

Overview of the CRISP proposal



- Context
- Work Package Structure
- IT Work Packages

Origin of the CRISP proposal

- Call publication: End of July 2010 – deadline towards end of 2010
- 4 topics concerning clusters of ESFRI projects in:
 - Social Sciences and Humanities
 - Life sciences
 - Environmental Sciences
 - Physics, Astronomy and Analytical Facilities
- Budget 30 M€ (total for the 4 topics)
- **One** proposal per topic, max 15 M€ per proposal



PaN-Data and the ESFRI roadmap?

Aim of the Call:

To support the **implementation phase** (i.e. the actual construction) of the **ESFRI projects** through a **targeted approach** to **clusters of ESFRI projects** in the **same field**.

- to exploit synergies, to optimise technological implementation, and to ensure a larger harmonisation and interoperability between ESFRI infrastructures.
- Implementation phase should include all appropriate coordination activities and technical work
 - to implement common solutions on common components like **meta-data framework, registries, single-sign on systems and permanent identifiers, standards, ...accelerator elements, detectors, radiation and safety components,**



CRISP – Cluster of Research Infrastructures for Synergies in Physics

Coordination – Michael Krisch (ESRF), participating laboratories:

No.	Short Name	Participant Organisation Name	Country
1	ESRF (Coor.)	European Synchrotron Radiation Facility	France
2	DESY	Deutsches Elektronen Synchrotron Hambur	Germany
3	CERN	European Organisation for Nuclear Research	Switzerland
4	ESS	European Spallation Source	Sweden
5	GANIL	Grand Accélérateur National d'Ions Lourds	France
6	GSI	GSI Helmholtzzentrum für Schwerionenforschung GmbH	Germany
7	ILL	Institut Max von Laue – Paul Langevin	France
8	E-XFEL	European X-Ray Free-Electron Laser Facility GmbH	Germany
9	ROMA1	Universita degli studi di Roma la Sapienza	Italy
10	FORTH	Foundation for Research & Technology Hellas	Greece
11	IST	Instituto Superior Tecnico Lisbon	Portugal
12	INFN	Instituto Nazionale di Fisica Nucleare	Italy
13	MTA SZTAKI	Magyar Tudomanyos Akademia Szamitastechnikai es Automatizalasi Kutato Intezet	Hungary
14	IFIN-HH	National Institute of Physics and Nuclear Engineering	Romania
15	UOXF.DB	Oxford University	United Kingdom
16	PSI	Paul Scherrer Institute	Switzerland

Main CRISP topics

Four main topics:

- Accelerators
- Instrumentation & Experiments
- Detectors & Data Acquisition
- IT & Data Management

	ELI	ESRFUP	ESS	EuroFEL	FAIR	ILC-HiGrade	ILL 20/20	SKA	SLHC	SPIRAL2	XFEL
Accelerators	X	X	X	X	X	X			X	X	X
Instr & Exp	X	X	X	X	X		X			X	X
Det & DAQ	X	X	X	X	X		X	X	X	X	X
IT & DM	X	X	X	X	X	X	X	X	X	X	X

CRISP Work Packages

WP	Title	Lead	PMs	Total Cost	EC contrib
1	Management	ESRF	45	619 500	619 500
2	Dissemination & Industry	ILL	18	490 670	342 000
3	Accelerators	GANIL, XFEL, GSI, ROMA1, ESRF	791	5 583 290	4 187 200
4	Instruments & Experiments	XFEL, GSI, ILL, ILL	550	3 936 670	2 952 500
5	Detectors & Data Acquisition	ESRF, CERN, GANIL, ILL	511	3 333 340	2 500 000
6	IT & Data Management	PSI, ILL, XFEL, CERN	444	3 706 040	2 690 000
		Total	2 349	17 669 510	13 292 200

A 10% cut has been applied, bringing the EC contribution down to 12 M€

- WP3A – Ion source prototype and beam diagnostics for SPIRAL2 and FAIR
 - WP3B – Access to SRF test infrastructures, quality assessment during SRF cavity production
 - WP3C – Fast ramped superconducting magnets
 - WP3D – Novel compact particle sources
 - WP3E – Solid State Amplifiers using cavity combiners
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- WP4A – Time resolved studies, pump-probe experiments at high repetition rates
 - WP4B – Tools for radioactive nuclear beam environments
 - WP4C – Common experimental approach for biological scattering with neutrons and X-rays
 - WP4D – Enhancement of neutron beams
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- WP5A – High-throughput detector data streaming
 - WP5B – CO₂ cooling of detectors
 - WP5C – Advanced electronics and software for neutron and gamma-ray detectors
 - WP5D – Large-area thermal neutron detectors using ¹⁰B films as an alternative to ³He

CRISP IT Work Package(s)

WP	Title	Lead	PMs	Total Cost	EC contrib
6A	Common User Identity System	PSI	85	747 540	550 000
6B	Metadata Management & Data Continuum	ILL	113	971 830	650 000
6C	High-speed Data Recording	XFEL	114	800 000	600 000
6D	Distributed Data Infrastructure (Cloud)	CERN	132	1 186 670	890 000
		Total	444	3 706 040	2 690 000

CRISP IT Work Package 6

WP	PSI	ESRF	ESS	GSI	ILL	XFEL	CERN	DESY	UOXF	GANIL	MTA-SZTAKI
6A	30	8	8	22	8	9					
6B		48			45		14	6			
6C		12	8		2	36		19	36	1	
6D				27			38	19	36		12
Tot.	30	68	16	49	55	45	52	44	72	1	12

WP1 + WP2 are Coordination

WP3 + WP4 are RTD

Objectives: Develop + deploy a **pan-European AAI for remote access, remote experiments, data, and IT resources**

- T1** Review and document existing AAI approaches and future requests of participating partners. Identification of cooperation and harmonisation possibilities with related projects. Propose architecture of an AAI concept for this community
- T2** Workshop with project and facility authentication and authorisation experts. Experts from academic and commercial activities are invited. Revise project based on feedback from the workshop. Develop final architecture document
- T3** **Prototype solution for an AAI system.** Provide possibilities to test this solution
- T4** Workshop with project and facility experts, where the solution is presented and discussed. Presentation and decision of the future deployment strategy. Deployment of the defined solution at the partner facilities

Deliverables

- D6A.1** AAI Architecture Document (M 9)
- D6A.2** AAI Prototype Solution (M 23)



Objectives: Implement metadata management and metadata mining services, establish an environment permitting a data continuum from raw data to publications.

- T1 Evaluate and adapt metadata catalogues according to the RIs requirements;
- T2 Prototype of data mining on metadata services;
- T3 Deploy and integrate metadata catalogues at each participating institute;
- T4 Identify the persistent identifier system with best fits the needs of the partners;
- T5 Elaborate data publication process satisfying data policies;
- T6 **Implement persistent identifier technology;**
- T7 Cooperate with major publishers to ensure that publications issued from data generated at the facilities, provide reference to the experimental data sets.



Deliverables

- D6B.1 Metadata Catalogue Implementation and Deployment Report (M36)
- D6B.2 Data Continuum Implementation and Deployment Report (M36)

Objectives: Provide solutions for high-speed data recording to permanent storage and archive, optimise and secure access to data via standard protocols for the RIs

- T1** Gather requirements and use cases. Review available technologies, select tools, and investigate their usability for the defined use cases
- T2** Collect requirements for data protection and understand their implications for high-speed data recording and data access. Evaluate existing data-protection schemes, including simple and advanced access-control models (i.e. NFSv4 and POSIX ACLs).
- T3** Define and select use case applications. Evaluate usability of standard access protocols, such as NFS4.1 (pNFS), as well as implementation and integration issues with storage and computing infrastructures. Identify possible improvements and optimisations. Define data-access architecture.
- T4** **Implement prototype system** for selected data-protection and data-access models. Re-evaluate and refine system architecture. Improve implementation. Deploy prototype system and demonstrate its functionality.

Deliverables

D6C.1 Report on Prototype System and Future Work (M36)



Objectives: Analyse existing **distributed data infrastructures. Plan and experiment their evolution according to the needs of the RIs**

T1 Management of the IT WPs by CERN

T2 Work with network providers to produce a roadmap for networking according to the needs of the RIs

T3 Analyze needs of the RIs for data management services and tools. **Identify, develop, and deploy prototype services and tools**. Work with e-infrastructure projects to ensure a coherent strategy.

T4 Follow evolution of grid based e-infrastructures. Identify commonalities and common use cases for future production distributed data infrastructures.

Deliverables

D6D.1 Distributed Data Infrastructures Development Plan (M 18)

D6D.2 Distributed Data Infrastructures Evolution Roadmap (M 30)

D6D.3-8 Six-monthly Topic Meetings (M 6,12,18,24,30,36)

Overlap Pan-Data ODI / CRISP

Evidently PaN-Data ODI and CRISP have common IT objectives:

- AAI (CRISP WP6A, PaN-Data ODI WP3)
- Metadata handling (CRISP WP6B, PaN-Data ODI WP4)
- Data handling/data continuum (CRISP WP6B, PaN-Data WP7,WP8)

But:

PaN-Data ODI and CRISP are not targeting the same communities

Risk:

Solutions which are not well suited for either of the communities



Thank you for your attention

