

The TripCom Project: Short Overview



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- 2003/2004:
 - Discussion between Frank Leymann and eva Kühn about **Web Services + Space Based Computing**
 - Prototype implementation of extending BPEL4J for mobile workers using Corso
- 2004:
 - Discussion between Dieter Fensel and Tim Berners Lee about **Web Services + Semantic Web**
 - Discussion between Dieter Fensel and eva Kühn about challenges to combine **Semantic Web + Space Based Computing**
 - Technical report about “Triple Based Computing” by Dieter Fensel
- 2005 - 2007:
 - Research Project: Triple Space Computing (TSC), AT
- 2006 - 2009:
 - Research Project: Triple Space Communication (TripCom), EU
 - Start: April 2006

The TripCom Project Partners

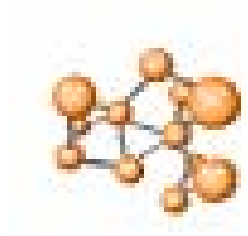


- Leopold Franzens Universität, Innsbruck, Austria
- National University of Ireland, Galway, Ireland
- University of Stuttgart, Germany
- Vienna University of Technology, Austria
- Free University Berlin, Germany
- Ontotext Lab, Sirma Group Corp., Sofia, Bulgaria
- Profium OY, Finland
- CEFRIEL - Società consortile a Responsabilità Limitata, Milano, Italy
- Telefónica Investigación y Desarrollo Sociedad Anónima Unipersonal, Spain



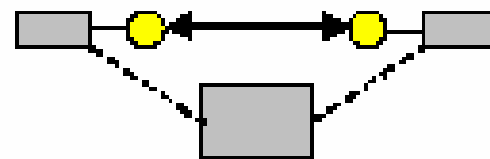
- Semantic Web

< audience should be familiar >



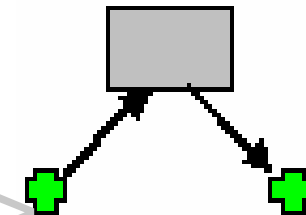
- Web Services

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- Space Based Computing

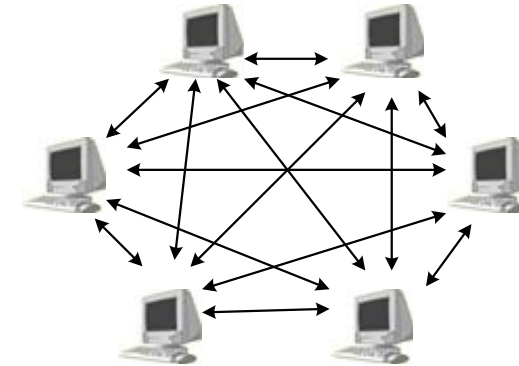
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Evolution of Communication Models

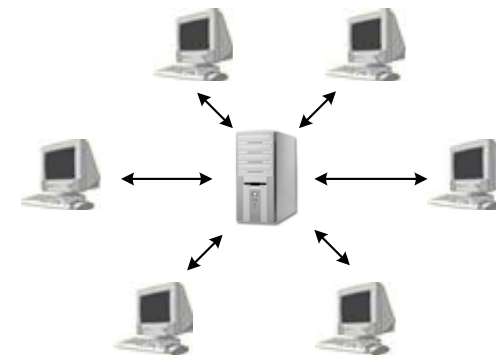
■ Direct Communication / Message Passing

- + High autonomy
- High number of communication paths
- Not scalable
- Complex in implementation



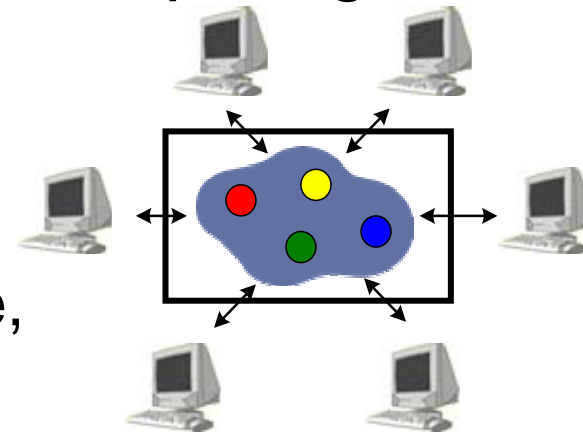
■ Central Server / Message Passing

- + Minimal number of communication paths
- + Simple in implementation
- Single point of failure



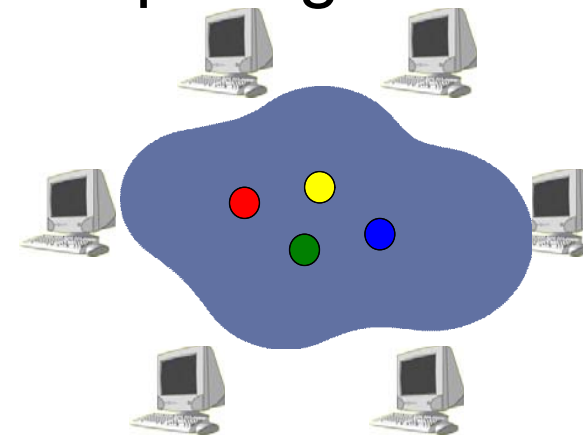
- **Central Server / Space Based Computing**

- Data is exchanged via a shared *space* (virtual shared memory abstraction)
- Network peers access the space, read and write data objects
- Communication by accessing a stateful data space

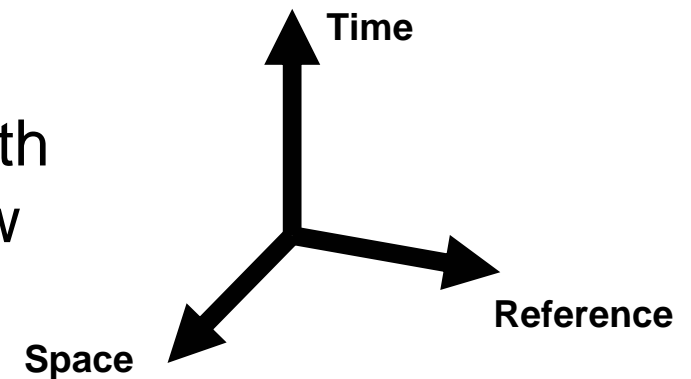


- **Virtual Server / Space Based Computing**

- Improvement through replication of the server
- intelligent peer-to-peer communication

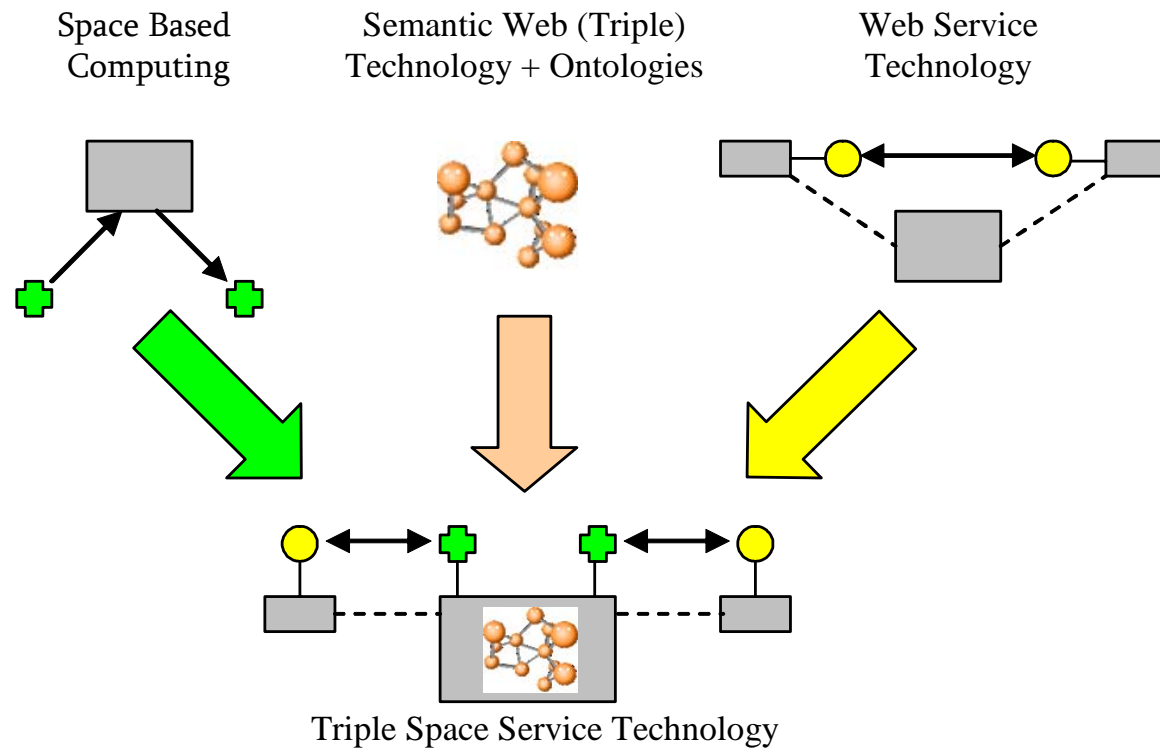


- SBC decouples interaction in three dimensions
 - Time
 - Applications can read and write data whenever they want to
 - Space
 - Applications only need to access the same space in order to communicate
 - Reference
 - Applications communicating with each other do not need to know explicitly from each other



- Tuple Spaces
 - David Gelernter
- Java Spaces
 - SUN
- T-Spaces
 - IBM
- Corso (Coordinated Shared Objects)
 - eva Kühn
- XML Spaces
 - Robert Tolksdorf
- XVSM (eXtensible Virtual Shared Memory)
 - eva Kühn

- Triple Space Computing results from the integration of three existing and well known technologies



“Triple Spaces shall embody a communication paradigm for *anonymous, asynchronous, scalable* information exchange through publication that ensures persistency and unique identification (URI) of the communicated semantic data”

“Triple Space shall become the web for *machines* as the web based on HTML became the Web for *humans*”

- Make Triple Computing *real*:
 - Improve the ideas of Tuple Space computing by adding semantics
 - Integration of Web service infrastructures with Triple Spaces
 - Establishing a novel Semantic Web service paradigm
 - Improve large scale process integration and space based interaction for business and e-applications
 - Implement a scalable and distributed “Web-like” Triple Space infrastructure
 - Address the lack of standardized business data ontologies
 - Focus on and incorporate security and trust mechanisms
 - Disseminate and apply the results through the exploitation strategies

- Reference Architecture (D6.1)
- Reference Implementation (D6.4, D2.3, D3.4)
- High-Performance RDF repositories (D1.3)
- Solutions to security & trust in distributed systems (D5.4)
- Integration with WSMO/L/X (D4.5)
- Ontologized version of selected EDI standards (D7.2)
- Realization in two concrete use cases (D8A.2, D8B.2)
- Standardization impact (D9.5) in
 - Semantic Web, Semantic Web Services, Coordination Systems