

Lightweight Composition of Ad-Hoc Enterprise-Class Applications with Context-Aware Enterprise Mashups



SYSTEMATIC THOUGHT LEADERSHIP FOR INNOVATIVE BUSINESS

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Context-Aware Enterprise Mashups

Executive Summary



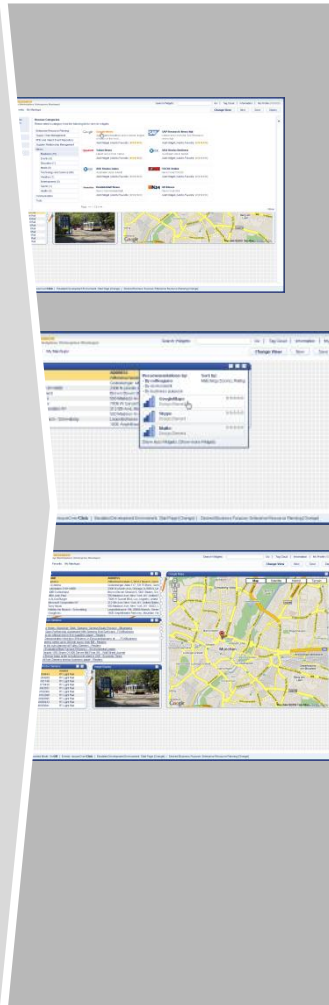
Problem Statement

User Needs

- **Low flexibility** due to static and pre-defined enterprise applications
- **Need for supporting** end user in order to compose individual enterprise-class applications without any programming skills

Technology Trends

- **Growing numbers** of company internal and external **Web-based resources** based on open standards
- **Availability of SOA-based backend systems**



Benefits for Business Users



Passive user assistance hides composition **complexity**



Interoperability challenge is solved by the community



Growing content base due to additional user created ad-hoc applications

Business Value for Organizations



Time savings through leveraging wisdom of the crowds



Broader usage of Enterprise Mashups by empowering additional users

Agenda



- 1. Motivation and Problem Scope**
2. Background and Related Work
3. Context-Aware Enterprise Mashups
4. Live Demonstration
5. Conclusion and Outlook

Enterprise Mashups

“Yes, we can!” – Empowering the Information Worker



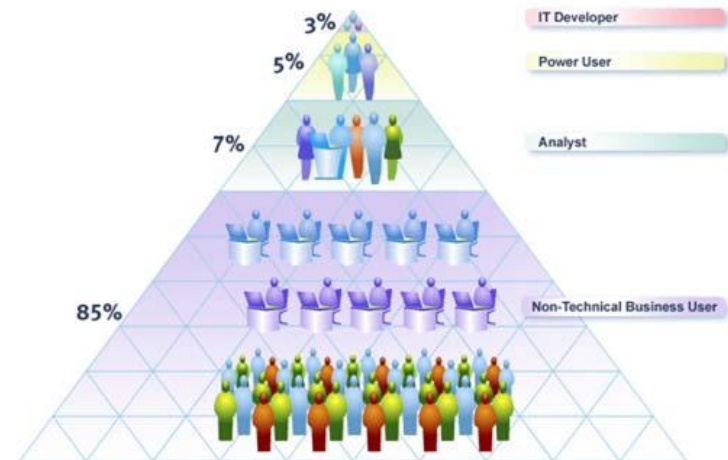
An Enterprise Mashup is a Web-based resource that **combines** existing resources, be it content, data or application functionality, from more than one resource by empowering the actual **end users** to create individual information centric and **situational applications**”

Core Characteristics

- Empowerment of the end user to cover ad-hod needs
- Broad involvement of user based on the peer production concept

Challenges

- Explosive growth of user-friendly building blocks
- Efficient and agile organization of such components
- Passive support for information worker (i.e. a sales manager)



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Enterprise Mashups

Enterprise Mashup Stack and User Roles



Enterprise Mashup Stack

Mashup

- Compostion of Widgets (Wiring) to enterprise-class applications



Widget

- User-friendly Building Blocks
- Provide graphical and simple user interaction mechanism
- Abstracting from the complexity of the underlying resources

Customer Data	
NAME	ADDRESS
Siemens	Wittelsbacherplatz 2 / 80333 Munich/ Ge
Automation 219114956	456 West Ohio Street / Boston IL 60610
ABB Switzerland	Brown Boveri Strasse 6 / 5401 Baden / S

Resource

- Core Building Blocks of Mashups
- Respresent actual contents, data or application functionality
- Encapsulated via well-defined interfaces (APIs; WSDL, RSS/ Atom Feeds, ...)

```

<?xml version="1.0" encoding="UTF-8"?>
<feed xmlns="http://www.w3.org/2005/Atom" xmlns:si="http://schemas.xmlsoap.org/feeds/2005/04" type="application/atom+xml">
  <title>Customer Data</title>
  <id>http://www.sap.com/feeds/customerdata</id>
  <updated>2008-09-24T10:00:00Z</updated>
  <author>
    <name>SAP</name>
  </author>
  <entry>
    <title>Siemens</title>
    <id>http://www.sap.com/feeds/customerdata/Siemens</id>
    <updated>2008-09-24T10:00:00Z</updated>
    <summary>Wittelsbacherplatz 2 / 80333 Munich/ Germany</summary>
  </entry>
  <entry>
    <title>Automation 219114956</title>
    <id>http://www.sap.com/feeds/customerdata/Automation 219114956</id>
    <updated>2008-09-24T10:00:00Z</updated>
    <summary>456 West Ohio Street / Boston IL 60610</summary>
  </entry>
  <entry>
    <title>ABB Switzerland</title>
    <id>http://www.sap.com/feeds/customerdata/ABB Switzerland</id>
    <updated>2008-09-24T10:00:00Z</updated>
    <summary>Brown Boveri Strasse 6 / 5401 Baden / Switzerland</summary>
  </entry>
</feed>

```

User Roles

End-Users run Mashups scenario

- Consume Mashup scenario
- Personalize individual environment (e.g., can change the background color, hide buttons, etc.)

Key users create Mashup Scenario

- Add pre-build widgets (from the catalogue)
- Connecting widgets by wiring their in-/out- ports

Consultants create Widgets

- Binding generic UIs to resources/ services
- Transforming and aggregating data

Developers implement the services

- Creates and deploys services – makes resources available (e.g., RSS Feeds, SAP Enterprise Services)



Context is any information that can be used to **characterize the situation** of an entity. An entity is a person, place, or object that is considered relevant between a user and an application.”

Dey, A. and Abowd, G. (1999)

Towards a better understanding of context and context-awareness

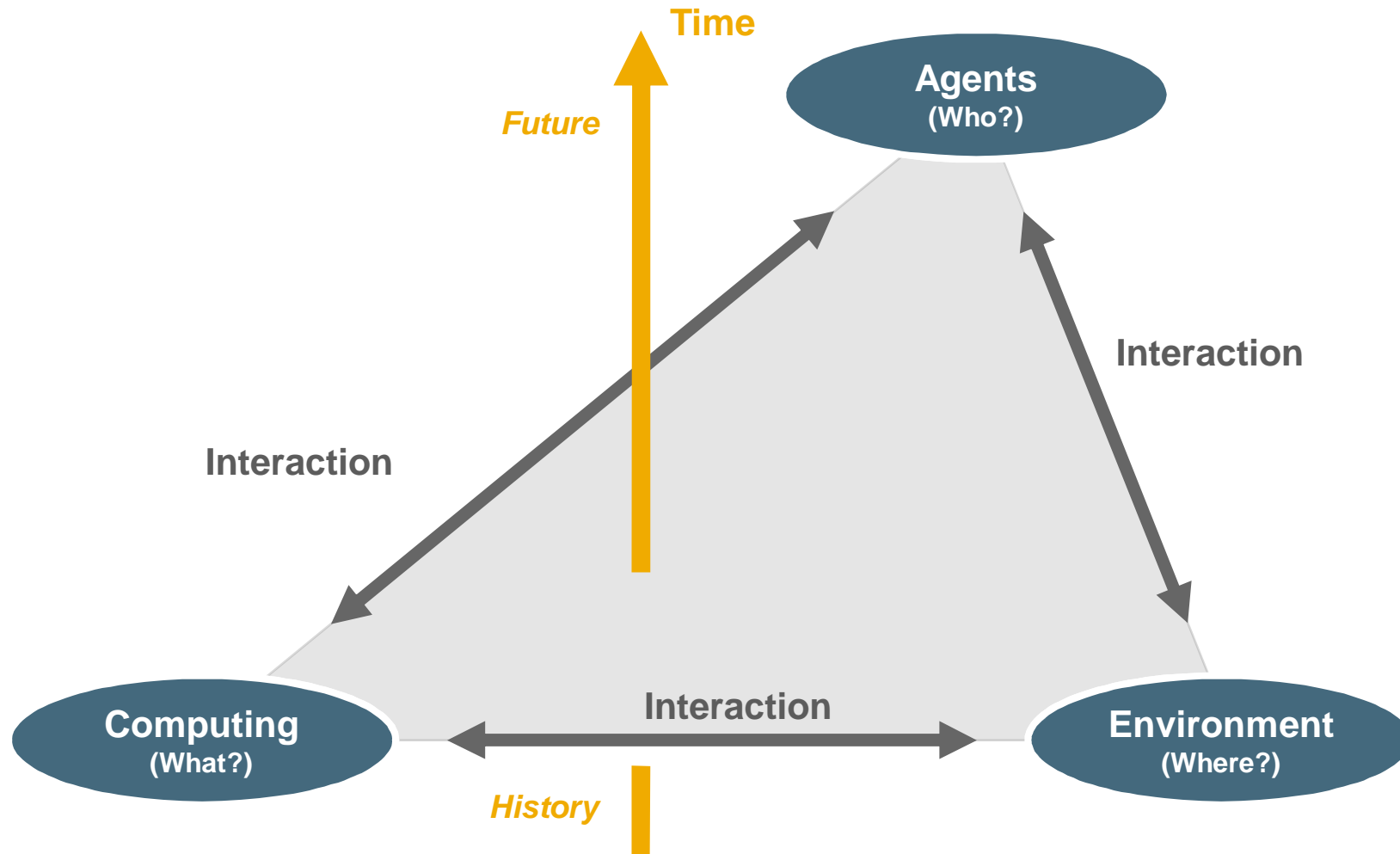


A system is **context-aware** if it uses context to provide relevant information and/or services to the user, where relevancy depends on user’s task.”

Dey, A. and Abowd, G. (1999)

Towards a better understanding of context and context-awareness

Context Model





Example: Agent Domain

- (Max Meier, isColleagueOf, Peter Mustermann)
- (Max Meier, isUsing, CustomerMappingMashup, 2009/06/01)
- (Max Meier, isUsing, CRM StartPage, 2009/06/01)

Example: Computing Domain

- (CustomerMappingMashup, involves, CustomerData)
- (CustomerMappingMashup, wasCreatedBy, MaxMeier, 2009/06/01)
- (CustomerMappingMashup, isUsedIn, CRMStartPage)

Example: Environment Domain

- (CRMStartPage, isChildOf, GlobalStartPage)
- (CRMStartPage, isUsedBy, MaxMeier)
- (CRMStartPage, canBeUsedFor, CustomerMappingMashup)

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Context-Aware Enterprise Mashups Leveraging the Wisdom of the Crowds



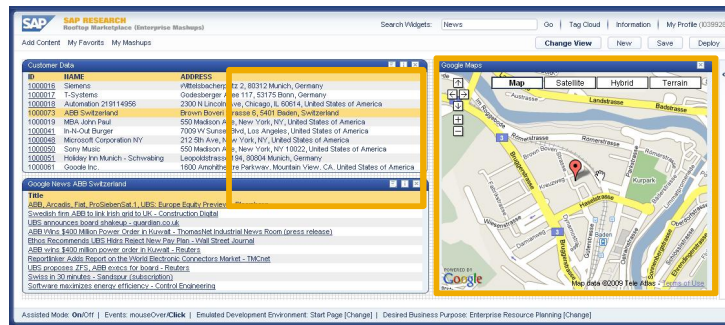
Enterprise Mashup Platform

- Ad-hoc applications created and adapted by the information worker
- Composition of user friendly visual building blocks (widgets) according to the individual context



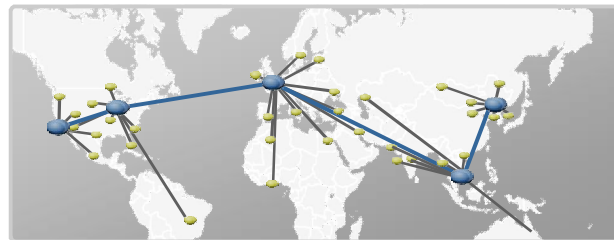
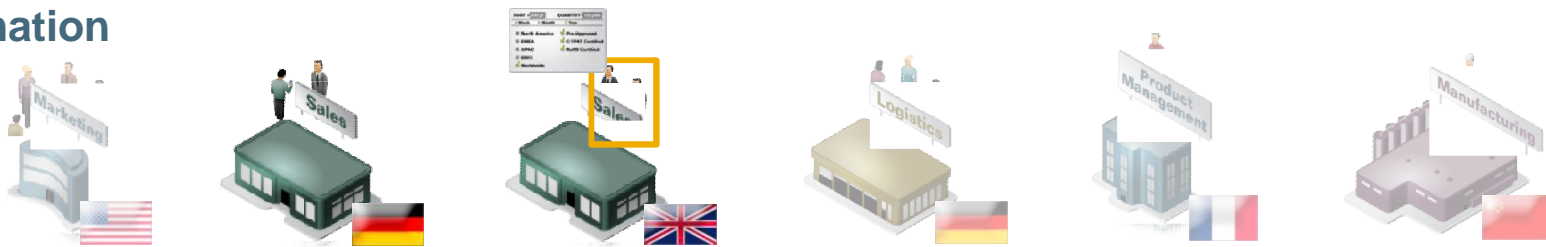
Peter Mustermann

- Sales Manager
- Manufacturing
- Germany



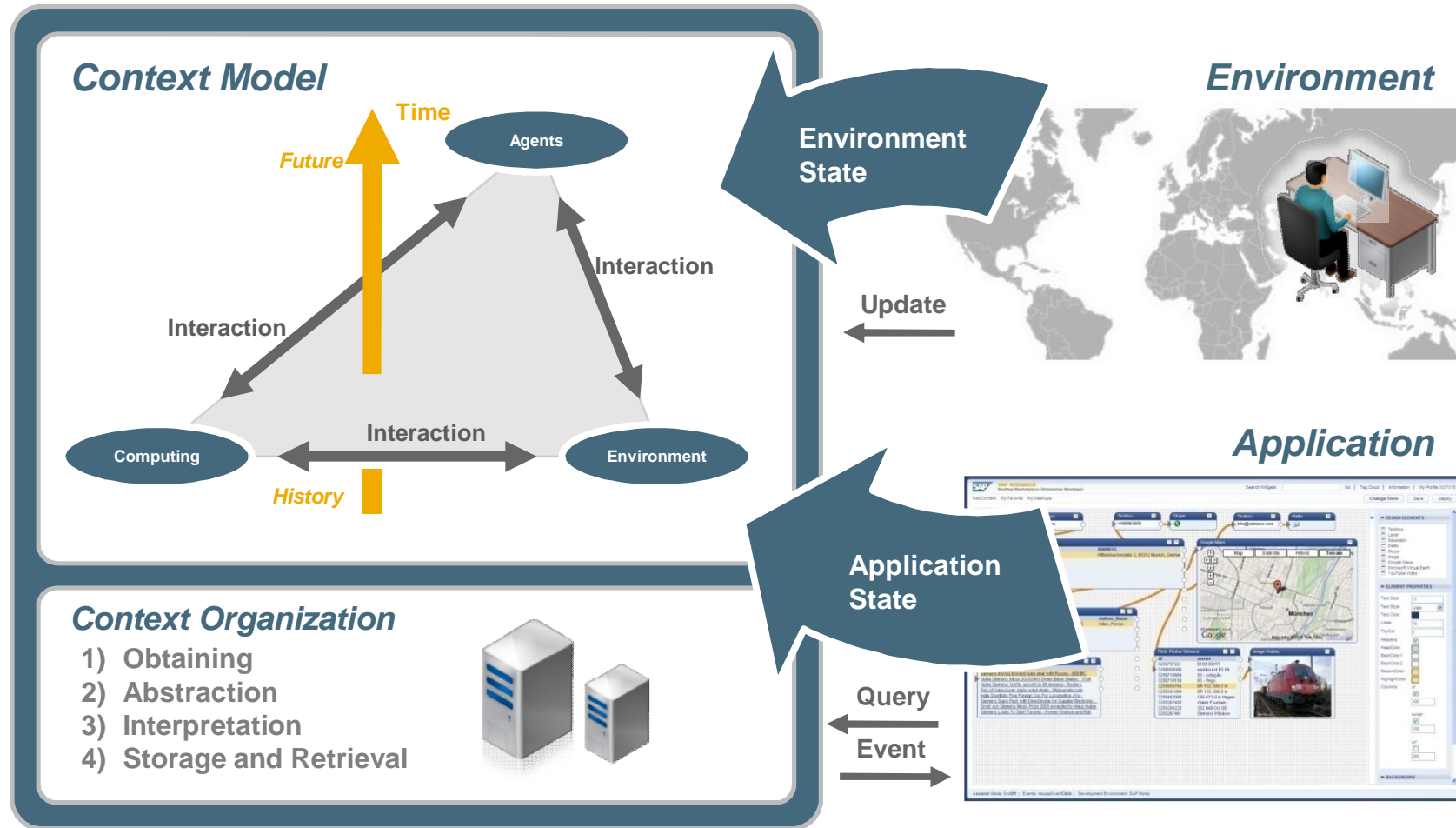
Context Information

- Industry
- Department
- Country
- etc.



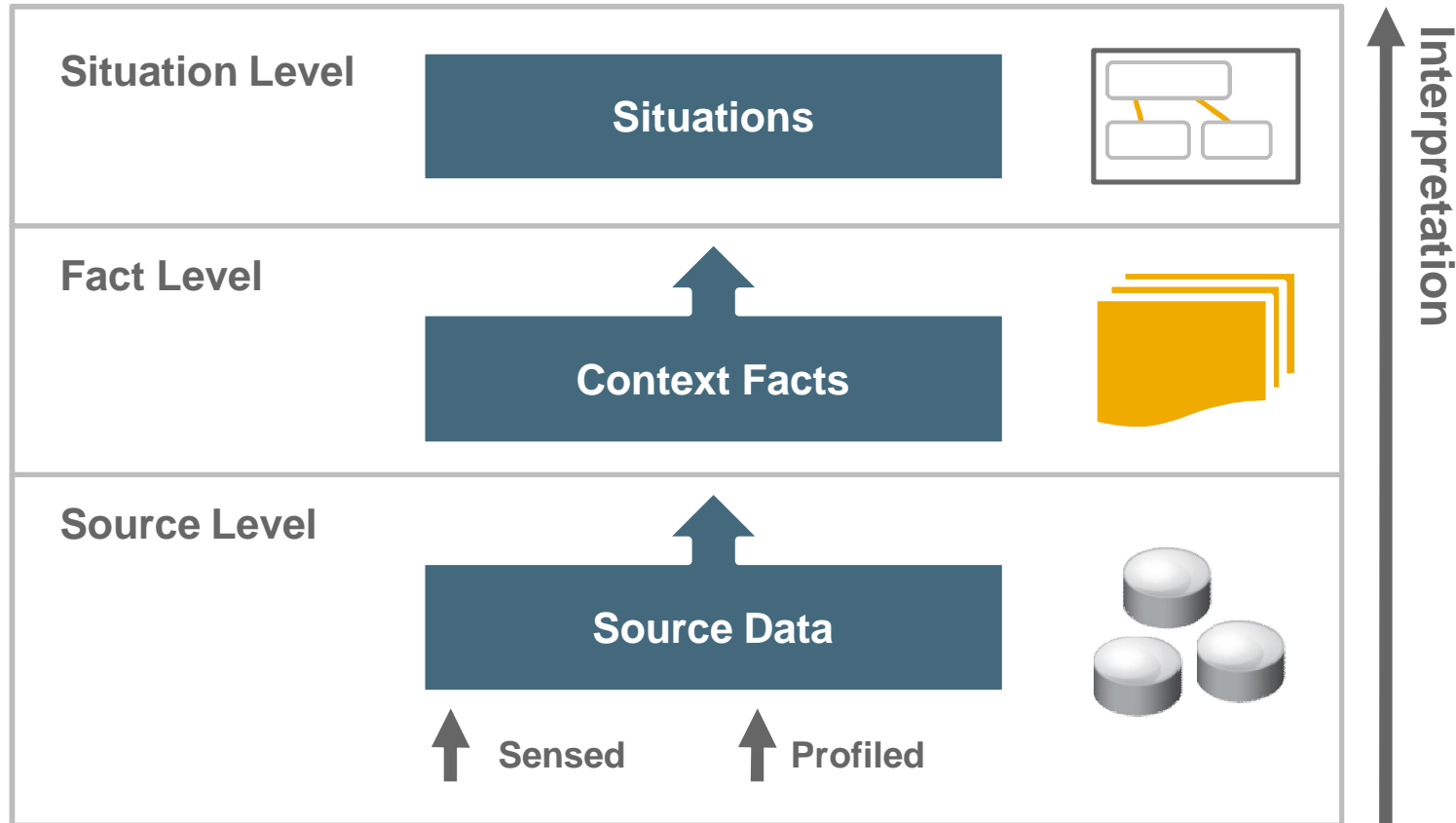
Context-Aware Enterprise Mashups

Gathering Context Information



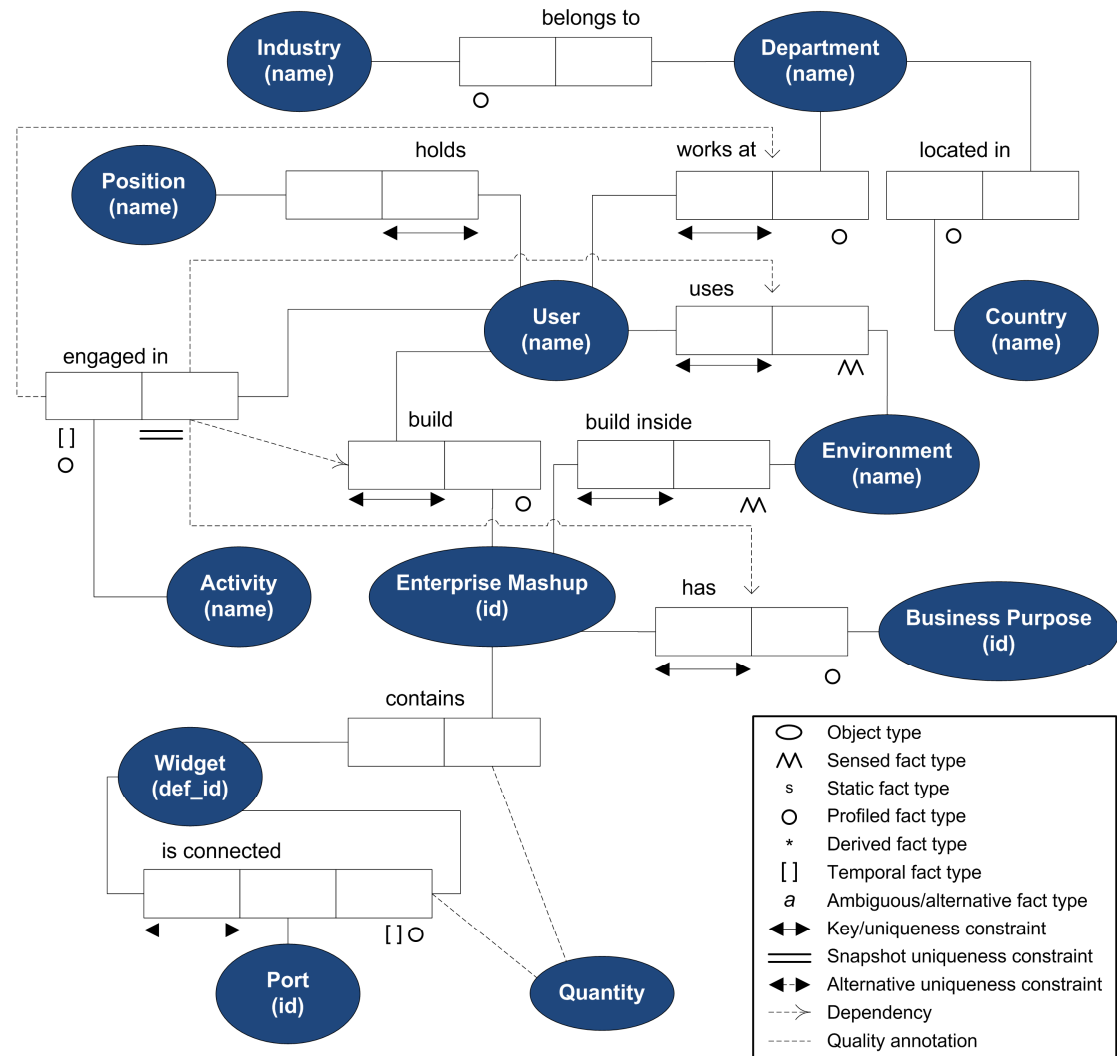
Context-Aware Enterprise Mashups

Context Layers



Context-Aware Enterprise Mashups

Context Facts



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Live Demonstration SAP Research RoofTop Marketplace



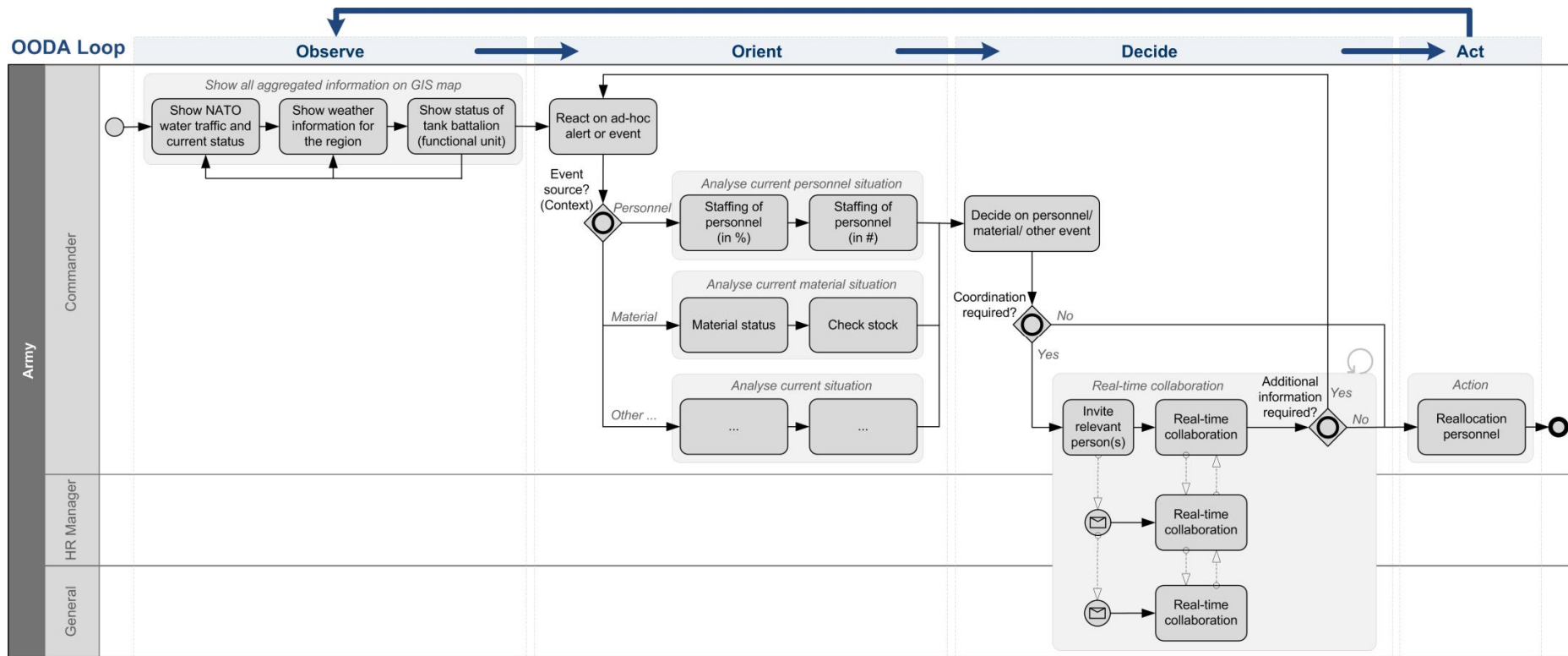
Enterprise Mashup Stack

Mashup	<ul style="list-style-type: none"> Composition of Widgets (Wiring) to enterprise-class applications 
Widget	<ul style="list-style-type: none"> User-friendly Building Blocks Provide graphical and simple user interaction mechanism Abstracting from the complexity of the underlying resources 
Resource	<ul style="list-style-type: none"> Core Building Blocks of Mashups Respresent actual contents, data or application functionality Encapsulated via well-defined interfaces (APIs; WSDL, RSS/ Atom Feeds, ...) 

SAP Research RoofTop Marketplace



Live Demonstration Scenario



Characteristics

- Support of the information worker
- Typical unstructured decision process in the management area of the defense industry
- Ad-hoc composition of several information sources (“Common relevant operation picture”)

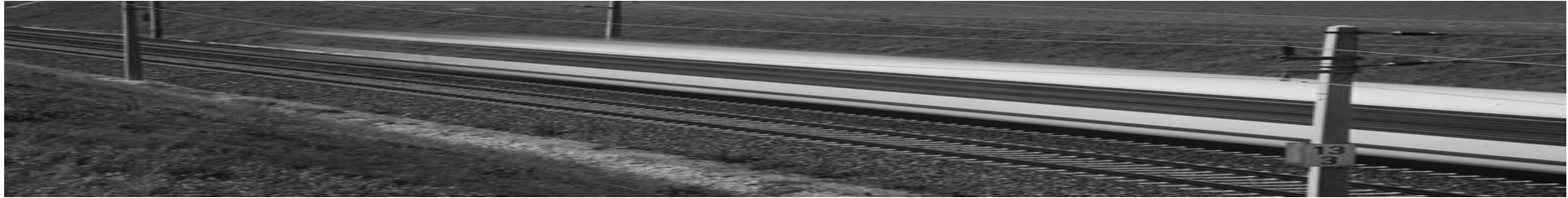
A large SAP logo where the letters 'SAP' are white and set against a blue background that tapers to a point on the right side.

SAP RESEARCH
Rooftop Marketplace

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- Leveraging the **wisdom of the crowds** to create ad-hoc information centric applications (Context-Aware Enterprise Mashups)
- Active user assistance **hides composition complexity**
- **Time savings** through automatic composition
- **Broader usage** of future Enterprise Mashup environments by empowering additional users

Thank you!

Contact

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