Interoperability and the Need for Standards in the DCI Roadmap Vision

Sergio Andreozzi (EGI.eu)

EGI Technical Forum, Amsterdam

15 Sep 2010

e-infrastructure

Outline

- DCI Roadmap and Vision
- Interoperability and Standards
- EGI-InSPIRE Standards Roadmap
- Standards for DCIs

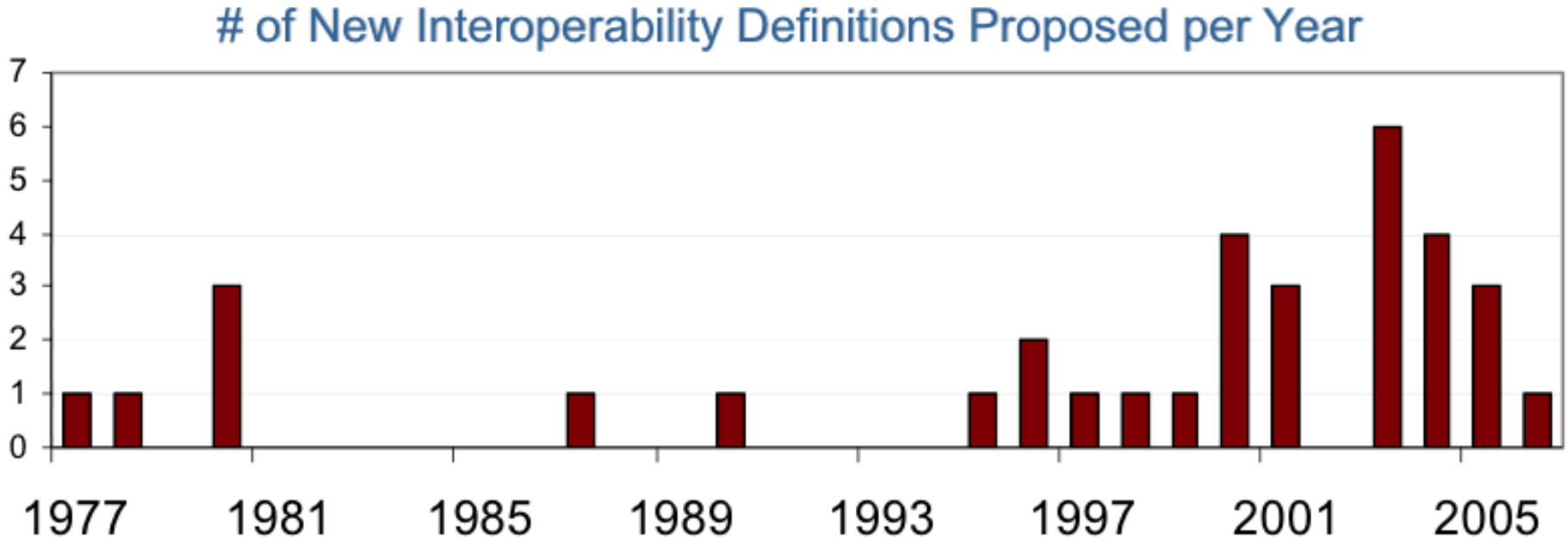
DCI Roadmap Vision

- DCI related EU-funded projects
- Shared roadmap
- DCI provision
- Serving Virtual Research Communities (VRCs)

Interoperability: considerations

- Intrinsic requirement when crossing systems/ organizations boundaries
- Need for:
  - reaching compromise
  - reworking/rebuilding systems
- Technical and non-technical aspects
- Plan, fund, implement, measure, benefit

Interoperability Definition(s)

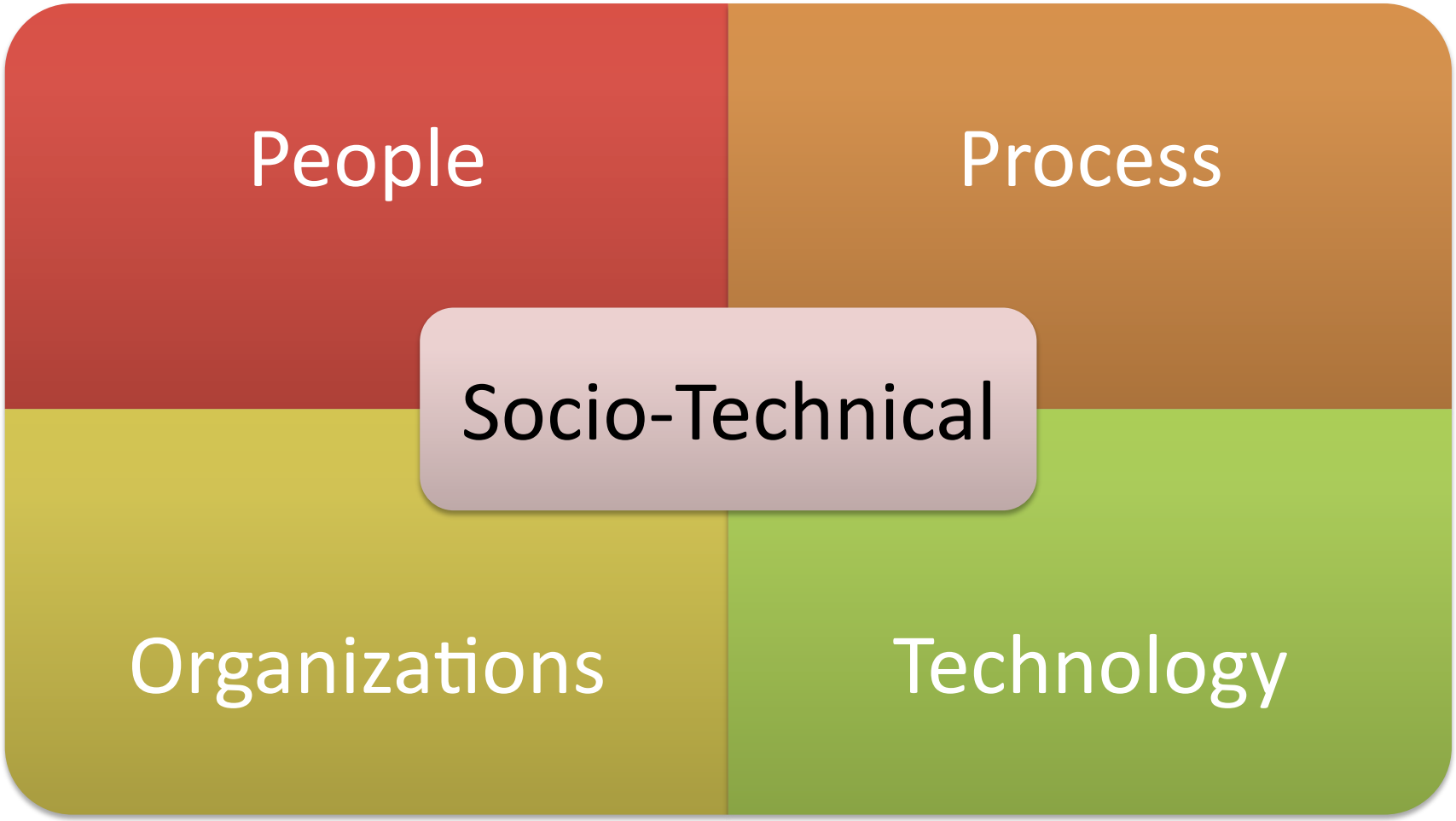


Interoperability: a broad definition

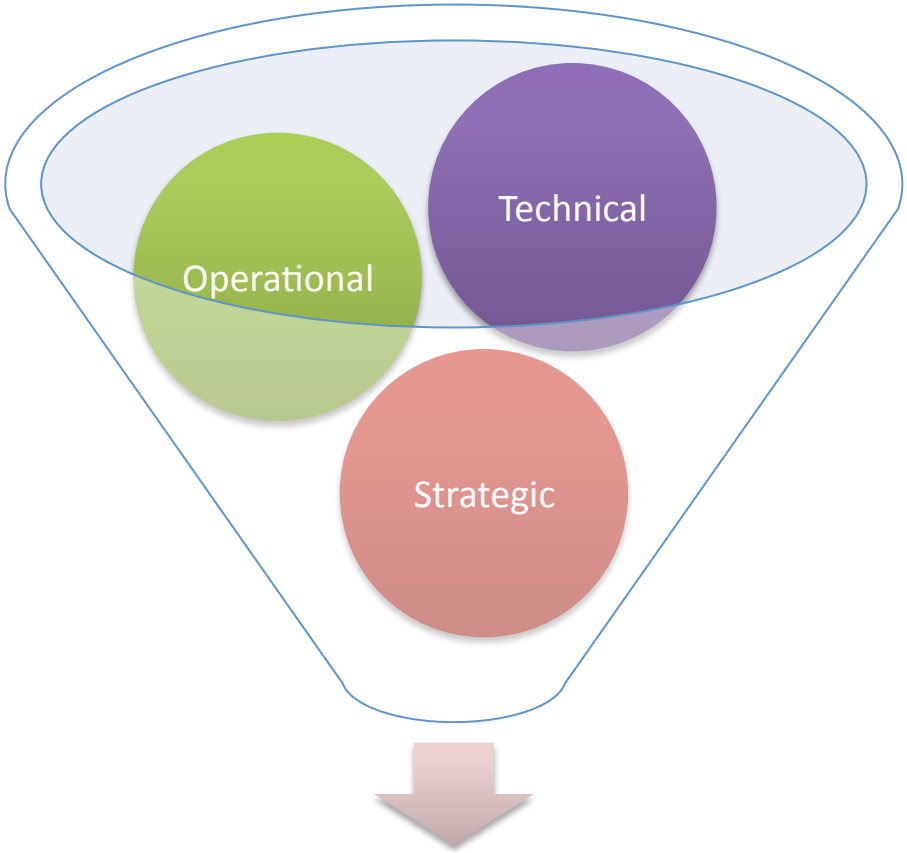
- The ability of systems, units and forces
  - to provide services to and accept services from other systems, units or forces
  - and to use the services so exchanged
  - to enable them to operate effectively together

Source: ***US DoD 1977***

Interoperability
a socio-technical requirement



Interoperability Types



Interoperability

How to Promote

Standard: definition

- document, established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context

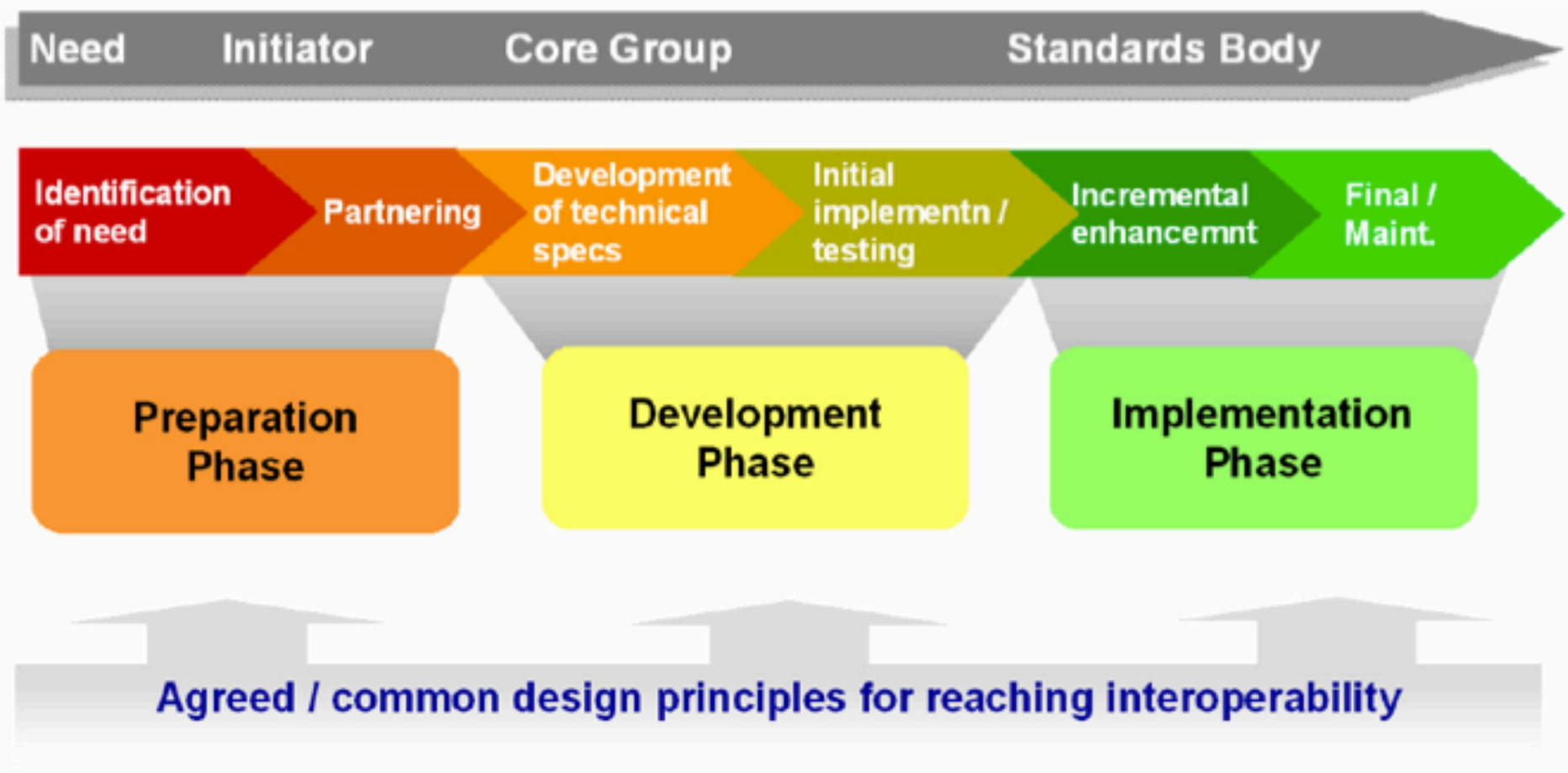
When a Standard is Open

- **Control**: the evolution of the specification with transparent process open to all interested contributors
- **Completeness:** the technical requirements of the solution should be specified completely enough to guarantee full interoperability
- **Compliance:** substantial standard-compliant offering promoted by proponents of the standard
- **Cost**: fair reasonable and non-discriminatory access is provided to intellectual property unavoidably used in implementation of the standard

Technical Standards

- Service Interfaces
- Application Programming Interfaces (APIs)
- Message formats (syntax and semantics)

Development Process of Open Standards



Source: EICTA White paper on Interoperabilty and Standardisation, Nov 2006

Test, Prototype and Conformance

- Prototyping implementation and interoperability testing as part of the standard development process

- Conformance Requirements should be defined together with standards

EGI-InSPIRE Standards Roadmap

- Standards Roadmap Deliverable
  - Standard activities in the EGI space
  - Influenced by UMD roadmap
  - Due at month 5 (end of September)

DCI Capability vs. Standards

Capability	SDO	Standard	Phase
Information Discovery	OGF	GLUE 2.0	IMP
Information Discovery	IETF	LDAP 3	IMP
Compute Job	OGF	BES, JSDL, HPC-BP	IMP
Compute Job	OGF	PGI	DEV
Parallel Job		MPI 1.x and 2.x, OpenMP	IMP
Compute Job Scheduling	OGF	DCI-Federation	PRE
Storage Management	OGF	SRM	IMP
File Encryp/Decryp			
File Transfer	OGF	GridFTP	IMP
File Transfer Scheduling	OGF	DMI	
Database Access	OGF	WS-DAI	IMP
Workflow			

DCI Capability vs. Standards

Capability	SDO	Standard	Phase
Remote Instrumentation			
Authentication	IETF	PKI	IMP
Authentication	OASIS	SAML 2.x	IMP
Credential Management			
User Management			
Authorization	OASIS	SAML 2.x, XACML	IMP
Virtual Image Management	DMTF	OVF	
Virtual Machine Management	OGF	OCCI	
Messaging			
Monitoring			
Accounting	OGF	UR	DEV

Conclusion

- Interoperability:
  - Intrinsic requirement for DCIs
  - Not just a technical problem
  - Plan, fund, implement, measure, benefit
- Open standards are necessary, not sufficient
  - Test, prototype, conformance requirements
- Standards for DCIs
  - Need for an agreed common roadmap
  - Participate, prioritize, adopt

sergio.andreozzi@egi.eu