking for and choosing best possible suppliers for all project components. Those two processes are linked but also completely independent: project can be managed and modified even if sourcing processes are running. Both processes require and use elements and data from the other.
2.2.6.2. Inputs to P&S

In terms of Information Systems, four major softwares are used for Company C’s processes:

- **PLM** (Products Lifecycle Manager)
- **BW/Vadis**, basically an extended database
- **SRM**, which is used for Quality Insurance
- **SAP** in every site

P&S process uses inputs mainly from PLM, BW/Vadis and SAP. In PLM are stored all components references and information at group level, as well as drawings. In BW/Vadis are stored all project information, such as description, client, team, schedule etc. Finally, SAP is used for price information for components, commodities information or supplier information.

2.2.6.3. Project Management

Project management process corresponds to the action of running a sourcing project by one or several buyers.

A project is related to one specific site for Production and R&D, to one specific car and one specific client. A preliminary schedule with milestones is set at the beginning and will be updated regularly. Project team is composed of a Buyer and a Project Manager, as well as contributors responsible for quality, R&D and logistics. Basically, a project is the development, sourcing and manufacturing of one or a set of products in very large quantities for a specific car.

A project is composed of components which constitute the final element. Those components are regrouped in BOMs which represent different variants of the final product (e.g. left and right front light). A project can have between 1 and 25 BOMs, average being 8. Each component has prices that are referenced inside the project: basic known unit price, but also expected future achievable prices after negotiation. A huge amount of other
information is also referenced in the project, such as tooling costs, main commodity, descriptions, incoterms, etc. For one component, more than 50 indicators can be filled.

A project also possesses a lifetime, typically ten years. Sourced volumes for all BOMs are also referenced for all project lifetime (for each year) which, when taking into account the part quantity of each component in every BOMs, gives a volume for each component.

Negotiations are led by Buyer component by component mostly on price, but potentially on all 50 previously mentioned indicators. Each component can be sourced in a specific currency, but the project possesses a reference currency for consolidation. For each component, the Buyer will try to find one or several suppliers that maximize all indicators to best achieve set objectives (typically in terms of price). It means that for one project, there can be as many suppliers as the number of components. Components amounts vary between 60 to thousands.

2.2.6.4. Sourcing processes (RFx)

Parallel to project management, sourcing processes (called RFx) are done. Doing an RFx corresponds to the action of putting suppliers in competition on a selected set of project components and choosing the best. As suppliers are often specialized on one commodity (type of components), a main commodity is chosen for an RFx. It means that most of the components (and generally all of them) included in the RFx will be from selected commodity (or segment).

RFxs are small projects inside the project. One project can have many RFxs, and for each RFx a schedule and a team are set. Each RFx will lead to the nomination of one or several suppliers at the end of the process. RFx are being run until all project components have been sourced.

Note that RFx are performed also outside projects, but since the process is almost the same we will only detail the one for projects.

Following steps until Nomination are part of the RFx.
2.2.6.5. VRF definition

VRF is one of the most crucial elements of a project sourcing process. It is the requirement file related to one component, with all component information (except expected price!) included in it. VRF can be considered as the agreement between Company C and a supplier concerning one component. There is generally one component per VRF. This file is pre-filled by the buyer with required features and specifications and sent to the all targeted suppliers during the RFx. They will fill it and send it back. The buyer will modify and send it again and so on, until the last offer by the supplier. When the final VRF is signed by both ends, negotiations are over and the deal is set.

VRF are pre-filled during the RFx with respect to a well-defined process. It is a collaborative task which can involve up to 10 actors. A VRF consists in many sections, among which can be found general information, basic purchasing, logistics, quality, and lead time sections. A VRF is linked to one (or sometimes several) components. It is the component identity, from a supplier point of view.

2.2.6.6. Pre-sourcing Committee (Pre-SoCo)

Pre-sourcing Committee is a meeting where RFx strategy is set and targeted suppliers selected. It is a very important step that involves around 10 Company C’s top managers, most of them being related to RFx main commodity.

In this meeting, a list of potential suppliers will be presented by the buyer that will be discussed and potentially validated, and strategies related to price, lead time, supplier selection, auctions, etc. fixed. There is one Pre-SoCo per RFx.
2.2.6.7. **RFQ**

Once Pre-SoCo has been validated and targeted suppliers selected, RFQs (Request for Quotation) are sent. It is the central part of the RFx, during which negotiations between buyers and suppliers are actually performed. This process can take several weeks and will continue until Company C is satisfied of one or several offers.

All VRFs linked to selected components are sent during RFQs and will constitute the reference of the negotiation. At any time of the process, what is written in the VRF corresponds to the current negotiation state.

2.2.6.8. **Sourcing Committee (SoCo)**

When RFQs process is done, a supplier shortlist is made by the buyer with best offers. Just as with Pre-SoCo, a meeting called Sourcing Committee (SoCo) is done to validate this list, involving Company C top managers.

Based on this list final sourcing decision is made and best supplier per component is chosen (or more than one in case of double sourcing or pluri-sourcing). Note that the main criterion for this decision is of course proposed price, but all indicators and information are taken into account. One SoCo is done for each RFx.

2.2.6.9. **Nomination**

Nomination is the final step of the process. It consists in sending a nomination letter to awarded suppliers, including awarded amounts and agreed conditions. Together with involved VRFs, they represent the base for the final contract.
2.2.6.10. Output from P&S

Once the sourcing is done and the suppliers nominated, the project continues its course inside SRM (quality insurance information system). Nominations and sourcing conditions (prices, quality, logistics, delay, etc.), as well as all VRFs, are transferred. A trace of all RFx is kept in SRM for traceability reasons. Project follow up will from now on be done in SRM for all project lifetime, to ensure quality for Company C’s clients. This is called PQA process (Project Quality Assurance).

After the sourcing process, components will actually be sourced. This period is called Serial life, and runs during the whole project lifecycle.

We developed Project Sourcing process. Note that three other types of sourcing processes exist:

- **Serial Sourcing.** Involves components that used to be part of a project but are now already sourced. This sourcing process means re-negotiation of prices or conditions.
- **Indirect sourcing.** For all purchases that are not involved in productions. Tooling is part of indirect procurement.
- **Generic Sourcing.** Simplest form of sourcing, for rapid benchmark or market study. Do not involve any VRF or Committee.

2.2.7. Contracts & Tooling

Once the sourcing is completed, a contract is written and signed. It will then be sent into SRM.

Tooling management process follows contracts redaction. It aims at monitoring tooling lifetime.

Tooling management is based on project information such as volumes, materials and components. A new set of tools is designed for every project.
2.3. **Company C PMA**

2.3.1. **Fundamentals**

In order to understand the root causes of previously raised issues, PMA methodology was applied. The idea was to identify, in the overall procurement process of *Company C*, where were the major gaps with best practices, identify those relevant meaning those that could be related to the issues raised, and design a solution to improve the level of maturity on these topics.

The matrix used had four domains (the ones mentioned in the theoretical part: Business and procurement policy, Infrastructure, Enterprise spend management, Supply Chain management process), and over 70 capabilities. The assessment was done only on a 2-year basis, as the goal of the project was not to get the best possible organization, but only to find out the practices that would allow solving the issues raised.

The assessment was done for more than 15 executives inside *Company C*, and the results were averaged. They were completed with metrics to add some quantifiers (confidential), as well as interviews with key managers, about the general aims and strategies of the company. As *Company C* has a large number of clients and suppliers, they were not interviewed.

2.3.2. **PMA results**

The amount of data gathered was quite large and were thus regrouped in general topics for this report. On topic regroups capabilities that may come from various domains but are somehow related. For each topic, the gaps have been identified and explained and the desired state displayed. The topics are:

- Procurement Process
- Supplier Relationships
- Measurements
- Information Technologies
Please note that, for confidentiality reasons (on IBM side), the exact features for each capability could not be given. Therefore only maturity level as well as an explanation related the Company C organization will be given in the following. Only capabilities linked to the previously raised issued for Company C have been presented.

2.3.2.1. **Procurement process**

<table>
<thead>
<tr>
<th>Capability</th>
<th>Current level</th>
<th>Description</th>
<th>Desired level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process Format.</strong> Refers to the way that the procurement process is documented and communicated to stakeholders.</td>
<td>2</td>
<td>Little formal documentation. That which exists is dispersed among stakeholders. There is little or no accountability for communicating processes.</td>
<td>5</td>
<td>Procurement processes are thoroughly documented and widely available to stakeholders through electronic media</td>
</tr>
<tr>
<td><strong>Transaction Media (EDI: Electronic Data interchange)</strong></td>
<td>3</td>
<td>Some sites or buyers use EDI, but the system is not thoroughly spread. A big part of the process is still down outside EDI between buyers and suppliers, with manual paperwork</td>
<td>4</td>
<td>Extensive use of EDI with sharing of information and minimal manual paperwork (more than 85%)</td>
</tr>
<tr>
<td><strong>Sourcing Process.</strong> Refers to how the client arrives at sourcing decisions.</td>
<td>4</td>
<td>Substantial use of global sourcing (more than 75% of spend) with regional and local variations as appropriate for competitive advantage. However, no grouping between sites, buyers or sourcing processes done on a global scale</td>
<td>5</td>
<td>Extensive use of globalization on top of global strategic sourcing</td>
</tr>
<tr>
<td><strong>Approvals.</strong> Refers to the process for getting a specific purchase authorized. Focus is on who can say &quot;Yes&quot;.</td>
<td>3</td>
<td>Pre-SoCo and SoCo are structured and documented but are seldom complete as there is a global lack of visibility for top managers</td>
<td>4</td>
<td>Pre-SoCo and SoCo are somehow systematic and cover the whole targeted activity for the meeting. They still have to be done manually and are not completely integrated</td>
</tr>
</tbody>
</table>

Table 4 - PMA Procurement process results

Company C’s procurement process was already well developed, although no documentation was available. This was bringing some difficulties for knowledge transfer, as well as homogeneity issues because of the lack of referential.

Besides, even if the company was sourcing on a global scale with global competitiveness between suppliers, not doing globalization for their sourcing process was a huge cause of
money loss. Indeed, they were in a situation where they could source twice to the same supplier, but from different sites and with no consolidation and thus potentially different prices. This was emphasized by the fact that negotiations with suppliers was mostly done manually by e-mail, as well as by paperwork, with very little data sharing between buyers.

This little data sharing also had an important impact on Pre-sourcing and Sourcing committees, as it made it difficult to plan a meeting with all required data.

### 2.3.2.2. Supplier Relationships

<table>
<thead>
<tr>
<th>Capability</th>
<th>Current level</th>
<th>Description</th>
<th>Desired level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier Scorecard.</td>
<td>3</td>
<td>Typically annual review by procurement personnel with supplier counterparts. Fact based with metrics which can be validated and tracked. Done individually at site level</td>
<td>4</td>
<td>Web-enabled reviews, with regular reports to senior management of company and suppliers, and shared among all sites</td>
</tr>
<tr>
<td>Supplier Rationalization.</td>
<td>3</td>
<td>Spend aggregation and supplier reduction integral part of category strategy. Supplier status exists and is regularly updated but individually at site level</td>
<td>5</td>
<td>Alliances and partnerships have been identified and fully incorporated in the supply chains. Highly optimized supply base, common to all sites</td>
</tr>
<tr>
<td>Supplier Risk Assessment.</td>
<td>4</td>
<td>Formal risk assessment and supplier qualification techniques are employed. Alternative sources are identified and qualified when risk factors reach a pre-determined threshold. However, data not shared on group level</td>
<td>5</td>
<td>Formal risk assessment and supplier qualification techniques are employed. Alternative sources are identified and qualified when risk factors reach a pre-determined threshold, with shared data among all sites</td>
</tr>
</tbody>
</table>

Table 5 - PMA Supplier relationships results

Once again, Suppliers management was already well developed inside Company C. The main issue arises from the fact that, although scorecards, rationalization and risk assessments did exist, they were done at a site level, which means that potentially there could be for one supplier several different assessments, depending on the site. Besides, data were once again not shared at a group level.
Another element not appearing in the previous table was the lack of visibility for top managers concerning suppliers, as information may have varied between sites.

2.3.2.3. Measurements

<table>
<thead>
<tr>
<th>Capability</th>
<th>Current level</th>
<th>Description</th>
<th>Desired level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Measurement</td>
<td>4</td>
<td>Formal performance measures assess individual contribution. Goals are set and measured to achieve competitive advantage through procurement performance. However, measurement process is not integrated.</td>
<td>5</td>
<td>The process is integrated and somehow done automatically.</td>
</tr>
<tr>
<td>Corporate Alignment</td>
<td>3</td>
<td>Corporate view of procurement performance is typically historical in nature. Non-procurement employees lack linkage to procurement goals. Low visibility on site performance for top managers and low reactivity</td>
<td>5</td>
<td>Procurement objectives and performance are fully integrated with company’s high level strategy. Sites performance is managed and monitored by top managers</td>
</tr>
</tbody>
</table>

The main issue concerning measurements was the difficulty for group purchasing managers to pilot performance at site level, as the only contact they had was the monthly report. They were thus unsure that they could achieve desired performance set by the board until the very end of the period, with the last results.

2.3.2.4. Information Technologies

<table>
<thead>
<tr>
<th>Capability</th>
<th>Current level</th>
<th>Description</th>
<th>Desired level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Integration.</td>
<td>2</td>
<td>Purchasing platform available but not widely used by buyers. Process mainly done by hand. Little communication between systems</td>
<td>5</td>
<td>Extensive use of purchasing platform for all sites. Shared data and interfaces between all IT systems, with automatic exchange of data</td>
</tr>
</tbody>
</table>
The main issue related to IT was the lack of homogeneity. Since every buyer tended to negotiate manually with suppliers outside any IT system, no process referential or price database was available. Furthermore, users had to switch between several systems, depending on the information they were looking for, resulting in huge loss of time.

But the main issue came from procurement databases. Each site had its own independent SAP with its own database without any communication, with potentially one component with as many SAP reference as the number of sites. It was thus very difficult to maintain a clear, structured and updated view of component databases throughout the whole company.

2.3.2.5. Summary

The keywords that came out from PMA process were **visibility** and **Integration**. Top-down visibility about performance or supplier status, but also horizontal visibility as no common standards for purchasing methods and no common databases existed. Operations and negotiations where done partially outside any system making follow-up very difficult, and manual processes were still numerous.

It seemed also that that actual organization of Company C was the root cause of most of their issues, as the total independence of each site made it impossible for top managers to monitor performance real time. The lack of data sharing between sites made it impossible to do extensive globalization, and visibility from Supplier side was also narrowed as one supplier may have had several Company C clients.
2.3.3. Chosen solution and future organization

To cope with the issues, Company C decided to make two major changes: a reshaping of their actual organization and the establishment of an integrated collaborative procurement platform called PuMa (Purchasing Manager).

PuMa would be an Information System used by all actors of the procurement process. Suppliers would be referenced inside with their scorecards, status and risk levels, with updated globalized data. Clients would also be referenced. Buyers would do the whole procurement process inside PuMa, in which the suppliers would also answer. A complete global products and components database would be available, which would be the consolidation of all SAP databases, with a complete segmentation. Pre-SoCo and SoCo would be triggered and validated in PuMa, as well as final nomination.

Since virtually everything would be done in PuMa, measurements and performance follow-up would be easier to handle. The platform would automatically consolidate all data and calculate the corresponding metrics. Besides, since all projects and sourcing process would be designed and followed-up in PuMa, globalization would be easily done: a component sourced in two different projects could raise the opportunity do to economies of scale. The use of already existing shuttles from another sourcing could reduce transportation costs.

PuMa would thus be the hub in Company C IT organization. It would get information from BW/Vadis, PLM and various SAP, and transfer information to SRM for quality insurance. PuMa databases would be updated daily with automatic interfaces doing the relay between all IS elements (see figure next page).

The extensive use of PuMa goes together with the reshaping of Company C’s procurement organization that goes towards the loss of autonomy for the sites, as we saw that this autonomy was one of the root causes for the raised issues. Although those sites would still have Procurement, HR, Logistics or Production departments, objectives and supervision will come from top group managers, who in return will be able to follow up real time all performance metrics and decide accordingly.
For example, the board would request a price decrease of 3% on group level for a specific commodity. This objective would be transformed by group directors into single objectives for each site, which they will be able to monitor through PuMa and directly have levers to act if things didn’t go as planned. Sites wouldn’t have any P&L account any longer, as everything would be recorded directly into the group accounts. Top-down visibility is therefore optimal.
2.3.4. Conclusion

PuMa, as it was previously described, allows Company C to solve all the issues that arose from PMA process. We could see through this practical case how powerful and effective a tool it was to have a very complete view of a procurement organization. It is very easy to use and can be easily adapted depending on the needs, and can lead to very efficient solutions.

The previous development completely covered phase 1 of IBM PMA methodology, and a detailed roadmap was designed for Phase 2. IBM was also involved in this transformation phase, which we are going to detail in the third part of this paper.
3. PuMa Project specifics

My mission at Company C for IBM consisted in two major tasks. The first one was to organize and perform PMA assessment, and the second was to lead and ensure quality and conformance over the development of PuMa solution, under the supervision of both Company C and IBM project managers. Key requirements for this second task were:

- Mediate discussions between software editor and Company C
- Ensure that the delivered solution correspond to Company C’s needs
- Ensure the strict follow of IBM methodology for Product Owner Assistance (see after)
- Test delivered solution, do bug reporting and ensure overall solution quality
- Launch PuMa in pilot sites and prepare training sessions

Those features will be detailed in the following section. In this project, Company C was of course IBM’s client. The editor of PuMa, IVALUA Company, was acting as a subcontractor.

3.1. Background

3.1.1. Project organization

After PMA assessment, IBM helped Company C for the development of PuMa. Such type of project is called Product Owner Assistance project, which consist in:

- Escorting the client into the development of their product by providing structured and secured methodologies and tools
- Ensuring overall quality
- Preparing go-live for developed product with maximum efficiency and minimum disturbance
Present project, as mentioned before, involved three major actors. Company C, final receiver for PuMa, IBM acting as a contractor, and IVALUA which was responsible of developing the solution. Project team consisted in:

- Two project managers (Company C and IBM)
- Between one and two IBM operative consultants
- IVALUA software architecture expert, responsible of providing means to realize Company C’s needs, in terms of IT
- Between 8 and 15 IVALUA developers
- Between 2 and 4 additional testers from Company C

Project objective was not to develop a complete new solution, but rather to use an existing IVALUA procurement platform called “eBuyer”, and add specific developments to meet Company C’s requirements. See Appendix 2 for screenshots of “eBuyer” solution.

Project schedule for the whole project was as follows:

October and November 2010 were Company C’s needs expression and sent RFQ (see 3.2.1). PuMa project itself started in January 2011 with specification of needs (translation of the requirements into an actual solution by IVALUA, followed by the design of specific developments (integration). Once the solution was delivered, tests and simulation phase started leading to go live and integration in pilot sites. These phases will be detailed later on.
A pilot site is a site selected to test the application in real working conditions before implementing it to the whole group. Four pilot sites were selected, one for each Business Group.

### 3.1.2. PuMa perimeter

PuMa solution was divided into 4 modules meant to cover the whole *Company C’s* procurement process. Those modules were:

- Suppliers Management
- PAP
- Project Sourcing and others
- Contract & Tooling

![Figure 12 - PuMa perimeter overview](image)

Only needs assessment and Supplier benchmark have been left aside, being manual processes. The exit of PuMa is, as explained before, SRM for PQA process.
Key features for those 4 modules are:

**Suppliers Management**

- Suppliers updated list
- Suppliers characteristics (location, commodities, products)
- Status panel
- Suppliers scorecards and risk level
- Validation workflows for introduction

**Productivity Action Plans**

- Consolidated interactive budgets
- Database of available actions
- Validation workflows

**Project and Sourcing**

- Complete projects management with project database, daily updated from BW/Vadis
- Consolidated components database from all SAP
- More than 50 indicators for components
- VRF database with VRF validation workflows
- Sourcing database and link to projects if any
- Complete sourcing process, with every previously mentioned steps and interactive workflows for committees.

**Contracts & Tooling**

- Tooling database with calculated lifetimes and replenishment times
- Contracts database with several templates available and validation workflow

All of these modules were developed following the same roadmap. I have myself mainly worked on Project and Sourcing module, we will hence only detail this module. We will however explicit the results for all modules.
3.1.3. Objectives and expected results

The objective of PuMa solution is simple: find means to model the whole Company C procurement process into an interactive procurement platform, in order to deal with the issues raised by PMA assessment.

The aim is to centralize all procurement related information (suppliers, PAP, sourcing and Contract & Tooling) into a single information system accessible by suppliers and all Company C stakeholders. The process should be simple and user friendly enough so that users would be driven into using this system rather than doing extensive manual paperwork, and performance follow up would become much easier to perform as all relevant data would be centralized and KPIs calculated automatically. Finally, PuMa should give the possibility to capitalize on globalization opportunities.

The four PuMa modules are widely independent but have to communicate together, with an efficient integration among all other Information Systems. Moreover, go-live and integration should be performed without any production interruption.

Final deliverable should be a stand-alone interface usable by any Company C’s site, shared with all its suppliers.
3.2. IBM methodology

When it comes to Product Owner Assistance (POA) projects, IBM has a well-defined methodology in place. We will roughly (for confidentiality reasons) present this method in this section, as well as the results it got in the case of PuMa project.

3.2.1. Needs expression and Request For Pricing (RFP)

In most cases, companies signing a contract with IBM for POA have an idea of product or system they want to develop. In that situation, first steps of POA methodology are project feasibility study and business plan. If the project is somehow related to a process, second step consist in auditing this process (in our case, the audit was PMA assessment). Third step corresponds to the study and benchmark of existing potential solutions and the study of similar cases done by IBM in other companies.

As PuMa was designed to cope with identified issues, and as Company C’s procurement process is unique and very complex, feasibility study, benchmark and similar cases steps were not performed. Early decision was taken to base PuMa on an existing procurement platform and to make specific developments using gap analysis, thus the goal was to send an RFP to known solution editors and find out which platform was the most adapted. In order to be able to do so, IBM helped Company C into their needs expression (fourth step).

Needs expression corresponds to the design of the requirements file, which regroups all features that have to be included in the final version of the solution delivered by the editor. This document is sent to targeted editors, which are supposed to indicate in their answer which functions are standard in their platform, and which ones will require a specific development.

Samples of the needs expression file are given below.
3.2.2. Conception phase

Once the editor selected, proper conception (sixth step) for all 4 PuMa modules could begin. Conception phase consists in the elaboration of a conception file, giving the definition, system architecture, parameters, properties and management rules of every screen and every function included in the module. Management rules explicit what can/cannot be done and in what conditions for every feature.

Conception phase is a long and tedious step which required a lot of meetings between Company C, IVALUA and IBM, but it is a crucial activity as the conception file corresponds to the contract between IVALUA and Company C. All that is included in this file will have to be delivered, and on the contrary everything that is not included will require additional costing.

Samples of conception file for Project and Sourcing module are given below.
Conception file was designed together with models of every screen (in html format), representing what the screen would look like if developed with all features mentioned in the conception file. It is also very useful for ergonomics issues.

Sample of model is given below.

Once the conception file was done, actual development and adaptation of “eBuyer” platform could start.
3.2.3. Tests and Pre-formation

When a module is delivered, it can have an important amount of bugs, anomalies and missing features. It has therefore to be **tested** (seventh step).

A test session is not a rapid test of the main functions, but a complete and thorough test of everything that is included (and not included) in the screen. Every field, every button and every calculation has to be verified and calculated. Acceptance can therefore be rather long and complicated.

In order to organize test sessions, testing sheets (or test scenarios) have been designed. A testing sheet displays the sequence of elementary actions that have to be performed by the tester (click here, check that, go there, do that etc.) in order to correctly test the corresponding features. More than 100 testing sheets were done for the overall PuMa solution. See Appendix 3 for a sample of testing sheet.

Testing sheets are regrouped in a Test plan, giving an indicator of the level of conformance of tested features compared to what has been defined in conception file. It allows follow up of test phase. See appendix 4 for Project & Sourcing module test plan.

All referenced anomalies were reported in an extranet interface between, *Company C*, IBM and IVALUA, allowing tracking and global follow up of advancement state of test phase. Screenshot of extranet is given below.
In the meantime, small training sessions have been scheduled and performed with operatives and managers assigned to pilot sites. Main objectives of these formations were:

- Give a brief overview of context and objectives
- Give a complete view of available features and system architecture of corresponding module (depending on the position of the trainee)
- Explain bug reporting method
- Get feedback for missing data, ergonomics, and further improvements

About 10 pre-formation sessions were performed for in total more than 25 trainees. This formed personnel will then be able to share their knowledge for collaborators inside their corresponding sites.

Once testing and pre-formation have been done and tested module validated by key-stakeholders, actual deployment can begin.

### 3.2.4. Deployment

**Deployment** (eighth step) corresponds to the action of implementing developed product, system or feature within POA. In the case of PuMa, four individual deployments were performed, one for each module.

The aim of deployment methodology is to ensure that deployed element will be efficiently integrated inside IT, human and infrastructure clusters. In other words, that it fits to existing IS, existing machines, technologies and infrastructures, and that it can be completely and efficiently used by involved personnel.

Deployment involve following key features:

- Assignation of roles
- Formation
- Risks designation and Mitigation
- Implementation
Deployment is systematically done with respect to a designed Deployment plan, which grants follow up and quality insurance. Purpose of deployment plan is to:

- Validate that proposed solution actually is ready for deployment. It contains the steps needed to make sure that solution hardware, software, and documentation are in place to proceed.
- Verify that people are trained and ready to support the new system. This includes user, support and temporary deployment communities.
- Verify that the organization is ready to accept the delivery of the proposed solution.
- Verify that the proper level of contingency planning has taken place and that appropriate risk mitigation procedures are ready.

Sample of deployment plan is given below (not for Company C project, for confidentiality reasons).

<table>
<thead>
<tr>
<th>Objective</th>
<th>Reference</th>
<th>Responsibility</th>
<th>Status</th>
<th>Go/No Go</th>
<th>Critical Success Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Training Materials Completed</td>
<td>BUG-24 To Be Process Documentation</td>
<td>Client</td>
<td>3-Complete</td>
<td>No</td>
<td>Delivery of training</td>
</tr>
<tr>
<td>Super User Training complete</td>
<td>BUG-24 To Be Process Documentation</td>
<td>IBM</td>
<td>3-Complete</td>
<td>Yes</td>
<td>Delivery of training</td>
</tr>
<tr>
<td>Deployment target dates established</td>
<td>ENG_23 Deployment and Cutover plans</td>
<td>Client</td>
<td>3-Complete</td>
<td>Yes</td>
<td>Client Established</td>
</tr>
<tr>
<td>Deployment Plan established</td>
<td>ENG_23 Deployment and Cutover plans</td>
<td>IBM</td>
<td>2-in Process</td>
<td>Yes</td>
<td>Deliverable - to be signed</td>
</tr>
<tr>
<td>Deployment team created</td>
<td>Client Team</td>
<td>Client</td>
<td>1-Not Started</td>
<td>No</td>
<td>Team Defined</td>
</tr>
<tr>
<td>Risk Analysis Established</td>
<td>Risk Analysis</td>
<td>Client</td>
<td>2-in Process</td>
<td>No</td>
<td>Creation of a risk plan</td>
</tr>
<tr>
<td>Go/No decision criteria established</td>
<td>ENG_23 Deployment and Cutover plans</td>
<td>Client PM</td>
<td>1-Not Started</td>
<td>Yes</td>
<td>Go Criteria established</td>
</tr>
<tr>
<td>Deployment responsibilities established</td>
<td>ENG_23 Deployment and Cutover plans</td>
<td>Client</td>
<td>1-Not Started</td>
<td>Yes</td>
<td>Responsibilities Established</td>
</tr>
<tr>
<td>Communication Plan established</td>
<td>ENG_23 Deployment and Cutover plans</td>
<td>Client</td>
<td>2-in Process</td>
<td>No</td>
<td>Creation of a plan</td>
</tr>
<tr>
<td>System Problem escalation and reporting process</td>
<td>ENG_23 Deployment and Cutover plans</td>
<td>Client IT</td>
<td>1-Not Started</td>
<td>No</td>
<td>Post Go-Live Plan</td>
</tr>
<tr>
<td>Post Go-Live Support Strategy established</td>
<td></td>
<td>Client</td>
<td>1-Not Started</td>
<td>No</td>
<td>Creation of a plan</td>
</tr>
<tr>
<td>Completion of Integration testing (APP-73)</td>
<td>APP-73 Integration test plan</td>
<td>Client</td>
<td>1-Not Started</td>
<td>Yes</td>
<td>Test Plan Executed and known exceptions documented</td>
</tr>
<tr>
<td>User Acceptance Testing Complete</td>
<td>APP-76 User Acceptance testing plan</td>
<td>Client</td>
<td>1-Not Started</td>
<td>Yes</td>
<td>Completion of testing</td>
</tr>
<tr>
<td>Daily batch processes in place for data movement and staging server</td>
<td>APP-73 Integration test plan</td>
<td>Client</td>
<td>1-Not Started</td>
<td>Yes</td>
<td>Completion of testing</td>
</tr>
<tr>
<td>Production Scripts created, documented and validated</td>
<td>APP-73 Integration test plan</td>
<td>Client IT</td>
<td>1-Not Started</td>
<td>Yes</td>
<td>Integration testing completed</td>
</tr>
<tr>
<td>Close-Loop Data flows and jobs in place</td>
<td>APP-71 Integration test plan, APP-76 User acceptance test plan</td>
<td>Client IT</td>
<td>1-Not Started</td>
<td>Yes</td>
<td>Completion of integration and user acceptance testing</td>
</tr>
<tr>
<td>FP Spec TestModel operational</td>
<td>ENG_23 Deployment and Cutover plans</td>
<td>Client IT</td>
<td>1-Not Started</td>
<td>Yes</td>
<td>Completion of integration and user acceptance testing</td>
</tr>
<tr>
<td>Planner job design in place</td>
<td>Org-67 Org and Role Design Rev</td>
<td>Client</td>
<td>1-Not Started</td>
<td>No</td>
<td>Training and communication of new job requirements</td>
</tr>
<tr>
<td>Metrics Established</td>
<td>ORG-11 Performance Metrics</td>
<td>Client</td>
<td>1-Not Started</td>
<td>No</td>
<td>KPIs established and reporting in place</td>
</tr>
<tr>
<td>Communicate Go/Live Decision to Users</td>
<td>ENG_23 Deployment and Cutover plans</td>
<td>Client PM</td>
<td>1-Not Started</td>
<td>Yes</td>
<td>Creation of a plan</td>
</tr>
<tr>
<td>Cutover 1st morning(s) to PST</td>
<td>ENG_23 Deployment and Cutover plans</td>
<td>Client IT</td>
<td>1-Not Started</td>
<td>Yes</td>
<td>PST Logic in place</td>
</tr>
<tr>
<td>Decommission legacy systems based on trouble</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Screenshot 5 - Deployment plan
3.3. Results, analysis and comments

3.3.1. PuMa Project & Sourcing architecture

In this section, we will detail specifically the results for the development of Project & Sourcing module, as it is the core and most important element of PuMa. Global considerations and conclusions about PuMa will be given at the end of this section.

3.1.1.1. Overview

*Company C’s* sourcing processes (projects and none-projects) were modeled so that a Buyer using PuMa would feel as little difference as possible with what he is used to in terms of process, but experience considerably more user friendly functions with minimal manual work and maximum efficiency.

In order to model these sourcing processes, this module was built around 5 databases:

- Suppliers database, shared with Suppliers module
- Projects database, updated from BW
- Components database, with consolidated database coming from all SAPs, and complementary information inherited from PLM and BW/Vadis.
- VRF database
- Sourcing Processes database (running or completed)

These five databases communicate with each other and share elements in order to reproduce desired processes.

Following picture summarizes P&S architecture.
As mentioned before, project sourcings can be divided into two major steps. First, project is inherited from BW and managed, then sourcing processes are created based on it, negotiations are performed with suppliers, committees are validated and Nomination is done. A buyer will be able, at any moment, to switch from one aspect to the other. During the whole process, metrics, KPIs and general indicators are referenced, updated and calculated real time, and are consultable by all personnel involved, making follow up very easy and reactivity very high. Core element here is the project, as it links components to VRFs, and components to RFxs. It also regroups all prices and other information.

For each project, a dashboard can be generated which regroups all relevant project information (schedule, sites, team, components, BOMs, costs, etc.). It will be updated real time with new information. For non-project sourcings, only second step exists.
3.1.1.2. Core functionalities

We will now see in details what are the main actions performed by a buyer using P&S module, to emphasize on benefits compared to previous state.

Getting a project

As previously mentioned, projects are transferred into PuMa from BW. The first thing to do for the buyer is to retrieve it and activate it. If he wants to open one of his running projects, a search function is available inside projects database. Key members of the team are indicated and can be searched upon, as well as sites or vehicles.

For all projects coming from BW, key information has been referenced, such as schedule, sites, team, client, vehicle, currencies, etc.
Modify key information

Once the project has been retrieved, the buyer can modify key information such as the team or the schedule. A trace of every modification is kept for every project to ensure complete follow up.

All information included in a project is called a project sheet. Project sheet is divided into 8 tabs: Identity (general information), Team, Schedule, Currency, Documents (attached to project), Components, Variants & Volumes (or BOMs) and Follow up. Each tab can of course independently be modified.

Screenshot 7 - Identity tab of project sheet

Screenshot 8 - Currency tab of project sheet
Add some components, BOMs and prices

This is the main activity related to project management. When projects come from BW, no components, no prices and no BOMs are included inside. The buyer will have to insert them manually.

Components are added to the project through an import file. Each line corresponds to one component. While doing component import, BOMs are also created as a component has to be attached to at least one BOM (or Variant) inside the project. In the import file, prices for each component are added, as well as much other information (such as main commodity, description, lead time, incoterms, targeted suppliers, tooling costs, etc.).

Once the import has been done, information can of course be modified manually. Components can also be added one at a time without using the import, for small modifications or evolutions.

Add some volumes

Once BOMs have been created with components attached to them, sourcing volumes of each BOM has to be added. Volumes are referenced on the next 10 years, and can be modified any time. Volumes represent the number of units of each BOMS that are going to be manufactured or assembled by Company C each year. These volumes, together with part quantities per BOMs, give the amount of each single component that have to be sourced.
Prices indicators are also calculated by PuMa based on single prices for each component composing considered BOM.

Screenshot 10 - Variant tab of project sheet

Screenshot 11 - Inside a Variant
Select components for RFx

From components tab inside Project sheet, a set of components can be selected in order to create an RFx on them. Those components will be automatically added by default on the RFQs sent later on.

An RFx is characterized by General information, such as root project, root sites and selected main commodity, as well as team, schedule, currencies and documents. This information is independent from the one selected on project sheet.
An RFx side menu is composed of two distinct sections. The header, common to all RFx (but with specific information), and a lower section related to the sourcing itself. Previously selected components have been added to components tab.

Note that this only involves Project RFxs. For other types, RFx is created directly from RFx database, and sourced items are added manually.

**Pre-SoCo**

Pre-SoCo step includes two things: selection of targeted suppliers to which RFPs are going to be sent, and actual meeting between managers for commodity and supplier strategies. The meeting itself is done outside PuMa. However, suppliers selection and Pre-SoCo validation is done within the application, for nomination purposes and traceability. Moreover Pre-SoCo file, regrouping all decisions taken during the meeting, has to be uploaded in PuMa in order to be reviewed and available to all stakeholders.
Create/Assign VRFs to selected components

Once the Pro-SoCo has been validated, VRFs can be created and attached to components. As mentioned before, VRFs are created using a collaborative workflow. All actors' contribution (uploading of their part of the file) and validation is required.
Created VRF is automatically partially filled with information referenced in PuMa. All VRFs related to components added to the current RFx are regrouped inside VRF tab, where they can be consulted and modified.

Send RFQ

After selection or creation, components and VRFs are added to the RFQs that are going to be sent to targeted suppliers. Several lots and rounds can be initiated, and several RFQs can be running at the same time for different quotation conditions.
Answer to RFQs is done directly inside PuMa by suppliers. Their offers will be compared inside and outside PuMa, and negotiation is still done partially by mail and phone between buyers and sellers. Agreed terms are then updated in PuMa.

Negotiations are performed until Buyer is satisfied or deadline set on schedule reached.

SoCo and Nomination

SoCo model realized in PuMa is rather shallow as it only consists in a validation. Meeting is once again performed outside SoCo (as during Pre-SoCo), but SoCo file has to be updated.

To conclude, Nomination of best supplier(s) offer(s) is done in PuMa. If agreed terms differ from what had already been inputted in the application, indicators have to be updated prior to validation. This constitutes the final step of the process. Agreed VRFs and prices are then sent to SRM for Product Quality Assurance (PQA) process.

3.1.1.3. Improvements compared to existing process

The main asset is of P&S module course optimal visibility on the whole process. Almost every action that was before performed manually is now done electronically in PuMa.
Component prices evolution is now updated real time by the buyer and accessible by any manager. BOMs volumes can be followed up in a few clicks, and forecasting and strategic decisions can be done accordingly. Data such as prices can be shared between buyers, projects and sites without any constraint. VRFs are consultable by all and are created in a collaborative and structured way, as opposed to previous state. And so on.

PuMa P&S process is moreover much more user friendly than the previous method. By automating most of the tasks, buyers gained a great deal of time, estimated to between 15 and 30 percents. Extensive paperwork has been eradicated, and reporting is much less complicated.

Besides, using components database, an absolute referential has been created for all sites. They can all use the same references and the same prices, leading to globalization opportunities. Globalization is enhanced by the creation of an extensive query allowing creating components lists along various filters.

![Screenshot 20 - Components query with extended search function and results table](image)

Using this complete search function, a manager can display various visions of the group sourcing state and make all sorts of regroupings, as the response table contains more than 50 columns displayed all components-related metrics and parameters. Globalization opportunities are thus numerous.
Although we only detailed P&S modules, previous statements and observations can be adapted to other modules, as the objectives were the same.

3.3.2. Global benefits from PuMa

We will try in this section to explicit the benefits brought by the implementation of PuMa in its whole by comparing the new state to the previous one described with Procurement Maturity Assessment method.

➢ Procurement Process

Previous statement: No absolute referential, little data sharing, extensive manual paperwork, absence of globalization, absence of documentation.

Actual situation: Whether it is with Suppliers, PAP, P&S or Contract & Tooling (C&T) modules, PuMa grants extensive automation and data sharing. Structured and reliable basis have been defined for all sites at group level, and globalization is available at all levels. The creation of documentation has been launched by Company C but is not part of PuMa project.

➢ Suppliers relationships

Previous statement: No consolidation at group level, little data sharing, low top-down visibility.

Actual situation: All supplier-related information is now stored in PuMa. Scorecards are created for the whole group, shared among all sites and updated regularly. Introduction process is now an online workflow, and visibility is maximal. As suppliers also use PuMa, communication is also enhanced. Visibility is also easy through PuMa screens for all involved stakeholders.
Measurements

Previous statement: Difficult follow-up for top-level managers complicated and time consuming reporting

Actual situation: Once again, follow-up has been as much simplified as possible with shared real-time updated data. Reporting is done almost completely automatically, reducing dramatically time spent by all actors and contributors.

Information Technologies

Previous statement: Lack of homogeneity, absence of common database, extensive switching between several systems.

Actual situation: From a Purchasing/Procurement point of view, only one system is now used as PuMa automatically and daily takes information for BW and PLM, and transfers to SRM only take several clicks. Common reliable databases have been created, and switching is no longer needed.

As a conclusion, we can argue that PuMa proves to be an accurate response to the defects raised by PMA assessment. Visibility and data-sharing are maximal, globalization is possible, and the whole process has involved towards a completely integrated chain of actions driven towards supply chain value by maximizing the levels of maturity of its core steps.
3.3.3. General conclusion and comments

PuMa development was realized as part of a global will of Company C to evolve from a cluster of independent sites acting as individual small companies to a thoroughly centralized organization were every decision is taken top-down. Group managers widely control all activities (commodities, sourcing, production, etc.), have easy follow up of performance and have levers to act if needed.

However, one can wonder what the drawbacks of such evolution are. As a matter of fact, Company C withstood quite effectively 2007 crisis with constant growth and millions of benefits each year. Many observers argued that the reason for this remarkable performance was actually because of the independence of each site. Being autonomous and very close to clients, suppliers and field needs, they could very quickly react to market changes or economical events. As every SPM had just a performance objective as requirement, they were completely free to take any relevant action to achieve it. With the actual organization, top managers being very far from market needs and actors, decisions will be much slower and less adapted to each individual situation.

In the end, the question is: can the benefits granted by globalization and process optimization through PuMa outweigh the losses due to this reduced flexibility? This cannot be answered yet, but doubts can certainly be raised.
Conclusion

Supply Chain, or even Supply Networks. Although a lot of times used referring only to logistics and distribution, Supply Chain Management regroups all key steps involved in the routing of a product, good or service to the final customers. Nowadays, almost every company having global activities possess a Supply Chain department, and the optimization of this chain of activities is one of the major sources of performance and savings (costs, humans and machines). It is only if each of those individual steps are all driven towards a common goal and towards overall supply chain value that a company will be able to achieve maximal profits.

We saw through this paper the tremendous importance that procurement and purchasing have in 21st century’s industry. Procurement process optimization being a relatively new concept, possible improvements in this field are quite large although most of the incurred costs transferred to the final clients come from this phase. Through Procurement Maturity Assessment, we showed that the possibility to know the state a procurement department is at and what the gaps compared to best practices are exists, but it is still barely used, even though it proved to be very effective with Company C’s project. Odds are high that demand for PMA will be high in the next decades to come.

Successive global crisis, increased raw material costs, inflation and money depreciation, pressure is high on industries in the beginning of this century. But if a closer look is taken, the reason why it affects their performance is because of the loss of final consumption, but also because procurement became more tricky and expensive in such an environment. Raw material costs directly impact procurement costs, inflation and money depreciation challenges sourcing strategies and locations. Environmental events, such as earthquakes, tsunamis and hurricanes are besides important variables in the sourcing equation. A complicated and explosive situation you say? Without a shadow of a doubt. What are we waiting for?
Bibliography and other sources


- Keough, M. (1993), Buying your way to the top Director.

- IBM documentation
Appendix

Appendix 1 – Keough’s levels of development
Appendix 2 – “eBuyer” screenshots (in French)
**Appendix 3 – Testing sheet sample**

### Test Sheet J.2

**Test Name:** Customer management

**Objective:**
Create/modify/block/delete customers

**General Remarks:**

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<thead>
<tr>
<th>System</th>
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<tr>
<td>PUMA</td>
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<tr>
<td>SRM</td>
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<td>SAP</td>
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**Pre-requisite:**

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<th>Action to test</th>
<th>Tested element</th>
<th>Expected Result</th>
<th>Obtained result / Tester Comments</th>
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<tbody>
<tr>
<td>1.1</td>
<td>Login to PUMA</td>
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<tr>
<td>1.2</td>
<td>Click to Administrator/Basic data/Enter/ Customer</td>
<td>Customer creation</td>
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<td>1.3</td>
<td>Click on “New” icon at the beginning of the first selected “Auto-Generated” line</td>
<td>Customer creation</td>
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<td>1.4</td>
<td>Click on “Save” button</td>
<td>Records create</td>
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</table>

**Profile involved:**
- Administrator
- Coordinator
- Buyer
- Group Purchasing Director (GPD)
- Region Purchasing Director (RPD)
- Business Group Purchasing Director (BGP)
- Group Buying Manager (GBM)
- Group Category Manager (GCM)
- Regional Manager (RM)
- Product Group Product Line (PGPL)
- Product Purchasing Director (PPD)
- Group Segment (GS)
### Appendix 4 – Project & Sourcing test plan

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<th>Comments</th>
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