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## **e-Procurement—Strengthening the Indirect Supply Chain Through Technology Globalization**

# e-Procurement–Strengthening the Indirect Supply Chain Through Technology Globalization

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## ABSTRACT

Indirect Materials (IDM) can be defined as goods and services that are not directly used in the production of Intel products. IDM spending accounts for 60% of Intel’s procurement spending with a significant impact on Intel’s supply-chain and bottom-line profitability.

In 2002, indirect procurement at Intel was sub-optimal with 60+ ways to buy. There were purchase order delays impacting internal customers, limited aggregation of Intel’s spending power, and no standardization of global systems. To address these gaps, the Materials organization initiated a comprehensive transition plan aimed at unifying the organization and creating a world-class global procurement solution. The program termed “e-Procurement” kept a keen focus on the global end state and targeted three focus areas: tools, people, and processes. This report focuses on the technological advancements made to strengthen the IDM supply chain.

e-Procurement focuses on several innovative solutions with a single global Enterprise Resource Planning (ERP) system as a foundation. An Internet negotiations tool was introduced to achieve additional cost savings and negotiation efficiencies. Now, suppliers participate in live on-line reverse Internet Negotiations to win Intel’s business. New online “e-Catalogs” directly connect requisitioners to the supply base and provide efficiencies through touchless transactions and contract compliance. Several data models were improved and a reporting system was introduced giving visibility into global spending by supplier, commodity, and country.

## INTRODUCTION

The manufacturing industry has traditionally focused its procurement resources on optimizing procurement practices in Direct Materials (DM), defined as materials needed to make the product. In the past several years, organizations have realized that they spend 60% of their

procurement spending on Indirect Materials (IDM), goods and services that are not directly related to the making of a product (Figure 1). Indirect procurement provides the “next big opportunity” for organizations to optimize the supply chain and save money.



Figure 1: What constitutes Indirect Materials (IDM)

Intel’s Indirect Materials (IDM) organization launched an initiative called “e-Procurement” back in 2002 that focused on strengthening the IDM supply chain. The major focus of the program was technology enhancements and additions. The program also focused on improving business processes and people skill sets.

This paper outlines the challenges, improvements, and results for the e-Procurement program that transformed the Intel IDM organization into a world-class supply-chain benchmark.

## CHALLENGES

It is worth noting that the solution to the IDM challenge was not strictly a technical one. Technology-only solutions have previously ended in failure. Success began with business process analyses that leveraged the available technology. The starting point for our technology success

was to focus on data. The team spent considerable time understanding the “as is” process and then used a rigid Total Quality Data Management (TQDM) process to ensure that the “to-be” process established solid data

quality. Figure 2, also known as “the mess,” depicts the “as is” process.

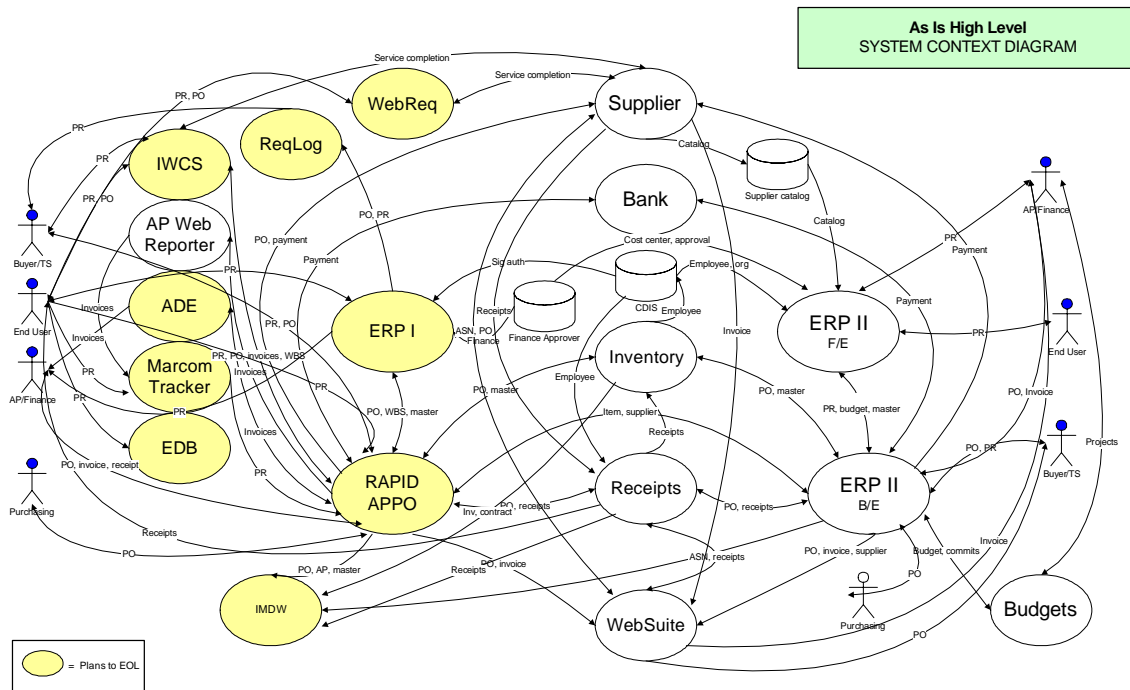


Figure 2: 2002 “As-Is” system

After the data analysis was completed several conclusions were drawn. The solution relied heavily on home-grown and highly customized applications. Based on the amount of data flowing among systems, it is difficult to link data back to the originating system of record with audit requirements. The overall architecture had been developed without regard to data visibility at an enterprise level. The whole “as is” process was extremely high maintenance: the architecture did not meet all of the business needs of the organization, high cost of ownership was associated with the solution architecture as deployed and maintained, and the system was built incrementally over time, resulting in a complex solution.

**Drivers**

There were several triggers that intensified the need for a significant transformation for IDM and services.

**Sub-Optimal Procurement Solution**

In 2002, Intel employees who needed IDM or services had 60+ ways to buy and pay for them. Methods ranged from manual to automated solutions. There were two issues with this sub-optimal solution. First, the requisitioner was unsure of the correct method to buy or pay leading to incorrect method utilization. Second, it required significant maintenance on procurement and IT

organizations to maintain these methods. There was a need for standardization and automation.

**Lack of Spending Visibility**

In 2002, IDM did not have any reporting solution that was able to measure Intel’s global IDM spending accurately. The data visibility was limited. There was a lack of standard material schema codes to enable spending aggregation. In a market that was getting increasingly global, it was important for Intel to accurately measure spending in order to maintain greater control over spending and have greater leverage when it came to negotiating terms. Finally, there wasn’t any systematic solution that measured the spending by contract, by supplier, or by geography.

**Revenue vs. Consumption Growth**

The e-Procurement team compared the IDM spending trend with Intel’s revenue trend in 2002. The findings were concerning: the consumption (IDM spending) was growing at a faster rate than revenue (see Figure 3). This was directly impacting Intel’s bottom-line profitability. It became important to put solutions in place that provided global spending visibility. It also became important for the IDM team to influence internal customers to reduce spending.

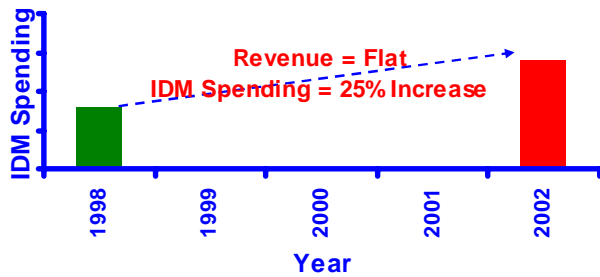


Figure 3: IDM spending growth

**Percentage of Spending in IDM vs. DM**

Traditionally, many companies, including Intel, focus mainly on reducing the cost of DMs; these costs are more visible as they relate to product or services costs. However, the e-Procurement team found that similar to several other companies, Intel spent 60% of their procurement dollars on IDM and services (see Figure 4). The Materials organization clearly needed to look closely at the IDM supply chain.

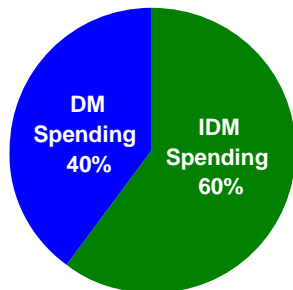


Figure 4: Intel spending pattern

**Intel Revenue Pattern**

As personal computing becomes prevalent across the globe, a higher and higher percentage of Intel’s revenue comes from global markets. This global trend in revenue also has implications for procurement systems and tools. To support the global trend in revenue, many of Intel’s business units are now locating globally. The e-Procurement team needed to look at standardization of purchasing processes and tools across the globe to support this trend.

**Increase in Maverick Spending and Supply Base**

If IDM continues to work in “regional” silos and Intel continues to expand into the global workforce, the resulting effect will be an increase in the supply base and an increase in spending with non-preferred suppliers (also called “maverick spends”). For this reason alone, Intel must have an IDM global spending policy. This also provides an opportunity to optimize Intel’s supply base, thus reducing supplier management expense.

**Industry Benchmarking**

Research was conducted on several companies to find an optimal solution to a strong global supply chain. The IDM organization investigated best-known methods and several companies shared knowledge. Among the practices that needed to be observed were the following:

- Utilize e-Tools.
- Have a standard global procurement process.
- Have a standard global sourcing process.
- Have global procurement teams.
- Engage business partners.
- Have global spends aggregation.
- Enforce “correct ways to buy.”
- Put consumption reduction programs in place.

**MANAGEMENT VISION**

Senior management can play an important role in changing the IDM process by creating a vision and setting the stage for change. A large-scale improvement program without vision and buy-in from management is one of the key reasons for failure. The vision should identify areas of focus, key metrics, and an overall timeline. This is exactly what the Materials organization management and IT organization management did. Their vision is known as the World-Class Indirect Procurement vision (WCIP) (see Figure 5).

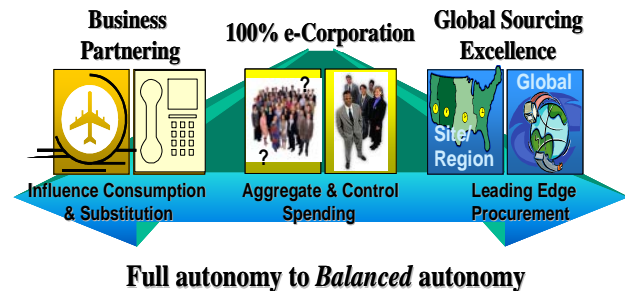


Figure 5: World-Class Indirect Procurement (WCIP)–IDM vision

The vision helped the organization align to common goals and focus areas and provided a way to communicate and check progress.

**Solutions**

Our industry benchmarking revealed that a “technology only” approach would have limited success in strengthening the IDM supply chain. The e-Procurement program had to be more than just a new set of tools. The structure of the organization, existing processes, people skill sets, and behaviors also needed attention. As a result,

while the overall program focus remained on technology improvements, significant improvements in process and people systems were made. A combination of these three factors drove the level of improvement we needed to realize the IDM vision (Figure 6).



Figure 6: WCIP enablers

### Tools (Technology)

The “to be” solution (Figure 7) offered the following benefits.

- Reduced system architecture complexity.
- Centralized procurement systems attached to the global Intel communications backbone.
- Improved and standardized data models.
- Proven data architecture in use globally.
- Near 100% match against requirements.
- Reduced IT operations management overhead.
- Leveraging of existing, off-the-shelf software.
- Scalability of core system components.
- Extensibility to other modules and third-party apps.
- Visibility of all data regulated through the data model.

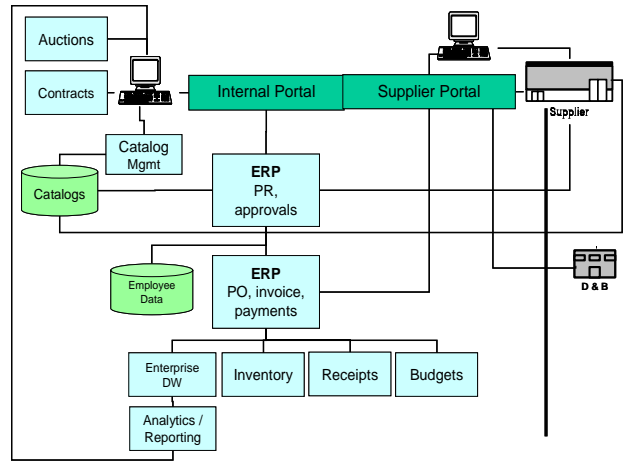


Figure 7: “To-Be” solution

Another key aspect of technology was to leverage our systems to support new processes. Key areas to highlight are global deployment, minimal system modification, limited interfaces, and parallel end-of-life programs for retiring systems.

Examples of key programs that were implemented were Internet negotiations, e-Catalog, and global procurement reporting.

### e-Catalogs

Using e-Catalog, a requisitioner can directly access a supplier’s list of items with minimal procurement involvement. This application improves the Throughput Time (TPT) and provides an excellent Graphical User Interface (GUI). Items that have high transaction volume can be described easily with or without pictures, or come directly off the shelf, such as office products, were a good fit for e-Catalog technology. During the first full year, thirty-nine catalogs in nine countries were deployed. Deployment of new catalogs will likely continue through mid-2008.

There are three primary benefits to the use of e-Catalogs: The first is the ability to get data by supplier, requisitioner, commodity, or by specific items purchased. The contracted purchase price is consistently guaranteed via the catalog. Aside from the contracted price, the catalog offers only items that have been contracted. Lastly, there is about a one-week reduction in processing time.

### Internet Negotiations

The Materials organization was utilizing traditional negotiations with no technology that involved a significant amount of face-to-face contact, telephone calls, e-mail, faxes, etc. The traditional process is iterative and time intensive. The e-Procurement team, through

benchmarking, found an application capable of performing negotiation activities on-line.

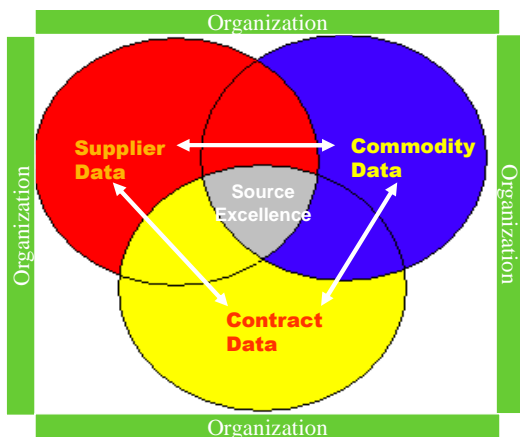
Internet Negotiations, an on-line negotiation capability, allows repetitive and real-time bidding by multiple suppliers, within a singular negotiation forum. This capability utilizes the Internet to reduce cycle time and provide a total cost evaluation for suppliers.

During the last three years, the Materials organization has been highly successful in using this tool in many of its commodity negotiations and has achieved an average of 10% in additional savings.

**Global Procurement Reporting**

“Spends visibility” was one of the key drivers for the e-Procurement program. The consolidation of business processes and tools aimed to create an environment where the data layer was integrated so a buyer and commodity manager had comprehensive visibility to spends data in the relevant and desired cuts. The next step was the creation of a data model that produces answers to the relevant business questions—this is the point where reporting technology steps in. A Business Intelligence (BI) layer with multi-dimensional On-Line Analytical Processing (OLAP) technology utilizing Enterprise Data Warehouse was identified as the required infrastructure.

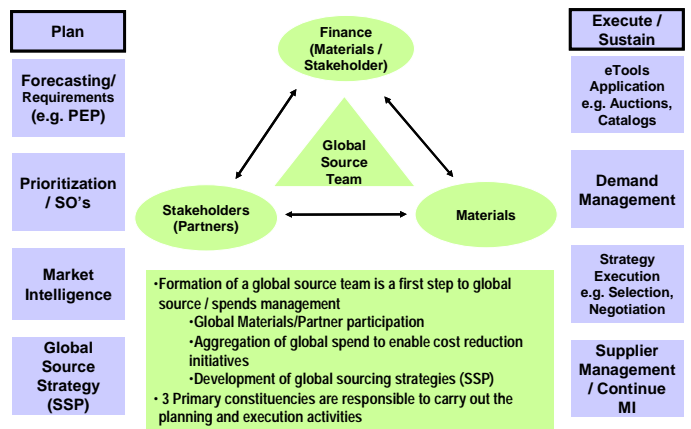
Within the requirements gathering and design process it was identified that some of the dimensions are either non-existent or not in the correct structure. The critical ones were supplier, commodity, and contract (see Figure 8). A major effort was invested in creating the correct supplier structure (ability to identify 100 instances of Supplier A and a legal relationship among the suppliers). Similarly, a commodity hierarchy was created from scratch representing the “non-part numbered items” purchases. This commodity hierarchy is aligned with industry-standard coding.



**Figure 8: Data model**

**People**

Several improvements were made in CP’s People Systems. First, while the resources remained aligned organizationally to regional management, they became matrixed functionally to central teams. For example, a sourcing specialist for IT products in Europe still reported to European management; however, his or her functional responsibilities aligned to a global IT products sourcing team. In addition, a transformation was needed to transition from “procurement only” regional teams to global teams. The concept of a global source team (Figure 9) was introduced in mid-2003. Global source teams not only included IDM employees, but also key business partners and the finance organization as equal members on the team.



**Figure 9: Global source teams**

In addition to the team development, several new training modules in business partnering, market intelligence, sourcing plans, and diversity training were introduced for employees to enhance their skill set.

**Process**

A 5-step source process was introduced in 2003 (Figure 10) as a common global framework for IDM’s sourcing and fulfillment professionals. This 5-step process provided a consistent framework for IDM employees worldwide to operate within. A standardized framework enabled a common approach and activities. Global source teams now had a process to follow that develops and enables optimal sourcing strategies for Intel.



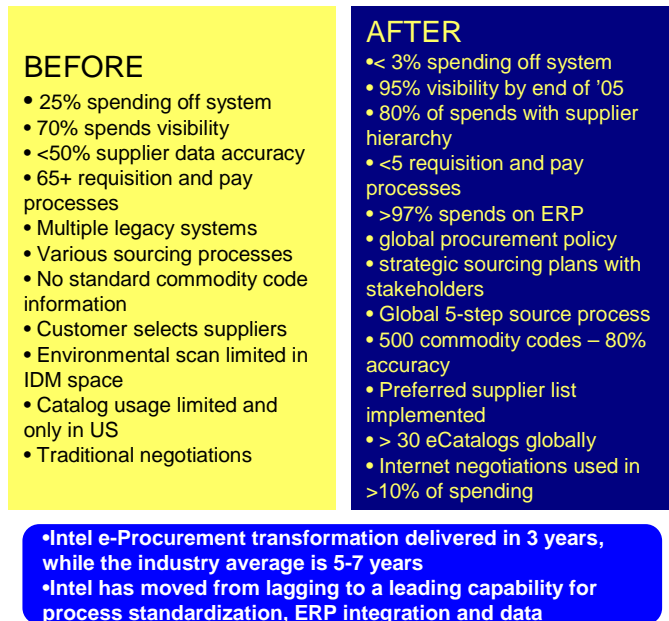
**Figure 10: 5-step source process**

Another key process change was how materials and services were coded in our systems. A new coding scheme was introduced (called “Commodity Schema”) and

aligned with the industry standards. A common global coding process provided an opportunity for spending aggregation and data accuracy.

## RESULTS

The e-Procurement program has been highly successful for Intel in the fields of technology, business processes, and people systems for indirect materials and services procurement. The program continues to deliver great savings and is expected to pass a cumulative savings of over \$300M by the end of 2005. Figure 11 shows before and after progress.



**Figure 11: e-Procurement results summary**

Solid progress has been made in technology deployment and enhancements. Over 95% of IDM spending is now channeled through a single global ERP system. A global reporting capability allows for a multi-dimensional view of IDM spending. Intel's IDM spending analysis progress was recognized by *Purchasing Magazine* in an article in December 2004. Intel's 60+ ways of purchasing methods and tools has been streamlined to five ways to buy. An Internet negotiations tool revolutionized supplier negotiations methodology. A catalog application is now in use in nine different countries.

The introduction of a 5-step source process helped the IDM organization drive a consistent, standardized framework for sourcing across the globe. The 5-step source process also enabled much larger engagement and influence with internal stakeholders than ever before. The success of this process was also recognized by *Purchasing Magazine* in its April 7, 2005 issue.

The IDM team has also evolved significantly. The organization was transformed from "regional procurement silos" to a global workforce. The organization formalized their relationship and their procurement expertise with the internal stakeholders through global source teams.

While the journey continues, it is estimated that the e-Procurement program delivered changes in the IDM procurement in three years, beating the industry average of five to seven years.

Finally, a couple of quotes from senior managers at Intel: Ann Marie Kenitzer-Director, Requisition to Settlement Capability Management, ISTG says, "Intel's e-Procurement initiative has transformed indirect materials into a global, strategic purchasing capability in one half the time of industry benchmarks and has delivered over \$300M in bottom-line savings to date. The implementation of standard global business processes, integrated and innovative information solutions, and emphasis on quality data is creating a new paradigm for global spend visibility and control of indirect materials that will deliver increased business value for Intel into the future."

Craig Brown, VP, TMG, Director-Materials, "e-Procurement program has delivered leadership results in spend management, sourcing excellence, stakeholder alignment, and controls. It has resulted in far more efficient indirect spending over prior years."

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Above all, we acknowledge the tremendous drive and desire from the IDM employee base to improve current practices, enhance technology, and become a world-class indirect procurement organization.

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