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Enterprise IT Architectures

Business Architecture and BPM – Business-IT Alignment

Think About: Explaining “Architecture”

- **YOU must show the value of your work as Architect to your peers from the Business**
- **HOW do you explain what you are doing, HOW do YOU communicate about solutions ?**
- **HOW do you explain your job to a non-IT person (your grandma) ?**
- ***Today's Major Topic:* Talking and communicating to Business people as well as Linking Business Goals and Business Requirements to envisaged solutions**

Term Paper – Simulating a Real Business Case

- **YOUR task is to provide a proposal about the solution YOU want to implement for the customer**
- **FIRST YOU have to sell your approach to the CEO and CIO and take into account that other people from your (hopefully) customer will judge your proposal**
- **THUS the proposal has to show WHAT you want to deliver and HOW**

- **YOU will have a time slot of 20 minutes for your presentation (there will be questions !)**
- **YOU have to deliver your proposal (augmented presentation)**

- **BTW: raise only relevant questions to your (hopefully) customer**
- **Please let me know the groups – by Email (CC all group members)**

**Business Architecture
Business-IT Alignment**

Business vs. IT (Just some Terms)

- **Time-to-Market**
 - **Cost**
 - **Risk**
 - **Sourcing**
 - **Compliance**
 - **Organization**
 - **Security**
 - **Role**
 - **Capability**
 - **Process**
 - ...
- **Data**
 - **Function**
 - **Program**
 - **Reliability**
 - **Performance**
 - **Access**
 - **Authentication**
 - **Software**
 - ...

Talking to the Business – using Business Architecture

- **Approaches to communicate and influence decisions**
 - Finding out what is relevant for the Business
 - You should work only on topics that are needed (provide business value)

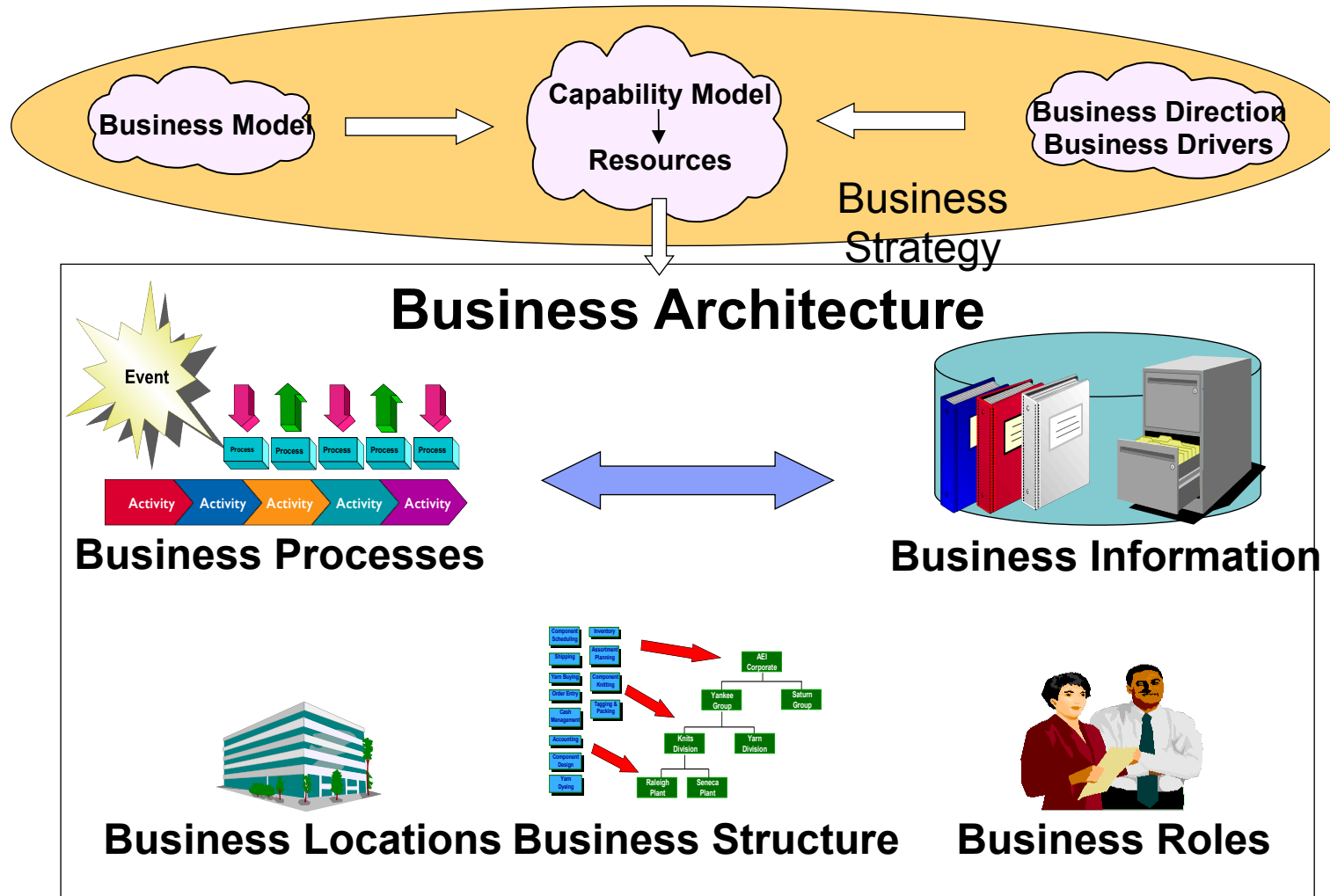
- **Demonstrate value of solutions to the Business by**
 - Showing how Capabilities are met
 - Showing how Requirements are fulfilled
 - Demonstrating ROI to stakeholders

- **“Business Architecture without business buy-in is meaningless”**
 - Note: Reason for failed projects is 90% Politics and 10% Technology

Business Architecture – Bottom Line

- **Describes: Function, information and human elements of the business relationships between these elements**
- **Seen as the prerequisite for all architecture work**
- **A business architecture *has no regard* for the use of automation [independent of IT]**
- **The most important work product is the Business Process Model**
 - **Implies Business – IT – Alignment**
 - **Business Modeling includes Business Use Cases**

Business Architecture – Aspects



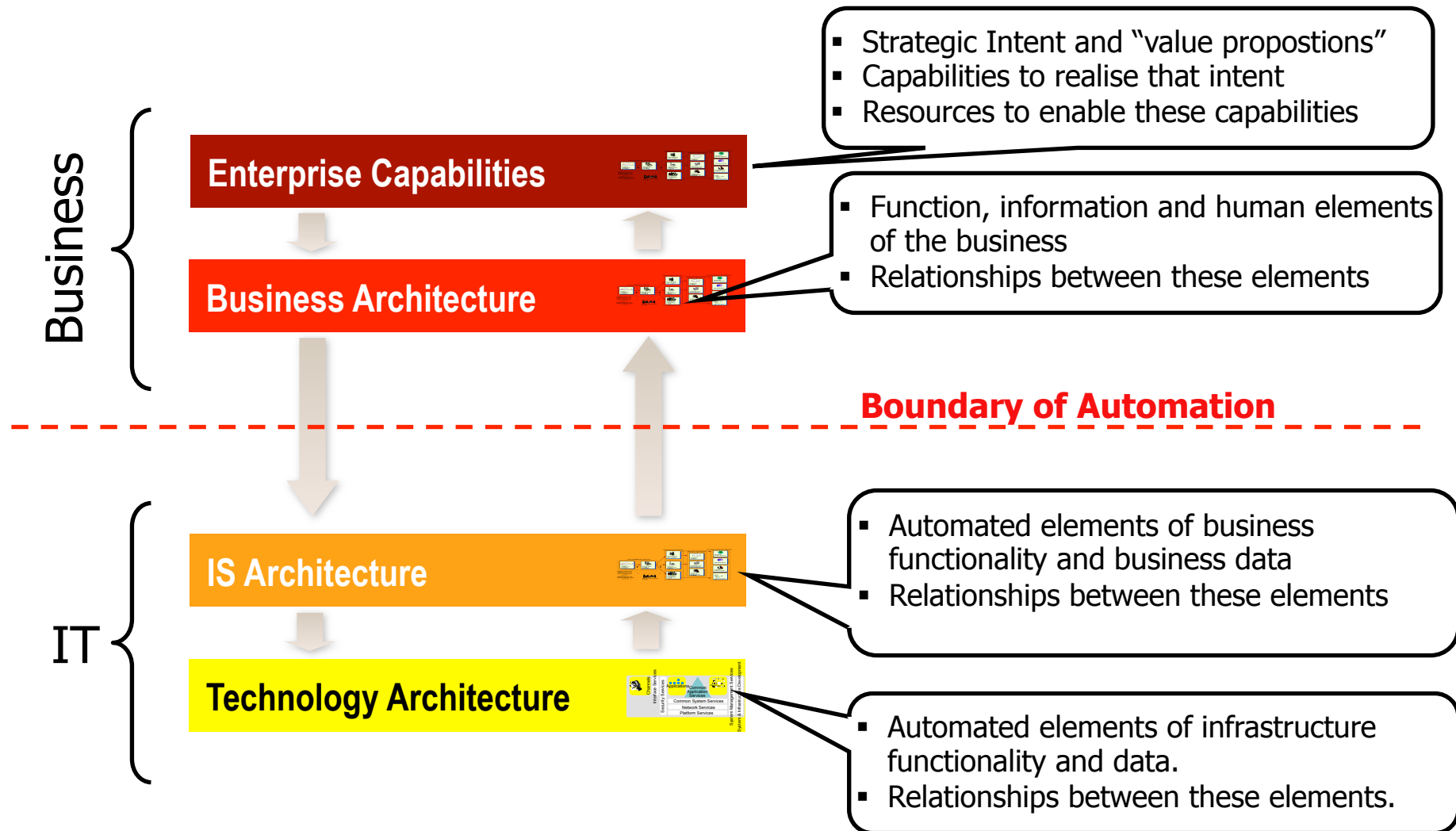
Business Architecture – Benefits

- **A Business Architecture is used to:**
 - Provide an understanding of how the business is structured and how it serves a given market place
 - Describe current and futures states of the business
 - Help identify future initiatives for the business and use of technology
 - Document the alignment of the business strategy to enabling IT transition plans and projects
 - Guide future IT investment as it allows the identification of functional areas targeted for change
 - To understand the business context in which a system will work
 - Help an organization to meet the challenges of a rapidly changing marketplace.

“A Business Architecture is the structure or structures of a business, which comprise processes, resources, goals, and information, the externally visible properties of those parts, and the relationships amongst them.”

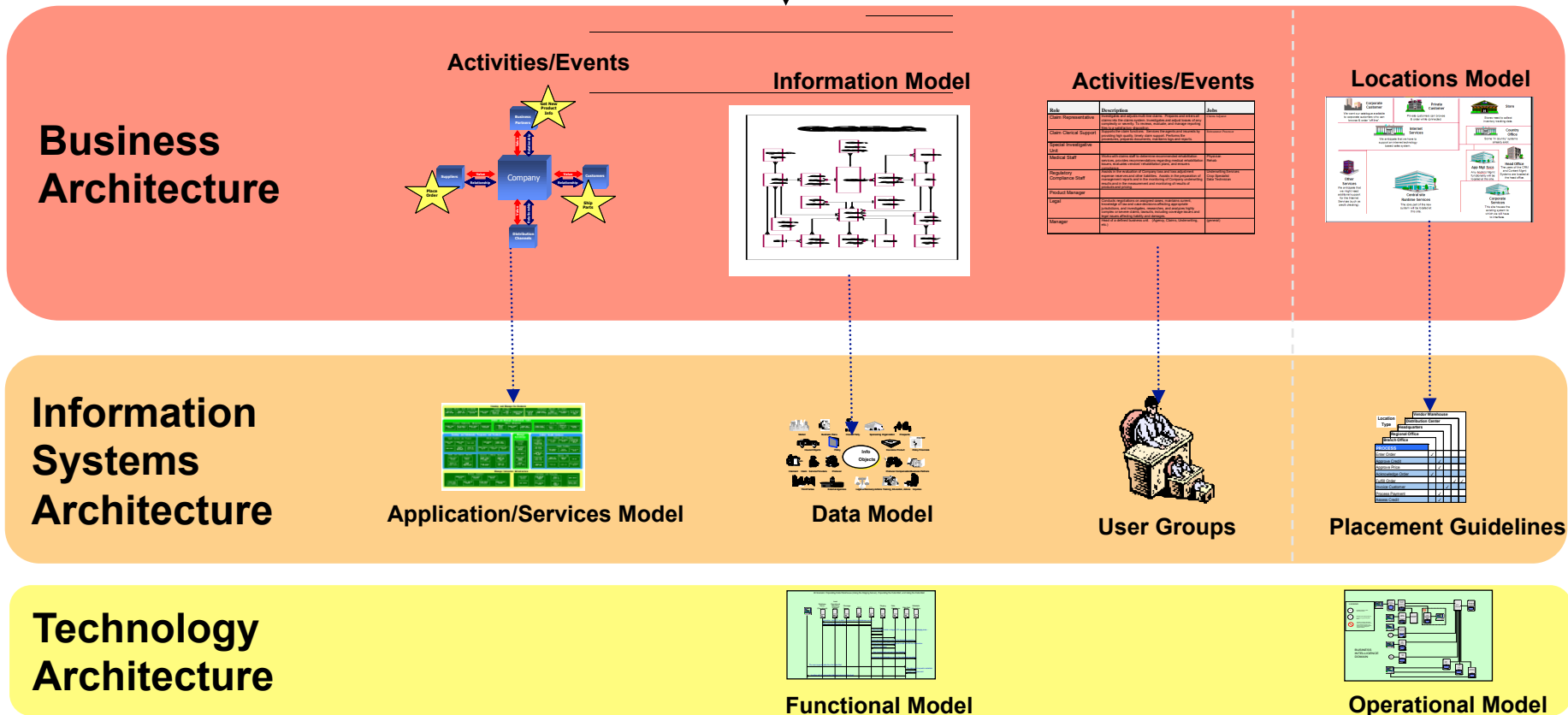
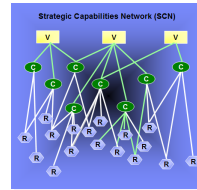
IBM Business Architecture Description Standards

Business Architecture – Positioning

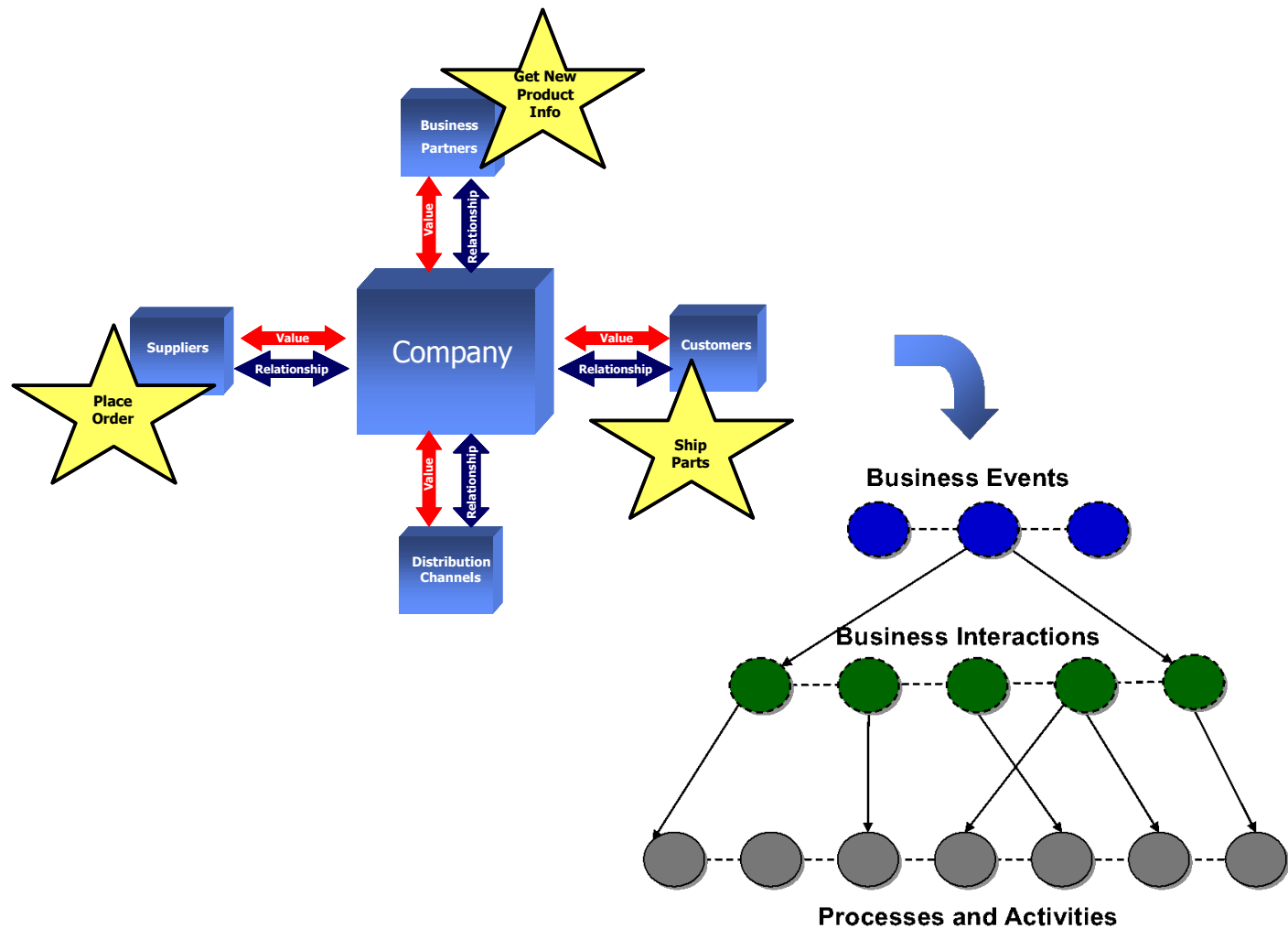


Business Architecture – Positioning

Capabilities

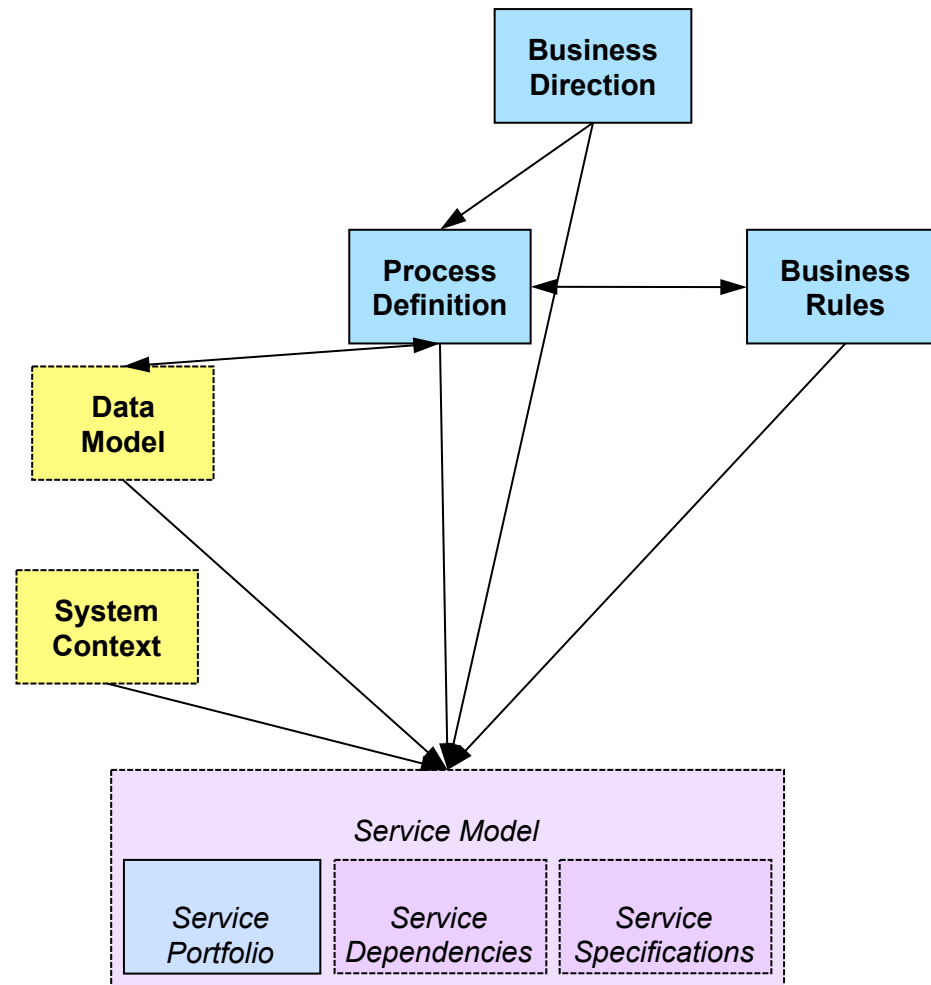


Value in the business ecosystem is exchanged by means of business events and associated interactions.

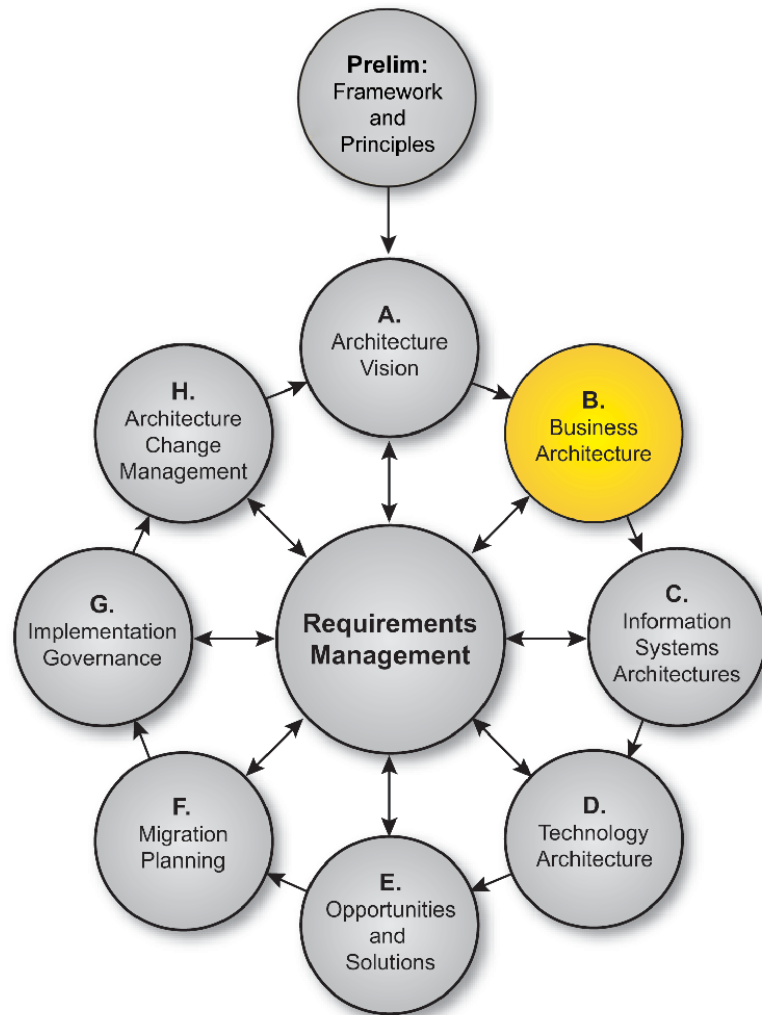


These externally facing business events and interactions are the starting point for developing the operational details of the subsequent business design.

Main Business Architecture Work Products – reduced to the Minimum – emphasis on Business Processes



Business Architecture Content according to TOGAF



- **Organization structure**
- **Business Goals and Objectives**
- **Business Functions**
- **Business Services**
- **Business Processes**
- **Business Roles**
- **Business Data Model (according to Course ATE240)**
- **Correlation of organization and functions**

Objectives / Approach Business Architecture (TOGAF 8.1 & 8.2)

- **The *objectives* of Phase Business Architecture are to:**
 - **Develop the Target Business Architecture that describes how the enterprise needs to operate to achieve the business goals, and respond to the strategic drivers set out in the Architecture Vision, in a way that addresses the Request for Architecture Work and stakeholder concerns**
 - **Identify candidate Architecture Roadmap components based upon gaps between the Baseline and Target Business Architectures**

- ***Approach***
 - **In summary, the Business Architecture describes the product and/or service strategy, and the organizational, functional, process, information, and geographic aspects of the business environment**

Some more – from TOGAF Document Chapter 8.2

▪ General

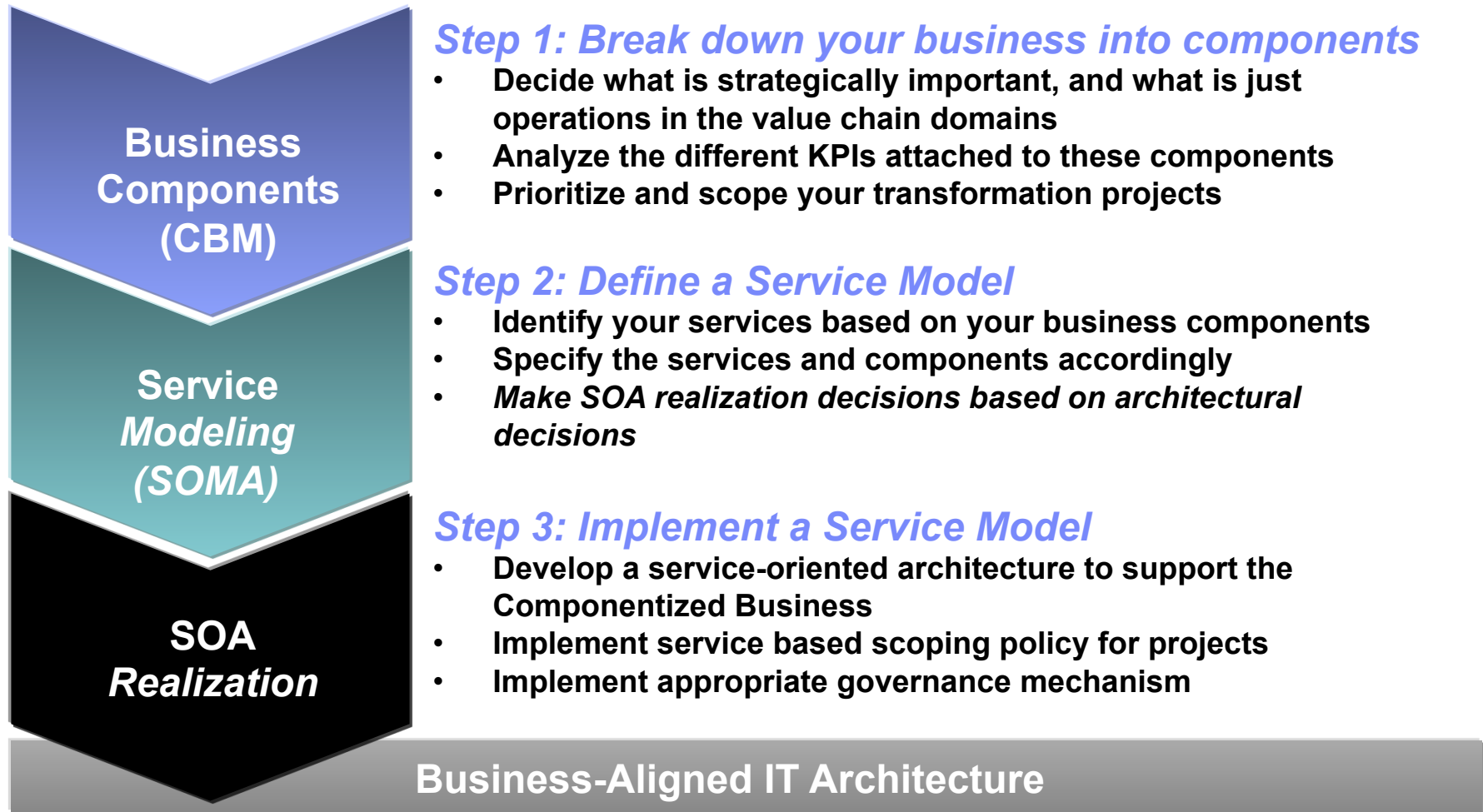
- is [...] the first architecture activity that needs to be under taken
- is also often necessary as a means of demonstrating the business value of subsequent architecture work to key stakeholders

▪ Business Modeling

- *Activity Models* (also called *Business Process Models*) describe the functions associated with the [...] business activities [...] Activity models are hierarchical in nature
- *Use Case Models* can describe either business processes or systems functions
- *Class Models* are similar to logical data models

**Being more focused: CBM
(Component Business Modeling)**

Steps of a Business-IT Alignment – Approach for SOA



Component Business Model (CBM) – Definition (1)

A **Business Component** is a part of an enterprise that has the potential to operate autonomously, for example, as a separate company, or as part of another company.

Columns are Business Competencies, defined as large business areas with characteristic skills and capabilities, for example, product development or supply chain.

An **Operational Level** characterizes the scope of decision making. The three levels used in CBM are direct, control and execute.

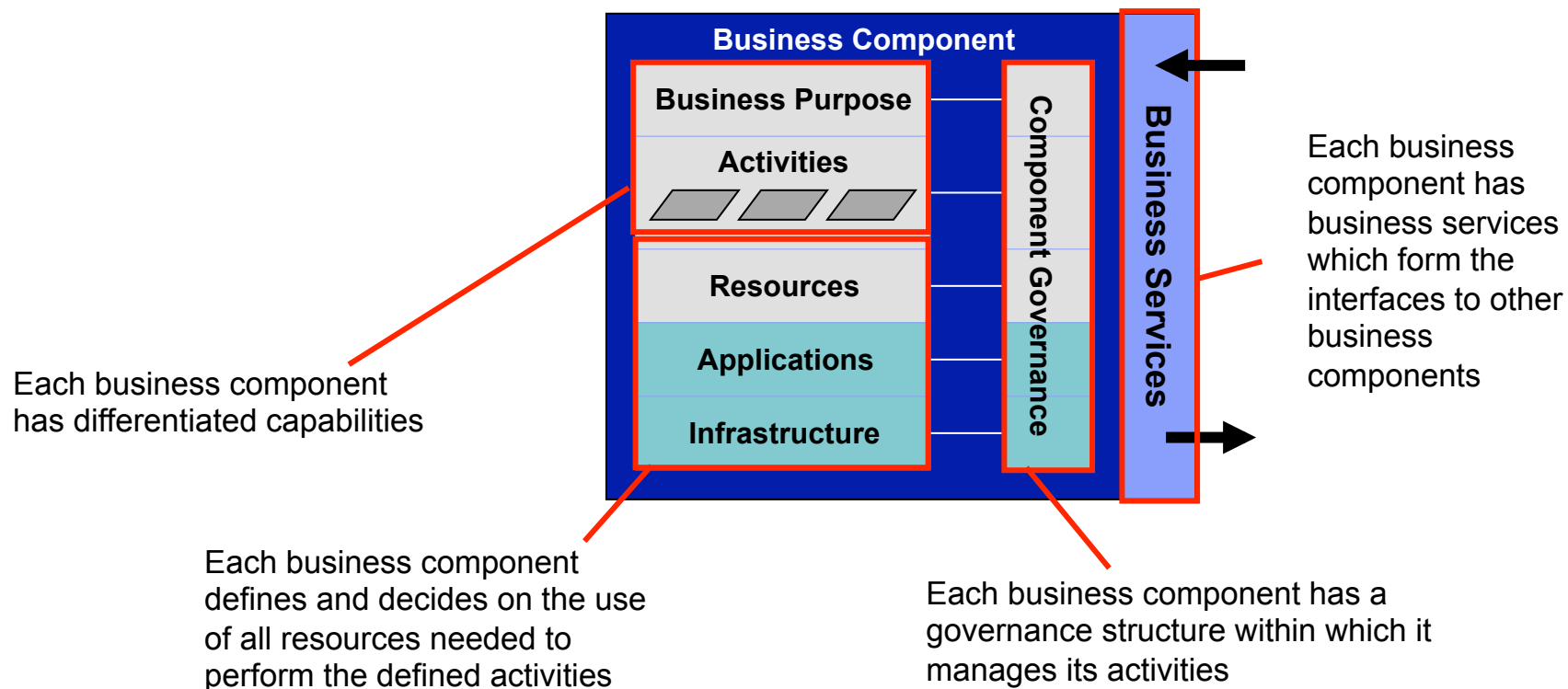
- Direct is about strategy, overall direction and policy.
- Control is about monitoring, managing exceptions and tactical decision making
- Execute is about doing the work

	Business Administration	New Business Development	Relationship Management	Servicing & Sales	Product Fulfillment	Financial Control and Accounting
Direct	Business Planning	Sector Planning	Account Planning	Sales Planning	Fulfillment Planning	Portfolio Planning
Control	Business Unit Tracking	Sector Management	Relationship Management	Sales Management	Fulfillment Planning	Compliance
	Staff Appraisals	Product Management	Credit Assessment			Reconciliation
Execute	Staff Administration	Product Directory	Credit Administration	Sales	Product Fulfillment	Customer Accounts
	Production Administration	Marketing Campaigns		Customer Dialogue	Document Management	General Ledger
			Contact Routing			

CBM – Definition (2): The building block of a component business model is a ‘business component’

A component is a business in microcosm. It has activities, resources, applications, infrastructure. It has a governance model. It provides goods and services (business services)

Business Component Elements



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Domain Decomposition – Component Business Modeling for JKE

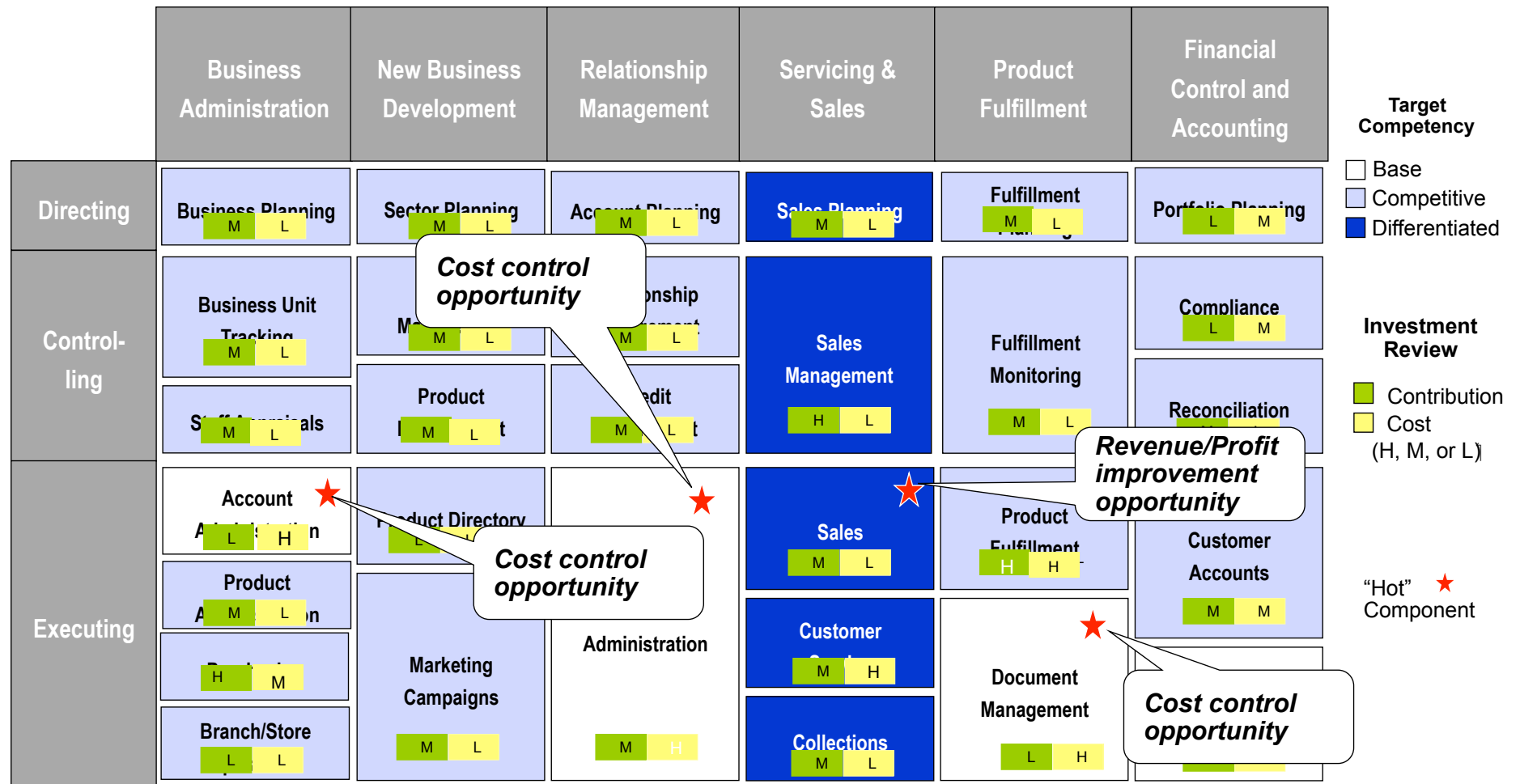
	Business Administration	New Business Development	Relationship Management	Servicing & Sales	Product Fulfillment	Financial Control and Accounting
Directing	Business Planning	Sector Planning	Account Planning	Sales Planning	Fulfillment Planning	Portfolio Planning
Controlling	Business Unit Tracking	Sector Management	Relationship Management	Sales Management	Fulfillment Monitoring	Compliance
	Staff Appraisals	Product Management	Credit Assessment			Reconciliation
Executing	Account Administration	Product Directory	Credit Administration	Sales	Product Fulfillment	Customer Accounts
	Product Administration	Marketing Campaigns		Customer Service	Document Management	
	Purchasing			Collections		General Ledger
	Branch/Store Operations					

Target Competency

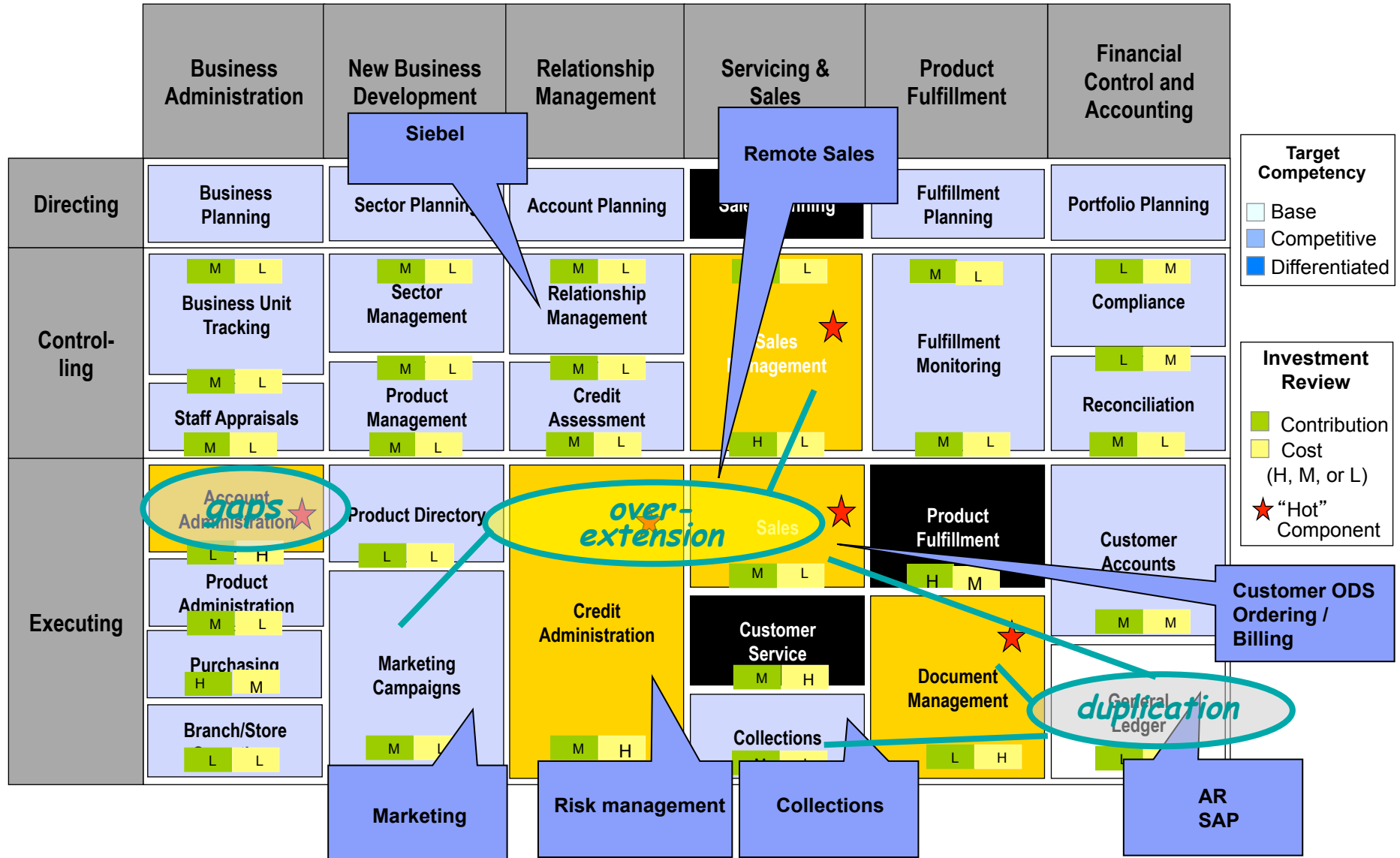
- Base
- Competitive
- Differentiated

Enterprise IT Architectures

Domain Decomposition – Component Business Modeling for JKE



CBM and IT Systems Coverage for JKE – “Footprint”



Enterprise IT Architectures

This lack of “goodness” and the inability to generate increased downstream value is addressed by more carefully connecting the service and component paradigms within CBM

	Product Management	Risk Management	Business Acquisition & Channel Management	Policy	Policyholder/Affiliated Party	Claims	Cash Flow	Financial Management	Business Administration & Infrastructure
Direct	Product Portfolio Strategy	Risk, Compliance, Legal Management Strategy	Channel Relationship Strategy	Policy Administration Strategy & Planning	Policyholder Relationship Strategy	Claims Strategy	Cash Flow Planning & Budgeting	Investment Strategy	Business Strategy
	Product Planning & Analysis		Channel Segmentation Strategy & Planning						
Control	Product Economics & Performance	Actuarial Control	Channel Management	Policy Administration Service Level Management	Policyholder Satisfaction Management	Claims Investigation Management	Cash Transactions Management & Control	Treasury / Bulk Reserves Management	Procurement/ Vendor Management
		Risk and Exposure Management	Rate Negotiation			Litigation Management		Investment Management	Asset Management
Execute	Product Define and Design	Underwrite Risk	Treaty & Facultative Reinsurance	Premium Audit	Compliance	Fraud	Investment Management	Technology	Technology
		Product Deployment							

Inside the Business Component:
 Each component comprises a **unique purpose** in the enterprise, a set of **services** and the **set of capabilities** required to deliver them.



Service 1

Service 2

Service 3

...we also need to describe how the component will deliver these services via its resources

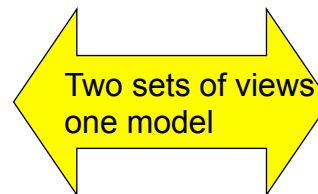
To fully specify the component, not only do we need to explicitly define and document its services...

Enterprise IT Architectures

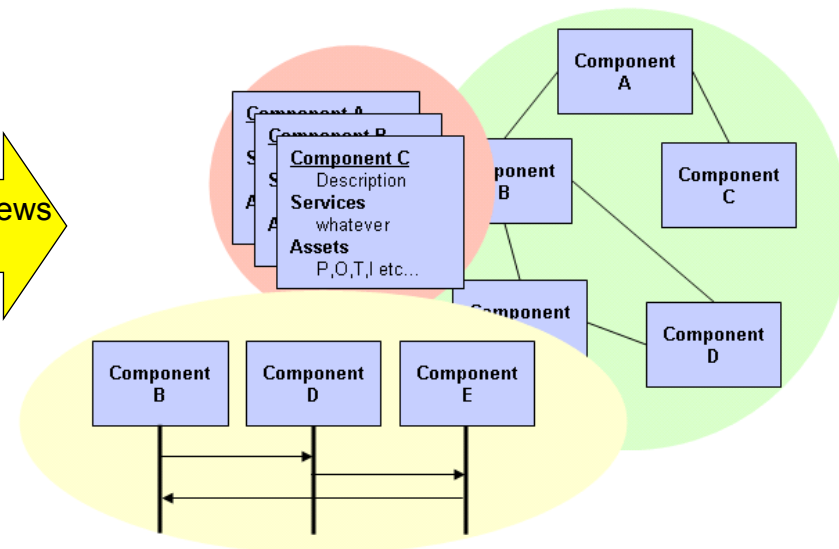
We need to develop “architectural views” of the CBM, helping us understand the detail of the components, their relationships, and the way they co-operate (via services) in order to meet the needs of the enterprise

“Strategy”

	Business Administration	Product Management	Acquisitions	Customer Portfolio Management	Customer Service and Sales	Product Operations	Customer Accounting	Financial Management
Planning & Analysis	Business Planning	Sector Marketing Plans	Acquisition Planning and Oversight	Customer Profiles and Analysis	Customer Servicing and Sales Planning	Product Operations Management	Customer Accounting Policies	Risk Management
	Business Architecture	Managing Products		Credit and Risk Management				
Checks & Controls	Business Unit Administration	Product Development and Deployment	Application Processing	Case Handling	Operations Administration	Reconciliations	Financial Control	Securitization
	Manage Alliance Relationships			Customer Behavior Decisioning	Special Sales Administration			
Execution	Policy & Procedure Review	Target Lists (Prospecting)	Customer Profile	Sales and Cross-Sell	Authorizations	Billing	Treasury	
	HR Management				Financial Capex	Payments	Financial Consolidation	
	Administer Alliance Sale	Marketing	Contract Event History	Servicing (Dialogue Handler)	Product Processing	Customer Account	Collections and Recovery	
	Audit/ QA/ Legal		Correspondence	Smart Routing	Inventory Management	Merchant Operations		
	Facilities	Market Research	Campaign Execution					
	Develop and Operate Systems							
	Accounting and GL	Product Directory						



“Architecture”



CBM Map,

Used as a strategic, “insight” tool

Also supports Programme Portfolio Management etc. (Programme overlap etc.)

CBM Component specifications, relationships and interactions, as part of a Business Architecture

Used to support specific programmes of change (responsibilities of and relationships between components)

Questions



Business Processes and Business Services

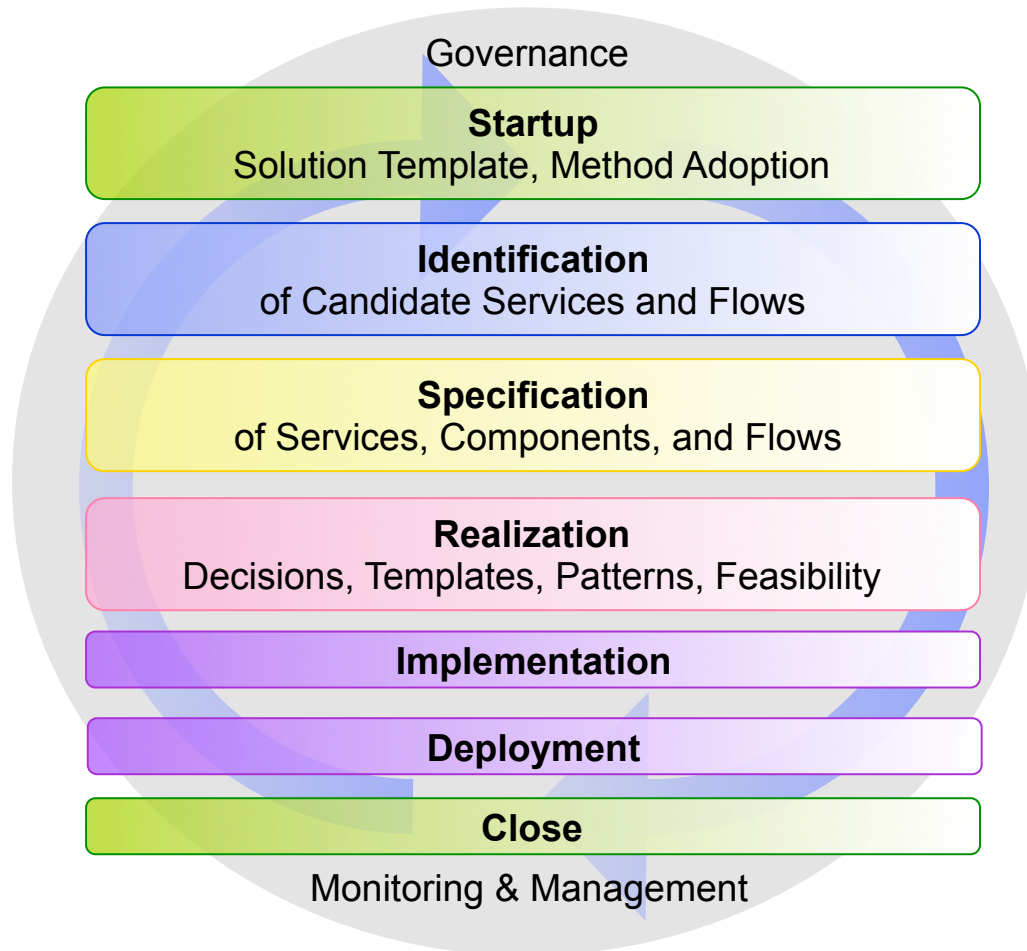
- **The *Service Model* includes a Business Service Part**
 - **which describes the business meaning of a service and thus bridges the gap between Business and IT**
 - **Specifications within a Service Portfolio provide Business Function building blocks**
- **The *Process Model* following BPMN**
 - **Has a business meaning as well and**
 - **thus bridges the gap between Business and IT**
- **Note:**
 - **Business Processes are key for a Business Architecture since many years (now we have a standard to use)**
 - **Sig Sigma consulting concentrates on improving processes**
 - **Business Functions correspond to Activities in a process**

SOMA
(Service Oriented Modeling and Architecture)

Introducing SOMA (Service Oriented Modeling and Architecture)

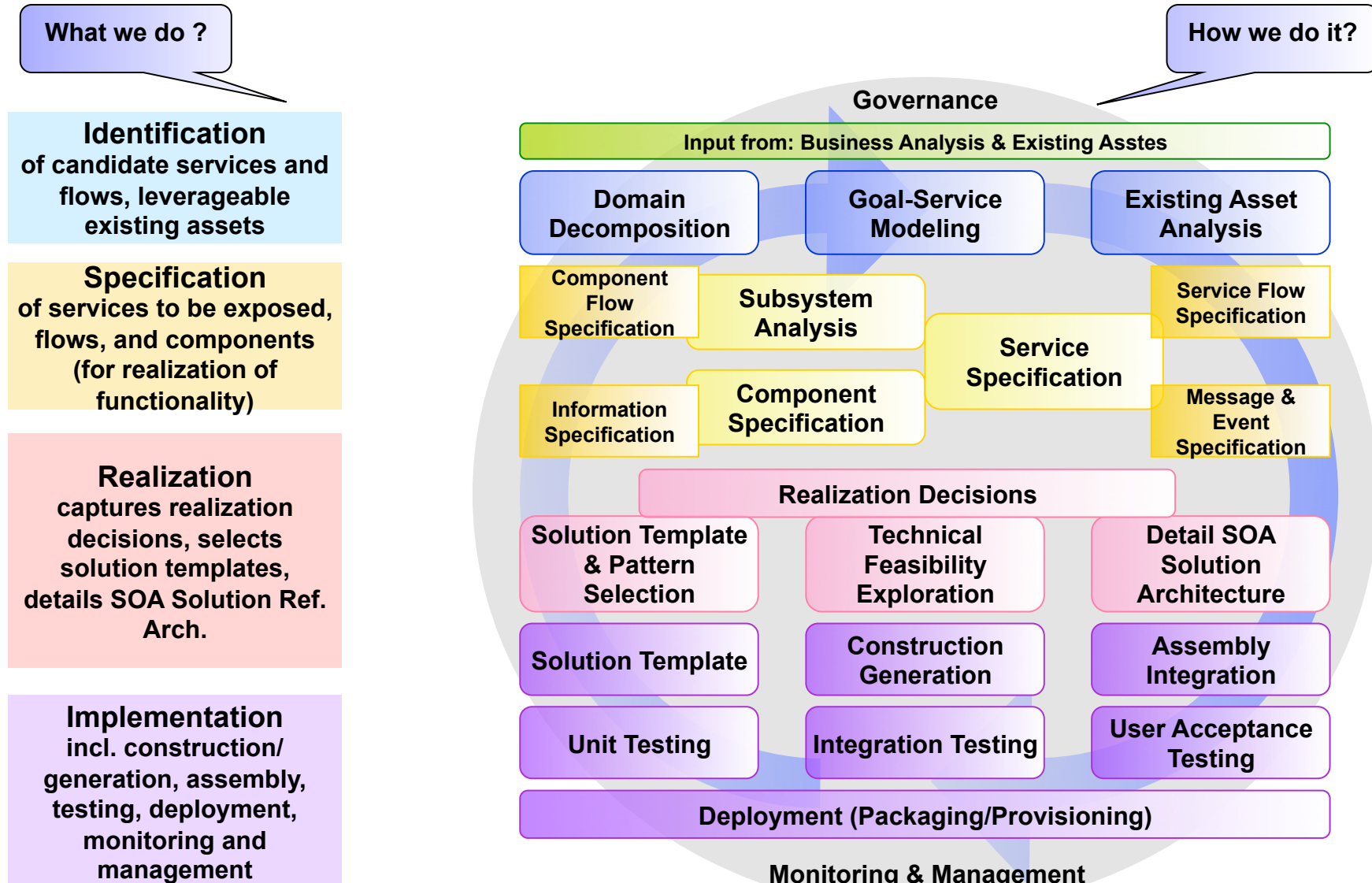
- **SOMA is a business-driven modeling and design method**
- **SOMA provides in-depth guidance on how to move from the business models to the IT models required by SOA**
- **SOMA adds new service-oriented aspects and techniques in intelligent ways to enable an SOA with services directly traceable to business goals and requirements**

At the heart of SOMA is identification, specification, realization and implementation of services, components and flows



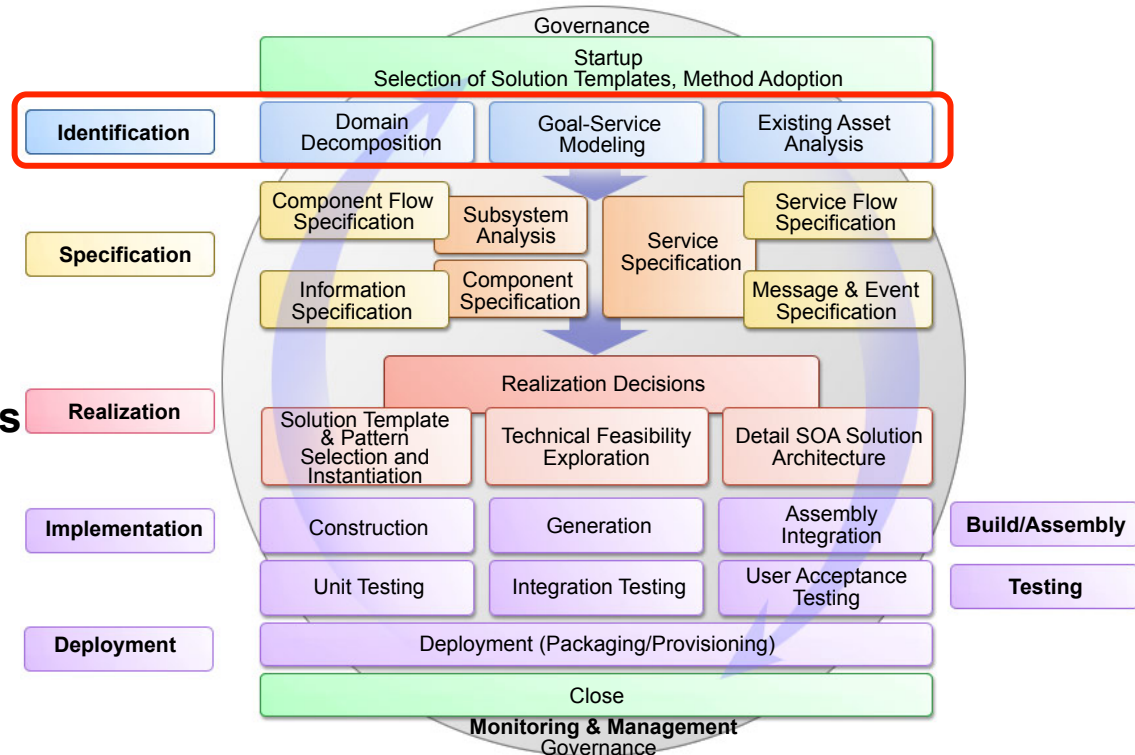
- **Design is separated in Identification and Specification**
- **Realization are mainly decisions on how to implement, buy, or use existing assets**
- **Implementation and Deployment as “classical” Software Engineering**

SOMA defines What we do and How we do it



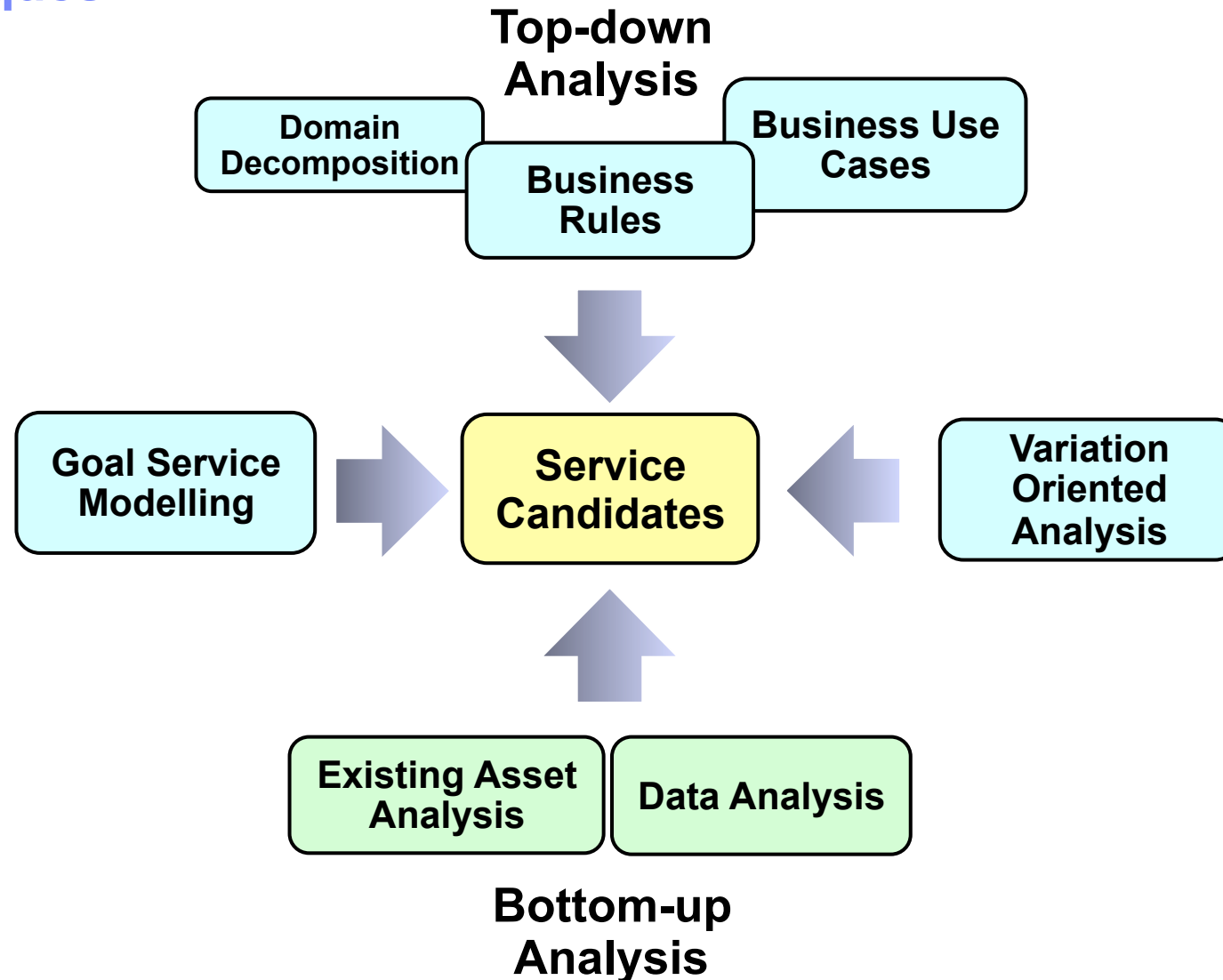
SOMA – Identifies Services

- **Domain Decomposition (Top-down Analysis)**
 - Process Decomposition
 - Functional Area Analysis
 - Information Analysis, Modeling, and Planning
 - Rule and Policy Analysis
 - Variation-Oriented Analysis
- **Existing Asset Analysis (Bottom-up Analysis)**
- **Goal-Service Modeling**
- **Additionally, Service Refactoring and Rationalization**
 - Service Litmus Tests
 - Exposure Decisions, including Exposure Scope



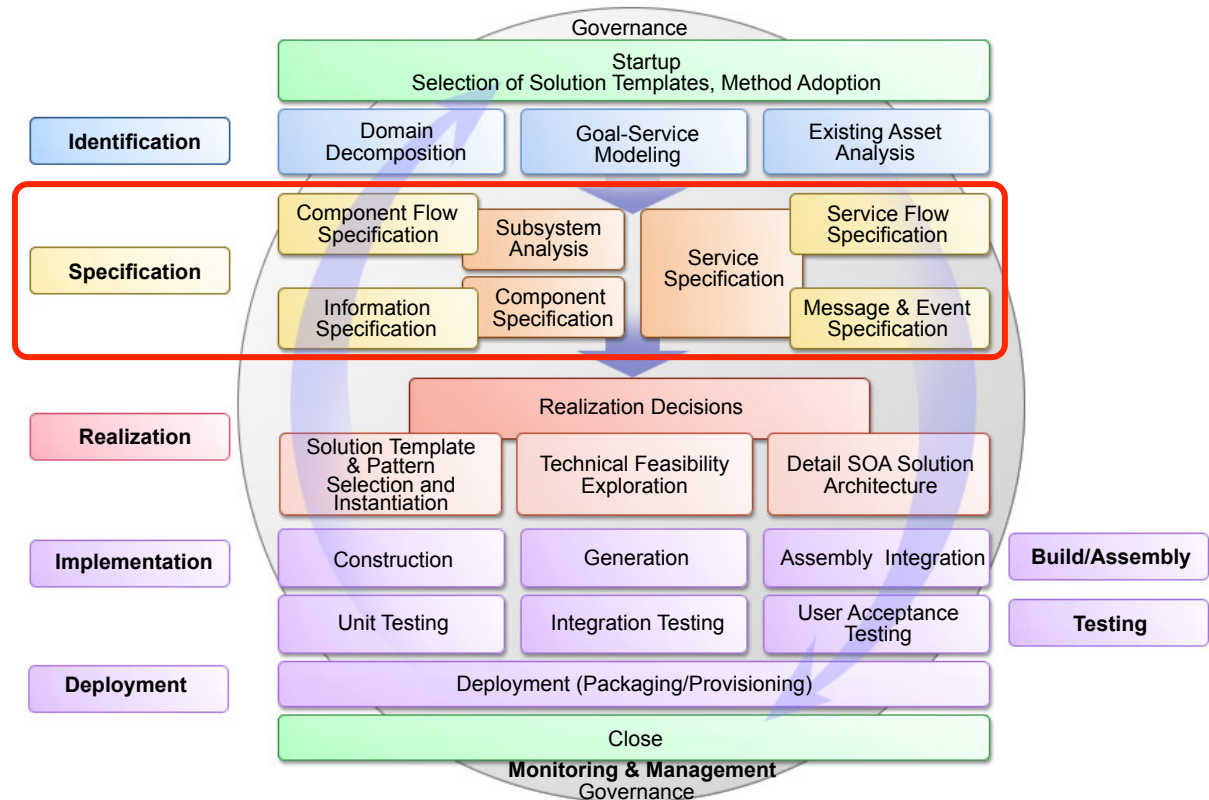
Id Services, Components, and Flows

SOMA – Service Identification Through Complimentary Techniques



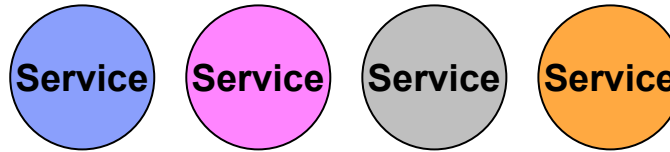
SOMA Specification uses comprehensive techniques to specify Services, Flows, and Service Components that Realize Services

- **Information Specification**
 - Data Model, Message Model, Business Glossary
- **Existing Asset Analysis – Fine Grained**
 - Determine the technical viability of existing applications and approaches to realize services
- **Service Specification**
 - Elaborates the **Service Model**, for example, service dependencies, service composition and flow, rules and policies, event specification, service operation, service message specification, QoS requirements, design decisions, and so on
- **Subsystem Analysis**
 - Partitions subsystems into service components that will be responsible for service realization
- **Component Specification**
 - Details component modeling, flow, information architecture, messages



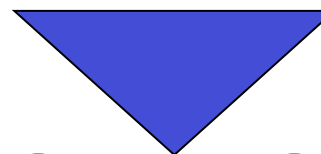
SOMA – Application of Service Litmus Test for Service Exposure Decisions

Candidate Services

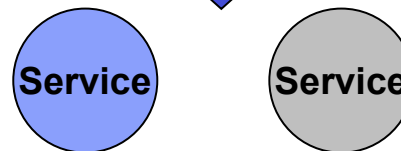


Service Litmus Tests

- 1. Business Alignment
- 2. Composability
- 3. Consolidation (Redundancy Elimination)
- 4. Technical Feasibility
- 5. [Externalized Service Description]
- 6. Project Defined/Customer Specific SLTs

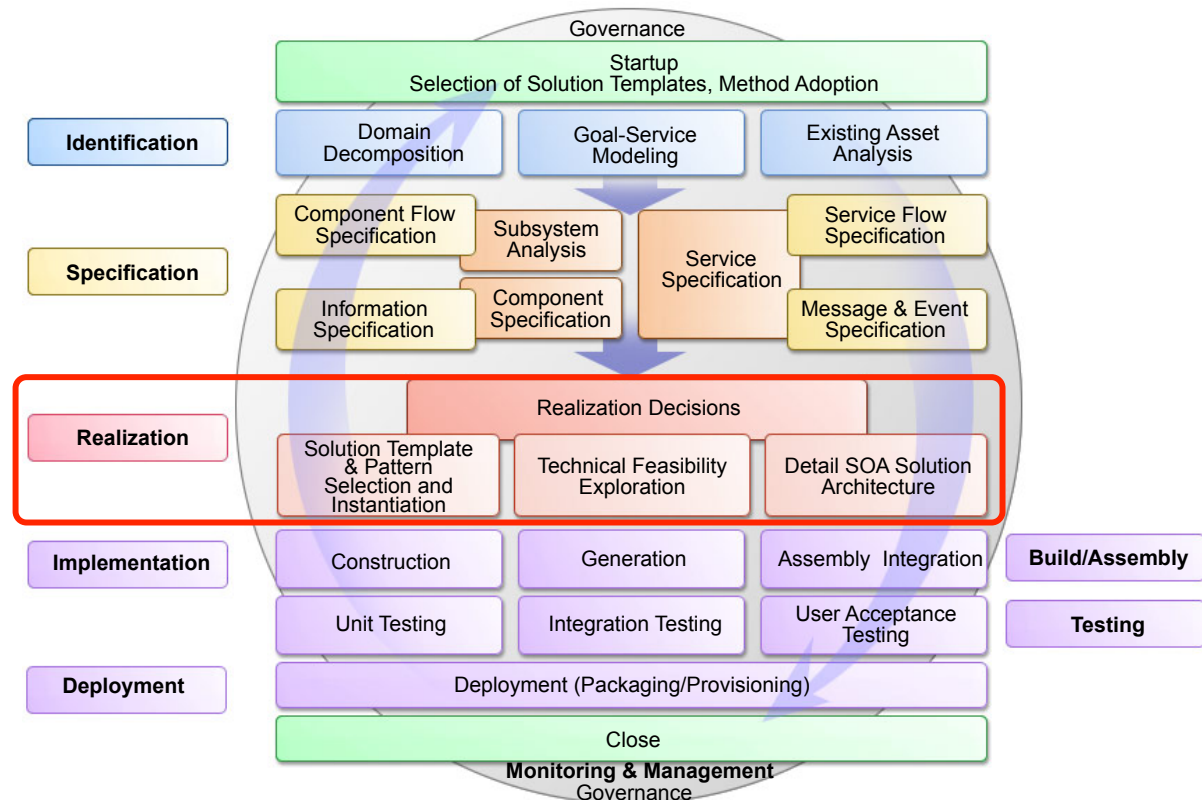


Exposed Services

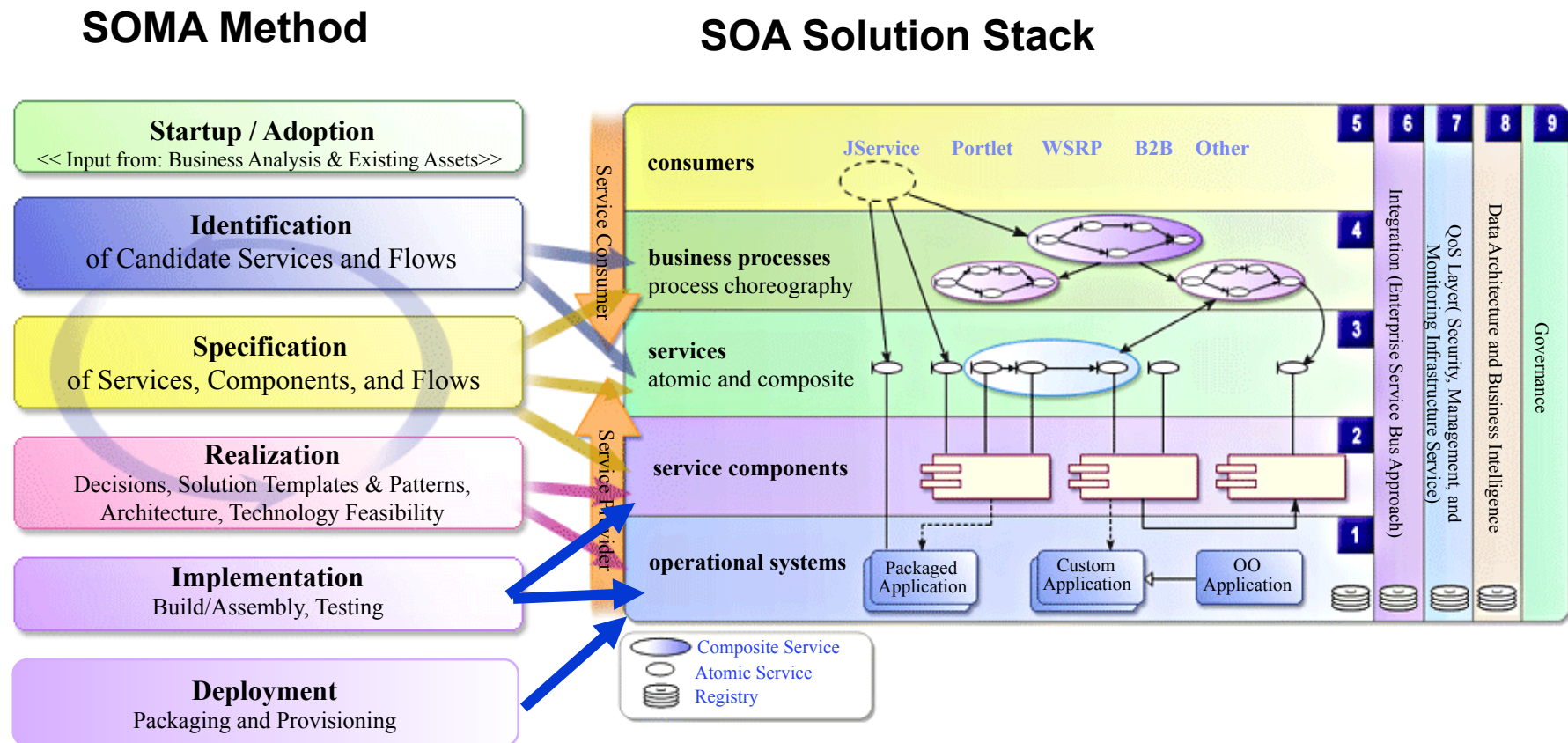


SOMA Realization (Includes SOA Solution Stack Instantiation)

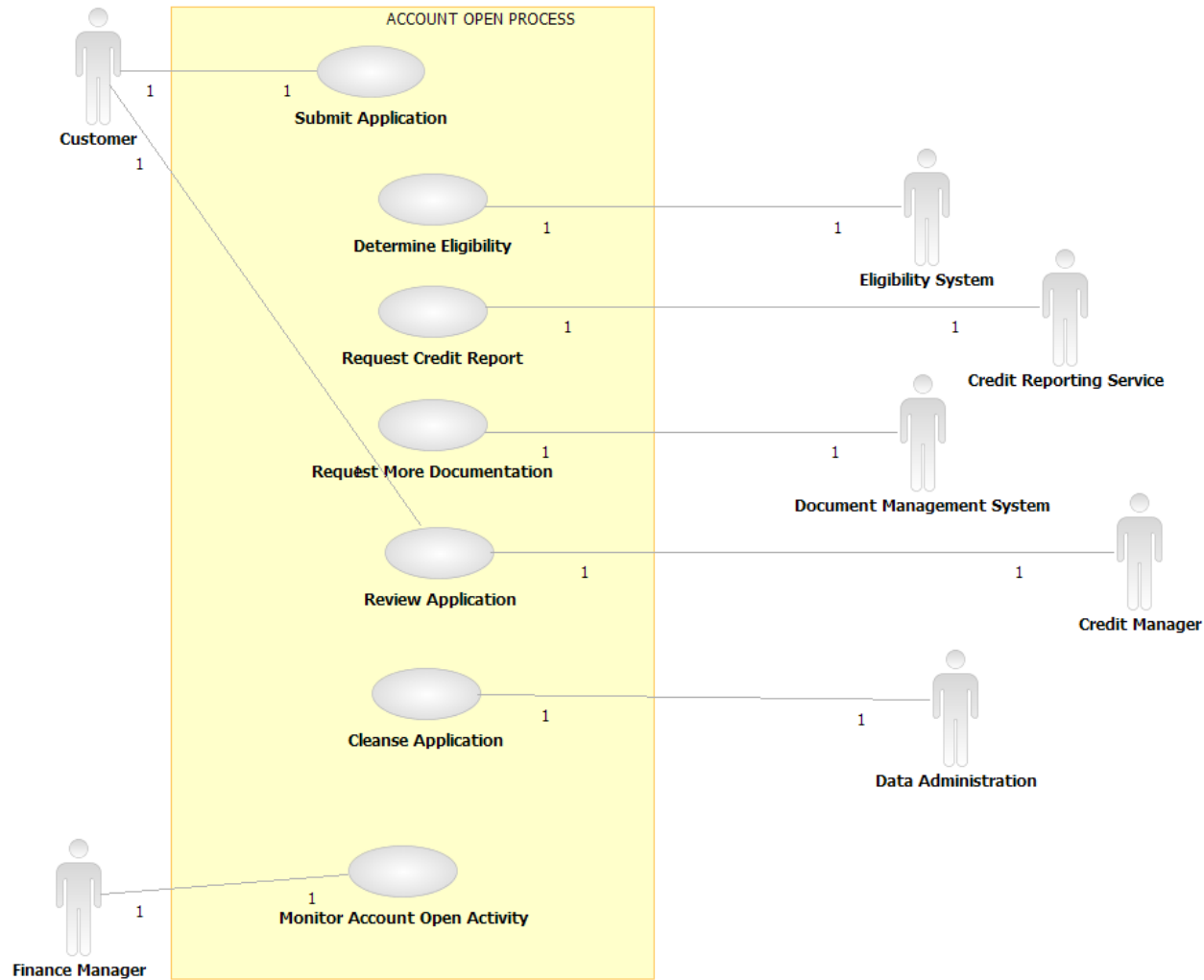
- **Select and instantiate Solution Templates and Patterns**
- **Technical Feasibility Exploration**
 - Examine approaches to handle client requirements
 - Examine legacy application specific considerations
- **Detail SOA Solution Stack**
- **Realization Decisions**
 - Consider alternatives
 - Select the alternative
 - Provide justification



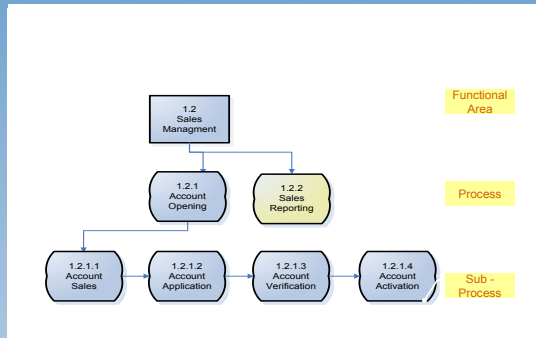
The SOA Layered View is populated with the SOMA Method



Example JKE: Use Case for JKE's "Open Account"



Example JKE: Service Design via SOMA – “Open Account” Service Identification



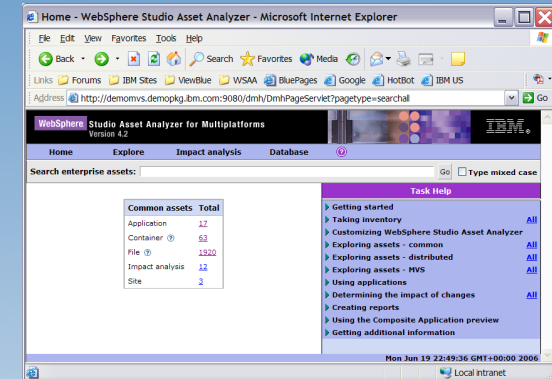
Domain Decomposition

- **Techniques:**
 - Process Modeling Tools
 - Design of KPIs/Metrics
- **Services Identified**
 - Open Account
 - Account Activation
 - Account Verification

Requirements:	Priority	Status
► KPI1: Decrease cost of account activation Decrease cost of account activation by 50%	Medium	Proposed
KPI2: Decrease negotiated cost of credit report retrieval Decrease negotiated cost (Vendor volume discounts) of credit report..	Medium	Proposed
KPI3: Automate credit report retrievals Automate 75% of all credit report retrievals	Medium	Proposed
KPI4: Decrease number of credit report retrievals Decrease number of credit report retrievals by 10%	Medium	Proposed
KPI5: Increase electronic applications Increase electronic applications by 25%	Medium	Proposed
KPI6: Reduce call center calls Reduce number of call center calls by sales force and offices (stores).	Medium	Proposed
* <Click here to create a requirement>	Medium	Approved

Goal Service Modeling

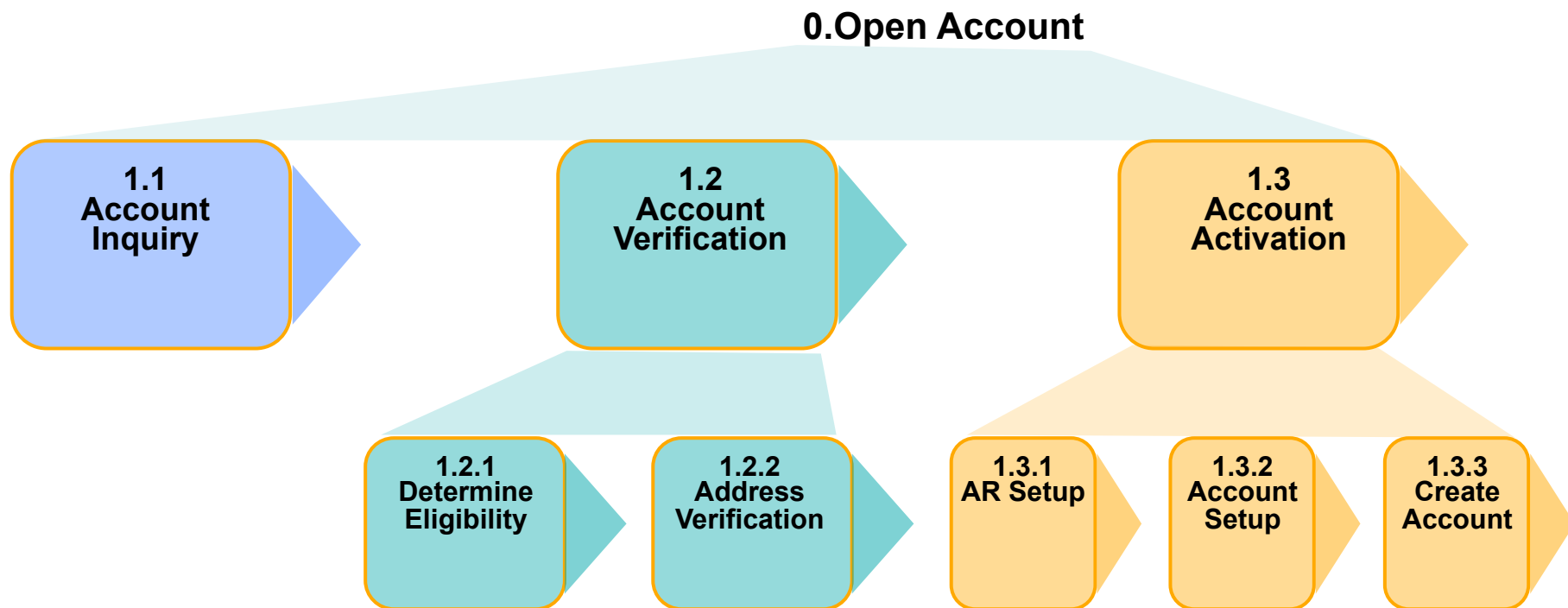
- **Techniques**
 - Requirements Planning Tools
 - Design of KPIs/Metrics
- **Services Identified**
 - Determine Applicant Eligibility
 - Address Verification



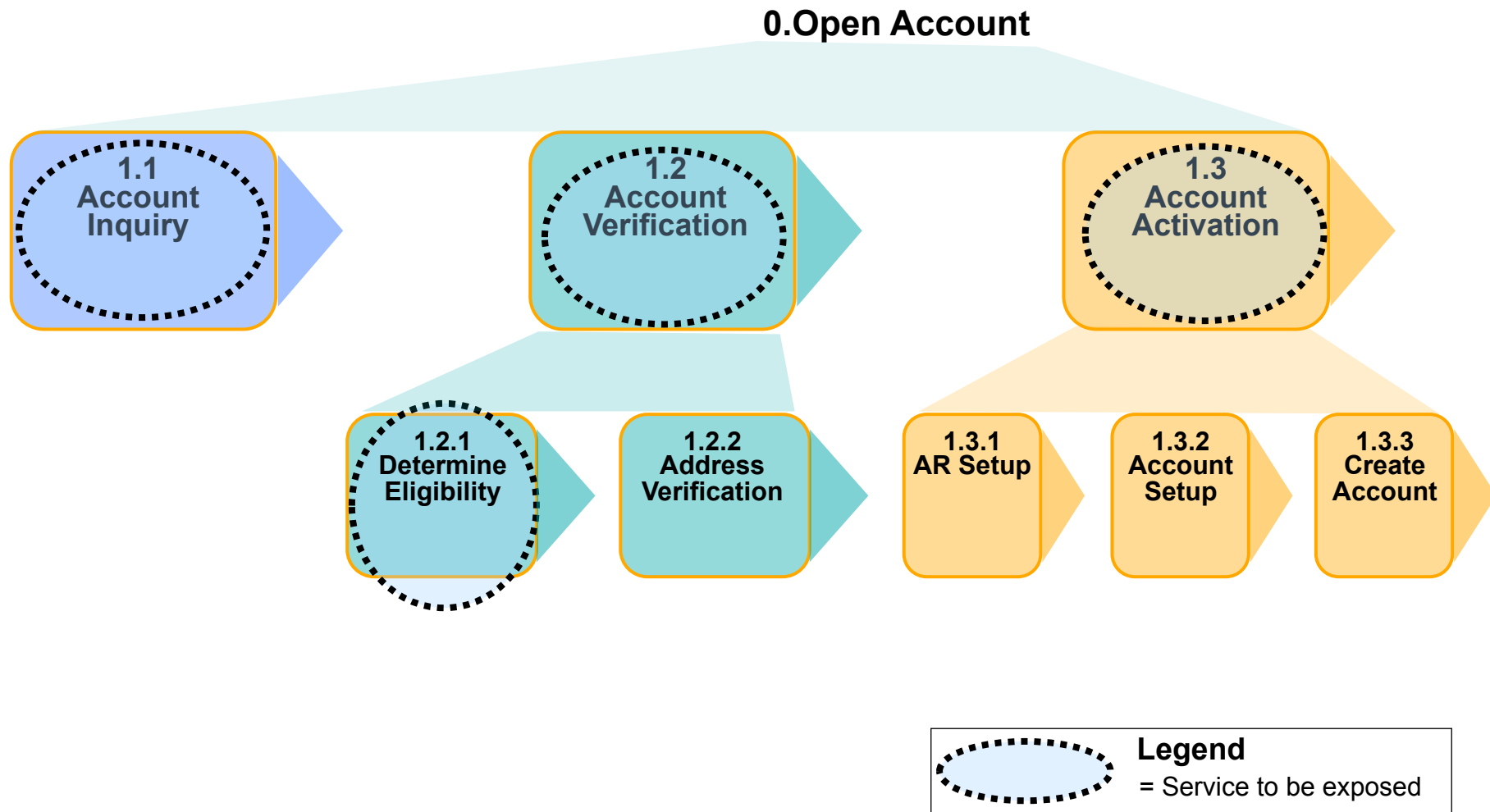
Existing Asset Analysis

- **Techniques**
 - Asset Analysis Tools
 - Interviews/Documentation
- **Services Identified**
 - Account Inquiry (CICS 2.2)
 - AR Setup (CICS 2.2)
 - Account Setup (CICS 3.1)
 - Create Account (SAP)

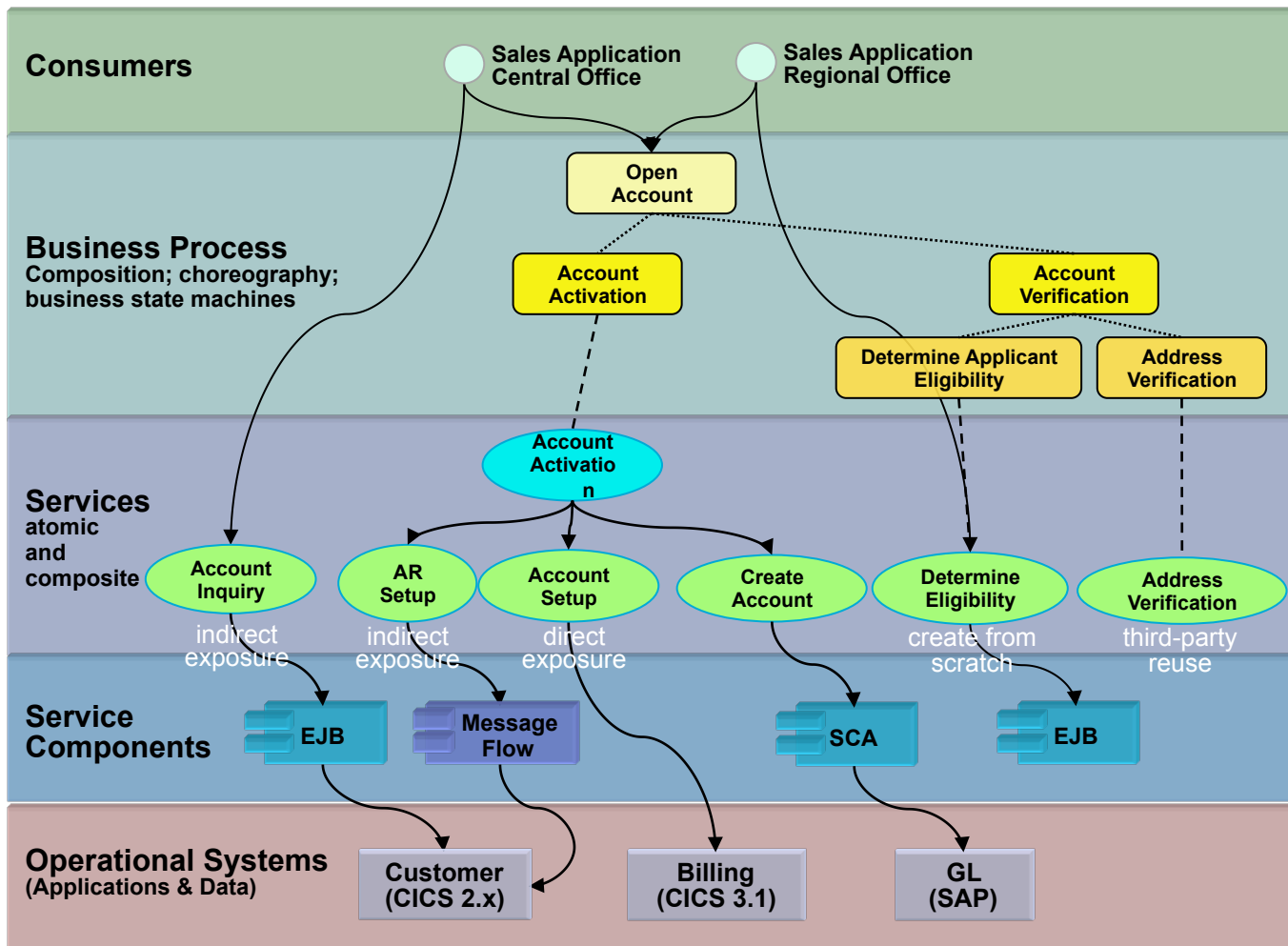
Example JKE: Domain Decomposition – Business Process Modeling for “Open Account”



Example JKE: Service Exposure Decisions – Litmus Test



Example JKE: Layered View for „Open Account“

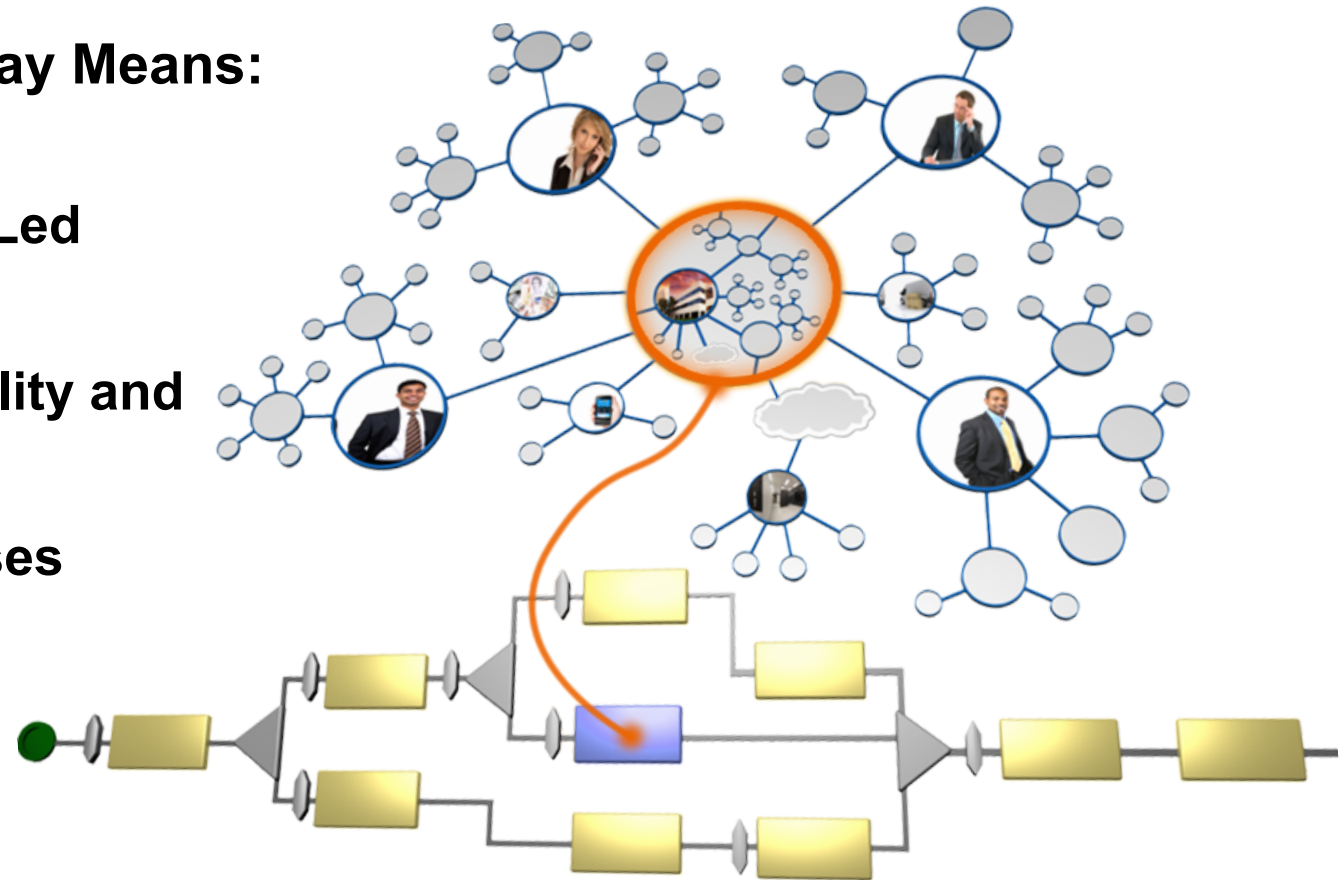


BPM (Business Process Management)

Can Your Processes Handle Change, Uncertainty and Complexity?

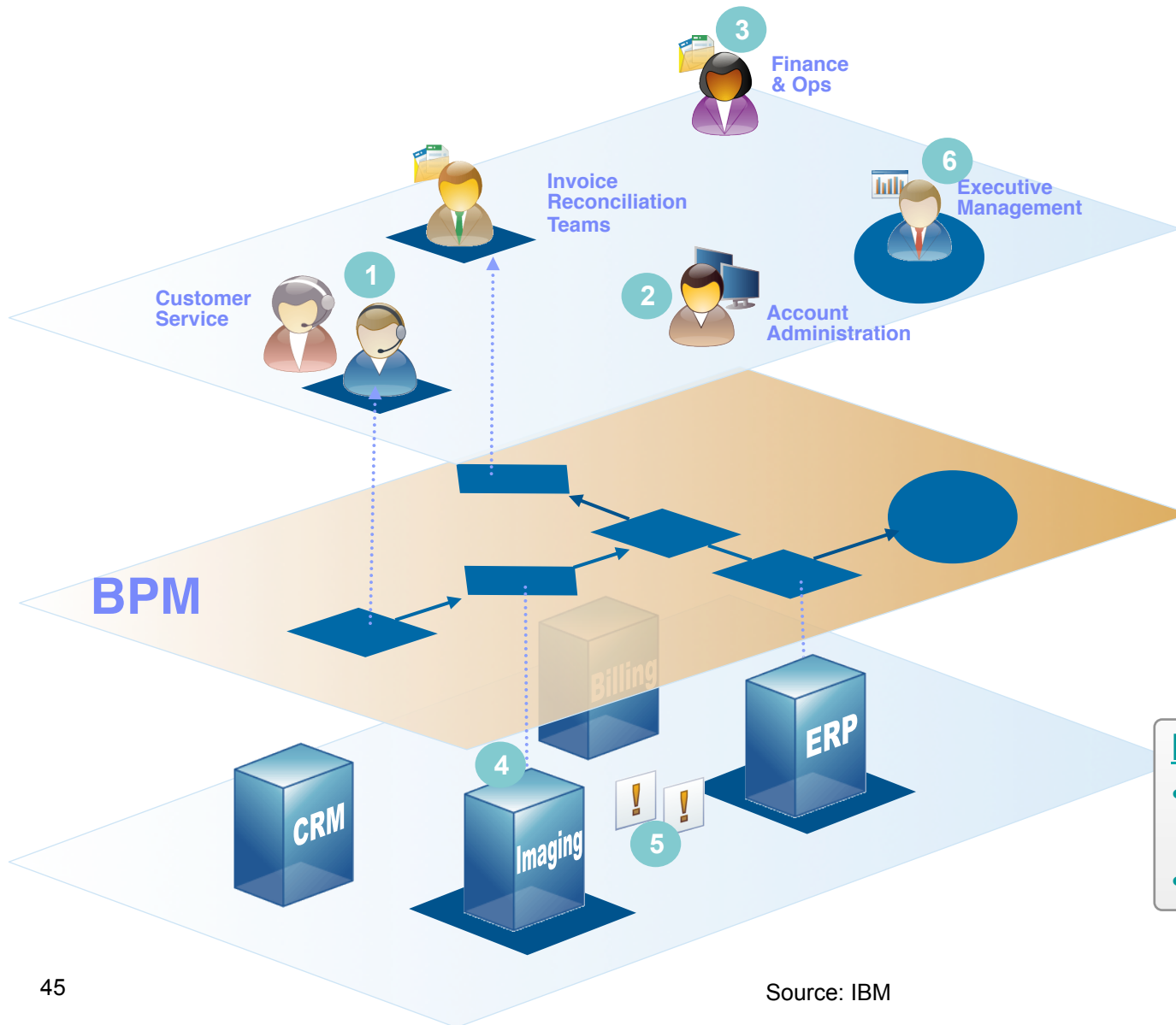
Transformation Today Means:

- **Simpler Business Led Change**
- **Full Process Visibility and Governance**
- **Optimized Processes and Decisions**



Agile Processes and Decisions with Business Process Management

BPM Delivers a Layer for Control and Visibility

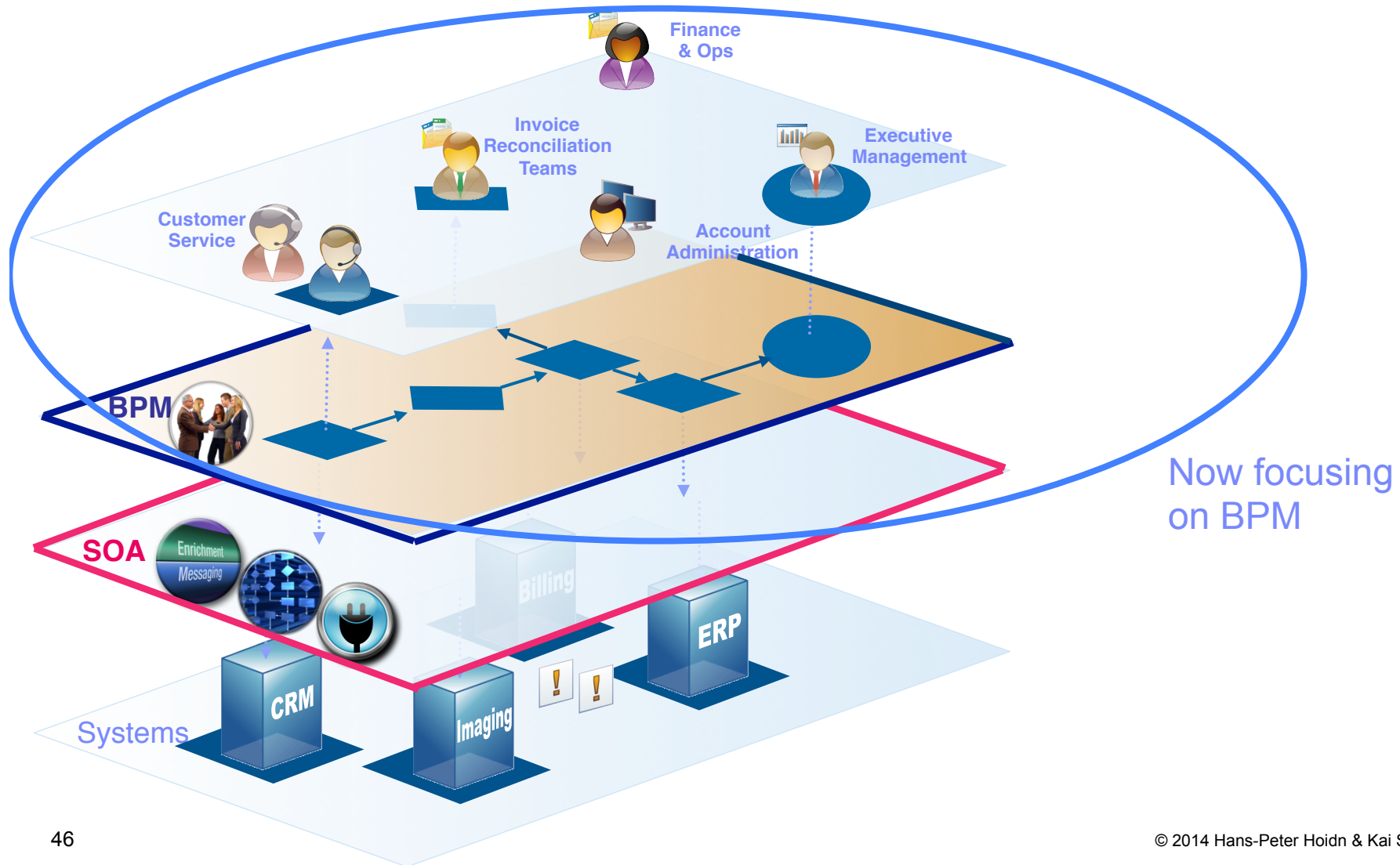


1. Automatically prioritizes and routes work
2. Guides users through decisions
3. Standard and consistent work prioritization
4. Leverages exiting system data Systems
5. Reacts to business events and generates actions
6. Real-time visibility and process control

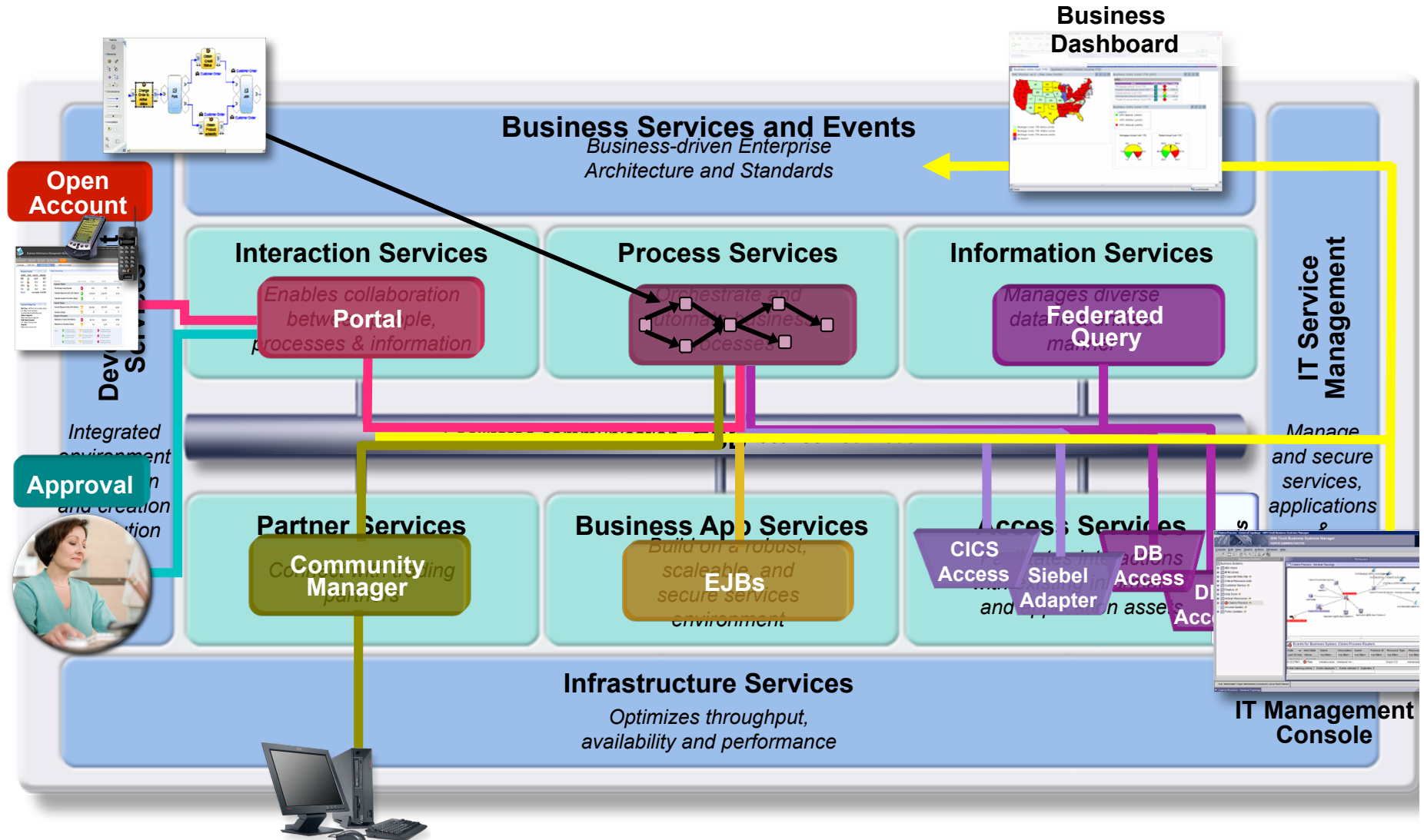
Benefits:

- 80% Reduction in Manual Interactions
- Faster Issue Resolution

BPM and SOA linked together



Example JKE: "Open Account" Process – SOA Reference Architecture in Action



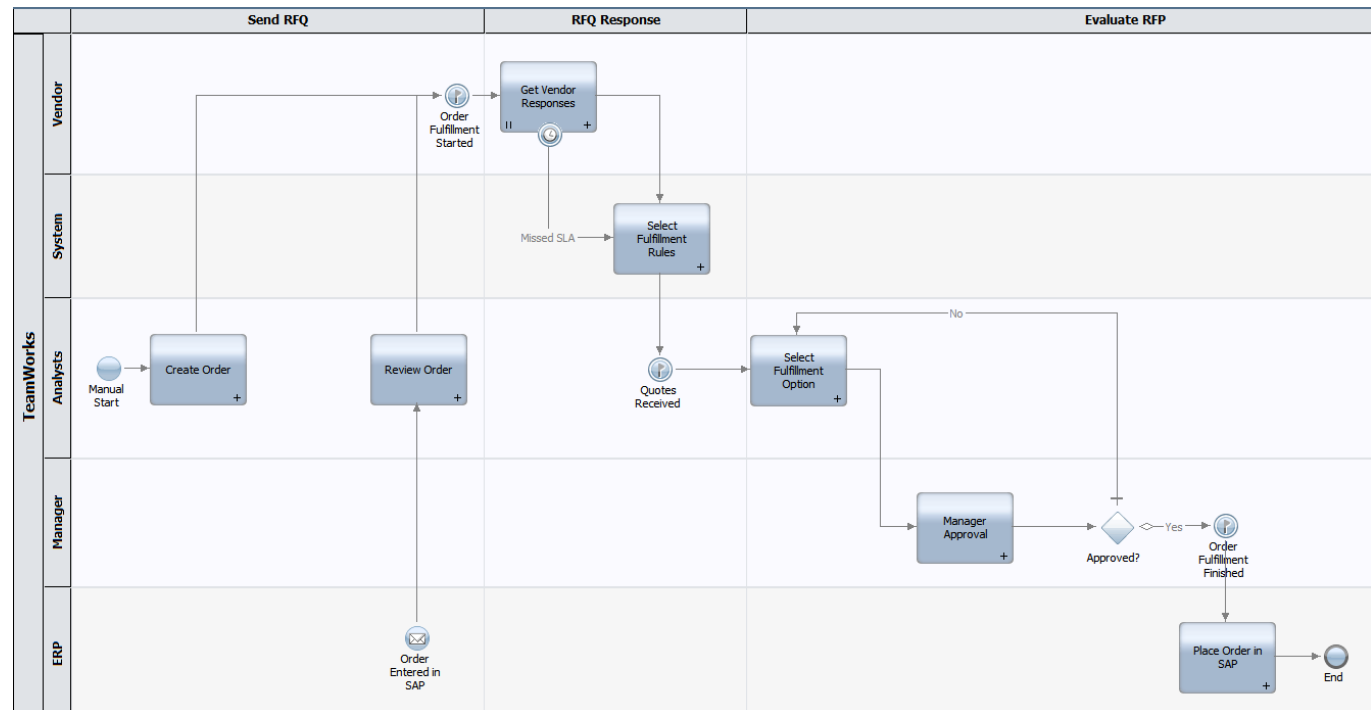
BPMN 2.0 (Business Process Model and Notation)

- **BPMN is an OMG Standard (Object Management Group – see www.omg.org), most IT vendors are supporting BPMN**
- **BPMN 2.0 covers notation as well as the metamodel suitable for execution (BPMN 1.x covered only the notation)**
- **BPMN supports:**
 - **Notation that a business person understands including a visual model with an appropriate Interchange Format**
 - **Semantic Metamodel and an appropriate Interchange Format (such that models can be exchanged between tools)**
 - **BPMN “execution semantics”**

Definition of Terms

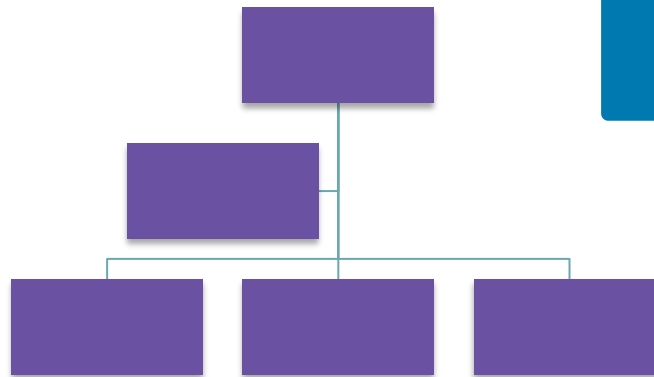
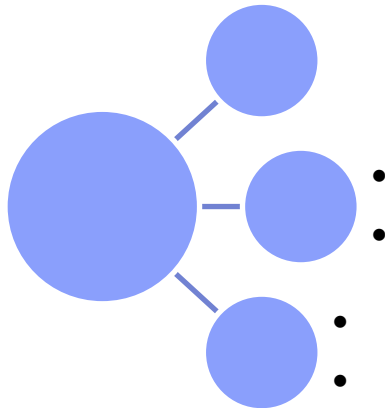
(see also Standard BPMN – Business Process Model and Notation)

- **Business Process Definition (BPD)**
- **Swim Lane**
- **Milestone**
- **Participant**
- **Step/Activity**
- **Flow Line**
- **Business Event**
- **User Story**



What is **not** a Business Process Definition?

- Entity State Diagrams
- Use Cases, Use Case Relationship Diagrams
- System Relationship Diagram
- Architectural Diagram
- Workflow Model (Application Development), Screen Flow



Activity/Step

A unit of granularity in a process that...

- Has a **goal** that can be expressed as a singular **outcome**
- Implemented as
 - **Task** (human or system)
 - **Sub-process**
- Can be a human task
 - **Single participant** begins the activity
- Can contain multiple steps, (e.g. screens in a screen flow)
 - These steps are not *process* steps
- Can be a **sub-process**
 - Implemented as another BPD

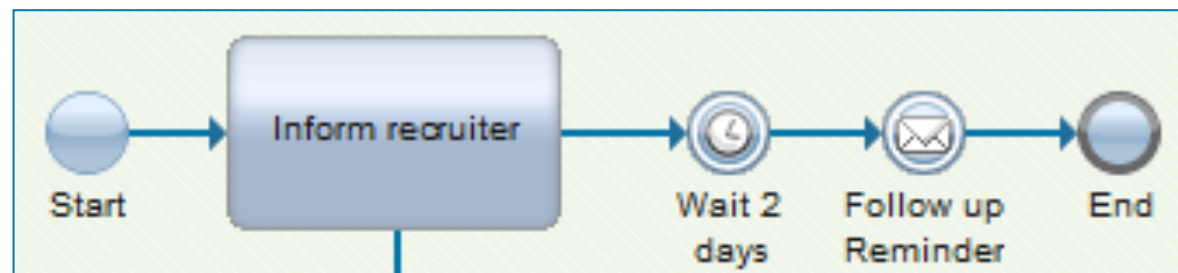
Events

A business event...

- Is the occurrence of a **condition** that triggers an activity.
- Can **listen to catch** a condition to trigger an activity or...
- **...throw** a result upon occurrence.



- **Types of events include the following:**
 - Start /End
 - Timer
 - Message
 - Exception



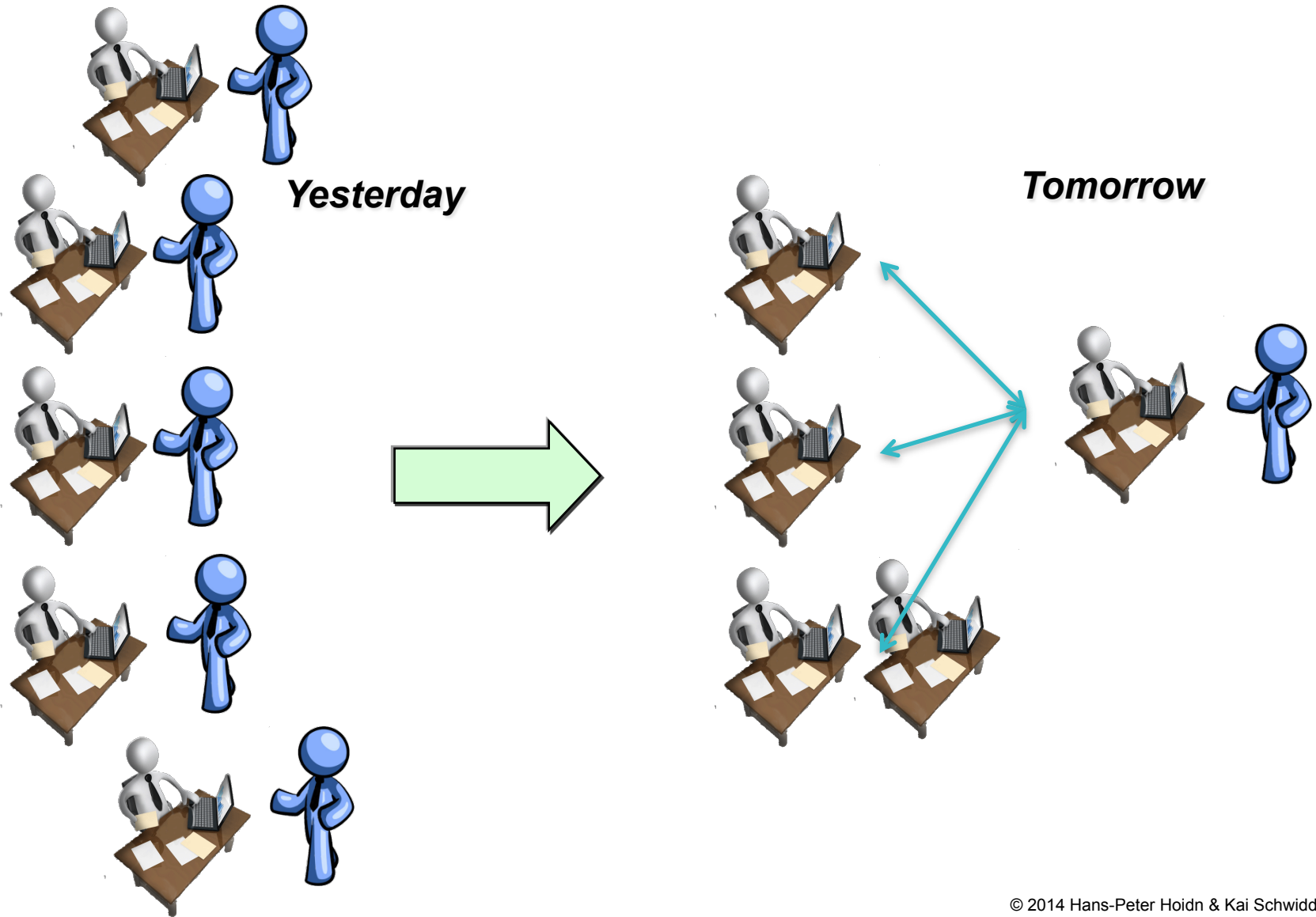
BPMN in Action: Automation of Business Processes

- **BPMN 2.0 Semantics automates the execution of business processes**
 - **Key is: “The diagram is the process”**
 - **Round trip is possible**
 - **It is always known where the process stands**
 - **KPIs (Key Performance Indicators) can be attached**
 - **Bottlenecks can be identified**
 - **Processes can be optimized**

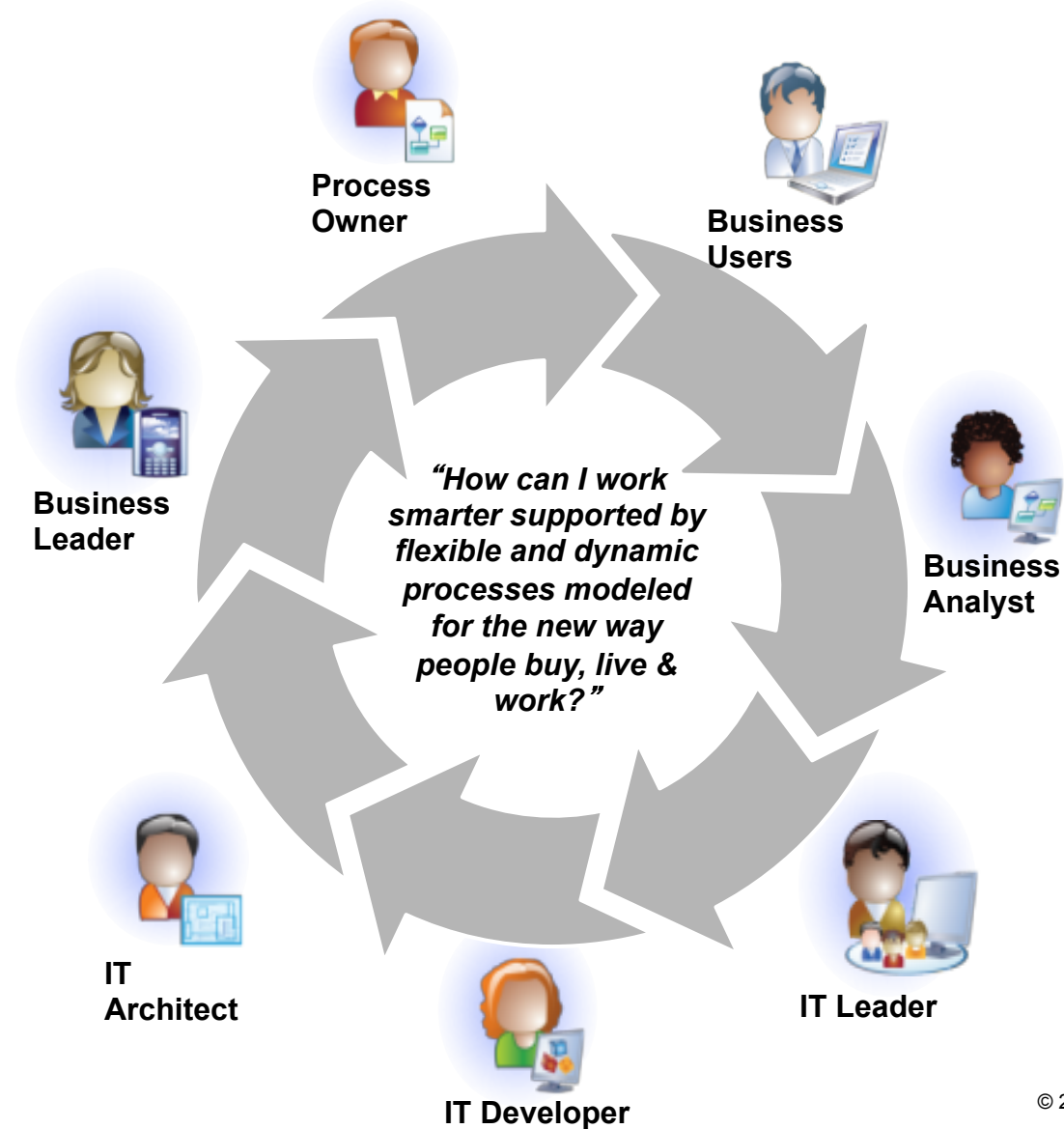
- **BPMN supports a Round Trip: modeling, implementation, deployment, execution, monitoring, and back to modeling**

- **Business people are eligible to monitor the execution of processes (and the KPIs)**

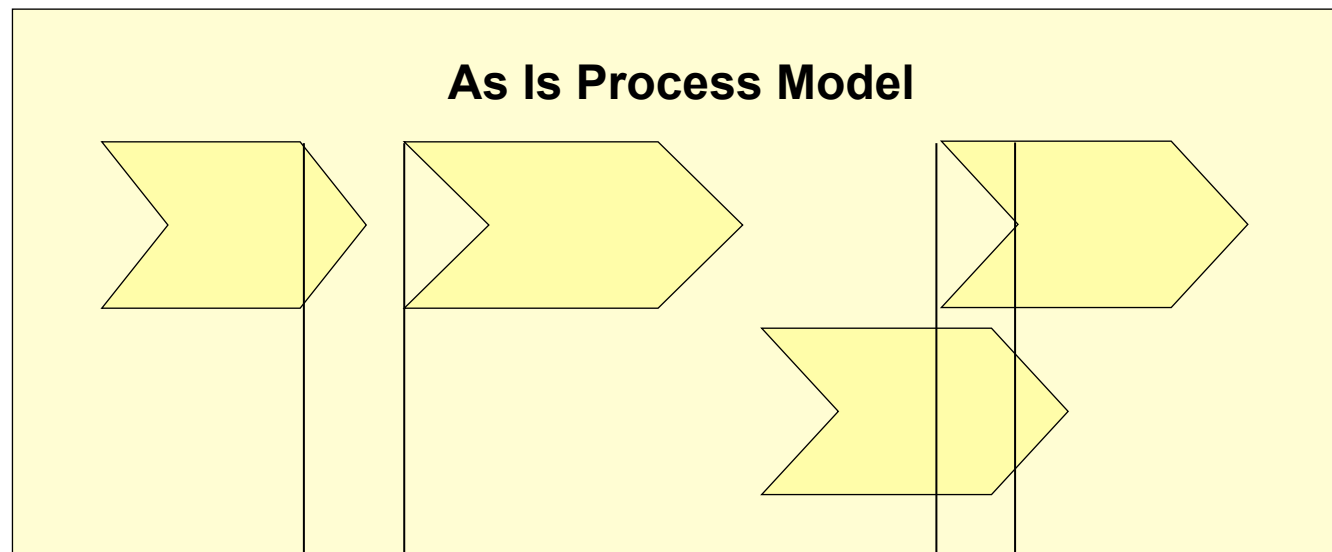
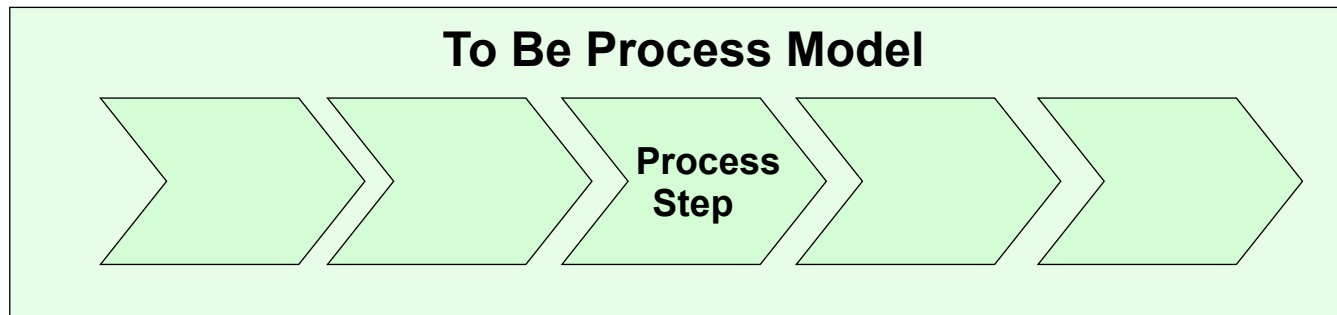
The Business Problem – one process instead of many actions



Business Process Management is a Team Sport ...



Business Process Reality and Plans



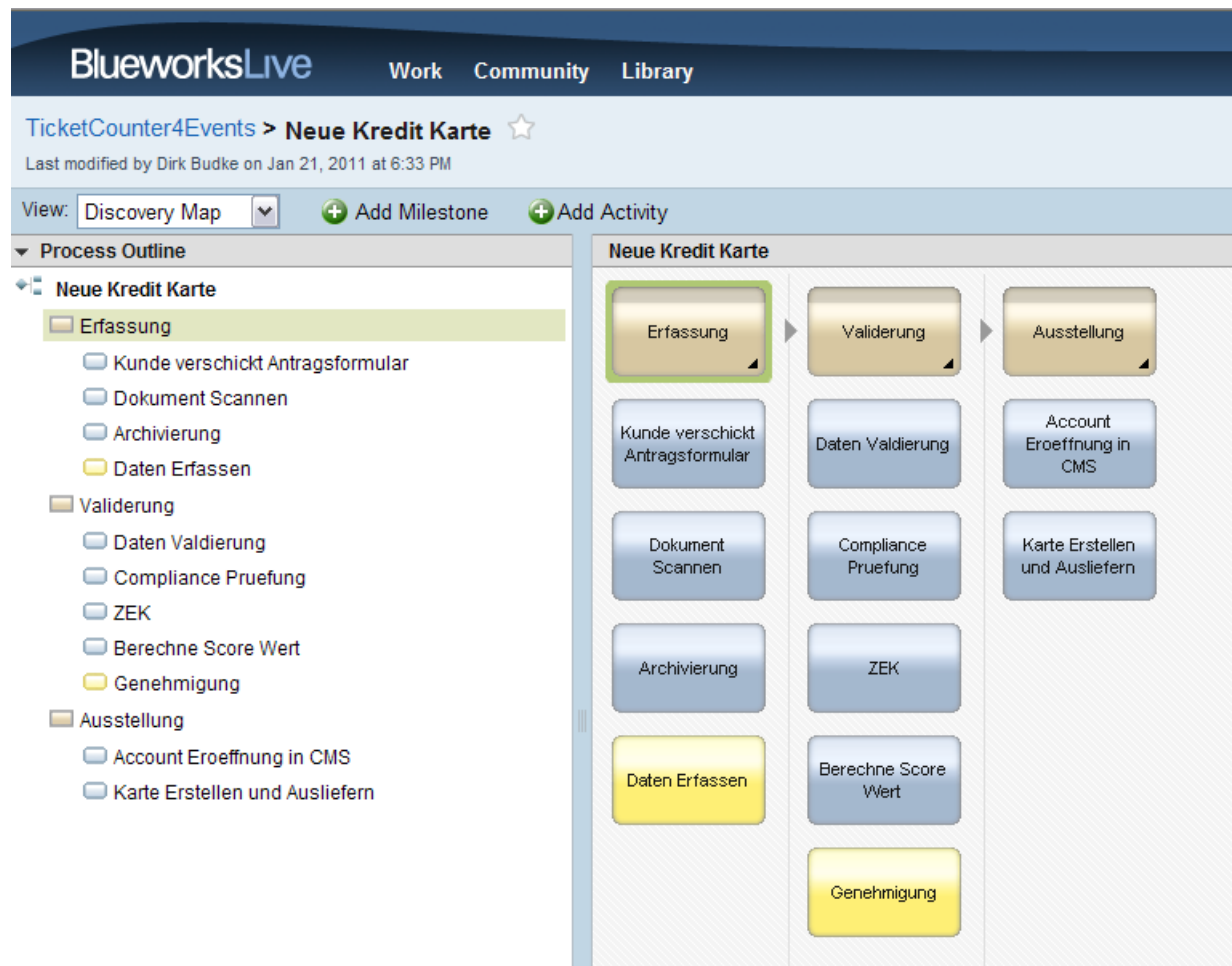
Gap



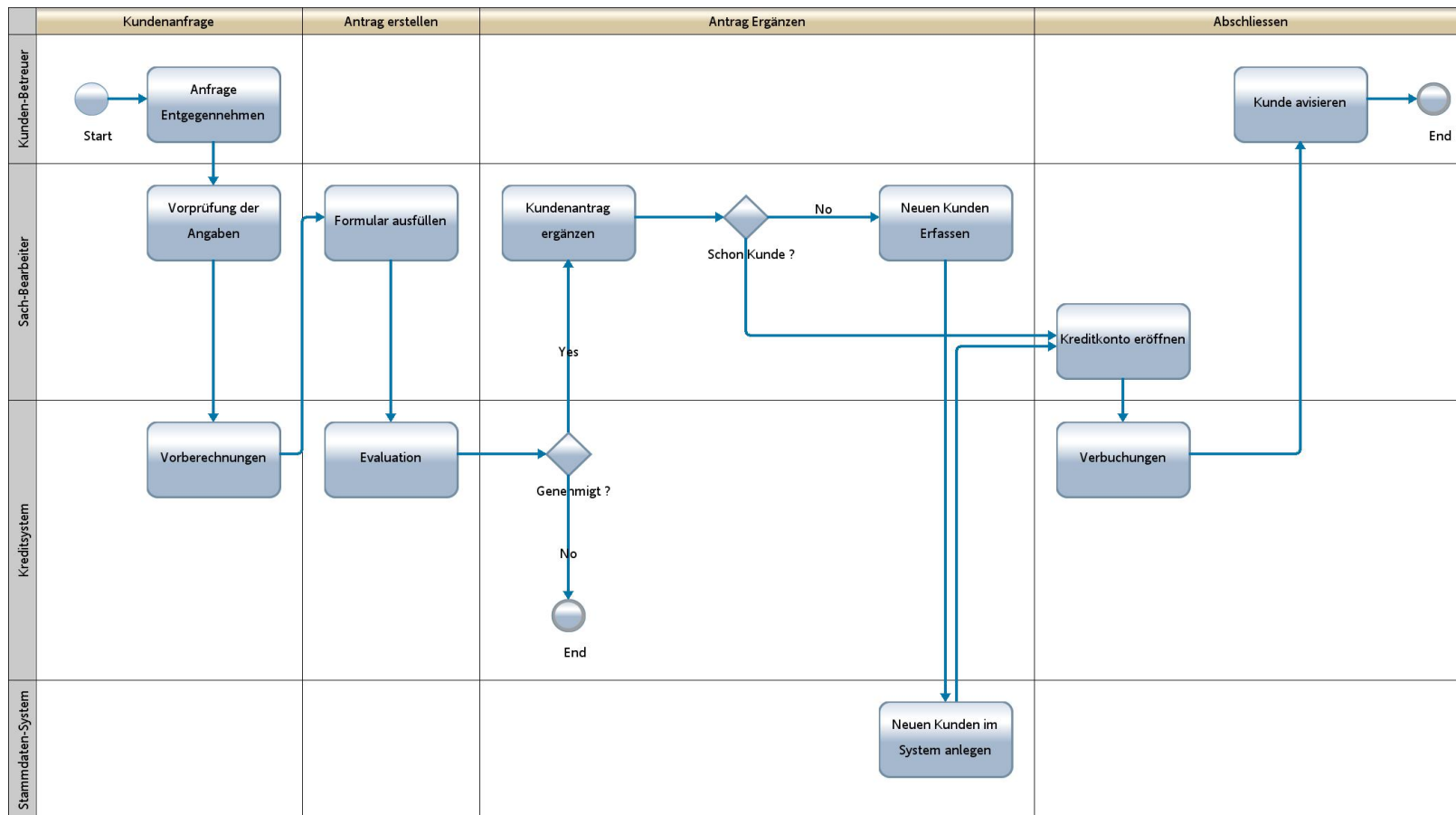
Overlapping

Blueworkslive “Discovery” Maps

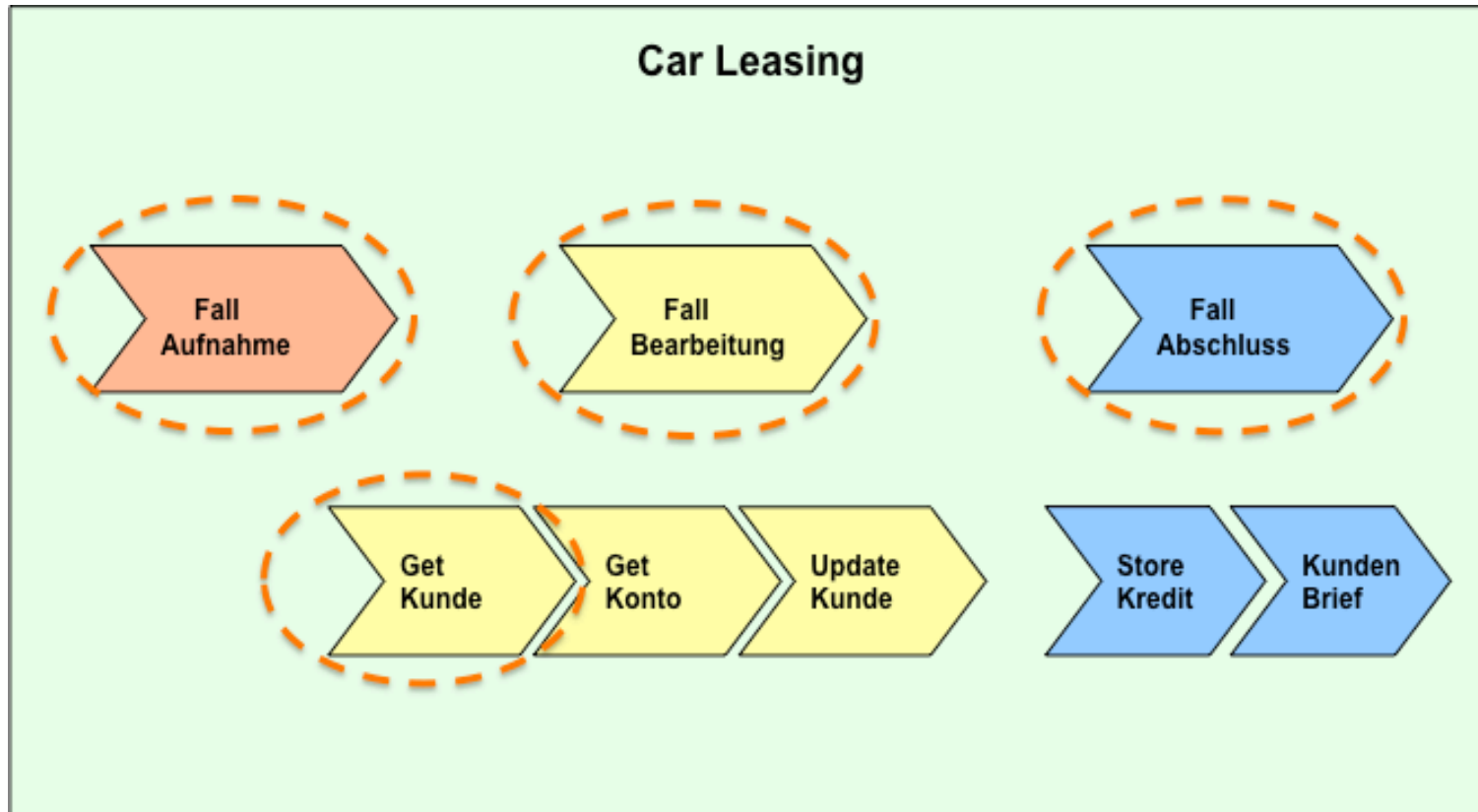
- Milestones represent phases, Activities are within milestones



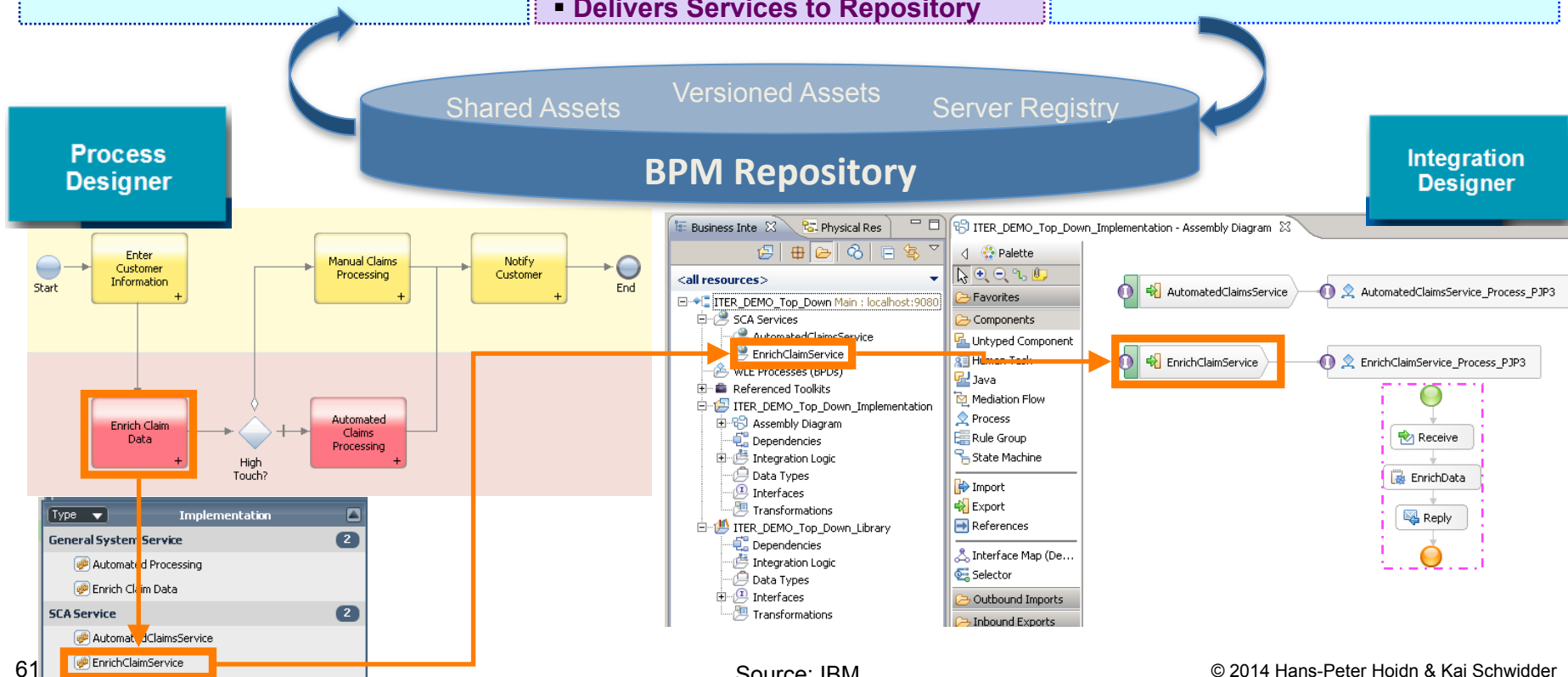
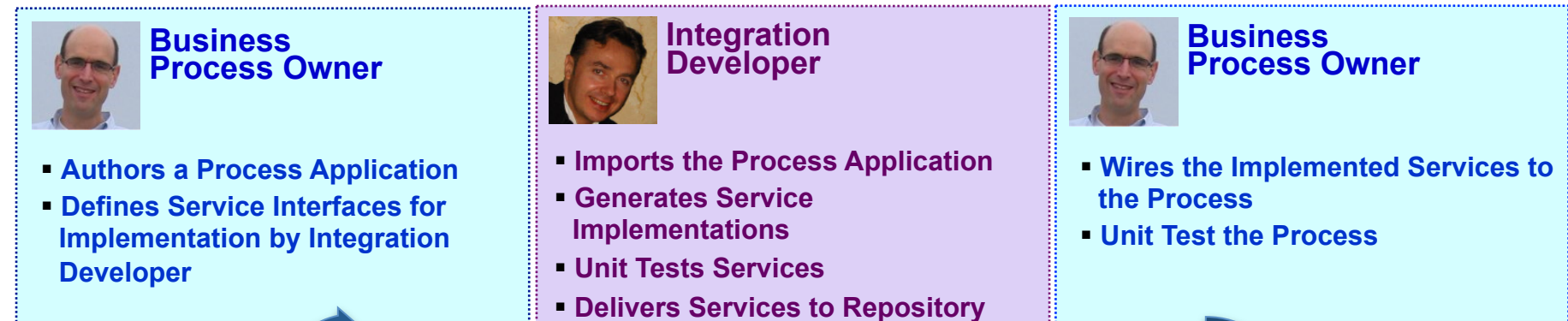
Example Car Leasing – BPMN Process Map



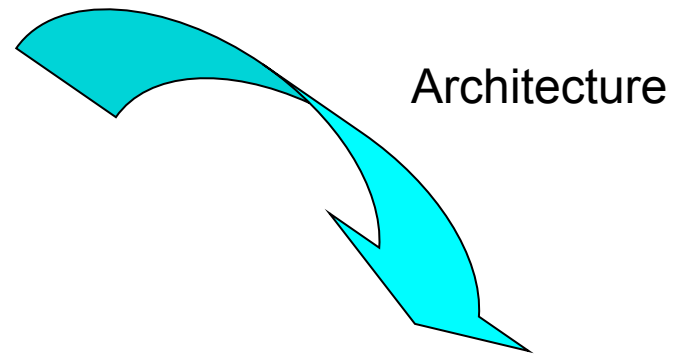
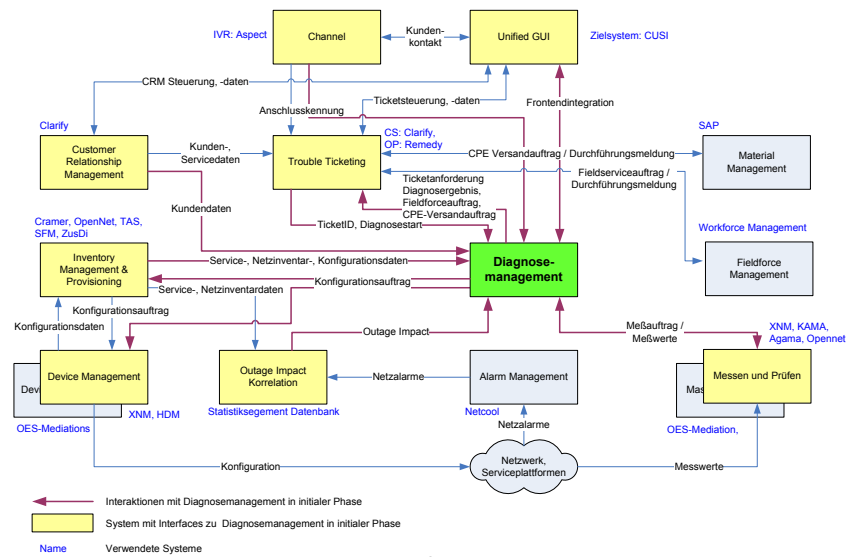
Example Car Leasing – Process Hierarchy



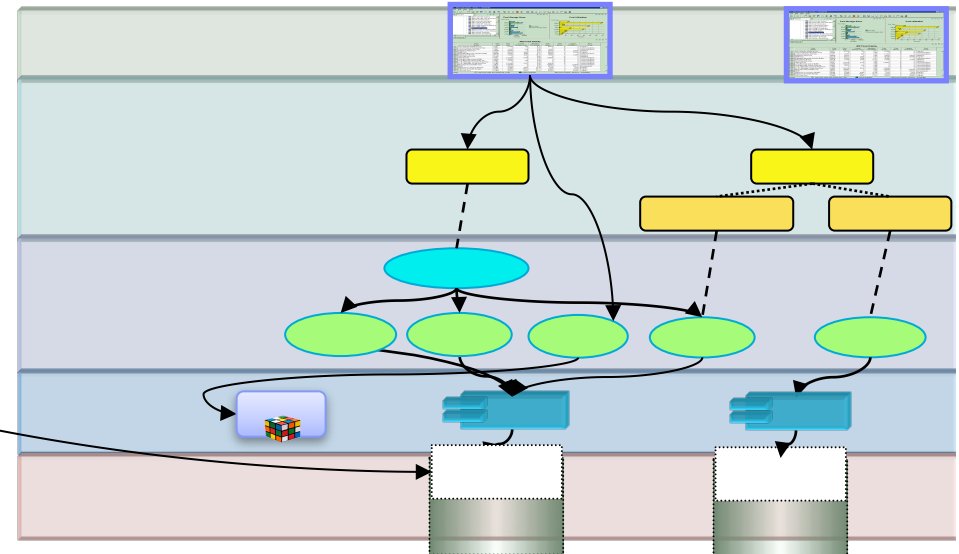
Integration: Seamless Collaboration Across Roles



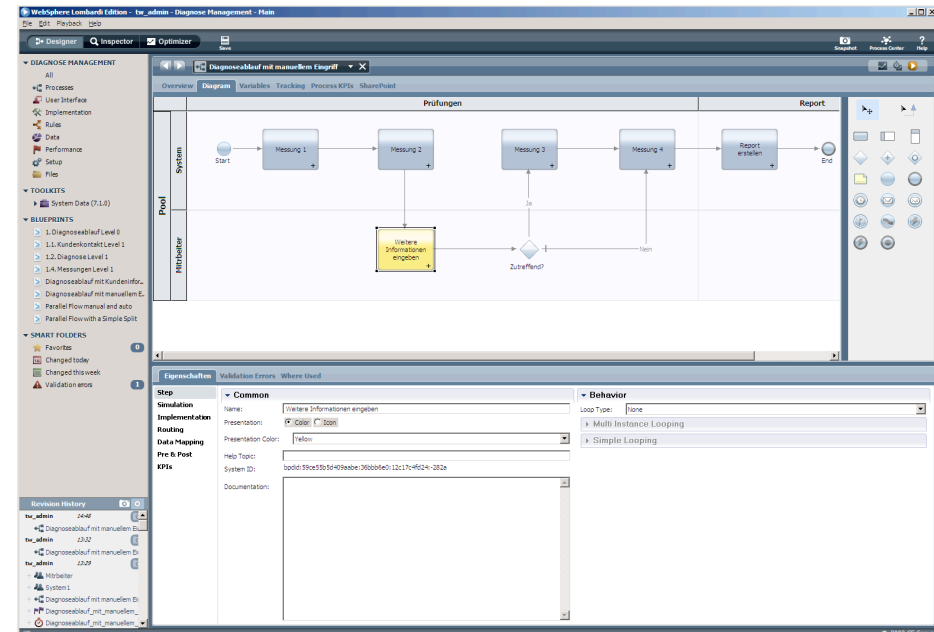
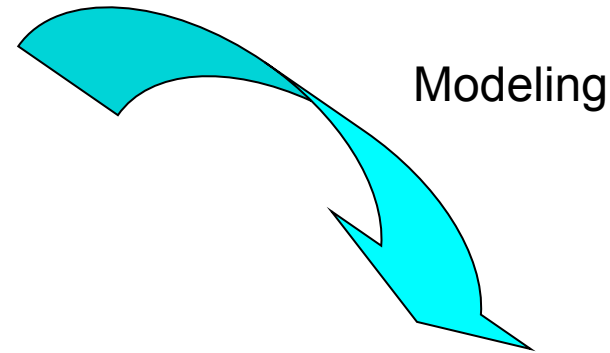
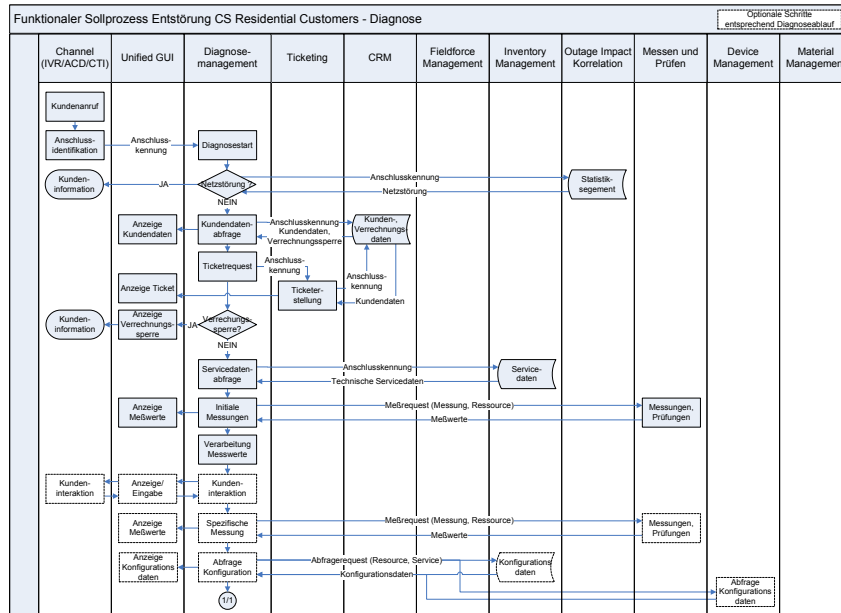
Designing BPM / SOA Application: Layered View



Integration of "Legacy"



Designing BPM / SOA Application: Process Modeling



Questions



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 - <http://www.youtube.com/watch?v=RZJy1Zb14fo&list=PLBC07B35CC4847FF7>
 - all BPM Video (56 Minutes):**
 - <http://www.youtube.com/watch?v=m7NXRDExMzM&list=PLBC07B35CC4847FF7>

References SOA and SOMA

- **Judith Hurwitz, Robin Bloor, Carol Baroudi, Service Oriented Architecture for Dummies,**
 - a) 2nd IBM Limited Edition, 66 pages, Wiley Publishing, see <http://www.websphereusergroup.org/.../b10a74235e21957b816b1efb3c73260...>
 - b) Wiley Publishing, ISBN 0-470-05435-2, 360 pp
- **Ali Arsanjani: *Service-oriented modeling and architecture (How to identify, specify, and realize services for your SOA)*, IBM developer Works, 2004; see <https://www.ibm.com/developerworks/library/ws-soa-design1/> (call 03.06.2014)**
- **Ali Arsanjani et al, *SOMA: A method for developing service-oriented solutions*, IBM SYSTEMS JOURNAL, VOL 47, NO 3, 2008; see http://www.cs.jyu.fi/el/tjtse54_09/Artikkelit/ArsanjaniEtAlIBMSsJ.pdf (call 03.06.2014)**

References BPM and BPMN

- **Volker Stiehl: *Prozessgesteuerte Anwendungen entwickeln und ausführen mit BPMN*, dpunkt Verlag, 2013, ISBN 978-3-86490-007-5, 390pp**
- ***BPMN*, Version 2.0.2, Release Date: January 20, 2014, Documents Associated With BPMN 2.0.2
see <http://www.omg.org/spec/BPMN/2.0.2/>**