Toward Interoperability realization considering SOA

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  • SOA, XaaS

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• Interoperability platforms
  • Integration, architecture of an Interoperable platform

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  • System and methods, standardization,
Globalization & Collaboration

• Today’s business model trends:
  • Agile for responding to accelerating rates of change
  • Support of collaboration through business network
  • Adaptability for sustainable growth and robust profitability
Collaboration & XaaS

- SOA
  - Considering the business interactions in the form of service exchange
Interoperability in supply network

• The SOA approach necessitates the static & dynamic interoperability
Interoperability

• The Static interoperability considers the exchange of data; requiring the mapping mechanisms among the semantics
Interoperability

• The Static interoperability can be considered to be the most simple level of interoperability
Interoperability

• The dynamic interoperability considers the exchange of processes; requiring the mapping mechanisms among the behaviors
Interoperability

• Interoperability VS Integration

  • Integration is achieved by stabilizing and promoting standards for both semantics, behaviors

  • Integration in SOA architecture endangers the competitive advantages of service providers
Interoperability

• Interoperability VS Integration
  • Integration can be realized in supply chains

• Today business environments requires to collaborate in supply networks in SOA architecture
Interoperability

- Interoperability VS Integration
  - Integration can not fulfill the SOA architecture in supply networks
Interoperability

• Two common mistakes when interpreting the interoperability
  • Integration can be achieved through integration
  • Interoperability can be fulfilled through human based agents
Human based Interoperability

- The human based interoperability mechanism will be ineffective considering today’s dynamic and agile business processes in supply networks
Platforms for enabling Interoperability

• Platform Main components
  • Interface
  • Business logic
  • Data model
Platforms for enabling Interoperability

• Interface
  • The exchange of data among the agents in the supply network will be achieved through the interface mechanism

• Main concepts:
  • Hardware/ software Plug & Play
  • Geographically distributed agents
Platforms for enabling Interoperability

• Business logic
  • The mechanisms for the exchange of both semantics and processes
  • The collaboration (contradict) mechanism
  • Consensus mechanisms
Platforms for enabling Interoperability

- Data model
  - The existence of standard data model in the platform is inevitable
  - The data model should be comprehensive and universal enough to encompass all semantics and processes in the supply network
Interoperability project in a firm

• Although different platforms and frameworks exist for enabling interoperability, establishment of an Interoperability project inside a firm requires extensive collaboration of firm’s line & staff.

  • The best responsible unit/section for the project lead can be the “System and method” (also called “planning”, “Quality assurance”)

Interoperability project in a firm

• The main milestones in interoperability project
  • The products/service portfolio

• The process/behaviors

• The resources

• The servization

• The digital twins realization
Interoperability project in a firm

• The main milestones in interoperability project
  • The products/service portfolio
    • The configuration of products/services of the firm especially with focus of lifecycle management should be interpreted and modeled
  • Product/service family definition especially with focus on modularity of features
  • The main challenge is the global semantic data structure
Interoperability project in a firm

• The main milestones in interoperability project
  • The process/behaviors
    • This perspective focus on the definition of processes, workflow and business rules
  • The focus is also on forming a service oriented structure on value added activities which can be then transferred for collaborative mechanism in the supply network
  • The main challenge is the behavior model structuring
Interoperability project in a firm

• The main milestones in interoperability project
  • The resources
    • This perspective focus on the resources (both in form of tangible/intangible) engaged in the processes.
    • The qualification and role of each resources should be defined
  • The main challenge is both the semantic and behavior model structuring
Interoperability project in a firm

• The main milestones in interoperability project
  • The servization
    • This milestone requires a paradigm shift in the firms
  • The firm should be transformed from a product/process/resource oriented organization to a service oriented organization
  • This is one the most challenging perspectives
Interoperability project in a firm

• The main milestones in interoperability project
  • The servization

  • Servization is the most important prerequisites for realization of SOA architecture

  • This enables the firm to start collaboration in supply network by for XaaS opportunities
Interoperability project in a firm

• The main milestones in interoperability project
  • The digital twins realization

  • The firm requires to have a digital shadow identity by the helps of hardware/software tools

  • What happens in the real world would be the reflected in the digital firm and vice versa the dynamics of supply network though IT based interactions will be realized in the real world
Interoperability realization in SOA

• Conclusions
  • Modern businesses requires extensive collaboration in their supply networks using SOA approaches
  • Interoperability is one of the key requirements for this collaboration
  • Achieving Interoperability requires the correct analysis of products/service, process and resource
  • Digital twins is the responsive and adaptive approach for collaborative firms
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Thanks for your attention