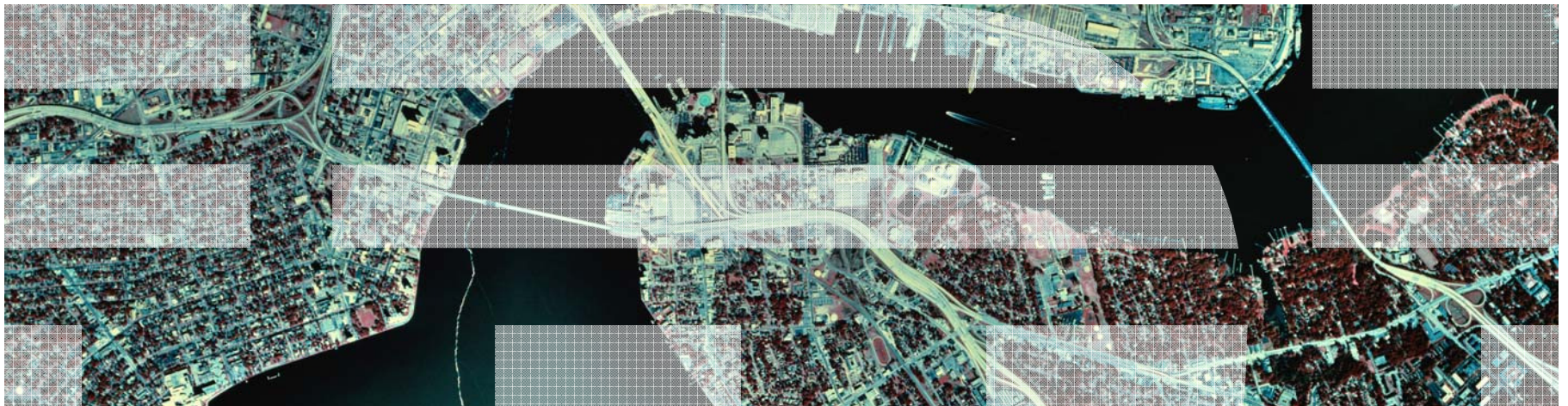


Cristina Morariu

Brasov, 15 March 2012



# IBM Manufacturing Integration Framework



## Agenda

### **Manufacturing Perspective/Challenges**

Key Standards for Interoperability

Manufacturing Integration Framework Overview

Solution Templates/ISVs

Summary

## Manufacturing in General

- Many proprietary devices, OPC is emerging standard but is not pervasive. OPC-UA is moving this away from Windows specific model. Many companies beginning to look at device virtualization and standardization
- EDI and OAGIS (and non standard definitions) being adopted for supplier integration. EDI most prevalent today, movement to XML and standards based
- Much interest in standardized messaging for standards based application integration. In plant floor, B2MML and OAGIS beginning to be used (B2MML more in process today, OAGIS more in discrete).
- SOA and services model is emerging, but not much in plant floor production yet. Many POCs and Pilots going and as companies consider transition to this architecture. Much interest due to the Brownfield nature of the problem.
- Plant floor is starting to migrate from proprietary applications to J2EE and .Net at MES level, but still a complex integration environment.
- Companies are looking for more flexibility on configurability of MES systems. Many of the major enterprises have projects underway here, all taking different approaches to the problem.

## Manufacturing Issues Today

- **Lack of flexibility**

*Unable to support process* improvements and data accessibility needs

Speed to market of engineering changes and adoption of new business strategies inhibited

Cannot provide personalized, relevant information in a timely manner to make best decisions

- **Obsolete technology**

Technology refresh cycle occurring now globally.

High risk for system *outages* resulting in production losses.

Diminishing skills and parts.

- **Lack of system commonality across company**

Inability to replicate process “best practices” and product.

Drives up maintenance cost for no added value.

Duplicate functionality.

- **High support costs**

Maintenance increasing due to legacy systems, diverse platforms, duplicate functionality, obsolete technologies, poor data management and point to point integration.

Niche manufacturing products with limited support, skills and non-functional capabilities.

## Agenda

Automotive Perspective/Challenges

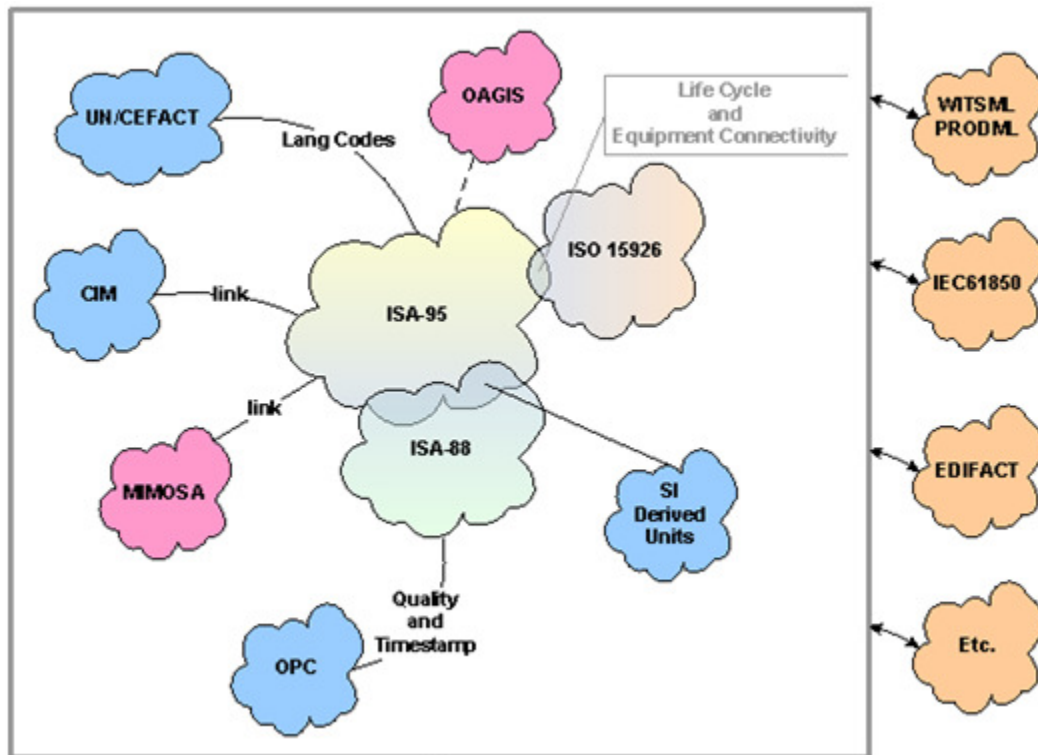
**Key Standards for Interoperability**

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Solution Templates/ISVs

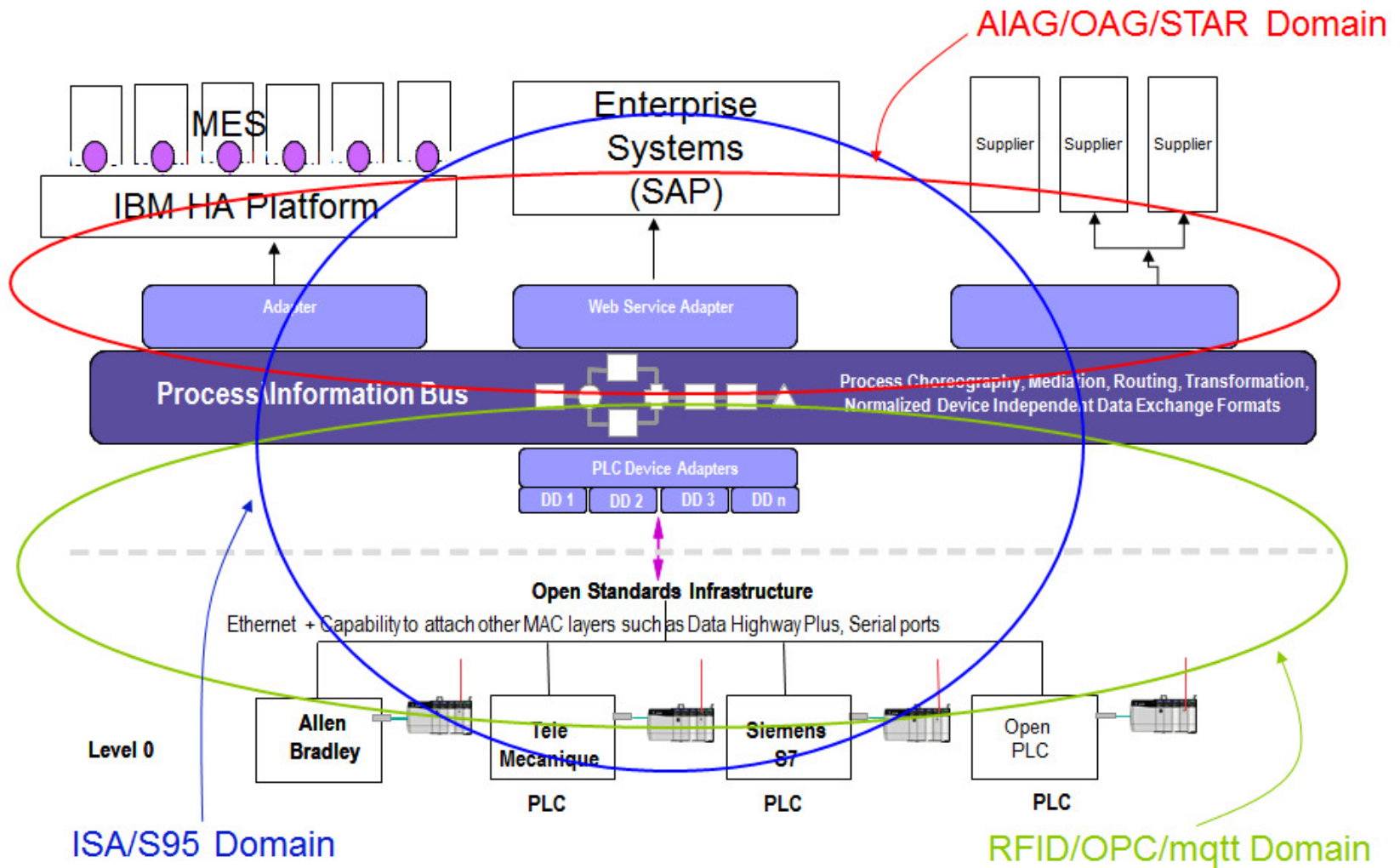
Summary

# Standards Model for Manufacturing Solutions



- SOA provides a common framework for integration
- In addition to a common mechanism for integration, a common set of semantics / data content also helps ease the tasks of integration
- OAGi, ISA-95, AIAG, STAR , JAMA, ODETTE....
- IBM and others have joined with standards groups including OAGi, ISA, OPC Foundation, Mimosa and WBF as part of the Manufacturing Interoperability Guidelines (MIG) workgroup with mission to converge some of the existing standards (initial focus on OAGIS and ISA-95).
- IBM is also participating with AIAG, MESA and ISA on the topic of standards for manufacturing including activities such as:
  - Published papers on standards in this area
  - Presentations
  - Working groups

# Manufacturing Integration Framework & Key Standards (Auto)



## Agenda

Automotive Perspective/Challenges

Key Standards for Interoperability

**Manufacturing Integration Framework Overview**

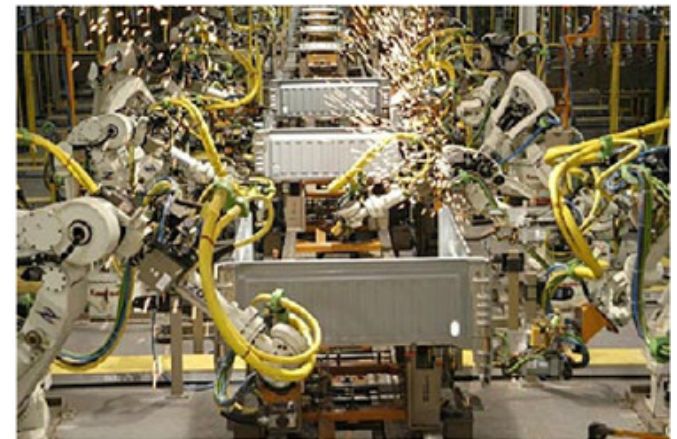
Solution Templates/ISVs

Summary

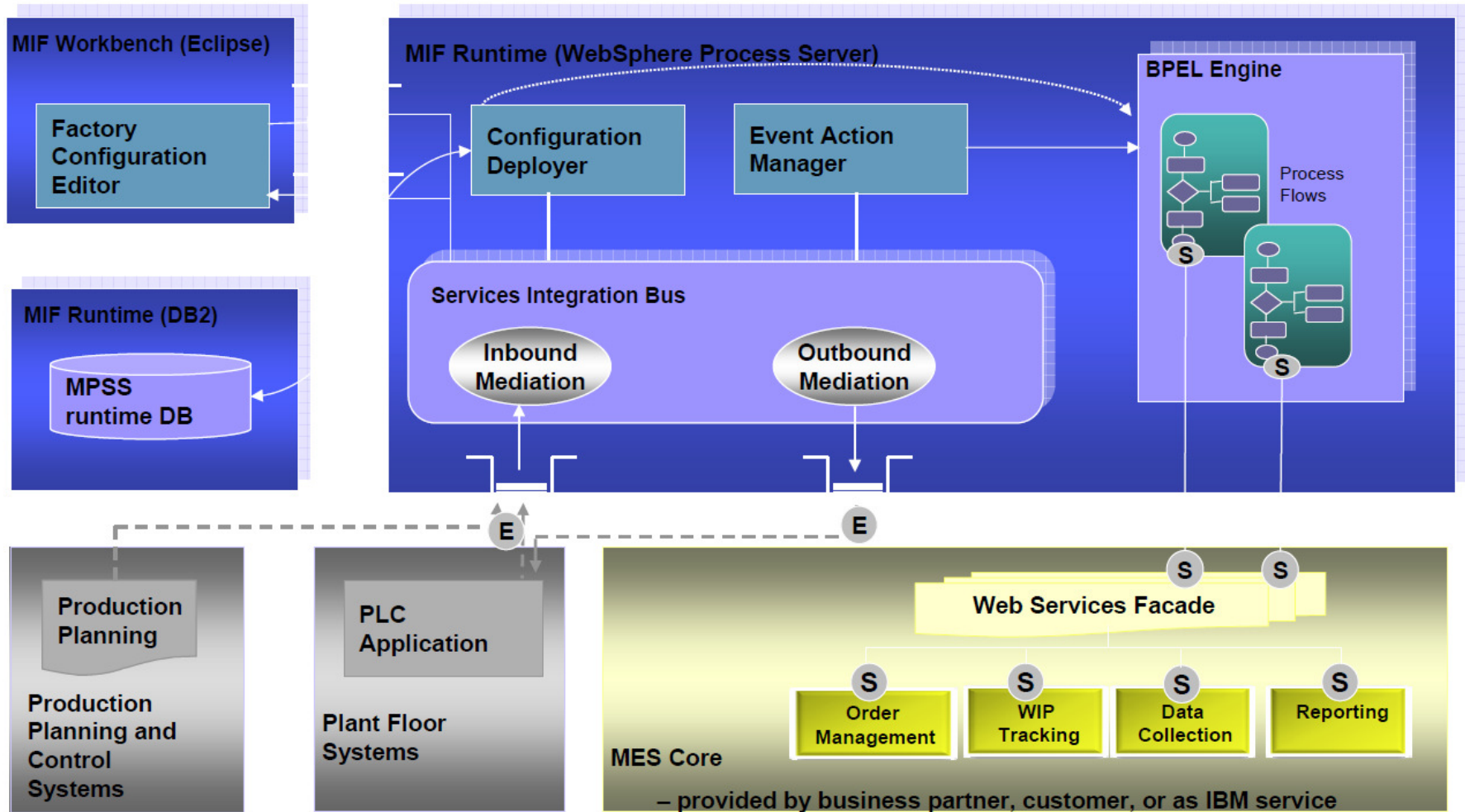


## What is Manufacturing Integration Framework?

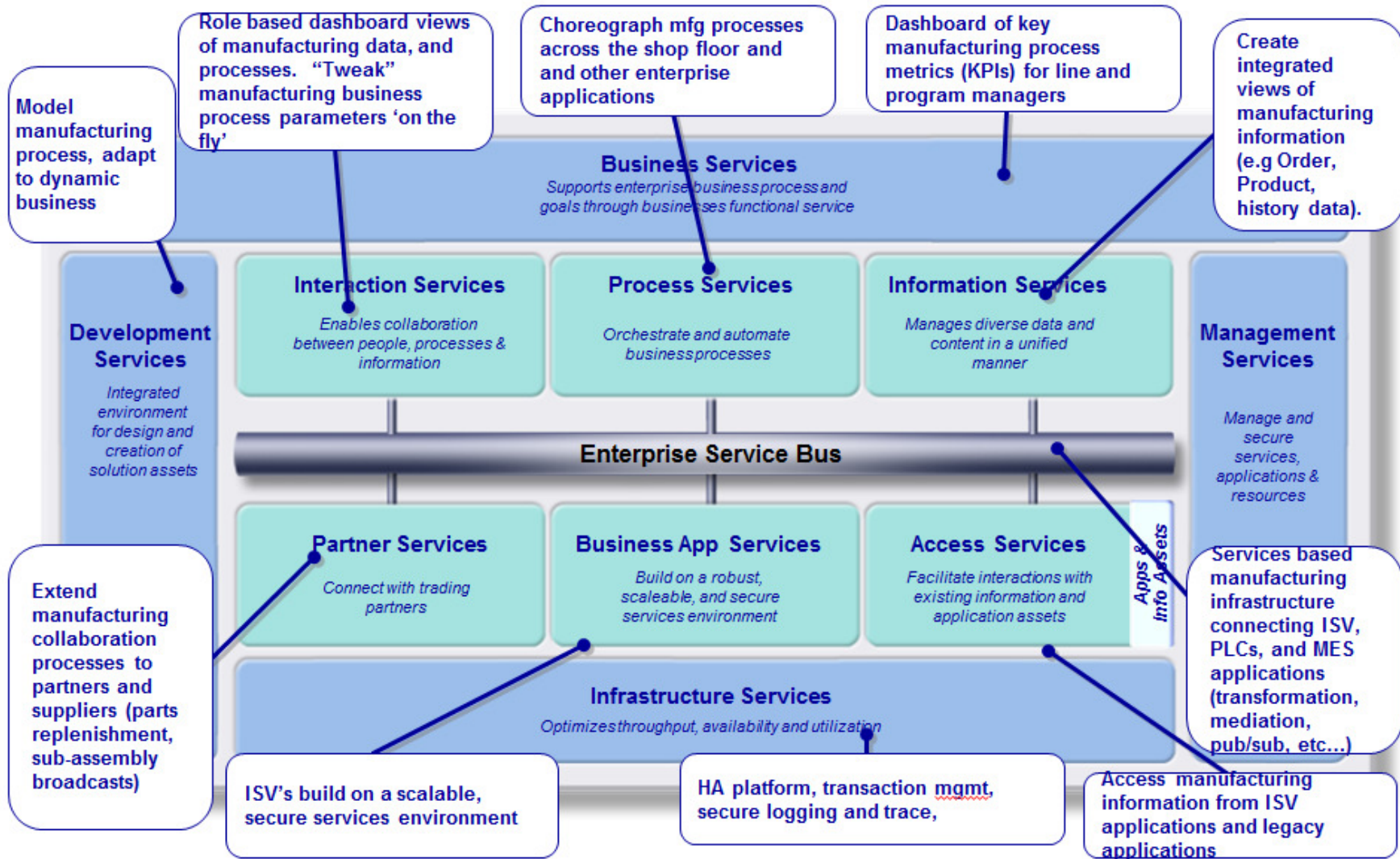
- Solution Enablement Workbench with industry content
- Integrates plant floor solutions with top floor business systems, and with suppliers
- Programmers can easily add services to the MIF list of existing services by creating adapters/WSDLs to specific applications' external interfaces
- Process Composers (non-programmers) can then build business process flows (BPEL) by defining actions, events, processes, and then, they can configure them into an assembly line
- Uses an open standards based Services Oriented Architecture (SOA)
- Based on WebSphere Process Server and Portal



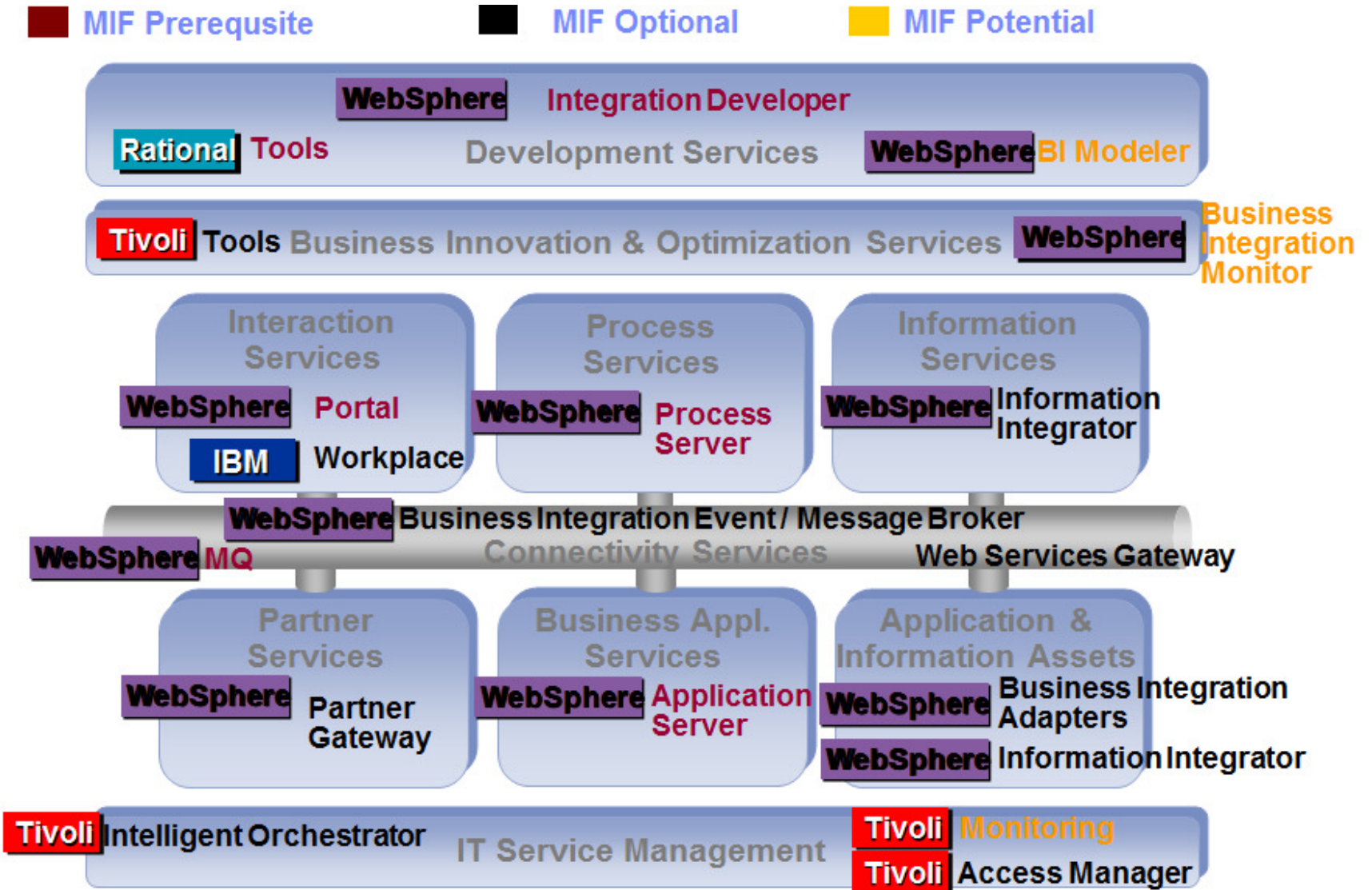
# MIF Architecture



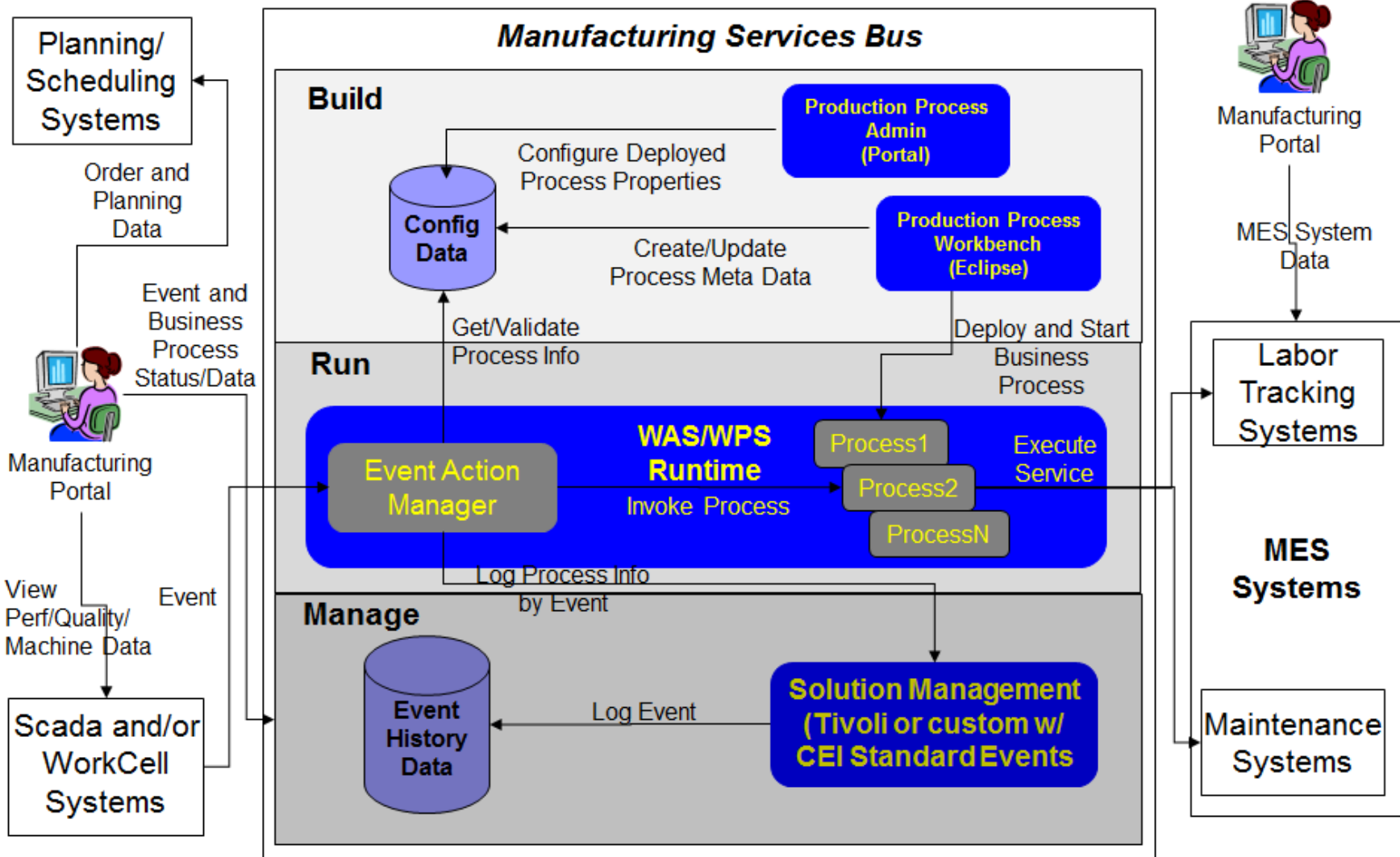
# The SOA Foundation enabling MIF



# IBM's Business Integration Solution



# Manufacturing Service Bus (detailed view)



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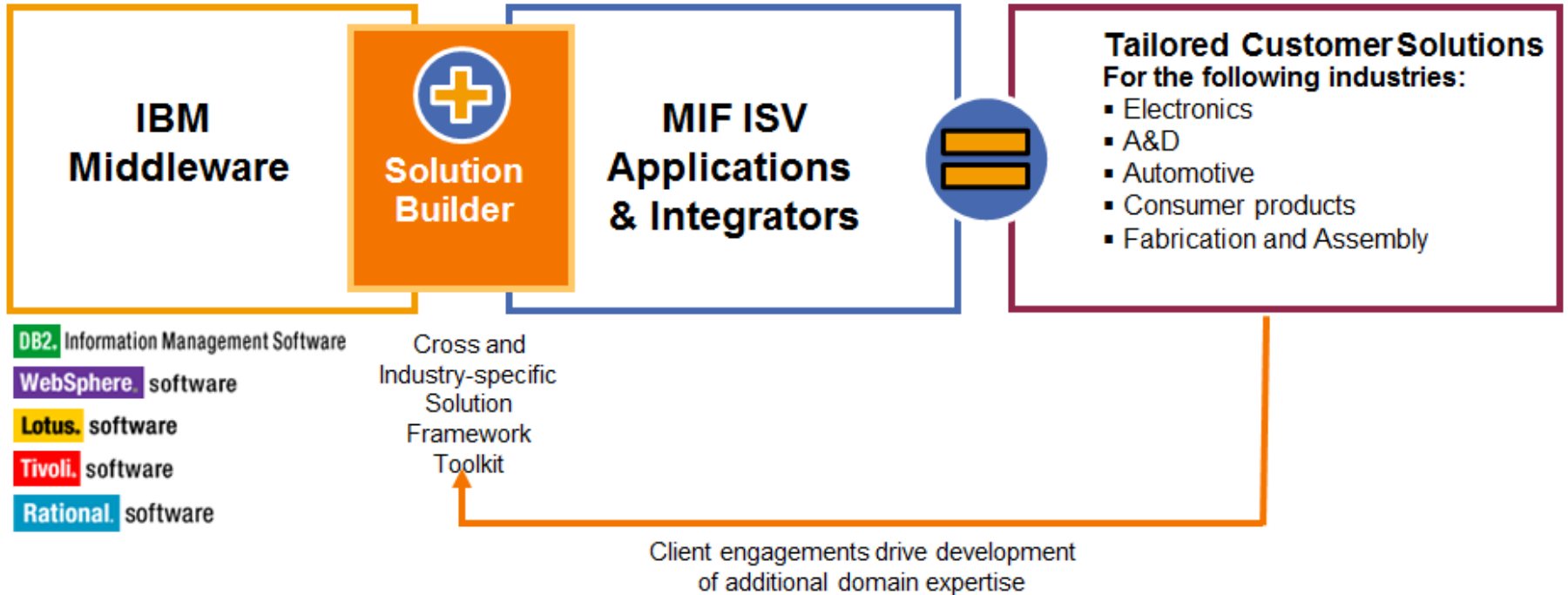
## MIF Partners/Deliverables

- MIF provides a framework with industry semantics and standards
  - Industry Models (ISA SP95, MIMOSA, OPC)
  - Manufacturing Services
- MIF provides the IT Integration standards (SOA based)
- An ecosystem of partners assembled to deliver the content based on MIF

# MIF SOA Framework Offering

**MFG** solutions

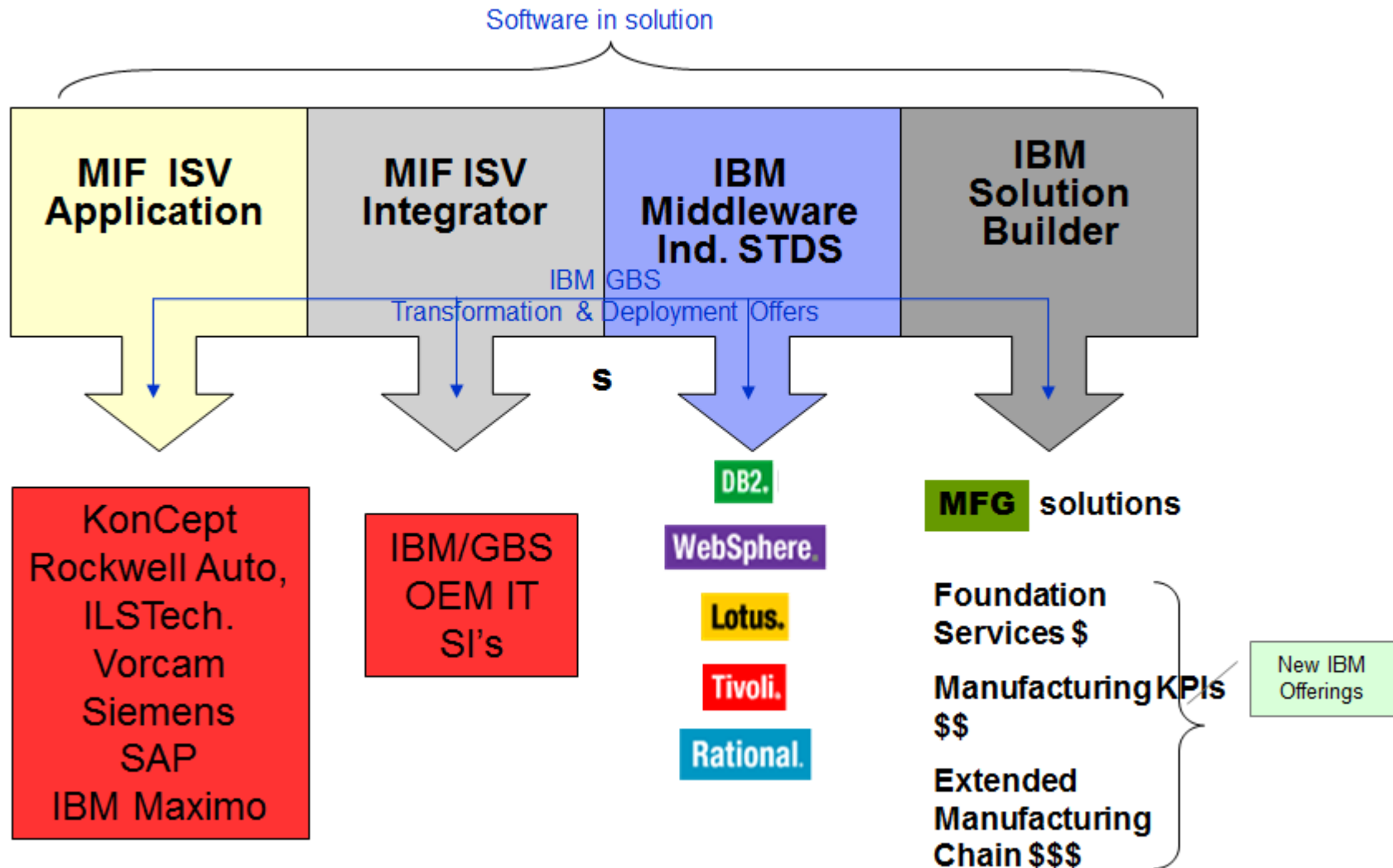
IBM Solutions Builder provides domain knowledge with deployment and implementation assets → GBS provides customers with solutions customized to their business needs → Meets Customer need





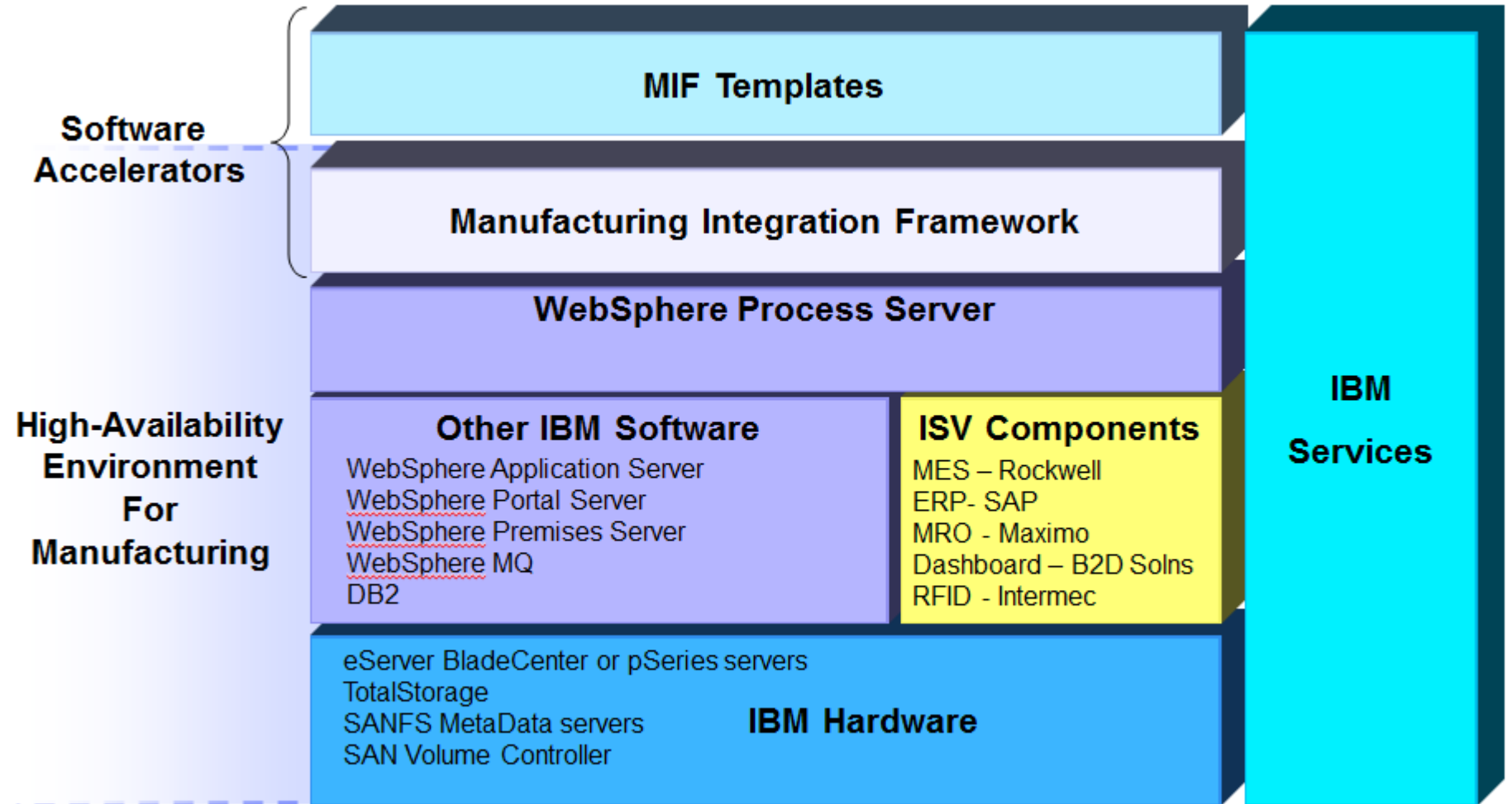
# MIF SOA Framework Offering

**MFG solutions**



\$ = Chargeable unit of IBM Services Asset, price and license-terms are tbd

# Solution Accelerator Approach



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## Customer Benefits with MIF

- **Improve flexibility**

Create new solutions with MIF based on existing plant applications

Speeds time to market when reconfiguring plants for new products

Provides timely and relevant information for quick decision making and better plant efficiency

- **Obsolete technology**

Technology refresh can be delivered over time with a planned roll out

Lowers risk of deploying new plant applications (no “rip and replace”)

Allow plants to introduce newer technology with advanced capability

- **Lack of system commonality across company**

MIF provides a technology neutral layer of existing systems through web services.

Common services can be provided globally across all factories.

Allows best practices to be shared.

- **High support costs**

Lowers maintenance cost for stable legacy systems by reducing the need for changes

MIF workbench allows non-programmers to make changes with limited IT resource

Reduces backlog of application updates