

SAP RESEARCH

SYSTEMATIC THOUGHT LEADERSHIP FOR INNOVATIVE BUSINESS

The Enterprise Interoperability Center - An Institutional Framework Facilitating Enterprise Interoperability

Petra Frenzel, Christoph Schroth, Tatjana Samsonowa

{petra.frenzel, christoph.schroth, tatjana.samsonowa} @ {sap.com}

SAP Research CEC St. Gallen, Switzerland

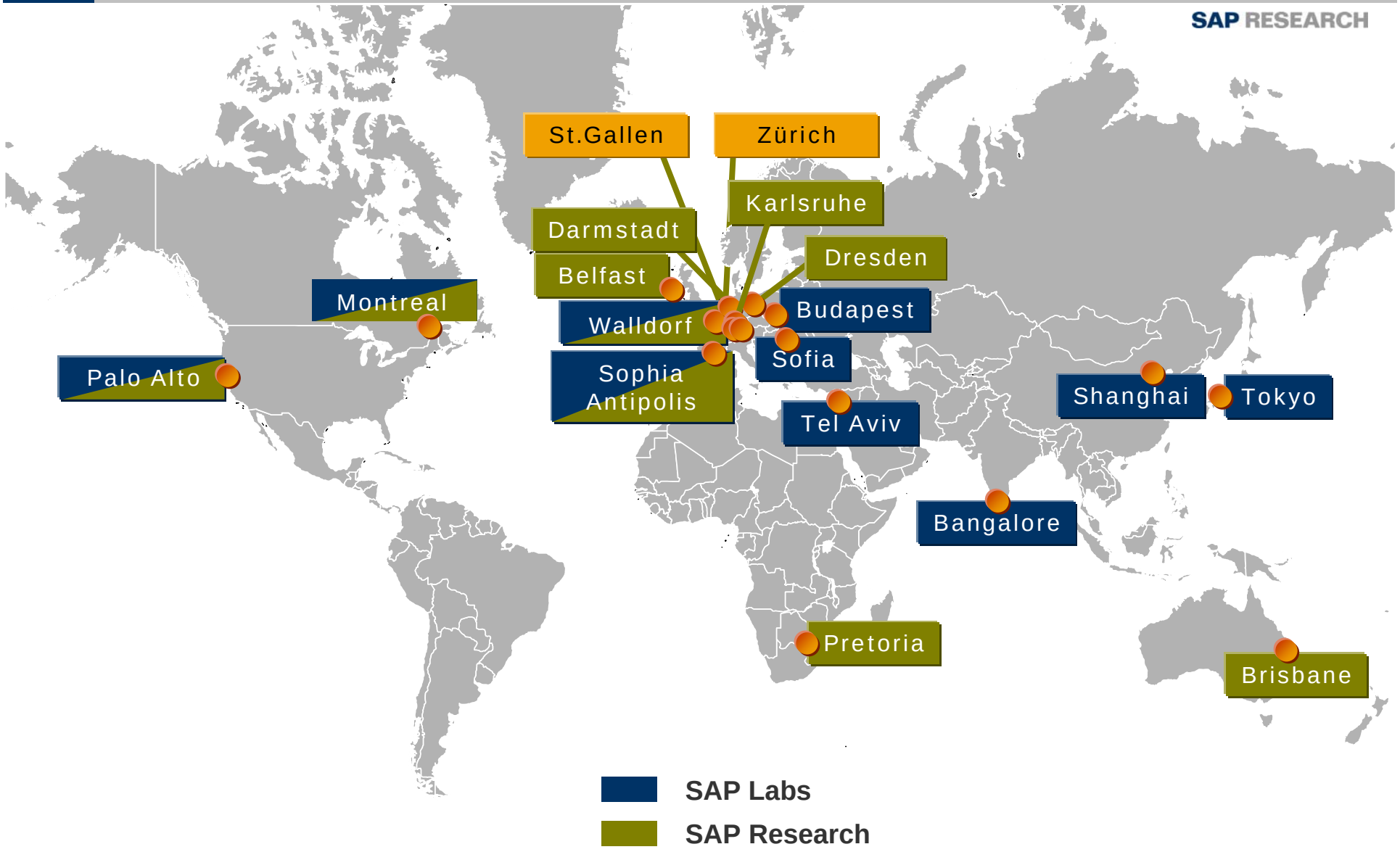
SAP AG, Walldorf, Germany

University of St. Gallen, MCM Institute, Switzerland

http://new.eic-community.org/

THE BEST-RUN BUSINESSES RUN SAP

Research- & Development Network of SAP



© SAP AG 2006, THE Enterpise Interoperability Center- An Institutional Framework Facilitating Enterprise Interoperability



SAP RESEARCH

Executive Summary

Key challenges of cross-organizational electronic business relationships

Institutional economics as research framework

The EIC – an institutional framework facilitating enterprise interoperability

Conclusion

Summary

B2B Interoperability Challenges

- Enterprise IT envisioned to be interconnected
- Numerous standards with different scope and granularity available
- Diverent interests of stakeholders as major hurdle

Institutional Economics

- Agents do not act rational and have a limited capactity for deciphering the complex environment
- To reduce uncertainties, institutions are needed
- Institutional economics leveraged to derive recommendations for the EIC

The EIC as instituio-nal framework

- EIC integrates SDOs, user firms, governments and SW vendors to reduce mutual uncertainty
- Hub for consensus building, for refining existing standards and for supporting their adoption
- Shall provide proper incentives

© SAP AG 2006, THE Enterpise Interoperability Center- An Institutional Framework
Facilitating Enterprise Interoperability



SAP RESEARCH

Executive Summary

Key challenges of cross-organizational electronic business relationships

Institutional economics as research framework

The EIC – an institutional framework facilitating enterprise interoperability

Conclusion

The Inter-Enterprise Nightmare*

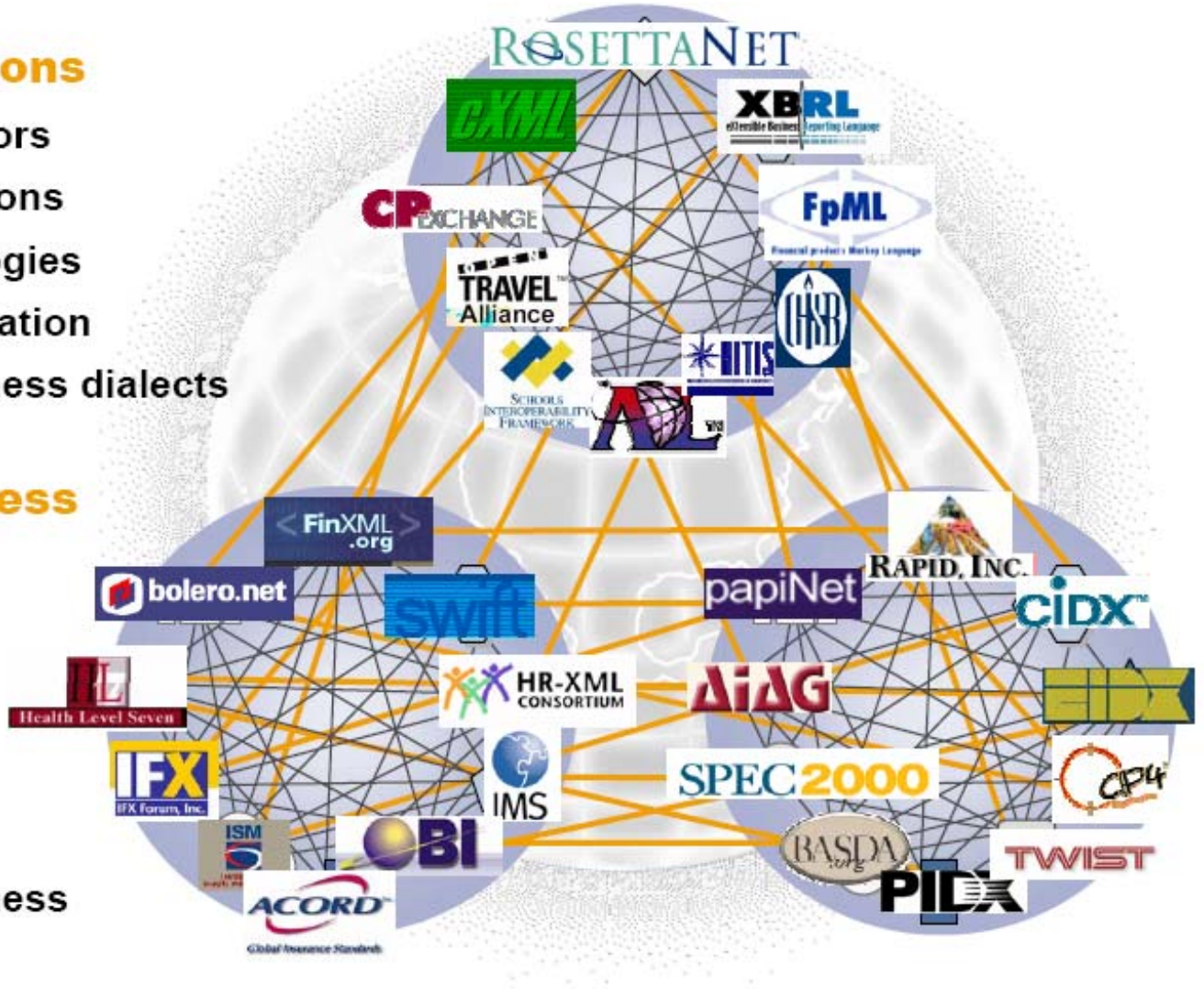
SAP RESEARCH

Best-of-breed solutions

- Many different vendors
- Custom made solutions
- Proprietary technologies
- Point-to-point Integration
- Many different business dialects

Risking future success

- Complex business environment
- Maintenance nightmare
- Multiple dependencies
- Many different business applications

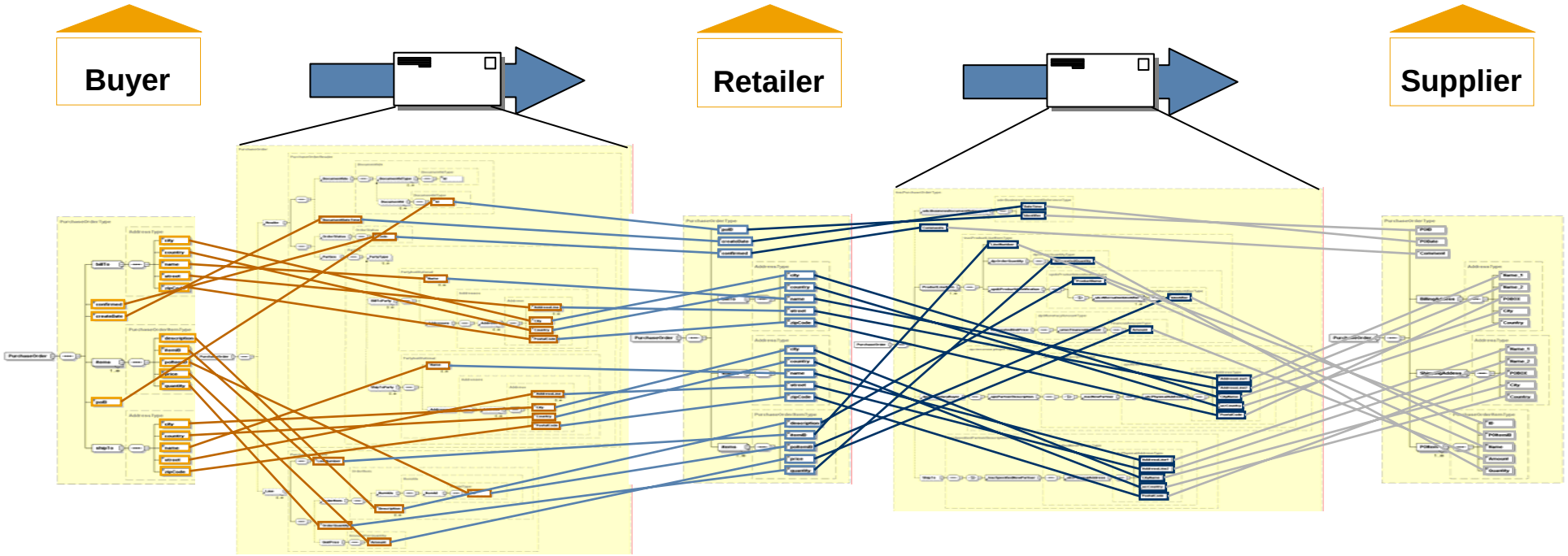


*** This graphic has been adapted from Gunther Stuhec, SAP AG**

© SAP AG 2006, THE Enterprise Interoperability Center- An Institutional Framework Facilitating Enterprise Interoperability

Inter-organizational supply chains face severe interoperability challenges*

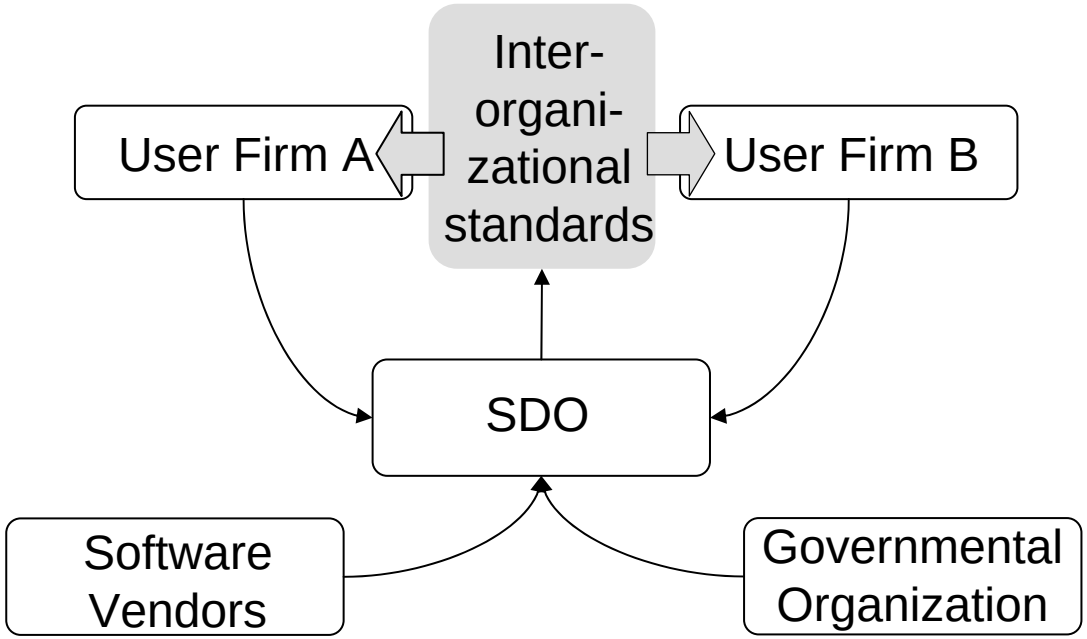
SAP RESEARCH



*** This graphic has been adapted from Gunther Stuhec, SAP AG**

© SAP AG 2006, THE Enterpise Interoperability Center- An Institutional Framework Facilitating Enterprise Interoperability

Divergent interests of key stakeholers represent a major hurdle to enterprise interoperability



Löwer, U. M. (2006). Interorganisational standards. Managing Web Services Specifications for Flexible Supply Chains. Physica-Verlag, Heidelberg

© SAP AG 2006, THE Enterpise Interoperability Center- An Institutional Framework Facilitating Enterprise Interoperability

Independent institutions are needed to mediate and facilitate the adoption of proper standards

User firms	• supposed to use standards for connecting applications • may **observe**, **adopt**, **drive** or **contribute** depending on the expected benefit of participation and the alignment of interests
SDOs	• highly **interwoven mesh of competing players** who pursue partially overlapping activities • may **coordinate** development, **participate** in other SDOs or **push the adoption** of a standard
Governmental organizations	• **impose** specifications as norms to enforce their acceptance • **support** SDOs to lower development costs • **coordinate** the different SDOs' work • try to **drive** standards which match their own requirements
Software vendors	• supposed to **incorporate standards** into their solutions • have to **cope with** unmanageable **variety of SDOs** • may observe, adopt, drive or contribute

Löwer, U. M. (2006). Interorganisational standards. Managing Web Services Specifications for Flexible Supply Chains. Physica-Verlag, Heidelberg

© SAP AG 2006, THE Enterprise Interoperability Center- An Institutional Framework Facilitating Enterprise Interoperability



SAP RESEARCH

Executive Summary

Key challenges of cross-organizational electronic business relationships

Institutional economics as research framework

The EIC – an institutional framework facilitating enterprise interoperability

Conclusion

The Institutional Action-Information Loop*

SAP RESEARCH

Institutions

Characteristics

- "The rules of the game"
- Formed and changed by agents
- Sustain as normative entities
- Exist in the form of informal or formal constraints/ rules that may be enforced

Impact

- Affect the costs of exchange
- Involve the interaction of agents
- Reduce uncertainty
- Provide an incentive structure

Information →

← Action

Individual agents

Characteristics

- Human individuals or organizations
- Agents do not act fully rational
- Limited processing capabilities for deciphering the environment
- Agents face transaction cost that arise from uncertainties involved in the interaction of individuals

Impact

- Agents require institutions to reduce uncertainties
- They form and also deconstruct them

*North, D. C. (1990). Institutions, institutional change, and economic performance. Cambridge University Press, Cambridge

© SAP AG 2006, THE Enterpise Interoperability Center- An Institutional Framework Facilitating Enterprise Interoperability



SAP RESEARCH

Executive Summary

Key challenges of cross-organizational electronic business relationships

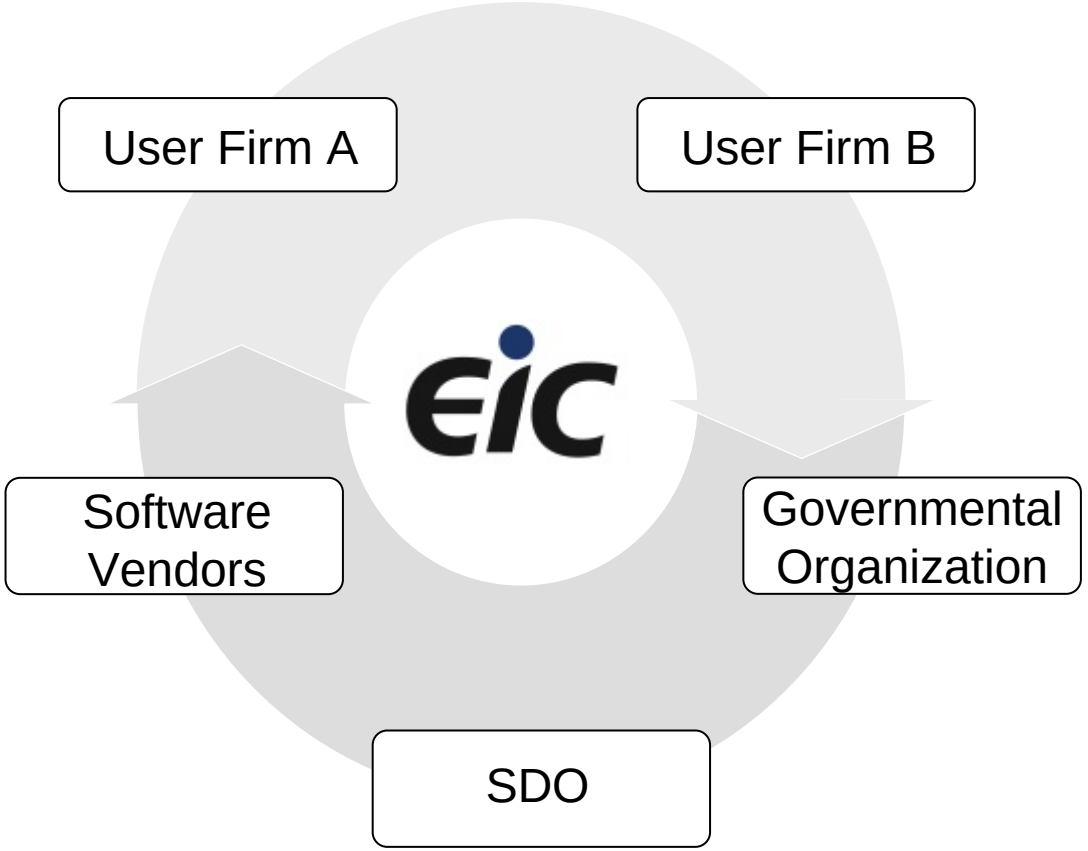
Institutional economics as research framework

The EIC – an institutional framework facilitating enterprise interoperability

Conclusion

The EIC – a hub for facilitating the adoption of interorganizational standards

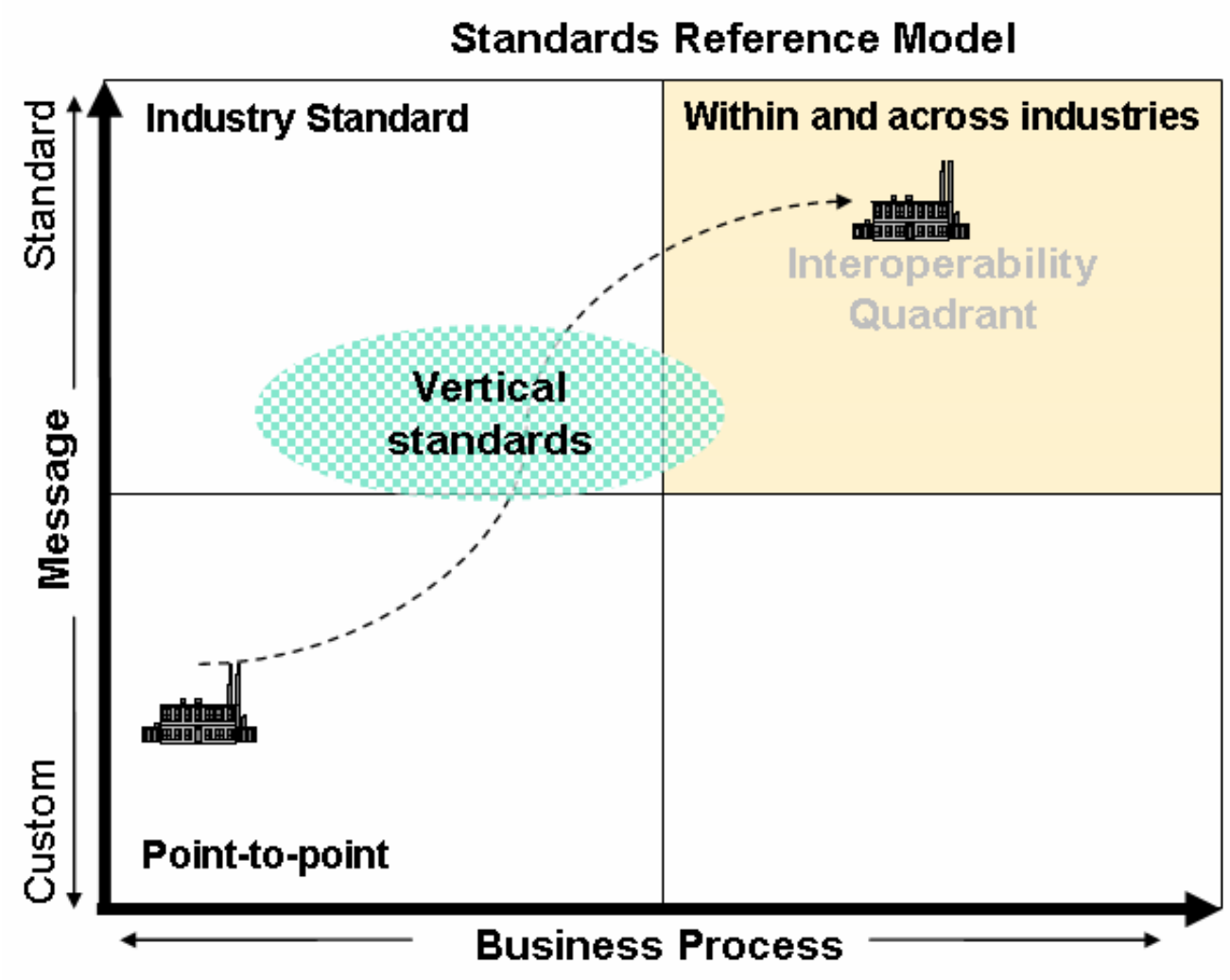
SAP RESEARCH



© SAP AG 2006, THE Enterpise Interoperability Center- An Institutional Framework Facilitating Enterprise Interoperability

EIC Standards Reference Model

SAP RESEARCH



© SAP AG 2006, THE Enterprise Interoperability Center- An Institutional Framework Facilitating Enterprise Interoperability

The EIC – an institutional framework

Reference Point

• Establish, promote and provide a **hub** for debate on interoperability issues and to act as a **provider of commonly accepted rule sets** for implementing cross-organizational electronic interconnections

• The EIC **reduces uncertainty** in the interaction of firms as it provides implementation guidelines, experience reports and extensions for standards (sharpening of verbal specifications and thus reducing semantic ambiguities)

Integrative Entity

• Open, neutral, credible, **independent and non-profit oriented entity** that encourages participation by all relevant stakeholders (SDOs, Governmental organizations, User Firms and Softwar Vendors)

Facilitator of Adoption

• **Interoperability Profiles** will be developed consisting of consensus-based **common processes** in combination with selected and interpreted messaging standards, while using **existing standards**

© SAP AG 2006, THE Enterpise Interoperability Center- An Institutional Framework
Facilitating Enterprise Interoperability

The EIC should ensure fairness, provide incentives and maintain an equilibrium of interests

Fairness

- **The subjective perception of fairness of all stakeholders is crucial to facilitate their willingness to actively contribute and also adhere to the constraints and rules imposed by the EIC**

Incentives

- **Incorporation of adequate incentives: User firms, for example, must receive significant return from investing in building skills and knowledge within the EIC framework**

Equilibrium

- **Interests of stakeholders always differ to some extent, however, none of them should find it beneficial enough to spend resources into restructuring the agreements and the underlying institutional framework**

© SAP AG 2006, THE Enterpise Interoperability Center- An Institutional Framework Facilitating Enterprise Interoperability



SAP RESEARCH

Executive Summary

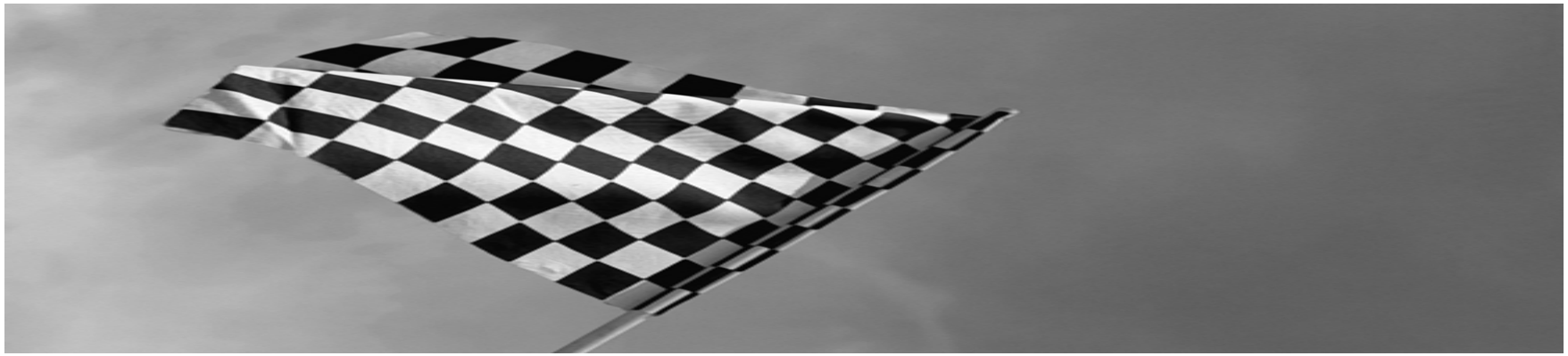
Key challenges of cross-organizational electronic business relationships

Institutional economics as research framework

The EIC – an institutional framework facilitating enterprise interoperability

Conclusion

Conclusion



- **B2B relationships face severe interoperabolity challenges due to the plethora of existing standards and the partially divergent interests of stakeholders involved in the development of standards**
- **Institutional Economics represents an adequate research framework and may be leveraged to analyze the EIC and to derive recommendations for it to permanently prevail**
- **The EIC should ensure that all stakeholders perceive it as a fair platform for consensus-building that provides incentives for all of them**

© SAP AG 2006, THE Enterpise Interoperability Center- An Institutional Framework Facilitating Enterprise Interoperability



SAP RESEARCH

SYSTEMATIC THOUGHT LEADERSHIP FOR INNOVATIVE BUSINESS

Thank you for your attention!

Petra Frenzel@sap.com, Christoph.Schroth@sap.com, Tatjana.Samsonowa@sap.com

Backup

© SAP AG 2006, THE Enterpise Interoperability Center- An Institutional Framework Facilitating Enterprise Interoperability

Selection of References

European Commission. (2005). The european e-business report 2005 edition- a portrait of e-business in 10 sectors of the eu economy. http://ec.europa.eu/enterprise/

Hodgson, G. M. (1998). The Approach of Institutional Economics. Journal of Economic Literature, Vol. 36, No. 1, pp. 166-192

Hoyer, V., Janner, T., Mayer, P., Raus, M., Schroth, C. (2006). Small and Medium Enterprise's Benefits of Next Generation e-Business Platforms. Business Review, Cambridge, Vol. 10, Nr. 2

Löwer, U. M. (2006). Interorganisational standards. Managing Web Services Specifications for Flexible Supply Chains. Physica-Verlag, Heidelberg

Lomerson, W. L., McGrath, L.C., Schwager, P.H. (2004). An examination of the benefits of e-business to small and medium size businesses. Proceedings of the 7th Annual Conference of the Southern Association for Information Systems

Malone, T. (2001). The Future of E-Business. Sloan Management Review, Vol. 43, No. 1, p. 104

North, D. C. (1990). Institutions, institutional change, and economic performance. Cambridge University Press, Cambridge

Porter, M.E. (2001). Strategy and the Internet. Harvard Business Review, Vol. 79, No. 3

Schotter, A. (1981). The economic theory of social institutions. Cambridge University Press, Cambridge and New York

Sippl, R. (2006). Breaking down the Silo walls - Realizing the vision of SOA. http://realworldsoa.com/resources/BreakingDownSiloWalls.pdf

Simon, H. A. (1957). Models of man: social and rational; Mathematical essays on rational human behavior in a social setting. Wiley, New York

Stuhec, G. (2006). How to Solve the Business Standards Dilemma - CCTS Key Model Concepts. SAP Developer Network (SDN), http://sdn.sap.com

Yankee Group (2006). XML Standards in B2B Integration: Study of Standardization Efforts of RosettaNet and ebXML. http://www.yankeegroup.com/

© SAP AG 2006, THE Enterpise Interoperability Center- An Institutional Framework Facilitating Enterprise Interoperability

Copyright 2006 SAP AG. All Rights Reserved

No part of this publication may be reproduced or transmitted in any form or for any purpose without the express permission of SAP AG. The information contained herein may be changed without prior notice.

Some software products marketed by SAP AG and its distributors contain proprietary software components of other software vendors.

Microsoft, Windows, Outlook, and PowerPoint are registered trademarks of Microsoft Corporation.

IBM, DB2, DB2 Universal Database, OS/2, Parallel Sysplex, MVS/ESA, AIX, S/390, AS/400, OS/390, OS/400, iSeries, pSeries, xSeries, zSeries, z/OS, AFP, Intelligent Miner, WebSphere, Netfinity, Tivoli, and Informix are trademarks or registered trademarks of IBM Corporation.

Oracle is a registered trademark of Oracle Corporation.

UNIX, X/Open, OSF/1, and Motif are registered trademarks of the Open Group.

Citrix, ICA, Program Neighborhood, MetaFrame, WinFrame, VideoFrame, and MultiWin are trademarks or registered trademarks of Citrix Systems, Inc.

HTML, XML, XHTML and W3C are trademarks or registered trademarks of W3C®, World Wide Web Consortium, Massachusetts Institute of Technology.

Java is a registered trademark of Sun Microsystems, Inc.

JavaScript is a registered trademark of Sun Microsystems, Inc., used under license for technology invented and implemented by Netscape.

MaxDB is a trademark of MySQL AB, Sweden.

SAP, R/3, mySAP, mySAP.com, xApps, xApp, SAP NetWeaver, and other SAP products and services mentioned herein as well as their respective logos are trademarks or registered trademarks of SAP AG in Germany and in several other countries all over the world. All other product and service names mentioned are the trademarks of their respective companies. Data contained in this document serves informational purposes only. National product specifications may vary.

The information in this document is proprietary to SAP. No part of this document may be reproduced, copied, or transmitted in any form or for any purpose without the express prior written permission of SAP AG.

This document is a preliminary version and not subject to your license agreement or any other agreement with SAP. This document contains only intended strategies, developments, and functionalities of the SAP® product and is not intended to be binding upon SAP to any particular course of business, product strategy, and/or development. Please note that this document is subject to change and may be changed by SAP at any time without notice.

SAP assumes no responsibility for errors or omissions in this document. SAP does not warrant the accuracy or completeness of the information, text, graphics, links, or other items contained within this material. This document is provided without a warranty of any kind, either express or implied, including but not limited to the implied warranties of merchantability, fitness for a particular purpose, or non-infringement.

SAP shall have no liability for damages of any kind including without limitation direct, special, indirect, or consequential damages that may result from the use of these materials. This limitation shall not apply in cases of intent or gross negligence.

The statutory liability for personal injury and defective products is not affected. SAP has no control over the information that you may access through the use of hot links contained in these materials and does not endorse your use of third-party Web pages nor provide any warranty whatsoever relating to third-party Web pages.

Copyright 2006 SAP AG. Alle Rechte vorbehalten

Weitergabe und Vervielfältigung dieser Publikation oder von Teilen daraus sind, zu welchem Zweck und in welcher Form auch immer, ohne die ausdrückliche schriftliche Genehmigung durch SAP AG nicht gestattet. In dieser Publikation enthaltene Informationen können ohne vorherige Ankündigung geändert werden.

Die von SAP AG oder deren Vertriebsfirmen angebotenen Softwareprodukte können Softwarekomponenten auch anderer Softwarehersteller enthalten.

Microsoft®, WINDOWS®, NT®, EXCEL®, Word®, PowerPoint® und SQL Server® sind eingetragene Marken der Microsoft Corporation.

IBM®, DB2®, DB2 Universal Database, OS/2®, Parallel Sysplex®, MVS/ESA, AIX®, S/390®, AS/400®, OS/390®, OS/400®, iSeries, pSeries, xSeries, zSeries, z/OS, AFP, Intelligent Miner, WebSphere®, Netfinity®, Tivoli®, Informix und Informix® Dynamic ServerTM sind Marken der IBM Corporation.

ORACLE® ist eine eingetragene Marke der ORACLE Corporation.

UNIX®, X/Open®, OSF/1® und Motif® sind eingetragene Marken der Open Group.

Citrix®, das Citrix-Logo, ICA®, Program Neighborhood®, MetaFrame®, WinFrame®, VideoFrame®, MultiWin® und andere hier erwähnte Namen von Citrix-Produkten sind Marken von Citrix Systems, Inc.

HTML, DHTML, XML, XHTML sind Marken oder eingetragene Marken des W3C®, World Wide Web Consortium, Massachusetts Institute of Technology.

JAVA® ist eine eingetragene Marke der Sun Microsystems, Inc.

JAVASCRIPT® ist eine eingetragene Marke der Sun Microsystems, Inc., verwendet unter der Lizenz der von Netscape entwickelten und implementierten Technologie.

MaxDB ist eine Marke von MySQL AB, Schweden.

SAP, R/3, mySAP, mySAP.com, xApps, xApp, SAP NetWeaver, und weitere im Text erwähnte SAP-Produkte und -Dienstleistungen sowie die entsprechenden Logos sind Marken oder eingetragene Marken der SAP AG in Deutschland und anderen Ländern weltweit. Alle anderen Namen von Produkten und Dienstleistungen sind Marken der jeweiligen Firmen. Die Angaben im Text sind unverbindlich und dienen lediglich zu Informationszwecken. Produkte können länderspezifische Unterschiede aufweisen.

Die in dieser Publikation enthaltene Information ist Eigentum der SAP. Weitergabe und Vervielfältigung dieser Publikation oder von Teilen daraus sind, zu welchem Zweck und in welcher Form auch immer, nur mit ausdrücklicher schriftlicher Genehmigung durch SAP AG gestattet.

Bei dieser Publikation handelt es sich um eine vorläufige Version, die nicht Ihrem gültigen Lizenzvertrag oder anderen Vereinbarungen mit SAP unterliegt. Diese Publikation enthält nur vorgesehene Strategien, Entwicklungen und Funktionen des SAP®-Produkts. SAP entsteht aus dieser Publikation keine Verpflichtung zu einer bestimmten Geschäfts- oder Produktstrategie und/oder bestimmten Entwicklungen. Diese Publikation kann von SAP jederzeit ohne vorherige Ankündigung geändert werden.

SAP übernimmt keine Haftung für Fehler oder Auslassungen in dieser Publikation. Des Weiteren übernimmt SAP keine Garantie für die Exaktheit oder Vollständigkeit der Informationen, Texte, Grafiken, Links und sonstigen in dieser Publikation enthaltenen Elementen. Diese Publikation wird ohne jegliche Gewähr, weder ausdrücklich noch stillschweigend, bereitgestellt. Dies gilt u. a., aber nicht ausschließlich, hinsichtlich der Gewährleistung der Marktgängigkeit und der Eignung für einen bestimmten Zweck sowie für die Gewährleistung der Nichtverletzung geltenden Rechts.

SAP haftet nicht für entstandene Schäden. Dies gilt u. a. und uneingeschränkt für konkrete, besondere und mittelbare Schäden oder Folgeschäden, die aus der Nutzung dieser Materialien entstehen können. Diese Einschränkung gilt nicht bei Vorsatz oder grober Fahrlässigkeit.

Die gesetzliche Haftung bei Personenschäden oder Produkthaftung bleibt unberührt. Die Informationen, auf die Sie möglicherweise über die in diesem Material enthaltenen Hotlinks zugreifen, unterliegen nicht dem Einfluss von SAP, und SAP unterstützt nicht die Nutzung von Internetseiten Dritter durch Sie und gibt keinerlei Gewährleistungen oder Zusagen über Internetseiten Dritter ab.