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SYSTEMATIC THOUGHT LEADERSHIP FOR INNOVATIVE BUSINESS

UN/CEFACT Service-Oriented Architecture

Enabling Both Semantic And Application Interoperability

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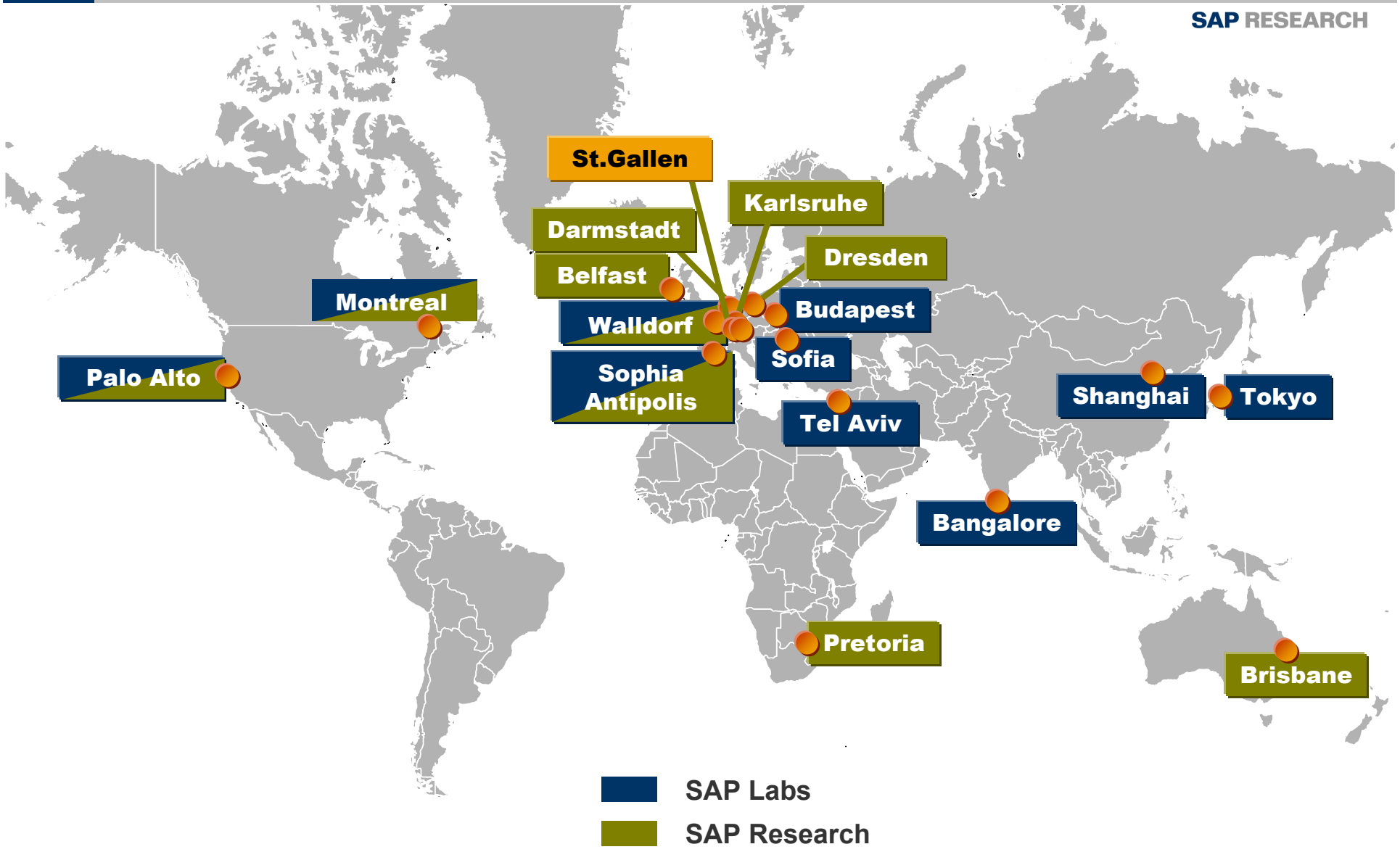
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Executive Summary

SOA State-of-the-Art and Interoperability Challenges

UN/CEFACT e-Business stack

UN/CEFACT meets SOA

Conclusion

Executive Summary

USOA

SOA Challenges

- Business standards dilemma
- No central and harmonized service brokerage
- Undefined business information semantics

UN/CEFACT e-Business stack

- Novel set of modular BOV-centric specifications
- CCTS and UMM as key components for data and process modeling
- Evolution and Collaboration

The USOA approach

- Semantic unambiguity
- Trading partners access, use and contribute to a common understanding of processes and data
- Public availability and dissemination as success factors

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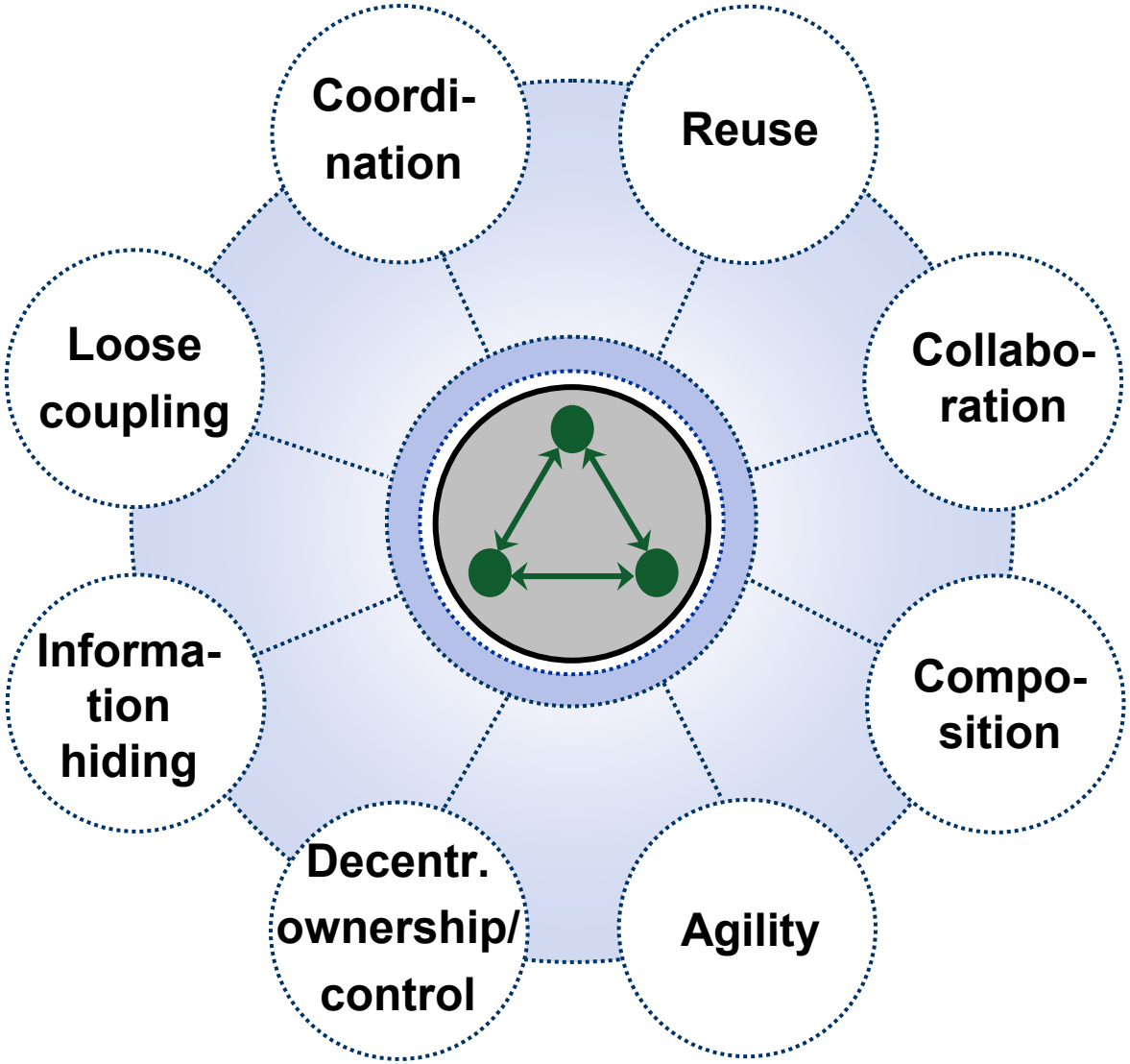
UN/CEFACT e-Business stack

UN/CEFACT meets SOA

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Key Paradigms of Service-Oriented Architectures (SOAs)*

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UDDI

BPEL

WSDL

SOAP

XML

HTTP

*Source: M. MacKenzie, K. Laskey, F. McCabe, P. F. Brown, R. Metz: OASIS - Reference Model for Service Oriented Architecture 1.0, available online at: http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=soa-rm, 2006

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SOAs Face Severe Interoperability Challenges

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Business standards dilemma

- Numerous standards for business processes and data
- Industry consortia, non-profit standards organizations and academia involved
- Different desription granularity, scope and degree of dissemination

Lack of interoperality

- Different naming for services due to non- harmonized brokerage
- Business information semantics not unambiguosly defined and machine-readable
- Tight coupling of technical representation and semantics prevents flexbility

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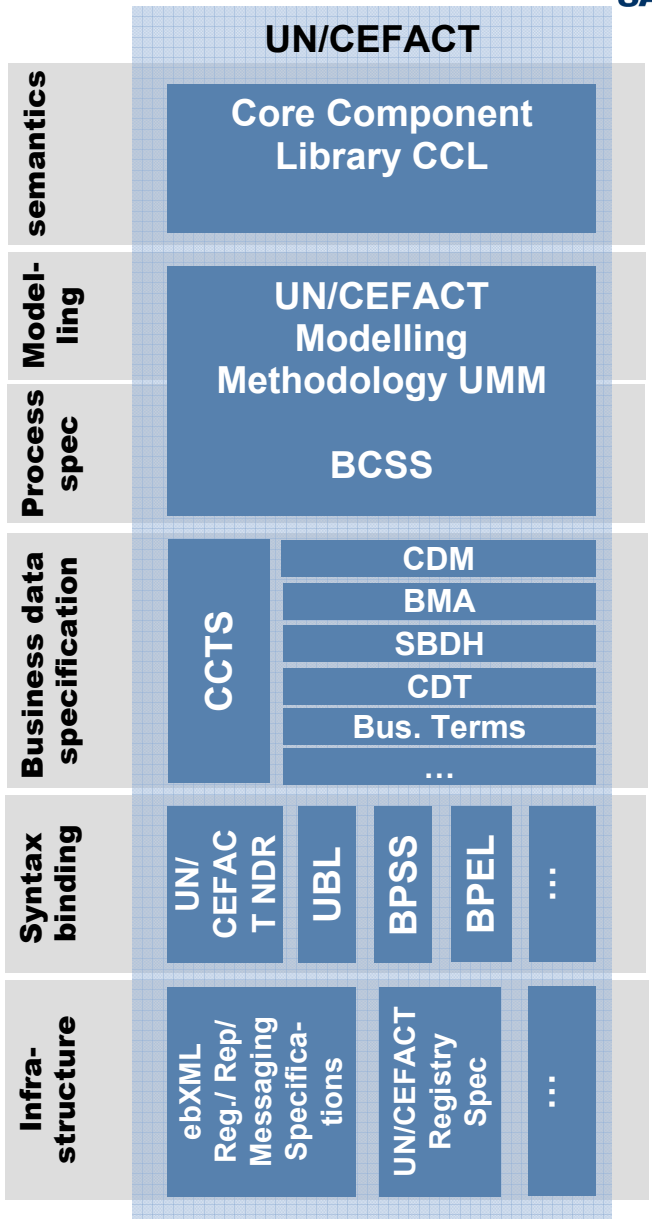
UN/CEFACT meets SOA

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UN/CEFACT e-Business Stack

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- Focus on the so-called Business Operational View (BOV): Business processes and data shall be modeled in a syntax- and technology-independent manner
- UN/CEFACT desires to close the semantic gap in B2B which has emerged from a non-controlled definition of business libraries and the contempt of rules for describing semantics in a common way
- UN/CEFACTs stack consists of several, modular specifications (some still in development)



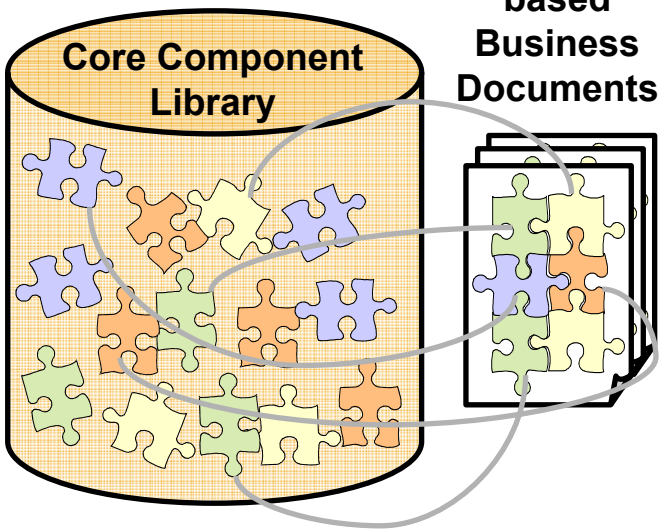
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CCTS and UMM are the Key Components

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CCTS

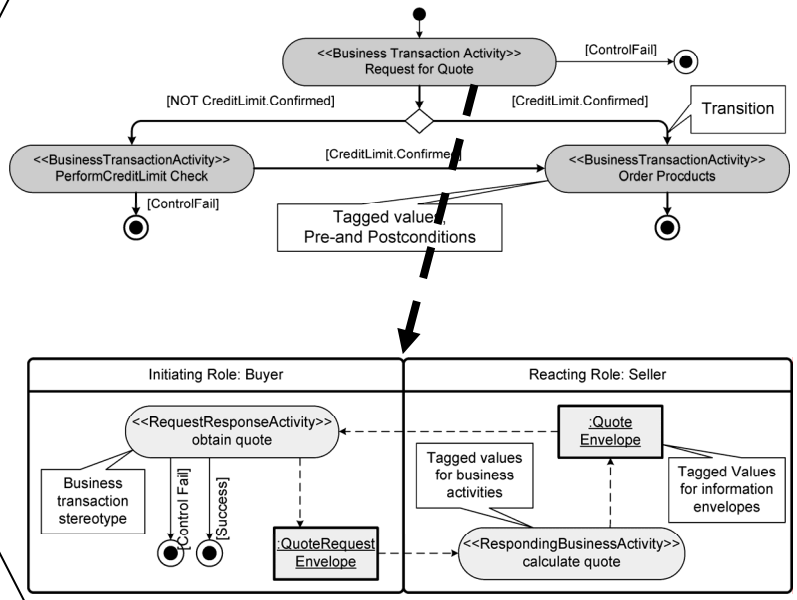
Component based message assembly



!

UMM

Component based process assembly (process stereotypes and tagged values)



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UN/CEFACT e-Business Stack Maturity

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FSV: Functional service view BOV: Business Operational View

Name	Explanation	Current version	Maturity
CC Library[1]	Core Component Libray- first set of generic and CCTS based business information; contains the aggregated core components	V 06A	
CCTS[2]	Technical syntax-independent model, conventions, and methodology for semantically based modeling of reusable business information	V 2.01	
CDM[3]	Methodology for assigning context to business information using a number of context drivers	V 1.0	
BMA[4]	Methodology for assembling higher level business information for Electronic messages	V 1.0	
SBDH[5]	Determines application based logical routing requirements of business information	V 1.3	
CDT[6]	Smallest and generic piece of information in a business data model with relevant characteristics	V 2.2	
UMM[7]	UN/CEFACT Modeling Methodology: Unified approach to capture business logic and model business processes as well as CCTS compliant data	V 1.0	
BCSS[8]	Business Collaboration Schema Specification: UML based representation of CCTS based conventions and artifacts	V 1.0	
NDR[9]	Rules for XML Schema and XML based instance representation of CCTS based conventions and artifacts	V 2.0	
Schema for CDT[10]	Smallest and generic piece of business information represented in XML schema	V 2.0	
Registry Spec.[11]	Specification defining scope and functionality of registries and repositories	V 1.0	

 **Completed: Only minor changes expected**

 **Ready for implementation version available**

 **First, comprehensive draft available**

 **Specification efforts started recently**

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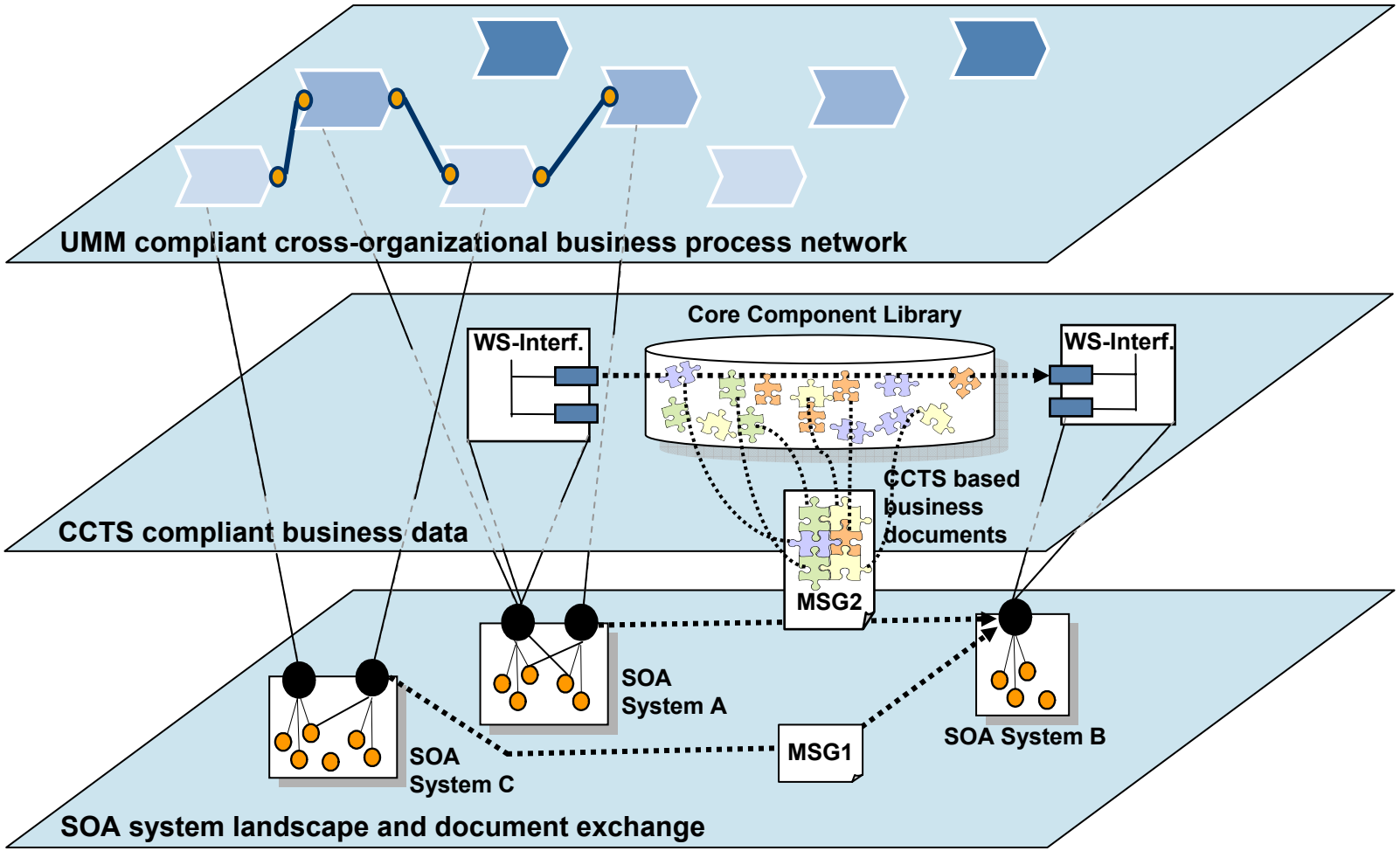
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The Multi-Layer USOA Concept

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Outlook and future work: Context-Driver Principle

Context-driver principle

- Key concept of UN/CEFACT CCTS
- Description of business semantics of data entities
- Not fully specified, need for standardization

Standardization

- Adoption of the context-driver principle to the UN/CEFACT e-Business stack
- Contribution to UN/CEFACT Unified Context Methodology (UCM) project

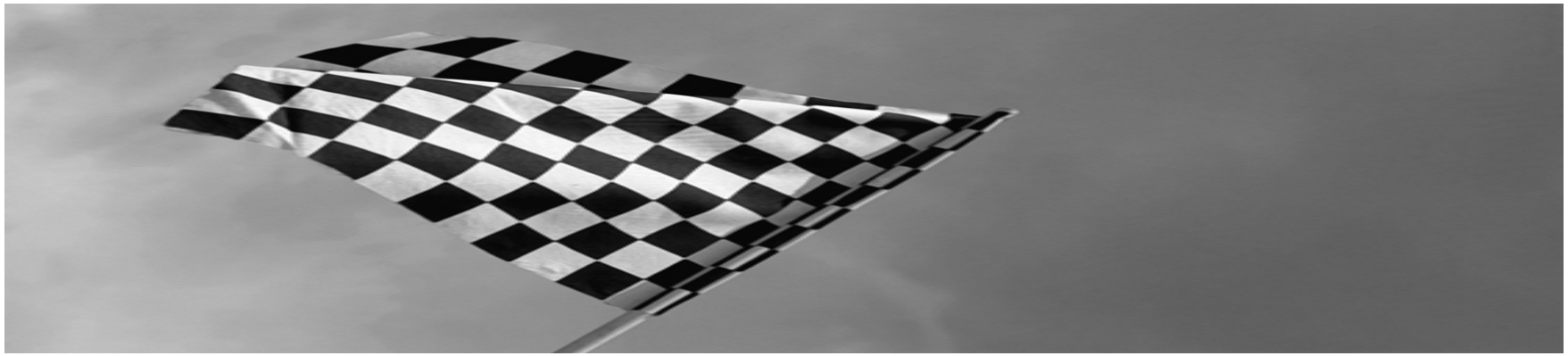
Implementation projects

- CCTS conform data modelling methodology and tool-support developed (EU project GENESIS)

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Summary



- The BOV-centric UN/CEFACT approach can be leveraged to increase SOA interoperability
- CCTS: Exchanged business messages are correctly understood by all applications due to the common and also ”living” repository of basic data building blocks. UMM: cross-organizational processes can be defined in an interoperable way
- USOA depends on the provision and dissemination of publicly accessible repositories for modeling building blocks

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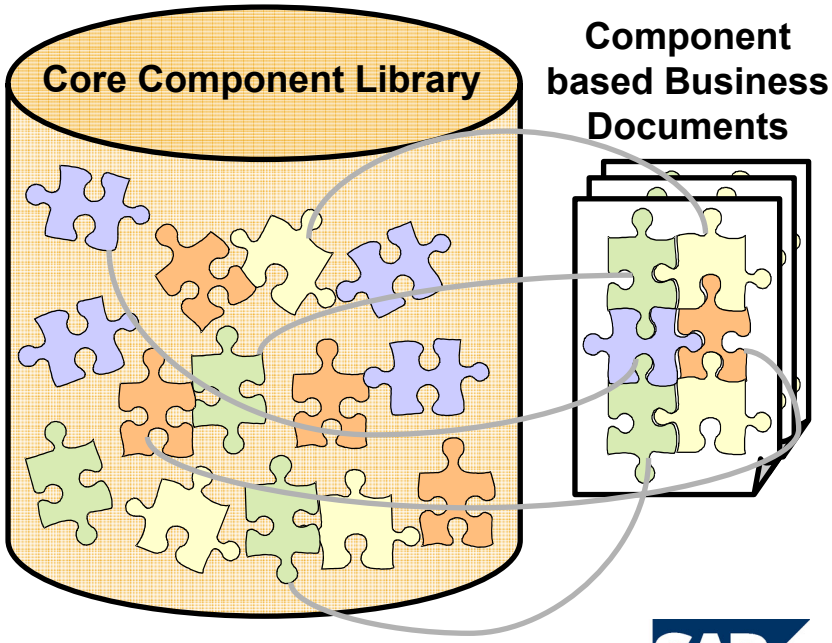
Backup

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UN/CEFACT – CCL and CCTS

- Core Component Library represents the repository for the generic, Core Component Technical Specification (CCTS) based business information
- CCTS is designed to tackle the lack of cross-organizational interoperability on data level
- Semantic building blocks that are syntax-agnostic and represent the general business data entities
- CCL can help to dynamically create even new business vocabulary
- CCTS based data leverages:
  - Reusability
  - Modularity
  - Semantic interoperability
  - Flexibility



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UN/CEFACT - Application of criteria

- Full horizontal integration of all possible industries: UN/CEFACT Core Components Library and the related CCTS offer a fundamental vocabulary that enables process and data modeling in all different domains
- UN/CEFACT aims at a "living", collaborative and evolutionary platform that is accessible to all users and thus provides a maximum degree of flexibility
- Significant parts of the UN/CEFACT e-Business stack are mature
- All core components defined by UN/CEFACT are envisioned to be stored in one single common repository that is freely accessible by all users
- In terms of comprehensiveness, the UN/CEFACT stack mainly tries to approach the Business Operations View (BOV), but not the Functional Service View (FSV)
- Ease of implementation and operation significantly improved
- Degree of dissemination still relatively low

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UMM and BCSS

BCSS used to make UML UMM compliant

- BCSS used to impose certain restrictions on UML modeling such that resulting models comply with the UMM standard
- Fostering of enterprise interoperability through common basis

1

BOV- centric modeling methodology for B2B scenarios

- Technology and syntax independency
- Enables users to leverage diverse implementation frameworks
- Abstracts scenarios and facilitates complexity hiding

UMM

2

UML as basis for the notation

- Use of the diverse forms of UML charts for capturing business logic (activity charts, sequence diagrams)
- Definition of a set of stereotypes, tagged values and constraints defined to customize UML meta model

3

4

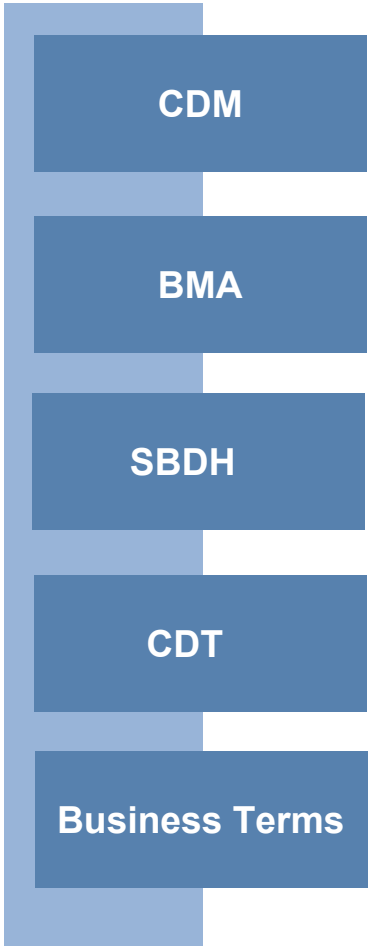
Facilitation of reuse through template- and repository orientation

- Provision of basic process building blocks that can be used to assemble overall processes
- Starting process modeling activities from scratch thus becomes superfluous
- Incorporation of the CCTS methods to model business data

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UMM, BCSS, CDM, BMA, SBDH, CDT, Business Terms

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Novel possibility to adapt generic business data core components to the current users' contexts. In this way, only the data parts that are of high relevance for the users are pre-selected for data modeling purposes

Approach for assembling higher level business information for complete, electronic messages. By defining one standard for the composition of business messages, enterprise interoperability is facilitated

Supports the determination of application based logical routing requirements of business information

Defines the smallest pieces of information in a business data model with relevant characteristics. In this way, UN/CEFACT has created an unambiguous basis of atomic business information

The so-called Business Terms are used to translate Core Components into all the different industry-specific terminology domains

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