



SAP RESEARCH

SYSTEMATIC THOUGHT LEADERSHIP FOR INNOVATIVE BUSINESS

Evolution of e-Business frameworks

EDI, RosettaNet, UN/CEFACT

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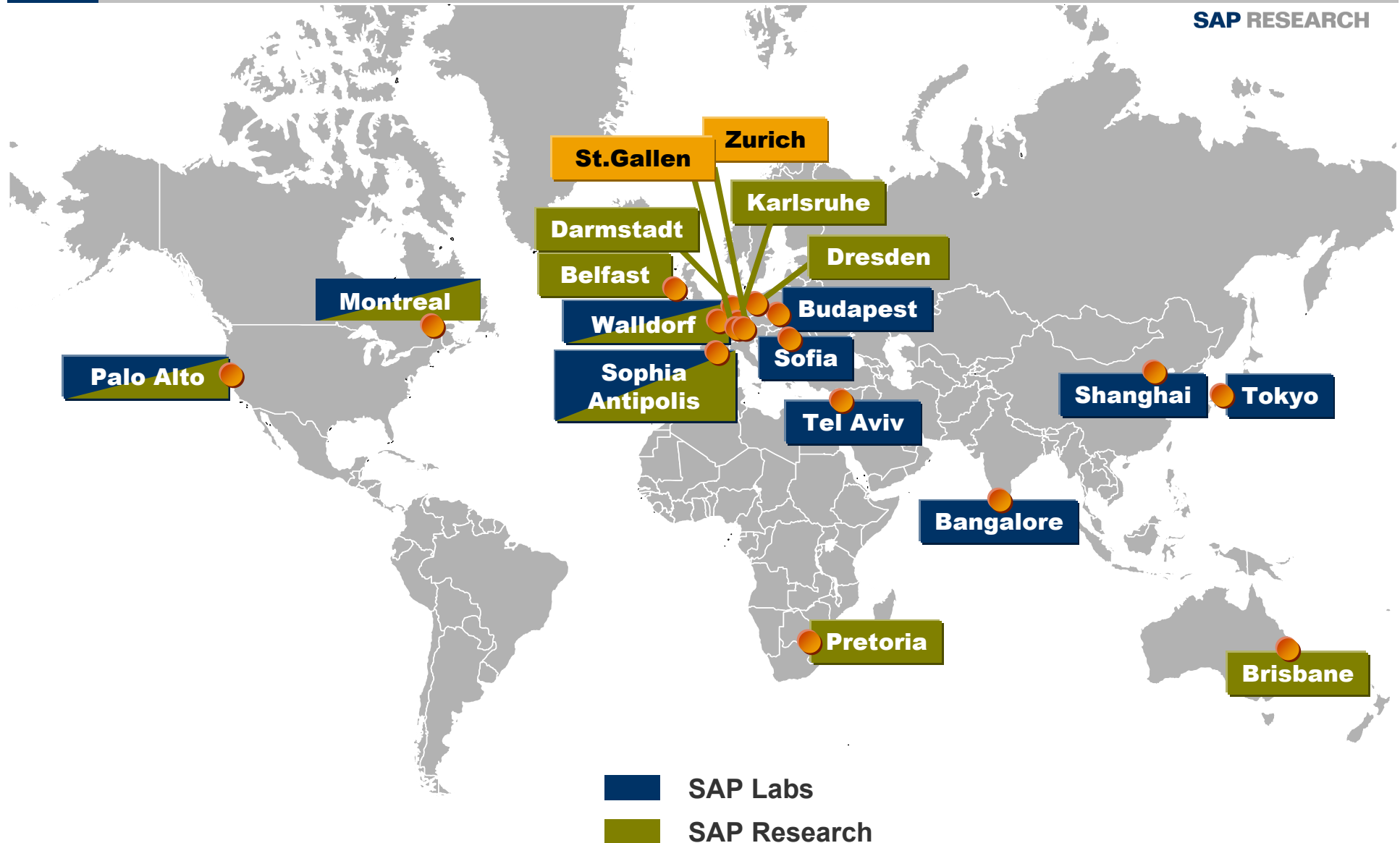
**Institute for Media and Communications Management,
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Smart Items Research

Enabling the real-time enterprise by bridging the gap between the real and the digital world

Focus topics

- AUTO-ID, Sensor Nets & embedded systems technologies
- distributed hierarchical Auto-ID infrastructure

Security & Trust

Provision of user-centric security solutions for dynamic, collaborative, and adaptive inter-enterprise business scenarios

Focus topics

- authorization and trust management
- secure services & composition
- security engineering

Knowledge People Interaction

Integrated knowledge-intensive collaborative working environments

Focus topics

- e-learning and KM technologies
- knowledge integration and innovation
- smart human computer interaction

Software Engineering & Architecture

Computer assisted engineering practices for SAP's standard development processes

Focus topics

- Model-driven SW development
- SW quality and non-functional aspects
- SW architectures for virtualization

Business Process Mgmt & Semantic Interoperability

Highly configurable process-oriented applications and semantically enriched service-oriented composition of applications

Focus topics

- Collaborative bus. processes between enterprises
- Model-driven architectures & engineering
- Semantic Web Services; ▪ SoA
- Interoperability of applications & enterprises

Intro and Motivation

Stack Overview and Criteria

Traditional EDI

RosettaNet

UN/CEFACT

Comparison Results

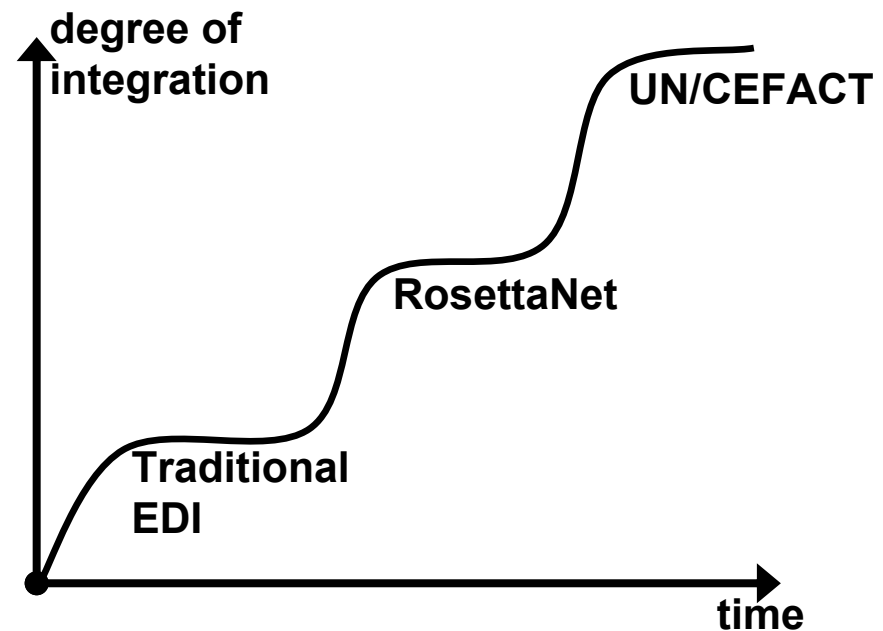
This presentation summarizes the paper :

“From EDI to UN/CEFACT: An Evolutionary Path Towards a Next Generation e-Business Framework”

written by **Till Janner, Alexander Schmidt, Christoph Schroth and Gunther Stuhec**

Paper structure:

- Intro and Motivation
- e-Business Stacks under Examination
- Criteria for Comparison
- Stack Comparison
- Presentation of Results





Intro and Motivation

Stack Overview and Criteria

Traditional EDI

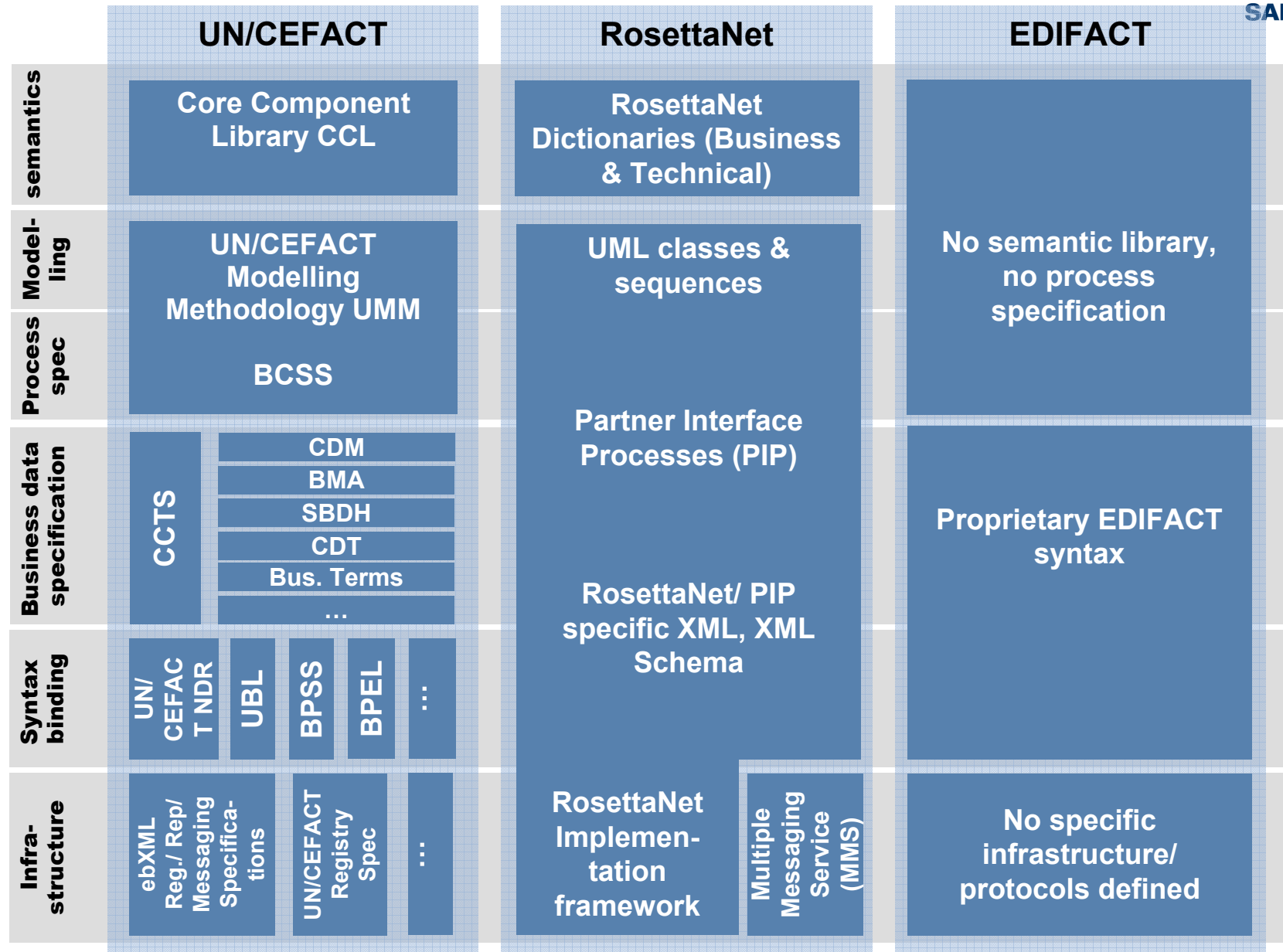
RosettaNet

UN/CEFACT

Comparison Results

Stack Overview

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■ Horizontal and Global Integration

- Applicable to various industries

■ Flexibility

- Adaptable and extendable according to the needs of enterprises
- Incorporate new business requirements

■ Maturity of the Stack

- Is the stack still “under construction”?

■ Comprehensiveness of the Stack

- Coverage of integration issues on e.g. syntax, semantic and process level

■ Common Repository/Dictionary

- Indicator for proper understanding between interacting business partners
- Can be seen as an “upper ontology”

■ Ease of Implementation and Operation

- Operational Efficiency concerning effort and time required for running, maintaining and adopting

■ Degree and Potential for Dissemination

- Differentiation between current dissemination and potential for the future

Intro and Motivation

Stack Overview and Criteria

Traditional EDI

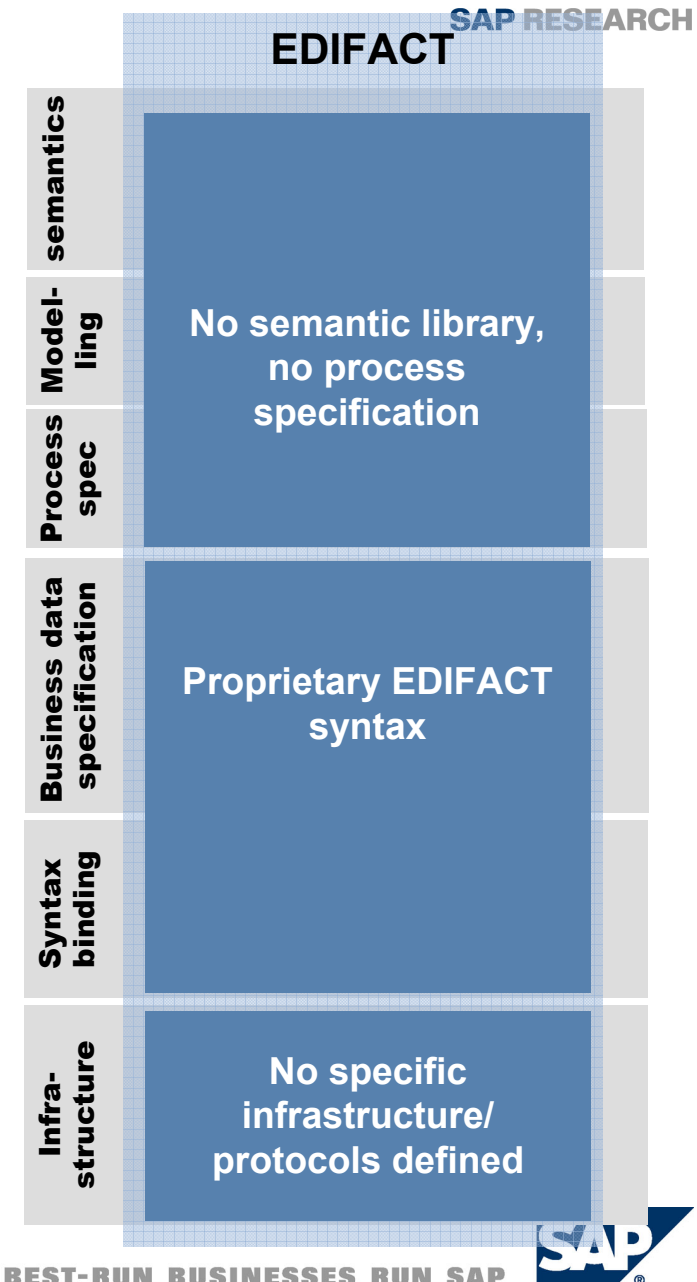
RosettaNet

UN/CEFACT

Comparison Results

Traditional EDI

- EDI technology came up in the 1960s
 - Several solutions with **different representation syntax** (e.g. TRADCOMS, SEDAS, VDA, ODETTE, ANASI X.12)
- Harmonization Efforts of UN/EDIFACT
 - Became crucial to nearly every industry including **retail, healthcare, financial and automotive**
 - EDIFACT Messages consist of ASCII-coded data elements (**no XML-syntax**)
 - Directories (for versioning) and subsets (specific industry support) are provided to handle the complexity
- Traditional EDI technology is still **widely used in industry**



- The various different data formats in different industries impede a **horizontal integration**
- Expensive **implementation and operation** hinders a broader adoption (particular of SMEs)
 - Especially analysis and development of EDI interfaces
- New business requirements are implemented slowly by the standardization bodies (low **flexibility**)
- The huge complexity is not supported by a **common repository**
- Nevertheless, large investments in EDI technology lead to a high degree of **dissemination** and **maturity**
- New developments (e.g. XML/EDI Adapters) enhance the overall low **comprehensiveness of the stack**

Intro and Motivation

Stack Overview and Criteria

Traditional EDI

RosettaNet

UN/CEFACT

Comparison Results

RosettaNet (RN)

■ XML based e-Business framework

- XML is a **machine and human-readable** data tags
- Huge amount of **tools** (schema development, mapping, integration)

■ RN basic standard encompasses

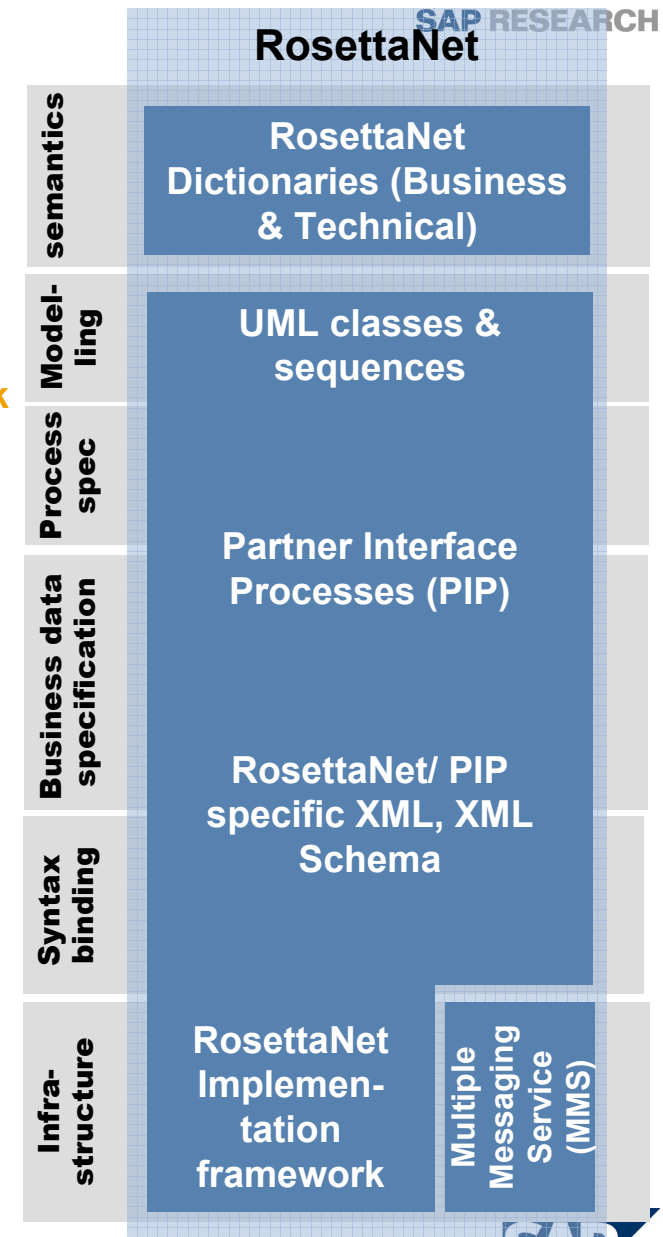
- certain **dictionaries**, an **implementation framework** and XML-based **business message schemas** and **process specifications**

■ Partner Interface Processes (PIPs) specify

- The business process alignment betw. trading partners
- structure of exchanged business documents
- Message choreography

■ RosettaNet Implementation Framework (RNIF) provides

- exchange protocols, message structure, security mechanisms ...
- Foundation of PIP implementation



- RN aims at overcoming the traditional one-to-one relationship in business processes (e.g. EDIFACT), and to develop plug-and-play interoperability between trading partners
- Designed as a vertical solution, RN still lacks the potential for **horizontal dissemination**
- Enhanced **flexibility** results of the possibility to combine PIP process steps according to requirements of enterprises
- Permanent improvements are **maturing** RN and increase the **comprehensiveness** of the stack
- RN **implementation** is facilitated by RIG (Recommended Implementation Guide), TRIP-PIPs (Trading Partner Implementation Requirements)
 - the RN Automated Enablement (RAE)-initiative targets the integration of SMEs
- Emanation from the high-tech industry as a vertical standard limits the horizontal **dissemination** to other industries

Intro and Motivation

Stack Overview and Criteria

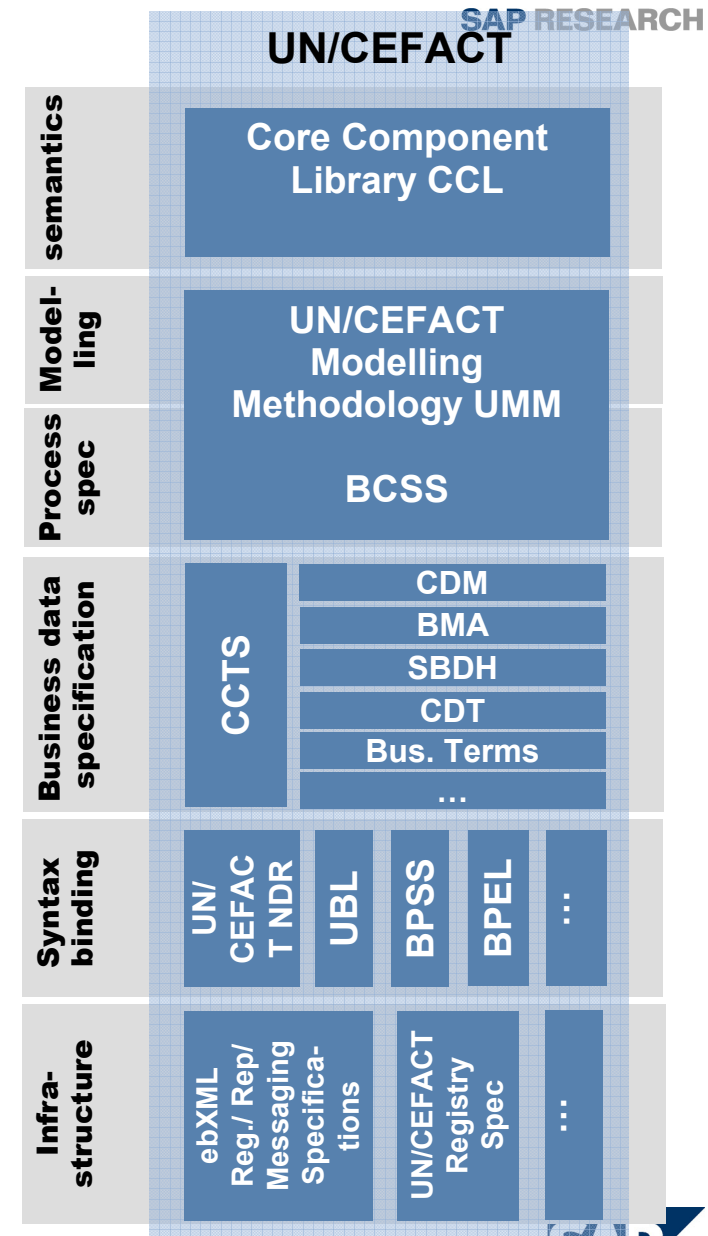
Traditional EDI

RosettaNet

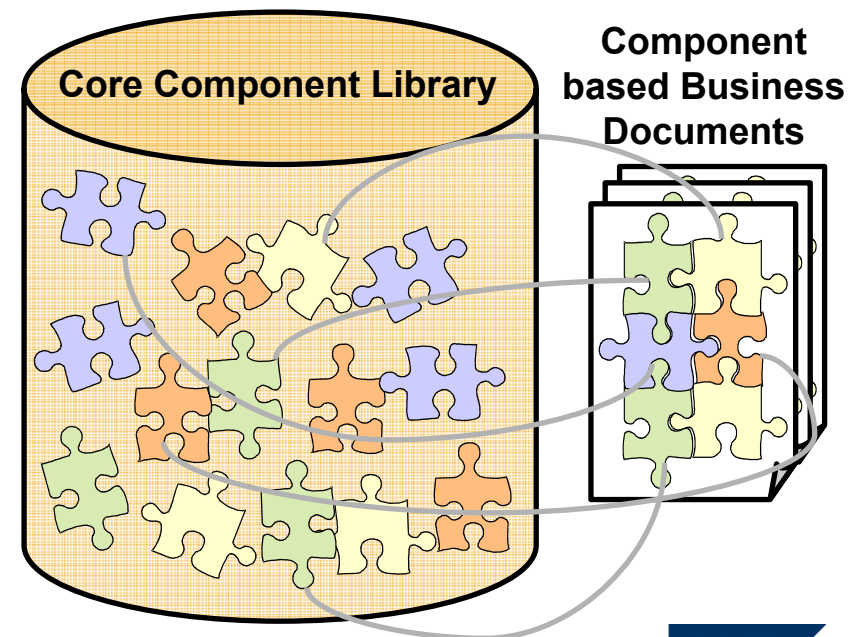
UN/CEFACT

Comparison Results

- 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)



- **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



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

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

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

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

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CDM

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

BMA

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

SBDH

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

CDT

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

Business Terms

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

- 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

Intro and Motivation

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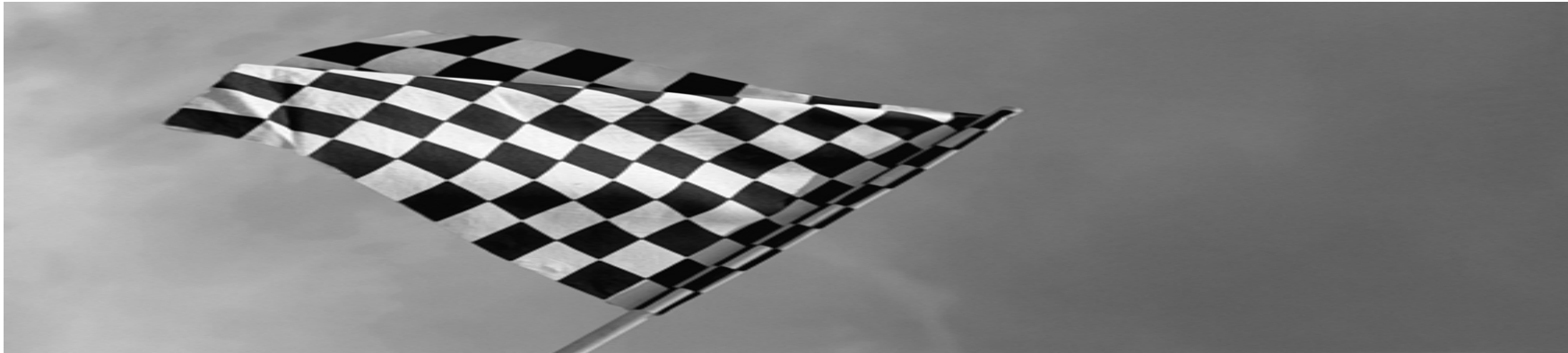
UN/CEFACT

Comparison Results

Result overview

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	EDIFACT	RosettaNet	UN/CEFACT
horizontal integration	✓	✓	✓ ✓
flexibility		✓ ✓	✓ ✓ ✓
maturity	✓ ✓ ✓	✓ ✓	✓
common repository/dictionary	✓	✓ ✓	✓ ✓ ✓
comprehensiveness of stack		✓ ✓ ✓	✓ ✓
ease of implementation		✓	✓ ✓
degree of dissemination	✓ ✓	✓	



- e-Business stacks move from monolithic silos towards sets of **modular and encapsulated** specifications
- UN/CEFACT provides a **promising solution** on the evolutionary path towards next generation e-Business frameworks
- **SAP already supports the UN/CEFACT** e-Business stack as it leverages Core Components for the definition of the novel so-called Global Data Types

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