Collaboration Bus: An Infrastructure for Supporting Interoperating Collaborative Systems

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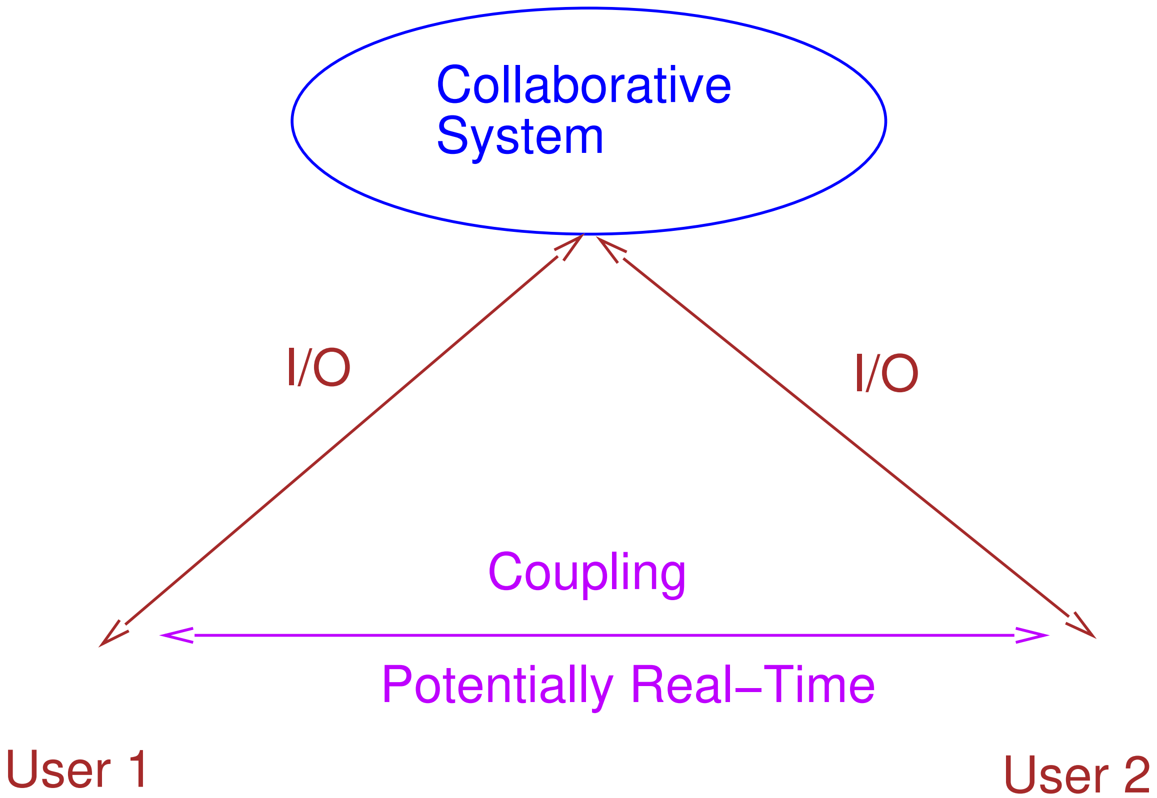
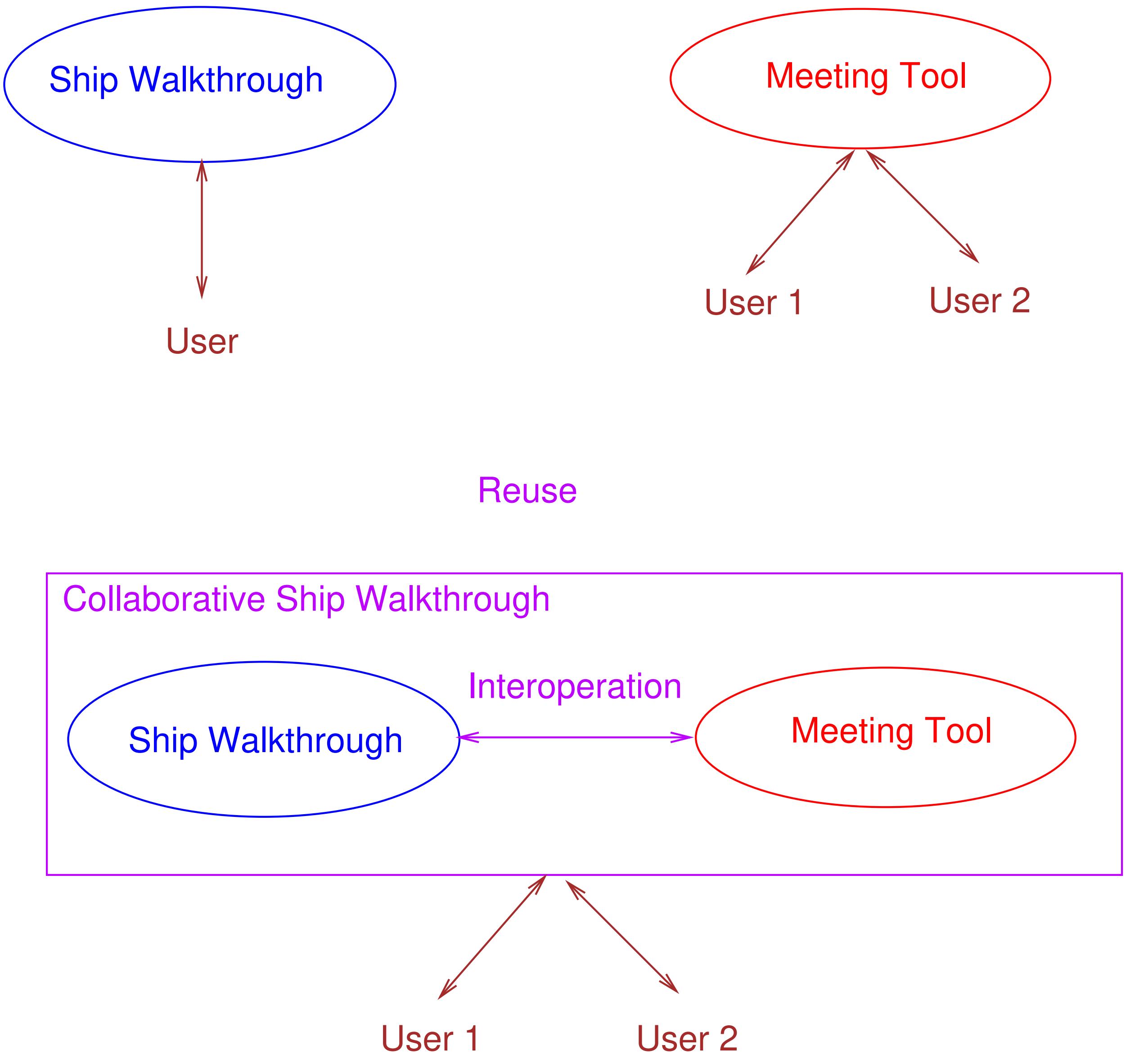
Definition

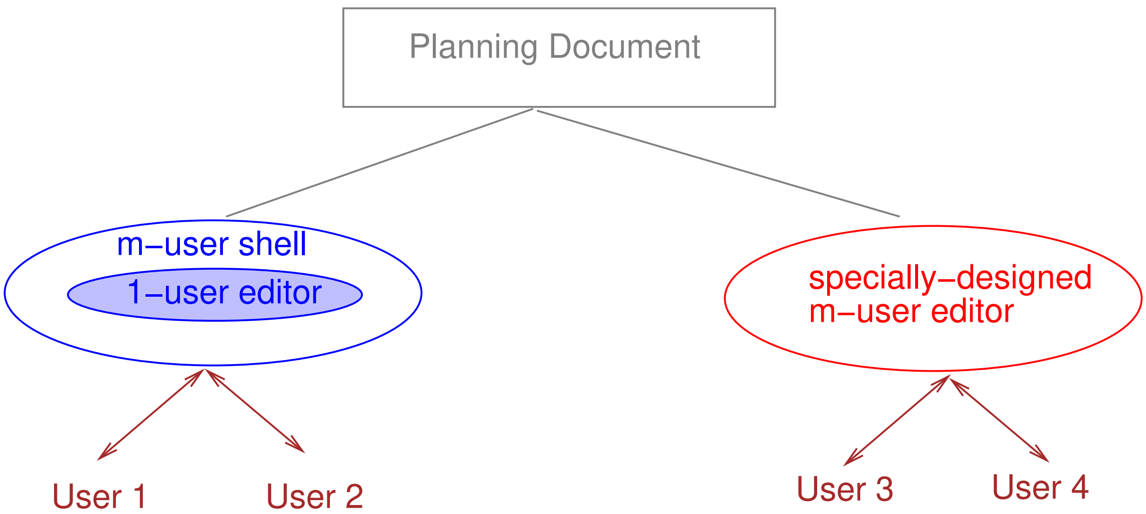


Collaborative
System
I/O
I/O
Coupling
Potentially Real–Time
User 1
User 2

Inter-Service Interoperability

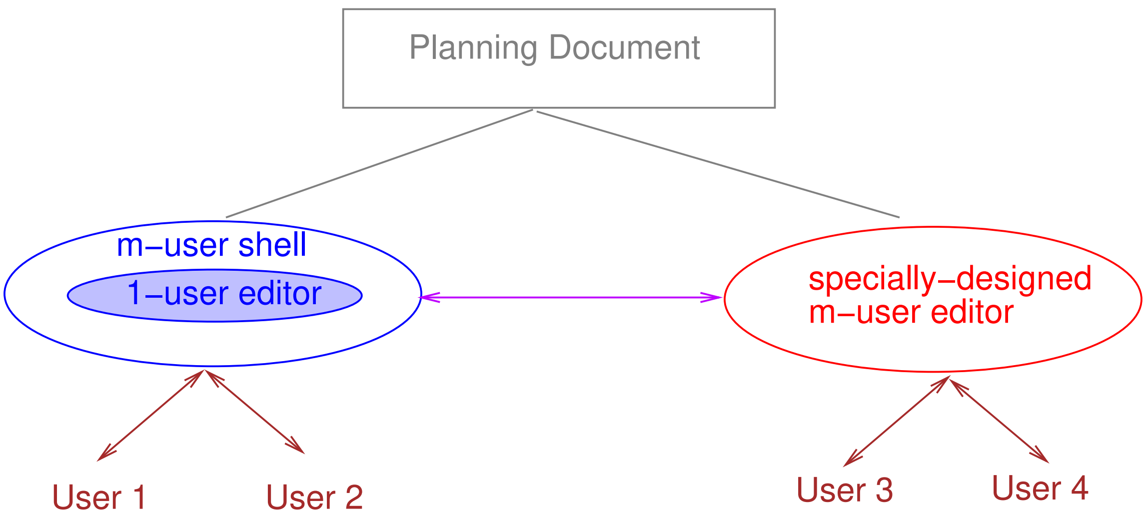


Intra-Service Interoperability



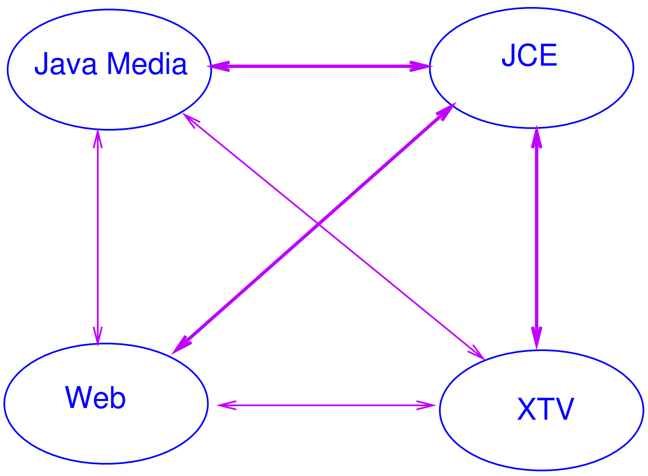
Coexistence

Composing Global Functions from Local Functions



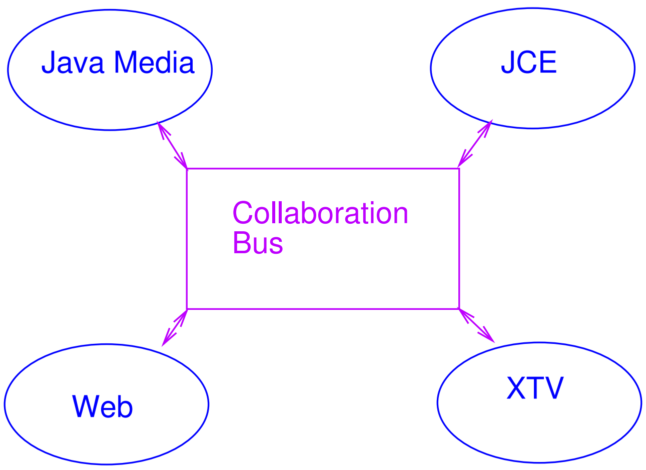
Interoperability Approaches

Direct Connection



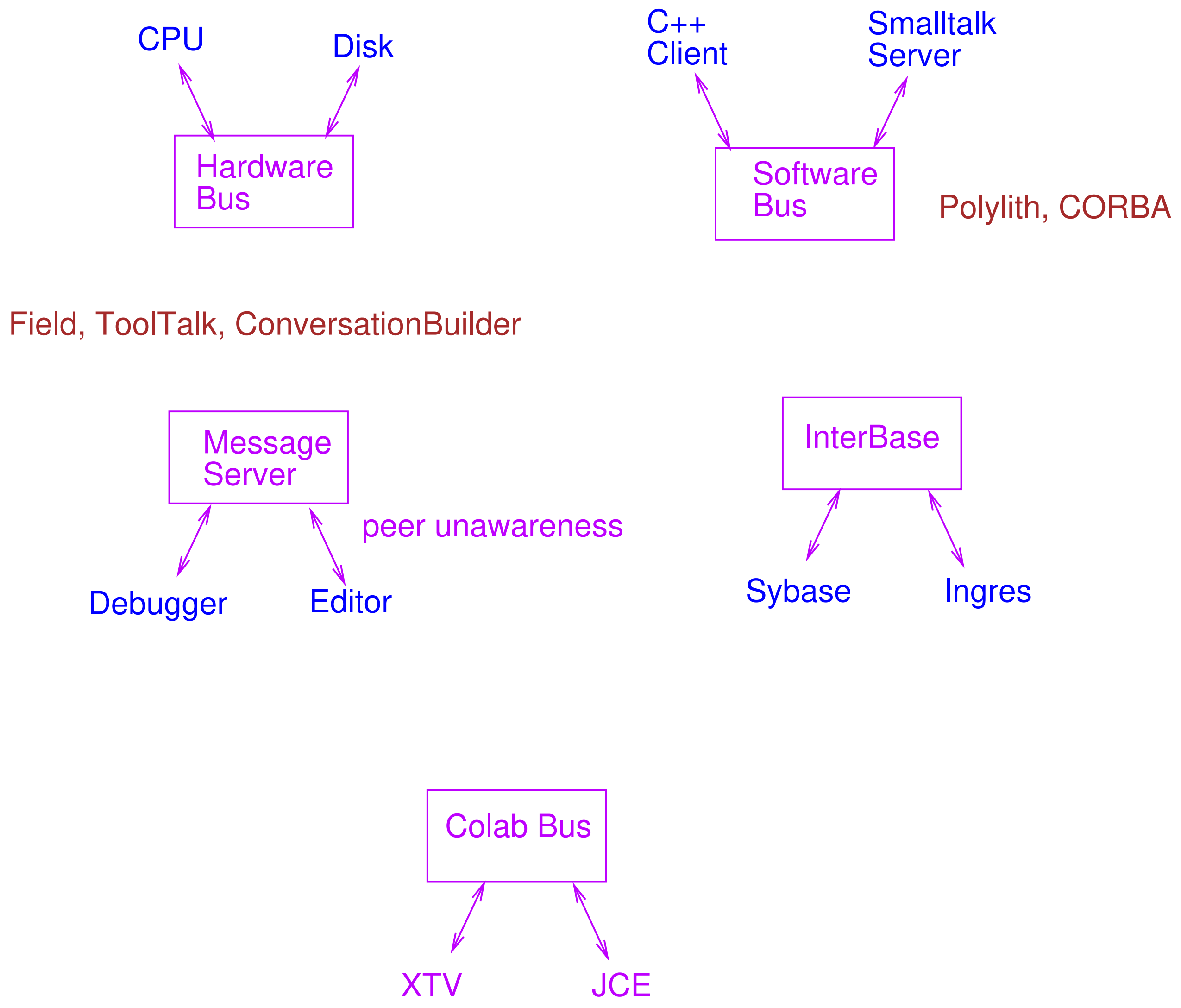
O (n^2) Translations

Bus-based Connection

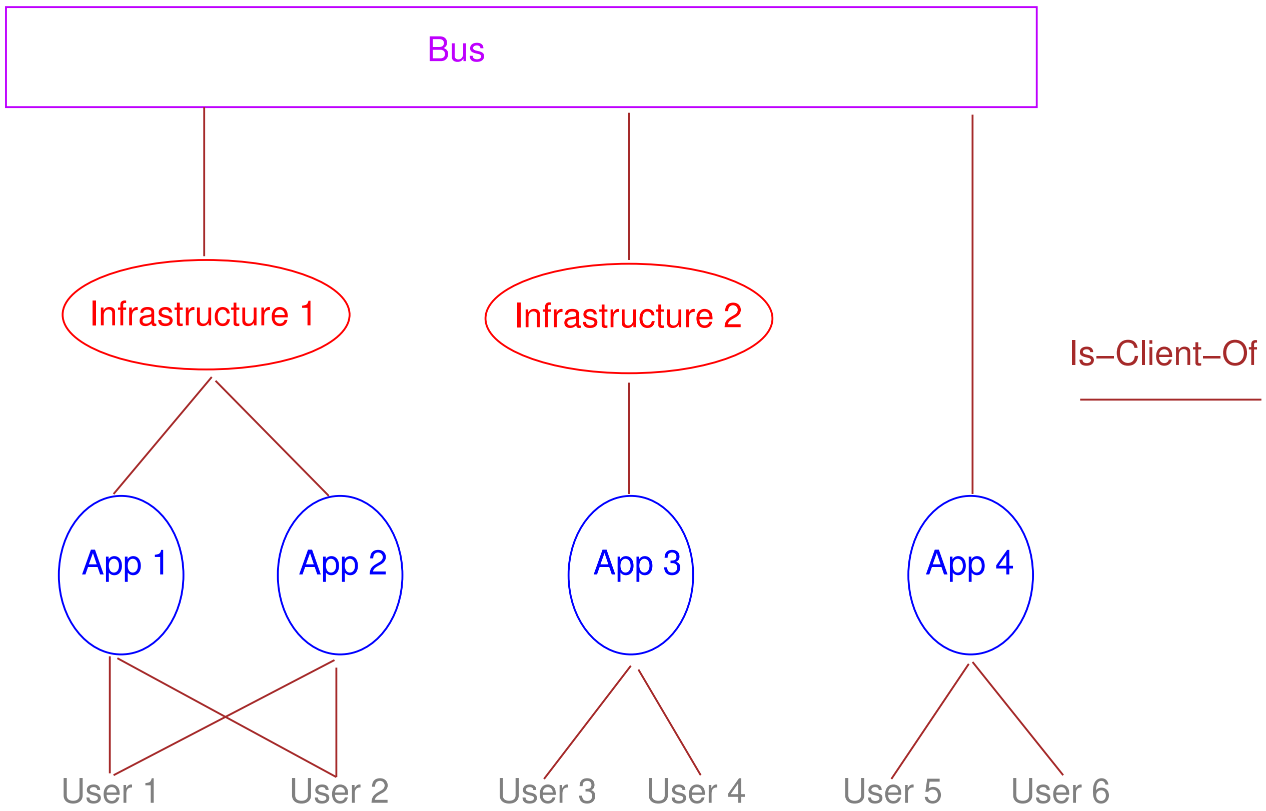


O (n) Translations

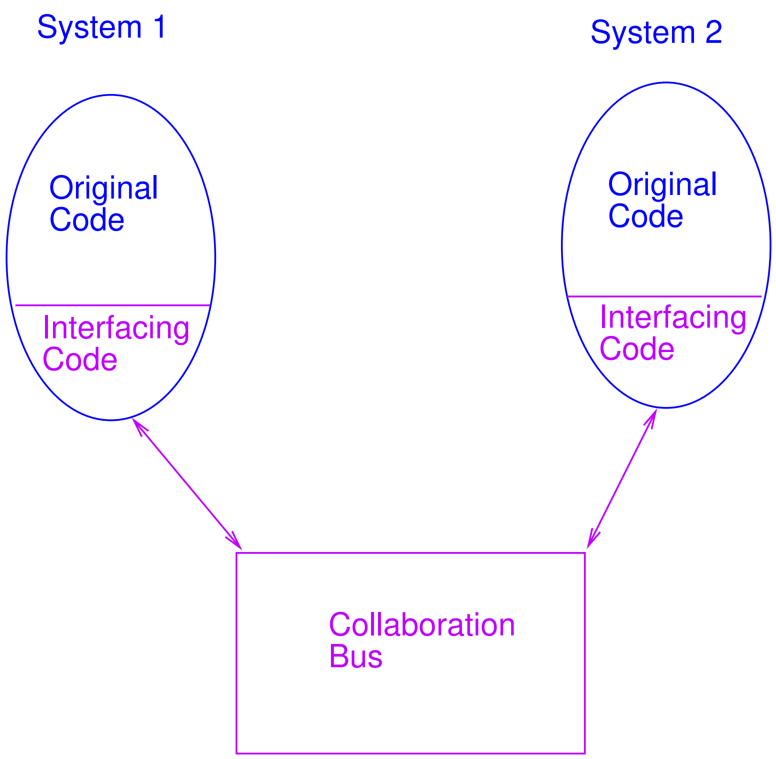
Relationship with other Bus Software



Relationship with other Collaborative Software



Requirements



Generality

Semantics Preservation

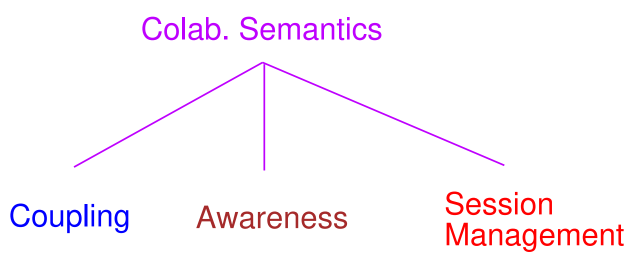
Security

Automation

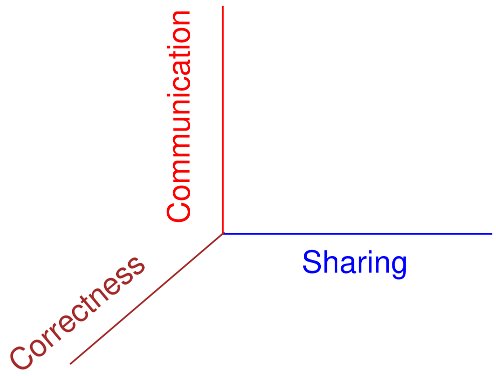
Efficiency

Reference Model

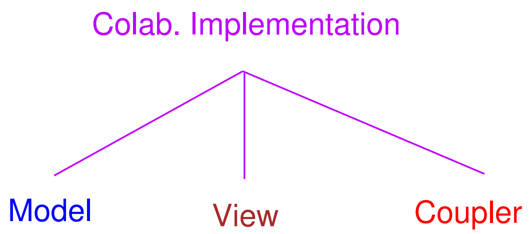
Semantics Decomposition



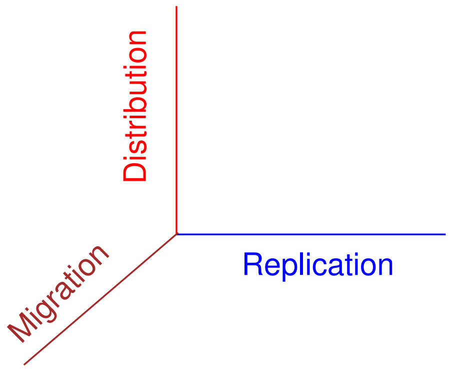
Semantics Design Space



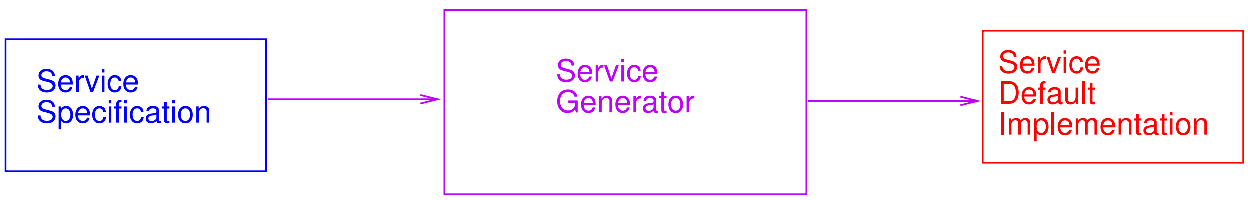
Implementation Decomposition



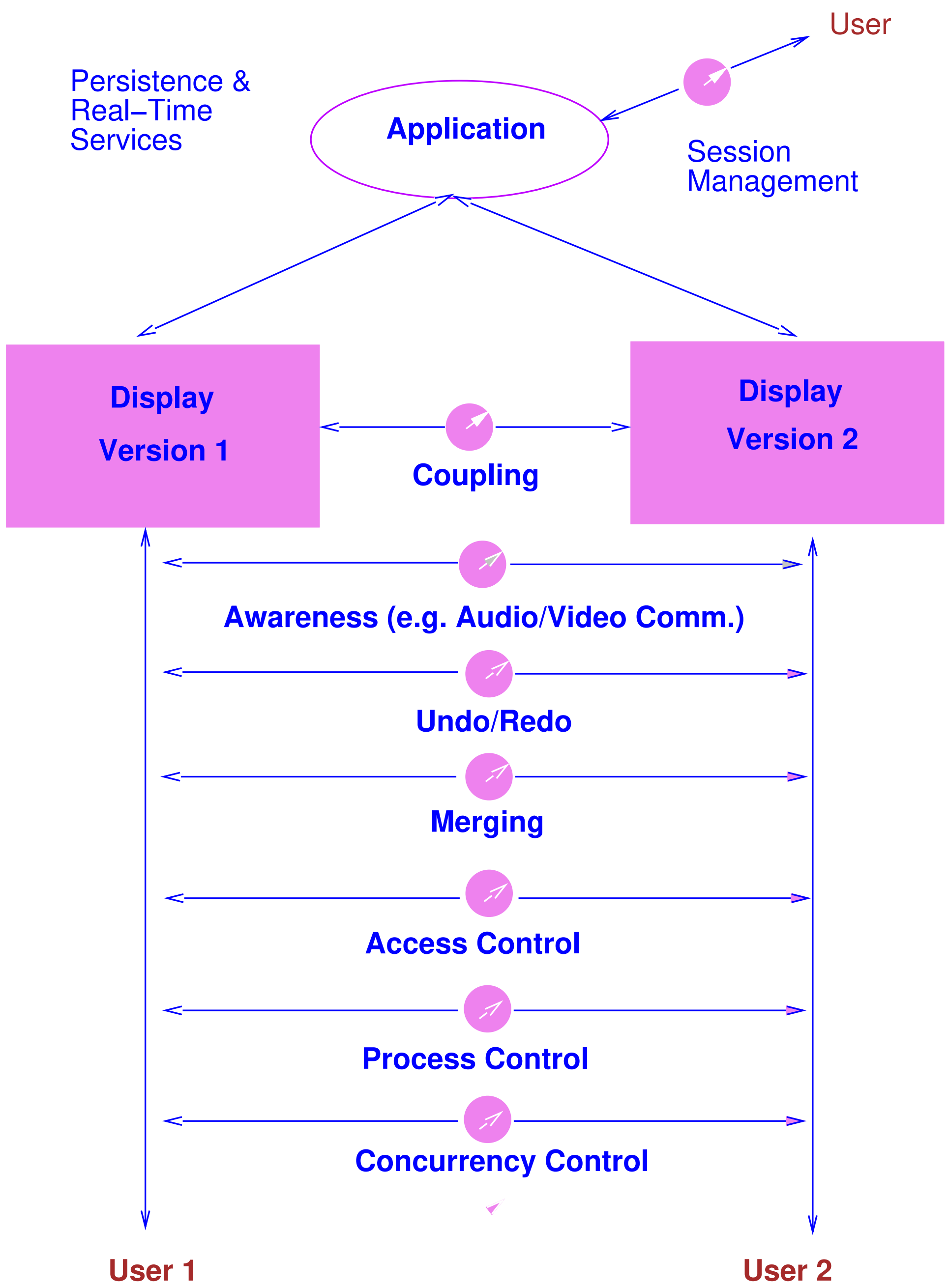
Implementation Design Space



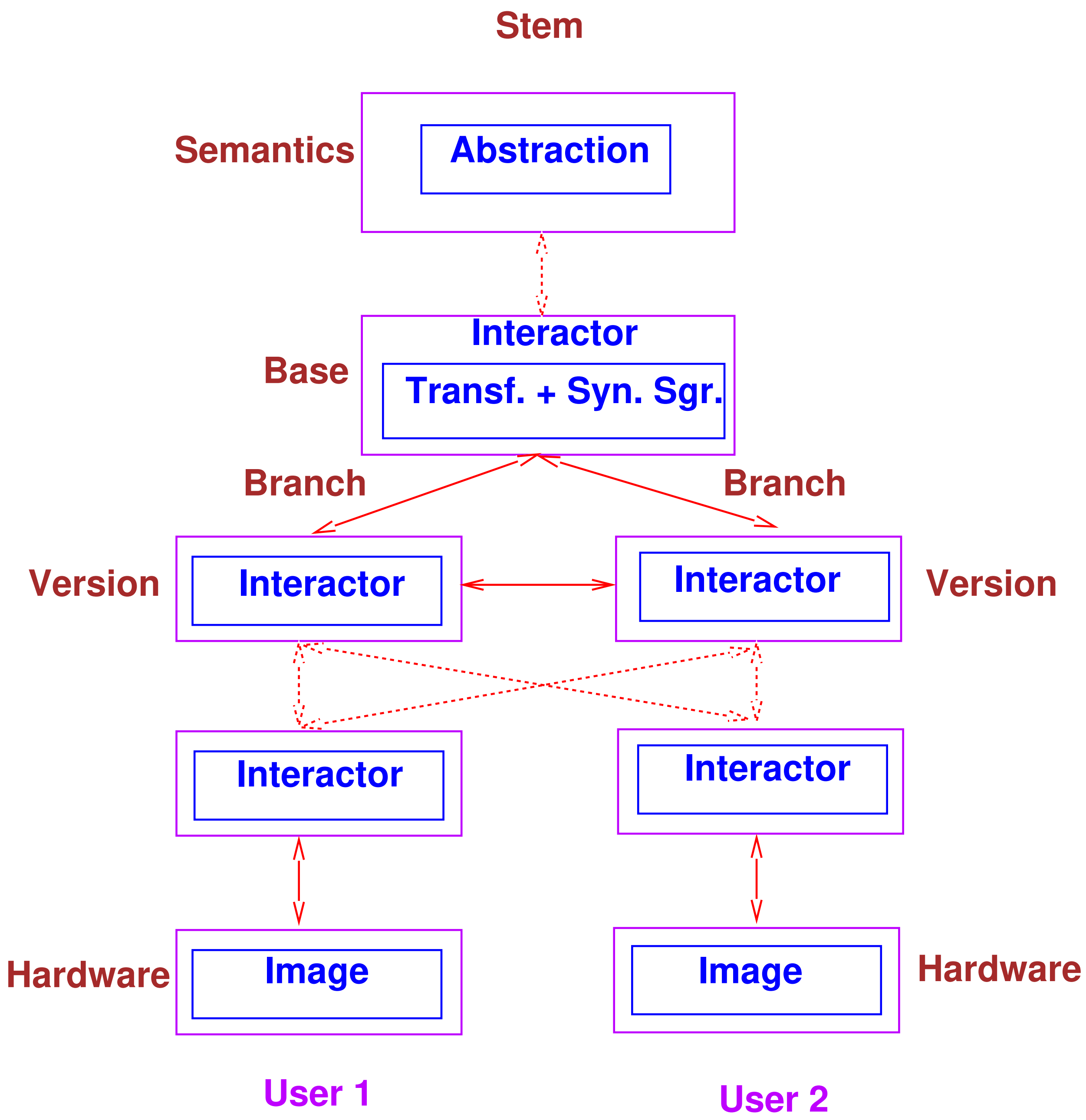
General Default Implementation



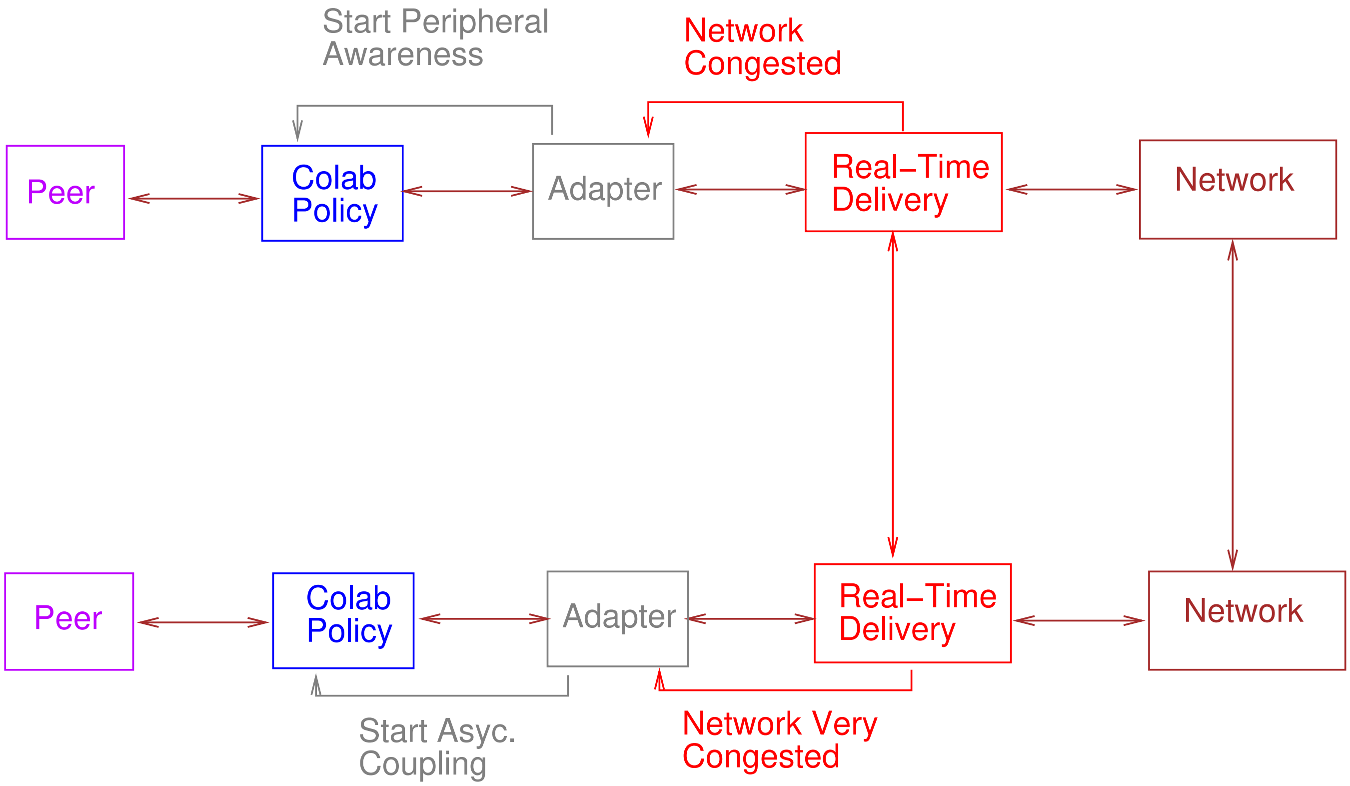
Semantics Model



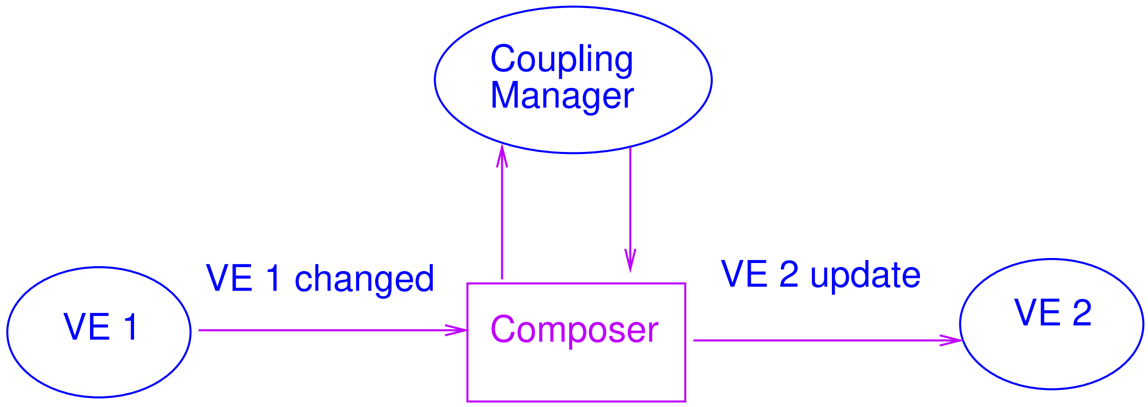
Implementation Model

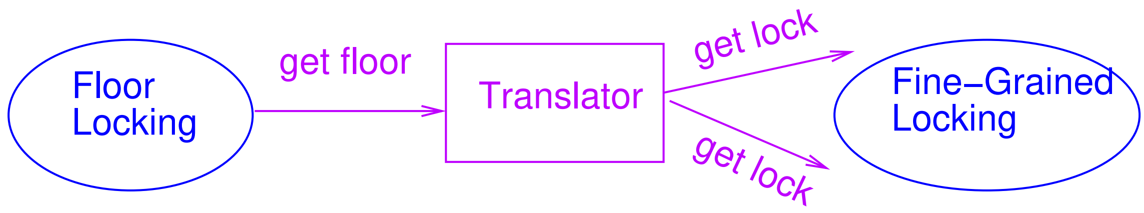


Peer-to-Peer Communication

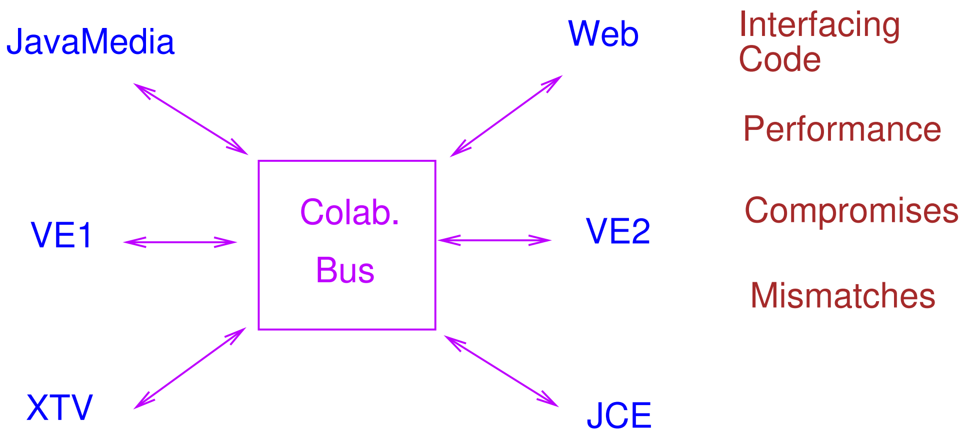


Intra- and Inter- Service Interoperability

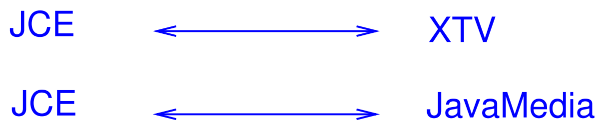




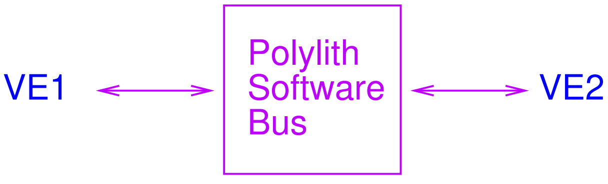
Experiments and Evaluation



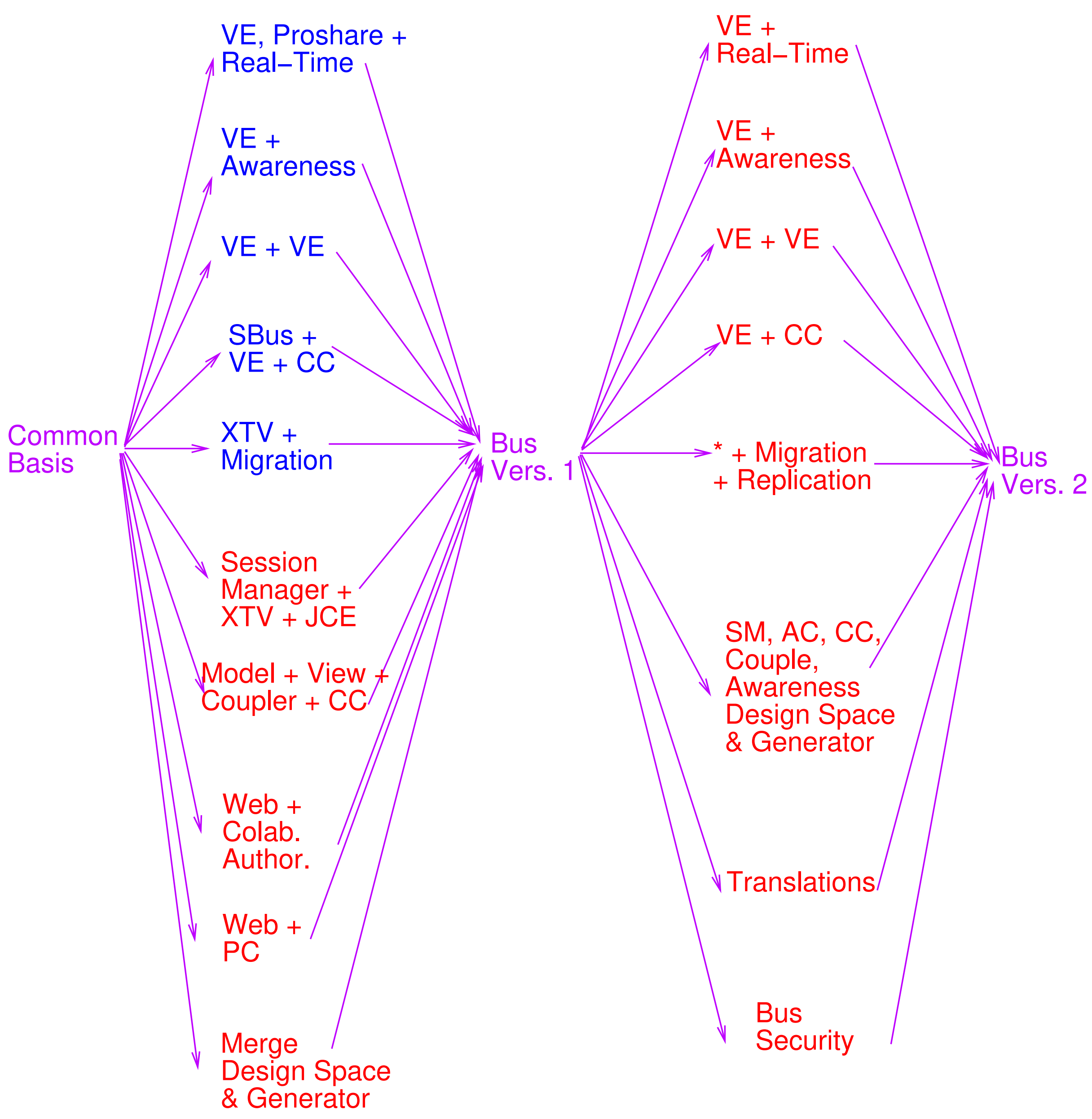
Comparison with Direct Interconnection



Comparison with Lower–Level Bus Interconnection



Project Steps



Milestones & Schedule

Identification of Bus Clients & Interoperation Scenarios	2/97
Design of Bus Version 1: Support for Session Management, Concurrency Control, Coupling, & Persistence	10/97
Implementation of Bus Version 1	4/98
Interconnection experiments with Version 1	
Design of Bus Version 2: Version 1 extension with support for VE, Awareness, Real–Time, Replication/Migration, Access Control and Security	10/98
Implementation of Bus Version 2	4/99
Interconnection experiments with Bus Version 2	8/99