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Introduction

If a tech-savvy colleague asked you to explain the basics of Business Process Improvement (BPI) and its supporting technologies, could you do it? If a CEO wanted to understand more about how technology can support process improvement, but did not understand technical language very well, could you tell the story using an engaging analogy? Hopefully when you’re done reading this paper, you’ll be able to answer “yes I can” to both of these challenges.

In the analogy used throughout this paper, the combination of Formula One race car and driver represents a hypothetical business or organization. Both can be seen as complex systems made up of manual and automated processes. Just as racing teams must bring all the process elements together in order to cross the finish line first, businesses must perfect their processes in order to beat the competition.

The fundamentals of auto racing success have not changed much over time. The team that does the best job of executing and optimizing its processes will win the race. The fundamentals of business success have not changed much over time either. Companies with better processes and better execution spend less, sell more and avoid regulatory penalties.

In the Formula One analogy, BPI initiatives are represented by the driver himself. But the driver needs help to win the race – he cannot do it alone. He first needs the help of a skilled pit crew, the Process Center of Excellence (PCoE), to direct and oversee all of the organization’s process improvement efforts. Then the driver needs a combination of technologies – the Formula One car – to carry him across the finish line.

Here’s what it takes to reach that finish line:

• First, this metaphorical car needs a strong body – application modernization
• Second, the car needs a powerful engine, which is a Service-Oriented Architecture (SOA)
• Third, it must have effective brakes in the form of SOA governance
• Fourth, the car must interface with the outside world through Business-to-Business integration (B2B)
• Fifth, the driver needs a steering wheel in the form of Business Process Management (BPM)
• And, sixth, because the driver needs input on the status of all systems, the driver needs Business Activity Monitoring (BAM)

The Driver = Business Process Improvement (BPI) Initiatives

To win consistently, teams and organizations need to go beyond simply executing their processes consistently. They must make their business processes better and better, because that’s what the competition is doing. The formal approach to making processes better is to launch BPI initiatives. BPI is represented as the driver in this analogy because BPI initiatives are human endeavors. Technology is available to assist, but people drive BPI. In addition, process improvement that does not address strategic business requirements will fail in the long run. Process improvement is not about a single project, but about creating culture change in the business.

The Pit Crew = Process Center of Excellence (PCoE)

No Formula One driver would even finish a race – let alone win – without the assistance of a highly-skilled pit crew. In the same way, BPI initiatives will only provide haphazard benefit to the organization without the support of a PCoE. There are at least five key elements that comprise a PCoE:

1. A documented process improvement methodology that can stand alone and is also able to work in conjunction with various technologies
2. A team headed by a Process Czar (or similar title) and comprised of highly competent employees with complementary skills and residing in various parts of the organization
3. A repository to hold and manage all types of process knowledge accumulated from inside and outside the organization
4. Executive sponsorship, including sufficient funding and empowerment to enforce governance policies throughout the organization
5. Metrics-based Key Performance Indicators (KPIs) that are tied to the organization’s strategic objectives and against which all process improvement initiatives will be judged

F1 Fast Fact
Germany’s Michael Schumacher is Formula One’s winningest driver, amassing 91 victories between 1991 and his retirement from the sport in 2006.
Fortunately, Centers of Excellence have by now been implemented successfully in many organizations, and a significant number of case studies are available from industry analyst groups and other sources to provide guidance in setting one up.

Most large organizations are going to have process improvement somewhere on the strategic roadmap. And those that do will intuitively see the need for a “hub”, such as a Process Center of Excellence, to guide and coordinate the effort.

The Race Car’s Body = Application Modernization

At the core of the Formula One race car is a unified body structure that ties all the other parts together. Just as the body is the essential foundation for the Formula One car, application modernization is the essential technology foundation for BPI.

Most large organizations have already recognized their most critical business processes and automated them by expressing them in custom-built applications, often running on a mainframe. These automated processes typically embody the “secret sauce” of the organization, distinguishing the organization from its peers and competitors in a way that an off-the-shelf package cannot replicate (for example, a shipping company’s cargo management system or a retailer’s supply chain network). So when it comes to improving business processes, it is vital that an organization incorporate its most important automated processes in the effort. That’s why Application Modernization is essential to BPI.

The Formula One car’s body is made up of four major components: the chassis, suspension, shell and aerodynamic package. Correspondingly, there are four major elements within application modernization: application discovery, Web enablement, SQL enablement and SOA enablement.

The Formula One car begins with the chassis, a super-strong carbon-fiber “monocoque” (single piece) that protects the driver, holds heavy components in place under great stress, and gives strength and integrity to the entire car assembly. In the organization, application discovery goes to the heart of complex core applications, revealing the process-oriented “gems” hidden inside. It uses automated code analytics to prepare application code for re-use in SOA and BPM initiatives and to optimize application performance and eliminate software deficiencies.

The Formula One car’s shell creates vital aerodynamic flow that keeps the car on the track and minimizes drag as well as protecting the driver and components from minor altercations and flying debris. But in the multi-billion-dollar sport of Formula One, these functions are secondary. The shell is primarily a very expensive rolling billboard – an ambassador of the sponsor’s brand and image to the outside world, using shape and color to create a positive impression for the fans and the sponsor’s clients. In the organization, Web enablement plays a diplomatic role as well, transforming unappealing “green screens” into browser-based interfaces – modern touch-points that mirror the performance, reliability and security of the core system underneath. Web enablement creates a compelling first impression of the core system and its applications, and makes that functionality much easier to use.

Connected directly to the Formula One car’s chassis is the car’s suspension, which keeps the car hugging the track at all times and provides the driver with agility to direct the car wherever he wants it to go. In the organization, SQL enablement also supports agility, letting business users view multiple and diverse database systems as a cohesive whole. By allowing users to gain a “single view” of a particular business topic or element across the organization or B2B relationships, SQL enablement helps eliminate data silos and costly duplication of effort.

Made up of a complex array of wings, fins, strakes and other futuristic works of sculpture, the Formula One car’s aerodynamic package turns energy produced by the engine into down force that keeps the car hugging the track and moving cleanly through the air. In the organization, SOA enablement performs a similar transformation, by turning all three “layers” of a core application (sessions, transactions and data) into Web services that can be re-used in new service orchestrations and composite applications that support improved business processes. Such re-use ensures that the core system applications will continue to meet the organization’s current and future business requirements even though little or no change to the original application code might take place.

All four elements of application modernization – application discovery, Web enablement, SQL enablement and SOA enablement – work together to give automated processes a co-equal role in BPI alongside human processes.
The Engine = Service-Oriented Architecture (SOA)

One of the most exciting elements of Formula One racing is the tremendous power generated by the car’s highly specialized engine, which uses eight cylinders (without a supercharger) to turn high-octane racing fuel into 700 horsepower at an eardrum-piercing 19,000 RPM (by contrast, a high-performance BMW 335i passenger sedan engine can operate only briefly at 7,000 RPM).

Just as with the Formula One engine, BPI initiatives within an organization receive a powerful boost when SOA and a service-based approach to process automation are adopted. With SOA, the organizational knowledge embedded in custom-developed applications can be readily tied into process models.

As in SOA, the relationship between the engine and the transmission is loosely coupled and service-oriented. The engine performs a service by producing power at a constant rate. The engine does not need to “know” how fast the wheels must turn — that operation is handled by the transmission. In the same way, the transmission is not “concerned” with how the engine produces its power. The transmission simply receives the power as a service and uses various gear ratios to transform that power into the necessary wheel revolutions.

How is SOA related directly to BPI? Through service orchestration, an SOA can gather simple automated processes from various places in the organization and string them together into more complex processes — called high-value business services — that can solve critical business problems. High-value business services can also be turned into new applications through a process called application composition.

Service orchestration and application composition enable the business to infinitely extend its investment in core applications as well as free up logic and data from a purpose-built proprietary structure. Because of SOA (and application modernization) existing applications don’t need to be scrapped and rewritten. Instead these applications can contribute directly to BPI.

The Brakes = SOA Governance

In Formula One, good brake work is vital to victory. Since a modern Formula One car allows the clutch and gear shift to be activated electronically from the steering wheel, there is only an accelerator for the right foot and a brake for the left foot. Because of this “go-kart-like” set-up, the brake and accelerator are often applied simultaneously in concert with one another.

The same kind of balancing act between braking and acceleration that must be performed by a skilled Formula One driver must also be performed by the organization in balancing service creation and re-use against SOA governance within an SOA. Otherwise SOA can lead to business process degradation rather than BPI. SOA governance is a very complex topic, but a few basics are helpful to know:

1. IT analysts generally agree that SOA governance is most effectively done using a registry/repository. The registry/repository will hold and manage all the information in the organization related to services (called metadata). A few examples of this information include policies regarding service creation and use, where to find the services and where the services are currently being used.

2. Decisions regarding policies and other SOA governance matters will typically be handled by the Center of Excellence — which has been (or should have been) given authority at an executive level to do policy enforcement across the organization.

3. SOA governance is closely related to the lifecycle of services. Different sets of rules and policies impact services depending on the lifecycle stage (design-time, run-time and change-time).

4. SOA governance (or the absence thereof) impacts the entire organization. If service usage is not managed properly, KPIs and Service-Level Agreements (SLAs) might not be met, and the organization could also fail to meet compliance standards, such as HIPAA, BASEL-II or Sarbanes-Oxley.

5. SOA governance is often expanded to include metadata related to processes and models as well as services — especially as BPI becomes interrelated with SOA.
Just as a driver would be foolish to enter the racetrack without fully functional brakes, the importance and complexity of SOA governance cannot be overemphasized. Therefore, organizations are strongly advised to seek expert help in the design and implementation of a governance strategy before embarking on the SOA journey.

The Tires = Business-to-Business Integration (B2B)

In a Formula One car, the tires transfer the energy of the power train onto the race track in a controllable and sustainable way. Tire-change strategy can win or lose a race as easily as refueling strategy. Just as tires are where the race car connects directly with the racing world, B2B integration is where an organization connects directly with its trading partners. An organization’s relationships with its B2B partners are a critical part of BPI. BPI efforts that end at the organization’s doorstep will lead to ineffective trading relationships.

The Steering Wheel = Business Process Management (BPM)

When envisioning a driver in command of a 200+ mph Formula One car, the first thing that comes to mind is two gloved hands gripping an ultra-compact steering wheel. Almost everything the driver needs to control the car, including an electronic gear-shift/clutch, is literally right at his fingertips. So it is fitting that the process improvement “command center” of this Formula One analogy is the steering wheel, representing BPM.

BPM is yet another topic that can easily take several books to probe in depth. At the very highest level, there are three main aspects of BPM that come into play: process governance, process enablement and process automation.

Process Automation – The mission of BPI goes beyond improving a company’s as-is processes. Often in order to better satisfy SLAs and KPIs, the organization needs to create new automated processes that enhance or even replace as-is processes. Sometimes these new automated processes will support initiatives the organization has never before attempted and for which no processes of any kind (manual or automated) yet exist. These new automated processes, the “to-be” processes, are created through process automation.

Process Enablement – While process governance is an umbrella over the entire process improvement cycle, the other two major aspects of BPM split their duties between “before” and “after.” It is the task of process enablement to document and model the “as-is” process before further automation and improvement has taken place. Process enablement works hand-in-hand with process improvement methodologies, such as Six Sigma and LEAN, and makes use of information gathered through BAM. Through process enablement, the as-is process is improved to better meet business SLAs and KPIs.

Process Governance – Just as SOA governance must permeate every aspect of a service-oriented architecture in order to ensure success for the organization, process governance has a vital role to perform at all three stages in the lifecycle: design-time (when the new or improved process is being designed), run-time (when the new or improved process is being executed) and change-time (when input has been gathered about the performance of the process and changes must be made). Both SOA governance and process governance typically rely on a registry/repository as the central piece of supporting technology.

The processes supporting B2B interaction are among the most business-critical in industries such as retail, manufacturing, transportation and utilities. Such processes must be at or near the top of the list for optimization within any BPI strategy.

The automation of document exchange between business partners (shipping notices, invoices, etc.) goes back decades — and the volume of B2B transactions between large trading partners such as “big box” retailers and their largest suppliers can easily be in the tens of millions per year. While standards such as Electronic Document Interchange (EDI) have long existed, the possibility of real-time B2B interaction is a more recent phenomenon.

Process improvement involving B2B interaction can have an enormous impact on competitiveness. Being the first to take bold steps and implement new B2B process optimization technologies can help propel a business to the top of its market. In the same way, a Formula One team can take the lead by being the first to make a critical tire change.

F1 Fast Fact

Formula One “slicks” are no longer completely slick. In 1998, the governing board of the sport mandated that grooves be added to the tires in order to decrease speed in the interest of improving safety.
Through process governance, process enablement and process automation, BPM becomes the primary tool for channeling the organization’s vision for business process improvement into the realm of real-world action.

**The Instruments = Business Activity Monitoring (BAM)**

Imagine taking all of the gauges, dials, lights, buttons and switches from a single-seat airplane and cramming them onto a passenger car steering wheel. Now imagine this steering wheel has been reduced in size by 50%, and you have some idea of what the Formula One driver sees before him. Everything the driver needs to know in order to make and execute the best decisions comes to him via his steering-wheel-mounted instruments. Among the array of indicators is a scrolling flat-panel to display details of the car’s condition and a series of ultra-bright Light-Emitting Diode (LED) indicators to tell the driver the optimum time to shift gears.

Just as a Formula One driver wouldn’t consider going onto the track without instruments, it makes little sense to implement an enterprise-level BPI initiative without the help of BAM software. If BPM represents the arms and hands of BPI, then BAM is the eyes and ears. Combined with a proven process improvement methodology, BAM lets the Process Center of Excellence collect process performance metrics and tie those metrics directly to strategic SLAs and KPIs established by the business.

Unlike other monitoring technologies, BAM does not monitor the performance of individual systems, but rather the performance of the business process those systems contribute to. Often a particular business process (such as order fulfillment) spans multiple systems and processes (accounting, inventory control, customer support, etc.). BAM looks at the entire process and measures volumes and velocities of various systems as they relate directly to the SLAs and KPIs mandated for that particular process.

If a process is “out of control,” BAM can track the results of improvements or controls brought to bear on the process. Once a process is “in control,” BAM can be used to compile historical performance data and can then analyze trends to predict when process errors or defects are about to occur.

When using BPM to plan the “to-be” process and achieve process improvement through greater automation, BAM plays a critical role by helping to establish a process baseline in advance. This baseline is referenced later on to demonstrate whether or not the new implementation actually caused performance to improve against SLAs and KPIs. As the analogy suggests, BAM and BPM work together to support process improvement just as a Formula One car’s instruments conform seamlessly to the steering wheel.

**Up to the Starting Line**

Let’s return to the two questions raised at the beginning of this white paper. If a tech-savvy colleague asked you to explain the basics of BPI and its supporting technologies, could you now do it? If a CEO wanted to understand more about how technology can support process improvement, but did not understand technical language very well, could you now tell the story using the Formula One driver, pit crew and car analogy? If you take a mental walk around the car and envision all the different parts, you might be surprised at how the elements will come together. Why not take ‘er for a spin?

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**F1 Fast Fact**

LED indicators on the car’s instrument panel enable race marshals to warn the driver of hazards on the course ahead with the help of Global Positioning System (GPS) cues.
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