



***OSIRIS***  
***towards an **O**pen and **S**ustainable  
ICT **R**esearch **I**nfrastructure **S**trategy***

**Antonio Candiello, INFN**



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## Project summary

### *OSIRIS:*

*towards an Open and Sustainable ICT Research  
Infrastructure Strategy*

*Project Duration: 24+6 months (Jan 2010 - June 2012)*

*Project Budget: € 1,145,083*

*Project Funding: € 818,367*

*Call Identifier: FP7-ICT-2009-4*

*Activity Code: ICT-2009.9.3 : General Accompanying Measures*

*Project Type: CA*

*Project number: 248295*





## OSIRIS Partners

1. Interdisciplinair Instituut voor BreedBand Technologie vzw - IBBT	IBBT	B
2. Inst. voor de Aanmoediging van Innovatie door Wet. en Techn. in Vlaanderen	IWT	BE
3. Interuniversitair Micro-Elektronica Centrum VZW	IMEC	BE
4. Council for Scientific and Industrial Research	CSIR	ZA
5. CSEM Centre Suisse d'Electronique et de Microtechnique SA	CSEM	CH
6. Ministrstvo za Visoko Solstvo, Znanost in Tehnologijo	MHEST	SI
7. Stichting National Computerfaciliteiten	NCF	NL
8. Turkiye Bilimsel ve Teknolojik Arastirma Kurumu	TUBITAK	TR
9. University College Cork, National University of Ireland, Cork	TNI-UCC	IE
10. Matimop, Israeli Industry Center for Research & development	ISERD	IL
11. Istituto Nazionale di Fisica Nucleare	INFN	IT
12. Muszaki Fizikai es Anyagtudomany Kutatointezet	MFA	HU
13. Latvijas Universitates Matematikas un Informatikas Instituts	IMCS	LV
14. Ministry of Education and Science of the Republic of Latvia	IZM	LV
15. Akademie ved Ceske Republiky	AVCR	CZ
16. CESNET, Zajmove Sdruzeni Pravnickyh Osob	CESNET	CZ





## OSIRIS Project

- The main **aim** of the OSIRIS project initiative is to provide **structured information** and **models** for decision makers (European Commission, Member States, Associated Countries) who develop cross border public-public partnerships and who establish a **coordinated approach** to **future large scale investments** in transnational European ICT RIs.

- Pave the way to a **platform** for *continuous analysis and recommendations* on existing and future European ICT RIs.
- This will lead to:
  - Complementary or common **planning** of investments and investment policies in order to obtain **sustainable European ICT RIs**
  - **procedures, rules and management** mechanisms for **coordinated investments** in *large scale transnational ICT RI's in Europe*

- Provide an overview of the current **coordinating organizations** active in the field (e.g. eIRG, eIPF, ... )
- Provide an analysis of **relevant documents** produced (e.g. from EGI, Prace, Géant, ...)
- Provide an overview and **qualitative model** of the important subjects to be considered when setting-up and running an ICT RI. This includes: **Governance, Sustainability, Access Policy, Operational Principles**
- **Apply the qualitative model** to important examples of ICT research infrastructures (about 30 RI's)
- Provide a **more detailed analysis** of a representative set of ICT research infrastructures (**IMEC, EGI, PRACE, DANTE, LifeWatch, Cea-Leti**), based on in depth interviews with the key persons in the organization.
- Apply the qualitative model to Future Internet Research and Experimentation facilities (**FIRE**)
- Contribute to the concertation of Horizon 2020

- **networks** – technological architectures that allow the **high speed interconnection** of different ICT facilities;
- **facilities** – sites with **concentrated resources**, such as *computing* facilities (as in HPC centres or smaller DCI computing sites/nodes) or *storage* facilities as in scientific repositories, digital libraries and DCI storage sites/nodes;
- **instruments** – **scientific equipment** capable of creating (in particular, digital) data from experiments; these provide new scientific data sets or repositories;
- **testbeds** – **artificial environments** needed to conceptualise, set up and test new kinds of ICT/internet interactions between humans and things;
- **laboratories** – **plants** for test and production of new ICT physical devices.

- **networks** are the structural element underpinning the *Research **Network** Environment*; they also create the structure for the *Research **DCI** (grid & cloud) framework*;
- **facilities** are mainly a characteristic of **HPC**; at a smaller scale, they are constitutive elements also for DCIs and for *Research **Data** Infrastructures*;
- **instruments** are the target of the ***Remote Instruments** access model*, which is an ICT interface to instruments;
- **testbeds** are required in order to outline the ***Future Internet** vision*, which is first and foremost a standardization effort;
- **laboratories** are the principal objects around which the main structure of the ***MNT** (micro & nanotechnology) collaboration framework* is built.



- The field of **ICT Research Infrastructures** is considerable and diversified, with *widely varying collaboration models*. In some cases there are functional *similarities* between them (for instance between network & DCIs), but there are also significant *differences* (for instance between the network integration model and the multi-facilities MNT model of collaboration).
- Also, the *maturity* of collaboration models (integration & coordination, funding, users, industry involvement) is not comparable between different RIs, as in some domains there are already production-level infrastructures operational with *well-defined governance* (e.g., networks, DCIs), whilst in some other domains the picture is *more fragmented* (e.g., data infrastructures) or even *still not defined* (Future Internet).
- A high-level list of **seven** relevant ICT Research Infrastructures has been surveyed in this document, outlining for each domain the relevant projects, the governance models and the challenges experienced. A *finer granularity inventory* of per-domain PA/NC-RIs collaboration models surveyed **thirty-one representative cases**.

1. European and National **Network** RI environment,
  - Géant/Dante/Terena & NRENS
2. (Grid & Cloud) European and National Research **DCI framework**,
  - EGI(InSPIRE&.eu), NGLs, mware providers, VRCs
3. (HPC) *high end / performance* **parallel computing** RI ecosystem,
  - PRACE, Tier-0 & Tier-1 HPC National Centres
4. **MNT** collaboration *facilities interchange* RI framework,
  - Sinano, HTA, MNTEurope, ...
  - IMEC, CEA Carnot Institutes, Fraunhofers, CSEM, ...
5. Research **Data Infrastructure framework**,
6. **Remote Instruments** access model,
7. **Future Internet** (FI) service-oriented vision.



# Domains & Cases

## Inventory of ICT RIs → Deliverable D3.2

See: <http://www.osiris-online.eu/Public.html>

D3.2 **Part I** Inventory of ICT RIs, organized in seven domains  
 D3.2 **Part II** selected (31) cases

Cases selected:

### ICT National Initiatives

(i.e., NRENs, NGIs, HPC National Centres, MNT National Centres / Initiatives):  
 C01-04 (NRENs), C06-08 (NGIs), C15-16 (HPC NCs), C18-19 (MNT NCs/NIs);

### European ICT RIs and Collaborations:

C05 (GÉANT), C09 (EGI), C17 (PRACE), C20-23 (MNT inter-centre collaborations),  
 C24-25 (OpenAIRE & EUDAT);

### (ICT RI) R&D-related Projects:

C10-12 (DCI middleware), C29-30 (IE/GMES), C31 (FIRE);

### Domain-related Community Networks:

C13-14 (VRCs), C26-28 (ESFRI-related).

ICT RI Environment	Cod.	PA/NC Research Infrastructure Case	Class
(E1) European and National Network RI environment	(C01)	SURFact: Dutch NREN	NREN
	(C02)	Belnet: Belgian NREN	NREN
	(C03)	SUNET: Swedish NREN	NREN
	(C04)	CESNET: Czech NREN	NREN
	(C05)	GÉANT Project Collaboration	EU ICT RI/CoI
(E2) (Grid & Cloud) European and National Research DCI framework	(C06)	EGI: Italian NGI	NGI
	(C07)	BEgrid: Belgian NGI	NGI
	(C08)	BiG Grid: Dutch NGI	NGI
	(C09)	EGI.eu Organization and EGI-InSPIRE Project collaborations	EU ICT RI/CoI
	(C10)	The EMI Grid Middleware Provider collaboration	R&D
	(C11)	The Stratuslab OS Cloud Middleware Provider Collaboration	R&D
	(C12)	The Venus-C Public/Private Cloud M.Ware Provider Collaboration	R&D
	(C13)	The WLCG HEP Physics VRC	VRC
	(C14)	The WeNMR VRC	VRC
	(E3) (HPC) high end / performance parallel computing RI ecosystem	(C15)	The Netherlands Computing Facilities Foundation (NCF)
(C16)		The CSC: Finland HPC Centre	HPC NC
(C17)		The PRACE/DEISA HPC Centres Collaboration	EU ICT RI/CoI
(E4) MNT collaboration facilities interchange RI framework	(C18)	The Irish Tyndall National Research Centre	MNT NC
	(C19)	The Belgian IMEC National Research Centre	MNT NC
	(C20)	The EPIXnet Network of Excellence	EU ICT RI/CoI
	(C21)	The MNT Europe Project Collaboration	EU ICT RI/CoI
	(C22)	The Simano Institute Collaboration	EU ICT RI/CoI
	(C23)	The MNT Heterogeneous Technology Alliance (HTA)	EU ICT RI/CoI
(E5) Research Data Infrastructure framework	(C24)	The Open Access Infrastructure for Research in Europe (OpenAIRE)	EU ICT RI/CoI
	(C25)	The EUDAT (EUropean DATa) Project	EU ICT RI/CoI
	(C26)	The Digital Cultural Heritage Network DC.NET	ESFRI
	(C27)	DARIAH ESFRI	ESFRI
	(C28)	Lifewatch – Italian National Network	ESFRI
(E6) Remote Instruments access model	(C29)	The Instrument Element (IE) Infrastructure Access Model	R&D
	(C30)	The Global Monitoring Access Model (Cyclops)	R&D
(E7) Future Internet (FI) service-oriented vision	(C31)	The FP7 FIRE Initiative	R&D



## Interviews → Deliverable D3.3

Out of the 30+ cases, 6 were selected for face-to-face interviews and in-depth information

### *Selected cases:*

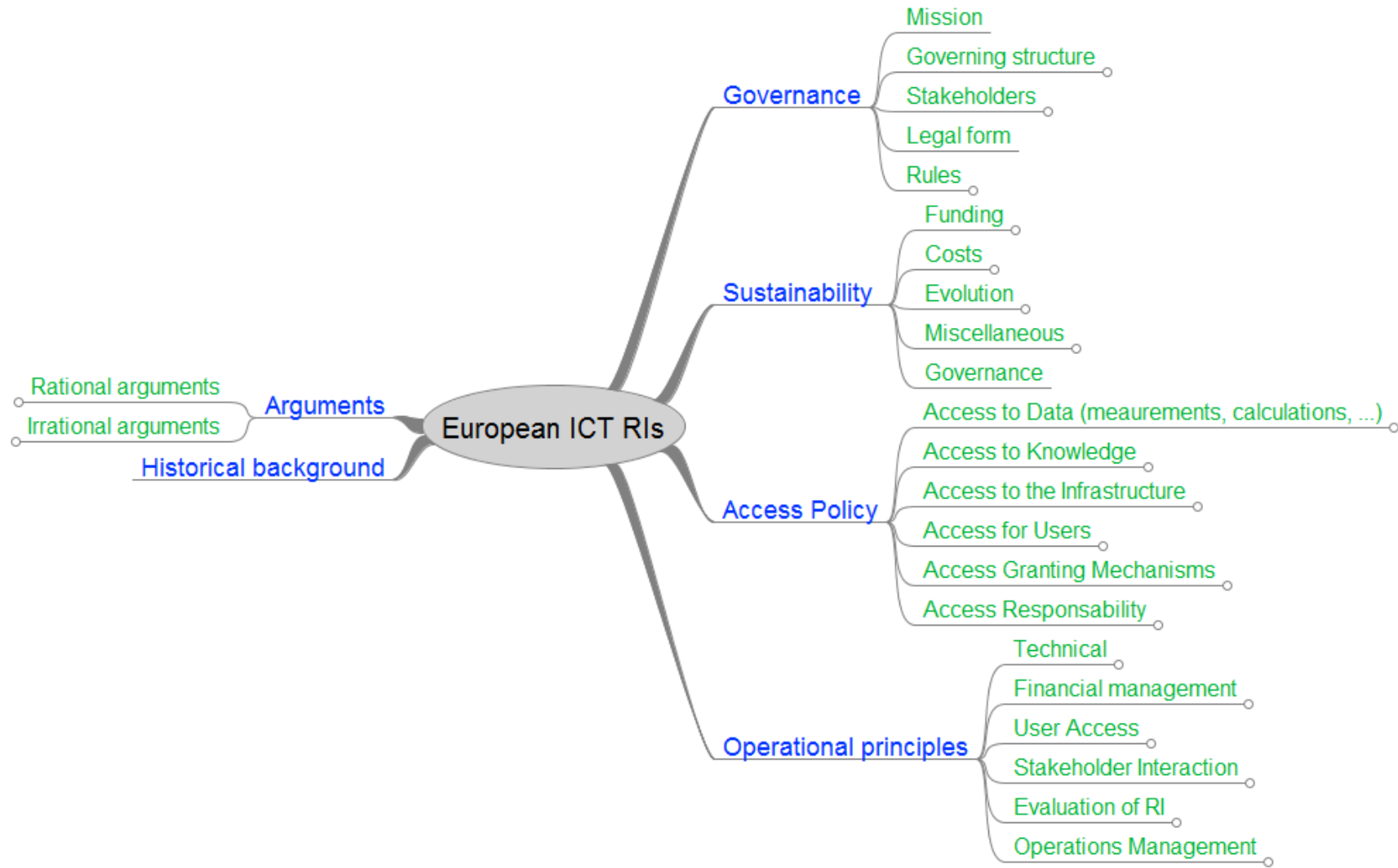
- *IMEC: Gilbert Declerck, Marc Van Rossum (Leuven)*
- *PRACE: Sergi Girona (Barcelona)*
- *EGI: Steve Newhouse (Lyon)*
- *LIFEWATCH: Wouter Los, Alex Hardisty (Amsterdam)*
- *DANTE/GEANT: Dai Davis (Cambridge)*
- *CEA/LETI: David Holden, André Rouzad (Grenoble)*

*Each interview on-site, duration : around 4 hours*

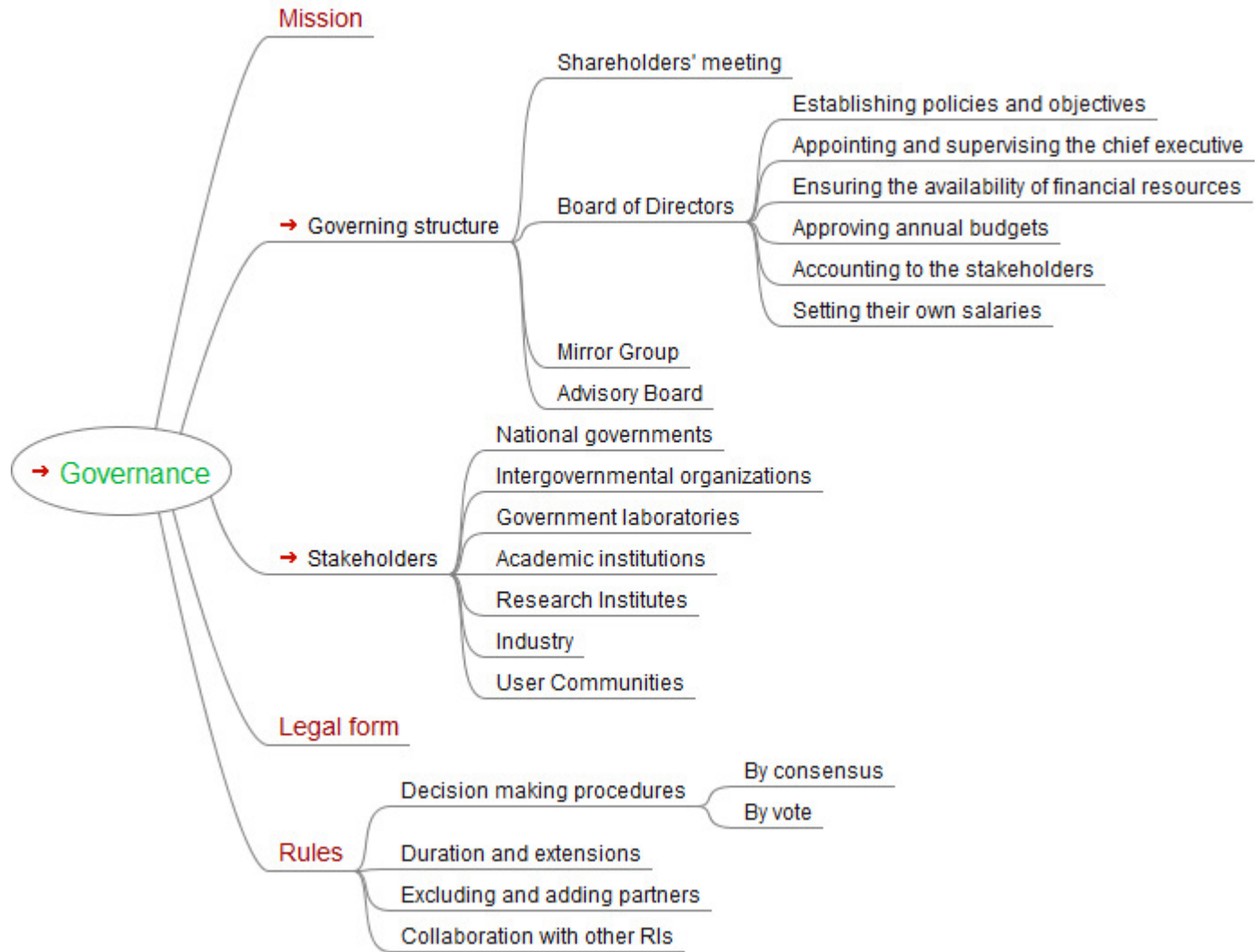
*Detailed discussion (30+ questions) on:*

*Governance, Policy, Sustainability, Operations*

- Mindmap analysis & modeling → Deliverable D4.1
- A mind map is a **diagram** used to represent words, ideas, tasks, or other items linked to and arranged around a central key word or idea
- Mind maps are used to generate, **visualize**, **structure**, and **classify** ideas, and as an aid to studying and organizing information, solving problems, making decisions, and writing
- The elements of a given mind map are arranged intuitively according to the importance of the concepts, and are classified into **groupings**, **branches**, or **areas**, with the goal of representing semantic or other connections between portions of information
- Mind maps have been very useful during discussions within the consortium and are considered a good means of representing the **different aspects** of the European ICT RIs.
- The mindmap approach is at the basis of our analysis & modeling methodology



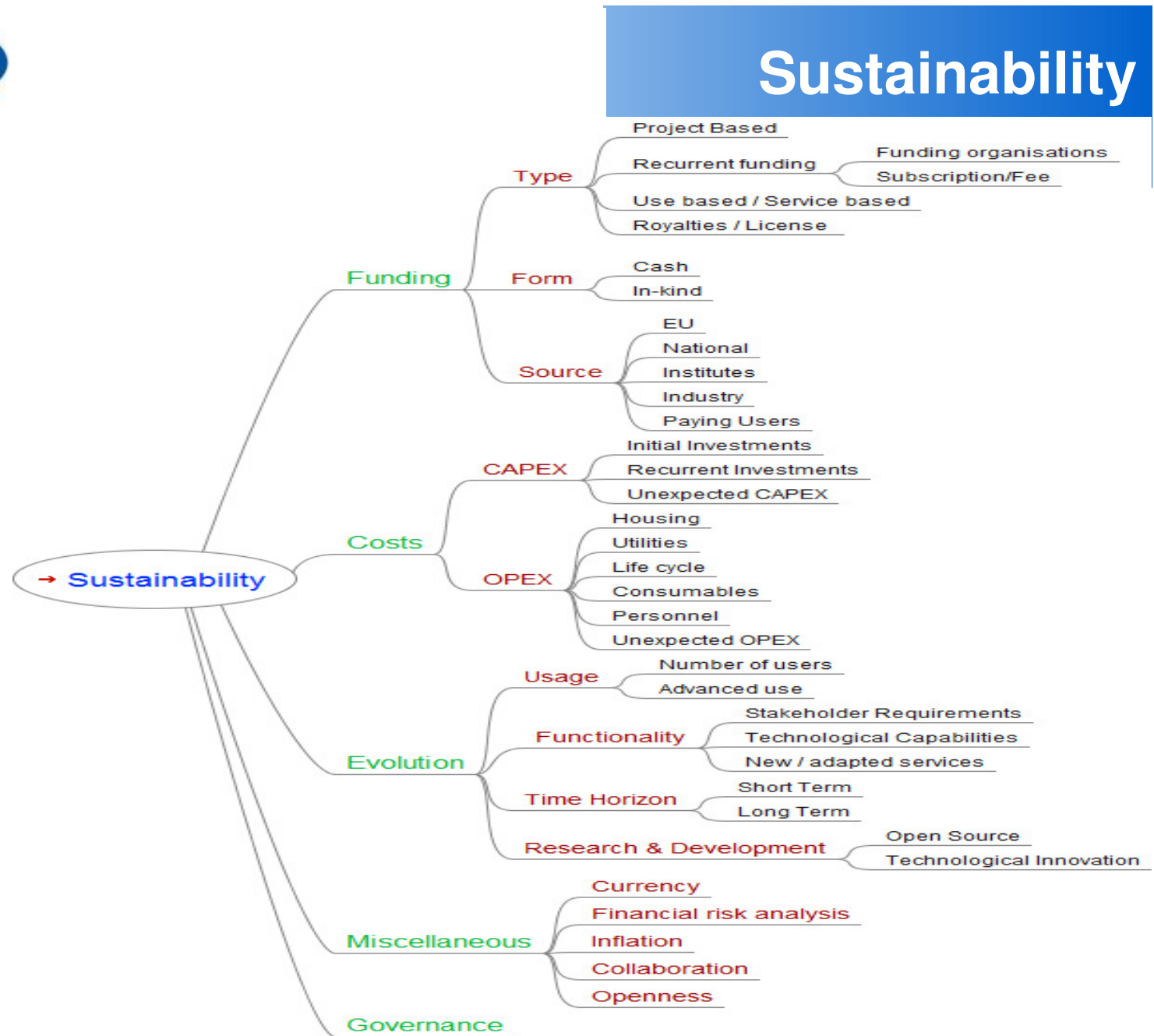
the mindmap





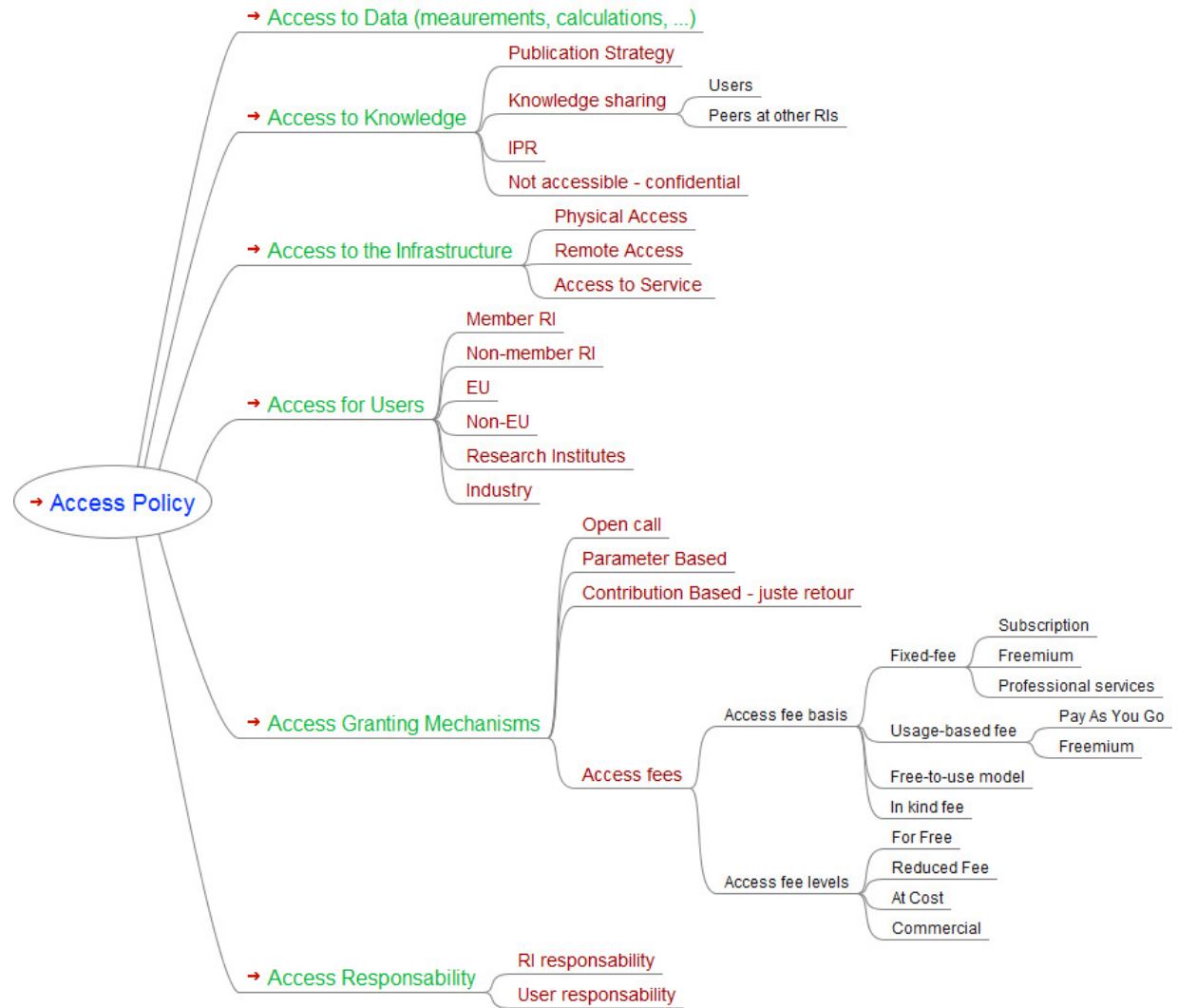
# Sustainability

the mindmap





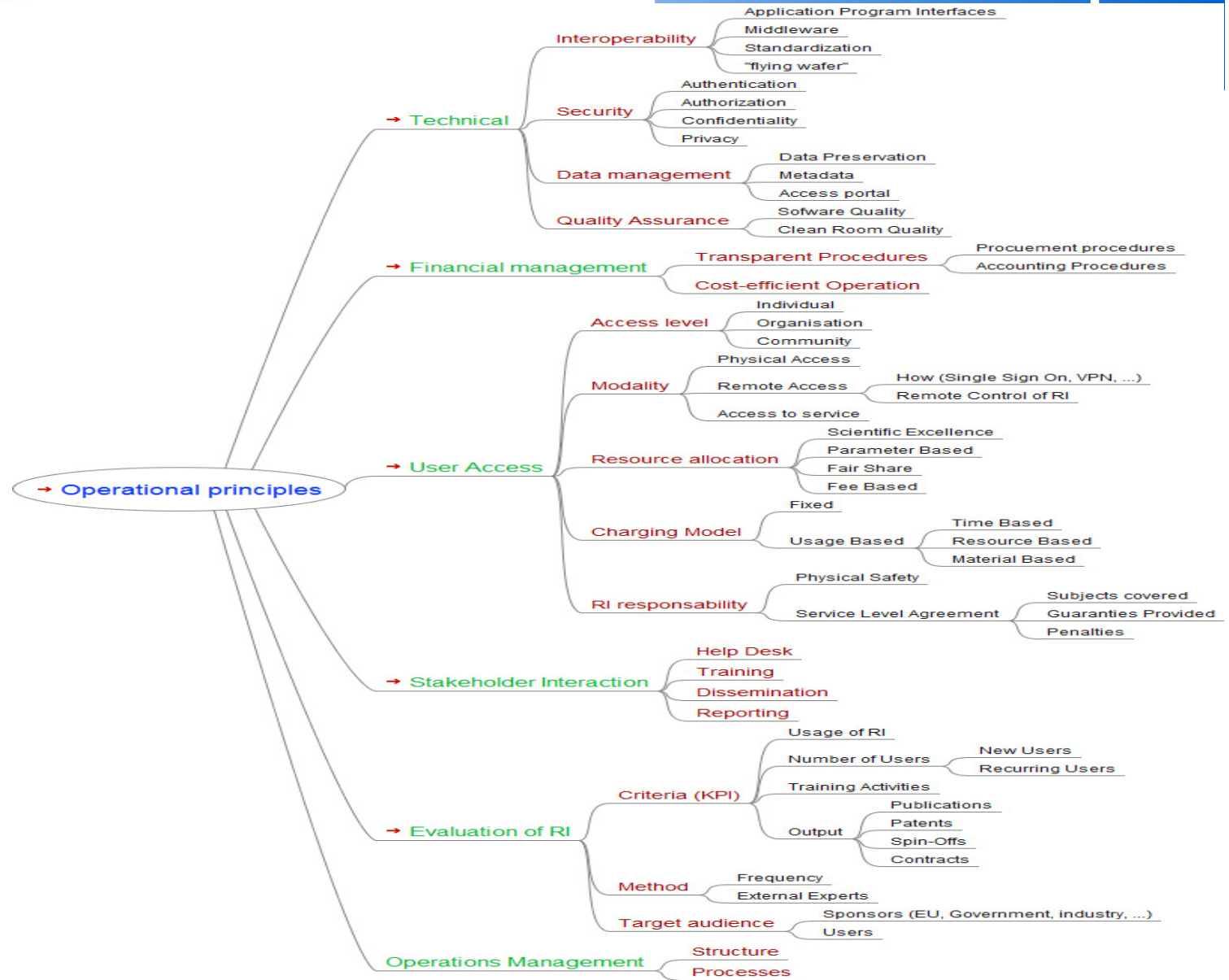
the mindmap





# Operational Principles

the mindmap



## Mapping of ICT RIs on mindmap → Deliverable D3.4

All 30+ cases mapped on the OSIRIS modeling structure

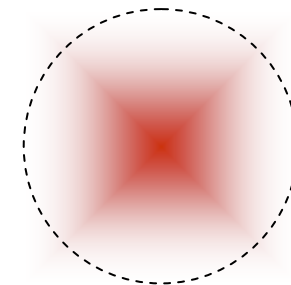
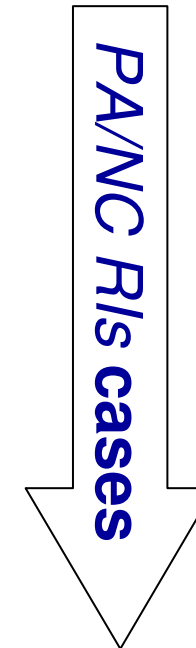
*Structure:*

- “checklist-like” branches

[X] [ ] [ ]

- “text-like” branches

*description*



**D3.4**



***OSIRIS [www.osiris-online.eu](http://www.osiris-online.eu)  
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**Thanks for the attention !**



**Antonio Candiello, INFN**

**[candiello@pd.infn.it](mailto:candiello@pd.infn.it)**

