



## +Part 2: Transitioning to Semantic Cloud – Short Extracts

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## **Based on events of 2040: The Meeting...**

*So far I've heard little and understood less. The president's face was pale but apparently she was the only one not surprised by the summary of the report. The group discussion started immediately. As usual, we split into small teams. This kind of parallel processing had other positive effects. Working in small groups, people tended to be free and open coming up with more innovative ideas than they would have in the larger group.*

*I was with the president and the chief psychologist. I kept silent, but no one seemed to be paying to me any attention. – “This is no one's fault” - said the psychologist, - “No one could have expected anything like this”. The president closed her eyes for a moment and said in a very quiet voice: “Provident warned me that this might happen. I did not believe him. He ordered this investigation without my permission”. – “Without your permission? What did you do to him when you figured this out?” - “I was angry. I kicked him out of the company.”*

*So, it was Provident. One piece of the puzzle was uncovered. No one had liked this strange guy. He would ignore some meetings and appear unexpectedly at others. In the middle of a discussion he would randomly announce something that made absolutely no sense at the moment and then leave the room without answering any questions. The most annoying thing about him was that a lot of his impossible announcements sooner or later became reality. There was a rumor that he is a cyborg, a mix of a robot and a human being.*

*In the scientific circles, Provident was known as the father of robotic psychology, which had only recently attracted the attention of the business world after a decade of work done by Provident and two of his students.*

*The president turned to me: “What do you think about this report?”*

*I hadn't expected the question and almost fell off the chair. “You know, I am not sure if we can trust it. I have a suspicion that the reporter is also a robot. There could be some hidden motives.” I paused. “Also, the report stated that we have moved beyond the turning point. I am having a hard time believing that.” “So, what do you suggest? Wait and see? Any constructive measures?”*

*The psychologist jumped in. She argued: “You know that robots do not lie, right?”*

*“Yes, that's common knowledge. But I guess this report makes our common knowledge questionable.”*

*The chief psychologist looked at the president and said, choosing her words carefully: “We've learned a lot about competitive and collaborative behavior in people's teams and we've improved teamwork culture in the past decades. But according to the report, all of this might not be applicable to the robots.”*

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## Part 2: Transitioning to Semantic Cloud

### *Transitioning to IT of the future with very practical “baby steps”*

Let us focus on how to make the transition to semantic cloud architecture with practical and straightforward steps which require minimum upfront investment. The emphasis in this process is on collaborative work by business professionals and enterprise architects with the Business Architecture Sandbox for Enterprise, or BASE. The BASE prototype was demonstrated at the Semantic Tech and Business Conference, and is likely to be the platform for the transition.

The discussed approach is to gradually shift the focus of IT from technology to information by standardizing business event processing, placing the seeds of semantic technology in the current business ground, and establishing a self-sustaining process of transformation to semantic cloud architecture. This chapter provides the context and technical details for this transition.

### *Transitioning from IT as we know today to Semantic Cloud Architecture*

Enterprise IT as we know it today is slowly disappearing. Some companies have begun transitioning their IT to a cloud. But even a bigger transformation is on the way.



Yes, Enterprise IT can be and will be very simple.

[Read more in the book...](#)

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### *Business Architecture Sandbox for Enterprise (BASE)*

Semantic Cloud Architecture can grow out of an enterprise environment with a well-established Service-Oriented Architecture. BASE is instrumental in creating such an environment and providing a natural transition to the beautifully simple and smooth Semantic SOA. Simplified and standardized infrastructure makes a cloud solution even more attractive, significantly decreasing maintenance expenses.

The art of Big Data processing is changing the way we view and analyze information. We can have immediate access to a big picture of the world. This is very different from the current approach, where multiple applications deal with their respective pieces of the puzzle and deliver intermediate results to subject matter experts for further (mostly manual) integration.

**The main features of Business Architecture Sandbox for Enterprise (BASE) are:**

- Leverage SOA and standard event processing with high availability and failover features.
- Create initial semantic models of business events and processes with their supporting components to improve development efficiency and prevent data and function duplication.
- Provide semantic support for development and testing by conducting these activities within the model before placing new components into production.
- Establish a collaborative (business + IT) playground for creating workflows and services.
  - Decrease the number of manual operations required for business changes.
  - Reduce the opportunities for human errors and production problems.
  - Standardize a RESTful API for multiple systems and 3-rd party developers.
- Add a semantic layer to Enterprise Service Bus to enable semantic listening and prepare for canonical model integration with the systems speaking different business dialects.
- Expand SOA to semantic SOA, gradually add semantic modeling and technology, and establish a self-sustaining process of transitioning IT to semantic cloud architecture.

The semantic layer of enterprise ontology reflects multiple dialects and provides their mappings to a canonical model. A modular approach to ontology integration and specialization is absolutely crucial for practical usages.

### ***Standard event processing with BASE, ESB/Mule, and ActiveMQ***

BASE runs as a Web Application, or as a portlet, which runs on the top of the open source portal, Liferay [2]. BASE is integrated with Mule, ESB [3], and Apache ActiveMQ [4]. This integrated system is configured as a cluster with multiple servers, providing high availability and failover.

These basic SOA standardizations provide the ground for service orchestration, reducing tight coupling of applications, and decreasing production problems and maintenance efforts.

BASE is set up as a standard platform for synchronous and asynchronous processing of any business events with the following message flows...

[\*Read more in the book...\*](#)

### **Developing Workflow Components within the semantic model and applying the conversational, semantic approach to Business Process Management (BPM)**

BASE allows business analysts and developers to collaborate in the development of new components within an existing semantic SOA model.

For example, a business analyst can type in the search text box: “build a new enrollment

workflow” and the program will display existing workflows and components related to the Enrollment business line. The program will offer to check if anything in the existing model can fit the needs or be reused. Then, BASE will start a conversational wizard helping to connect a new component to the existing model and will continue with the development recommendations.

Business processes, data and system components are interrelated. Exposing these relationships in the [Enterprise Business Model](#) and further in a Business Ontology will transform the islands of enterprise data into linked and living knowledge in a semantically-rich environment to support Decision Making:

- 1) Find a Line Of Business to build a workflow** with a sequence of Business Goals implemented with business states/processes.
 

A Business State or Process might have some decision points and an associated Decision Model to achieve specific business goals. For example, "Determine Person Likelihood of Defaulting on a Loan".

To re-enforce the top-down modeling approach, you start with the final state and move backwards to provide necessary support with additional states.
- 2) Build a Decision Model** for a selected workflow or a business process. Each Decision Model consists of a sequence of Rules or Rule Families.
 

Policy Renewal Method  
Policy Pricing Within Bounds  
Policy Underwriting Risk  
Manual Underwriting Indicator
- 3) Build a Rule Family.** A Rule Family is a table with one or more rules. Each Rule is a row in the table with the Conditions and Conclusion columns. In the illustration below, a Rule Family consists of a single rule.
 

Conditions					Conclusion	
Person Credit Score	Person Employment History	Person Other Loans Assessment			Person Likelihood of Defaulting on a Loan	
is less than 650	is Unstable	is High	is	is	is	High

Business Architecture Sandbox for Enterprise (BASE) offers Data Dictionary & Semantic Model Integrator with built-in Rules Engine & Decision Modeling, allows SMEs and IT collaborate on Business Architecture tasks, while focusing on information, and transitioning to Semantic Cloud Architecture. [View and Update New Components](#) | [View all components](#)

[List Business Functions or/and Processes](#) | [List System Components](#)

Each workflow consists of several business states or work steps. A resulting state is stored in a cluster and serves as an input for the next state process. In Workflow and State definitions you will use system help to configure implementations.

BASE creates a unified semantic information landscape and with the Conversational Semantic Decision.

[\*\*Read more in the book...\*\*](#)

### ***Based on events of 2040: Competition and Collaboration ...***

*... The chief psychologist looked at the president and said, choosing her words carefully: "We've learned a lot about competitive and collaborative behavior in people's teams and we've improved teamwork culture in the past few decades. But according to the report, all of this might not be applicable to the robots."*

*I knew I could trust her. Two decades ago, Monica had written a book on the subject of competition and collaboration in human life. Starting from the beginning of civilization, the book considered social and work activity via the prism of these conflicting aspects of human behavior. The book made a significant impact on the society. Omitting a lot of details and with great simplification, I'll try to outline the main points.*

*Competition is a natural way of survival behavior for all species, human or not, in environments with the limited resources. Evolution theory supports this view: species less suited to compete have to adapt or die out.*

*On the other hand, collaboration is about sharing resources and working together to achieve common goals. This might sound like a higher level activity in complete opposition to competition ideology. But let's take a closer look. In the most cases collaboration is a component of competition between groups. While individual competition drives change and innovation, collaboration increases stability of groups and puts less emphasis on individual achievements.*

*Through the history of civilization, men have usually played more competitive roles than women. The book mentioned steadily growing number of women who participated in the workplace and suggested another major step: women might be better managers than men. The book argued that, genetically, women have the ability to multitask and prefer collaboration over competition. Men, on the other hand, tend to focus on specific problems and take risks in order to solve these problems. The book convincingly illustrated this point with the Gauss' curves, showing very different patterns of competitive and collaborative skills distribution for men and women.*

*Taken seriously by the business world, the book ignited a hot discussion, which transitioned into a quiet revolution in corporate management. A new generation of managers, mostly women, introduced a new leadership style, improving corporate culture and stabilizing the economy. Society followed suit and elected many more women to positions in government. The new administration drastically increased communications over multiple channels warming foreign relationships and business climate.*

*The government passed new laws slowly changing the rules of the workplace. One of the most controversial was the taxation of worker hours. The new rule removed all limitations and allowed workers to sell unlimited hours to their employers. For both: the employers and the workers, the rule established a normal tax for the first six hours of work and double taxation beyond this time. The worker time taxation rule made long hours a very rare case, as it was not profitable for corporations and for the employees.*

*The dispute over this ruling abruptly stopped in five years after the publication of a statistical analysis of the policy. The main benefit came as significant savings of health care expenses. The report listed several contributing factors: improved workplace safety and worker's health, a decreased number of sick days taken and an overall reduction in family emergency cases. Also appealing to the public were side benefits such things as a decreased divorce rate and decreased unemployment. All of this did not happen overnight. Ten years after the book publication, some of us were getting ready to celebrate "the age of stability" . . . .*



[Read more in the book...](#)

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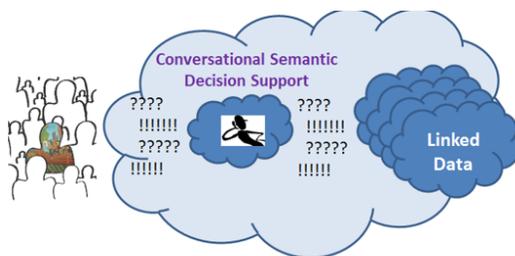
## **Summary for this chapter**

The time for Semantic Cloud Architecture is coming and this chapter offers very practical tools and step-by-step instructions to transition to the IT of the future without upfront investment. The discussed approach is gradually involves new technology while capitalizing on SOA and further standardizing business event processing, and establishing a self-sustaining process of IT transformation.

The major benefits of Semantic Cloud Architecture are manifold. For example:

- **In Enterprise Data Integration:** Semantically integrate scattered data in a unified platform for knowledge management [17], leading to streamlined business development [18] with less layers and better information focus.
- **In Content Management, Enrichment, and Analysis:** Value-add by linking to free Linked Open Data sources; Simplified Publishing and Sharing of Data; Increase accessibility for new integration and partnerships; Open new horizons in collaboration with computer systems [19] on information analysis, discovering hidden dependences, and making mission critical decisions.

**The bottom line is Enormous Cost Savings and shifting the focus of IT from Technology to Information.**



A unified semantic information landscape simplifies the storage and management solutions to Linked Data and Conversational Semantic Decision Support (CSDS) systems.

CSDS systems help computers to better understand us by asking more questions [1] and using the combined power of Semantic Technologies and Big Data.

Integrated software and knowledge engineering [1, 20] is transitioning from science fiction to science, taking the form of Semantic Cloud Architecture, and opening new horizons and business opportunities.

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