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Social Sciences and Humanities



CLARIN – Common Language Resources and Technology Infrastructure

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CLARIN's objective is to make existing digital language data collections and advanced tools accessible and available to the social sciences and humanities research community. This should not be restricted to resources that happen to reside in Europe, and CLARIN will aim at making collaboration agreements about access to language data repositories, infrastructures and services with centres and infrastructures outside Europe. Countries that already have a national infrastructure in place that is compatible with CLARIN requirements can join CLARIN ERIC as full members.



DARIAH – Digital Research Infrastructure for the Arts and Humanities

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»Enabling digital humanities and arts research, internationally

DARIAH, the Digital Research Infrastructure for the Arts and Humanities is an international research infrastructure. It aims to enhance and support digitally - enabled research across the humanities and arts. DARIAH will develop, maintain and operate an infrastructure to support researchers in using ICT- based research practices. As a Research Infrastructure on the European Strategy Forum on Research Infrastructures (ESFRI) Roadmap, DARIAH is currently being established as a European Research Infrastructure Consortium (ERIC). This legal framework, with initially 10 European countries as Founding Members, will facilitate the longterm sustainability of DARIAH. DARIAH will operate through its European-wide network of Virtual Competency Centres (VCC). Each cross-disciplinary, multi-institutional and international VCC is centred on a specific area of expertise; e-Infrastructure, Research and Education, Scholarly Content Management, Advocacy, Impact and Outreach. DARIAH's activities do not stop at the Europe border. DARIAH collaborates with initiatives such as Project Bamboo (www.projectbamboo.org/about/), to ensure that humanities research interoperates, internationally.



DASISH – Data Service Initiative for Social science and Humanities

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All 5 ESFRI infrastructures in the social sciences and humanities (SSH): ESS, SHARE, CESSDA, CLARIN and DARIAH are facing identical challenges DASISH brings them together by concretely working on selected activities that will bring cross-fertilization and synergy into the infrastructure development of all five communities, and that will support a broader international SSH infrastructure collaboration. Central topics in the cooperation concerns: "Trust and Common Data Services", "Data Curation", "Users and Data Generation" and "Community Support Services".

ESS – European Social Survey

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»ESS: A major European research infrastructure



The European Social Survey, identified in the ESFRI Roadmaps of 2006, 2008 and 2010 as a research infrastructure of pan-European relevance, has an international and world class profile through its commitment to scientific excellence. It is a facility providing free access to an extensive archive of social attitude time series data gathered over five biennial survey rounds to date. It also provides advanced quantitative survey methodological resources. Free access to data and documentation is supported by an on-line data analysis package and the ESS delivers e-training to both junior and senior social scientists. Through these activities the ESS achieves its aims: (i) to promote the systematic measurement of changes in social attitudes and behaviour across time; (ii) to contribute to the improvement in the quality of comparative quantitative measurement in Europe and beyond and (iii) to communicate the results of the ESS to its users - members of scientific, policy and general public communities.

INDICATE – Digital Cultural Heritage e-Infrastructure

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»International Network for a Digital Cultural Heritage e-Infrastructure

Promoting common approaches to the support of Arts, Humanities and Social Science activities by e-Infrastructures. Stimulating the international cooperation of e-infrastructure providers and application users in the digital culture domain. Pilots to study and experiment the migration of existing e-Culture applications to the e-

infrastructure platforms. Results of the pilots are accessible through the INDICATE e-Culture Science Gateway. Case studies to analyse the potential for e-Infrastructures to be used for: long term digital preservation, virtual exhibitions, management of geo-coded cultural content

TrustedDigitalRepository.eu

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»European Framework for Audit and Certification of Digital Repositories

Sustainable access and digital preservation are big challenges for research infrastructures around the Globe. Data and software that are created and used by science and scholarship need to be managed, curated and archived, making sure that the substantial investments in preparing and presenting the content and tools will not

be lost. Researchers need to be sure that the resources the infrastructures offer remain meaningful and usable over time. Moreover, the research infrastructures themselves need to have sustainable business models. Preservation and sustainability raise challenges in many areas, ranging from technological obsolescence to legal issues and funding models. The audit and certification of digital repositories are fundamental in guaranteeing the trustworthiness of research infrastructures as a whole. Within Europe a multilevel framework for certification of trusted repositories has recently been developed.



ACTRIS – Aerosols, Clouds, and Trace gases Research InfraStructure Network

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»ACTRIS: For coordinated long-term observation of aerosols, cloud-aerosol interactions, and trace gases

ACTRIS (Aerosols, Clouds and Trace gases Research InfraStructure Network) is a research infrastructure that contributes: to provide long-term observational data relevant to climate and air quality research produced with standardized or comparable procedures; to support transnational access to large infrastructures strengthening collaboration in and outside the EU and access to high quality information and services to the user communities; to develop new integration tools to fully exploit the use of atmospheric techniques at ground-based stations, in particular for the calibration/validation/integration of satellite sensors and for the improvement of global and regional-scale climate and air quality models. At international level ACTRIS operates in strong cooperation with the Global Atmospheric Watch Program of the WMO, the ARM Climate Research Program and all the relevant research networks as (i.e. AERONET, GALION, NDACC, etc.) for the establishment of the ground-based component of the Global Earth Observation System of Systems.

ANAEE – Infrastructure for Analysis and Experimentation on Ecosystems

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»Infrastructure for Analysis and Experimentation on Ecosystems



ANAEE will provide Europe with a distributed and coordinated set of experimental, analytical and modelling platforms to analyse and predict in a precise manner the response of the main continental ecosystems to environmental and land use changes. ANAEE will consist of highly equipped in natura and in vitro experimental

platforms associated with sophisticated analytical and modelling platforms coupled to networks of instrumented observation and monitoring sites throughout Europe. ANAEE will be a key instrument in both structuring and improving the European Research Area in this field. ANAEE will be the reference point for rigorously assessing ecosystem services and their responses to management by agriculture, forestry and to global change. In the context of the development of European bio-economy, critical political, environmental and scientific questions related to ecosystems functioning and services will be answered.

EISCAT_3D: The next generation European incoherent scatter radar system

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»EISCAT_3D: Our window to the geospace environment



EISCAT_3D is a multi-static phased-array incoherent scatter radar system that will be built in the northernmost parts of Finland, Norway and Sweden. Incoherent scatter is the most sophisticated radio method to remotely observe and monitor

geospace. The planned facility will provide better resolution and higher power capabilities than present systems, combined with possibilities for volumetric imaging and interferometry as well as opportunities for continuous measurements. EISCAT_3D will collaborate with other incoherent radar systems globally in order to obtain a comprehensive understanding of the processes forming the geospace environment. It will also work as part of the European network of environmental infrastructures with harmonised data architectures, metadata frameworks and visualisation standards. EISCAT Scientific Association, who coordinates the preparatory phase for the new system, is an international research organisation with six member countries in Europe and Asia. EISCAT_3D was included on the ESFRI roadmap for research infrastructures in 2008.

Environmental Sciences



EMSO – European Multidisciplinary Seafloor Observatory

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EMSO is a European network of fixed point, deep sea observatories with the basic scientific objective of real-time, long-term monitoring of environmental processes related to the interaction between the geosphere, biosphere, and hydrosphere. EMSO is composed of several deep-seafloor and water-column observatories, which will be deployed at key sites in European waters. The European community involved

in EMSO RI has built strong synergies with scientists engaged in analogous initiatives all over the world. Collaborations are currently ongoing with: (i) the US Consortium for Ocean Leadership, managing the NSF-funded programme Ocean Observatories Initiative (OOI) (ii) Canadian institution involved in the cabled observatory network NEPTUNE Canada (iii) JAMSTEC, managing the Dense Oceanfloor Network System for Earthquake and Tsunamis (DONET) in Japan (iv) Australia's Integrated Marine Observing System (IMOS).



ENVRI – ENVRI Common Operations of Environmental Research Infrastructures

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The ENVRI project is a collaboration in the ESFRI Environment Cluster, with support from ICT experts, to develop common e-science components and services for their facilities. The results will speed up the construction of these infrastructures and will allow scientists to use the data and software from each facility to enable

multi-disciplinary science. The target is on developing common capabilities including software and services of the environmental and e-infrastructure communities. While the ENVRI infrastructures are very diverse, they face common challenges including data capture from distributed sensors, metadata standardisation, management of high volume data, workflow execution and data visualisation. The common standards, deployable services and tools developed will be adopted by each infrastructure as it progresses through its construction phase.



EPOS – European Plate Observing System

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»EPOS: a Long-term Integration Plan for Solid Earth Sciences

The European Plate Observing System (EPOS) coordinates and integrates the research infrastructures in the European-Mediterranean region, to promote innovative approaches for a better understanding of the physical processes controlling earthquakes, volcanic eruptions, tsunamis as well as those driving tectonics and

Earth surface dynamics. The EPOS 30-year plan aims at integrating the currently scattered, but highly advanced European facilities into one distributed, coherent multidisciplinary Research Infrastructure allowing sustainable long-term Earth science research strategies and an effective coordinated European-scale monitoring facility for solid Earth dynamics taking full advantage of new e-science opportunities. EPOS has been approved by ESFRI and the EPOS Preparatory Phase is supported by the European Commission FP7 program. EPOS is a GEO participating organization and it is involved in coordinating geohazard research for selected "Supersites" in Europe contributing to the global supersite initiative. EPOS collaborates with several e-science European projects and with similar US programs and infrastructures (i.e. Earthscope).



Euro-Argo – European contribution to Argo program

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»EURO-ARGO: A new European research infrastructure for climate change, research and operational oceanography

The oceans have a fundamental influence on our climate and weather. They store, transport and exchange with the atmosphere large amounts of heat. These exchanges dramatically affect world and regional climates on time scales ranging from days (storms and hurricanes), to seasons (monsoons), to years (El Niño) and centuries (climate change). Understanding and predicting the evolution of our weather and climate thus requires long term, high quality global ocean observations. Argo is a global ocean observing system for the 21st century. It is an international array of 3000 profiling floats that measure temperature and salinity throughout the deep global oceans, down to 2,000 metres. Argo is the first-ever global, in-situ ocean-observing network in the history of oceanography, providing an essential complement to satellite systems. Euro-Argo RI will develop and consolidate the European component (deploy, maintain and operate an array of 800 floats worldwide) of the global network.

EUROFLEETS – Towards an Alliance of European Research Fleets

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»Free infrastructures for enhancing the European scientific excellence



Eurofleets

The EUROFLEETS FP7 infrastructures project main objective is to develop the coordination within European research fleets. This project fosters the shared use of European research vessels and associated equipment to enhance their efficiency and help reducing costs, also by providing scientists on land with real time data from cruises. Consequently one of the main activities of EUROFLEETS is to provide free access to the consortium's research vessels (5 global/ocean and 13 regional vessels) to all European scientists through transnational calls for multi-national, collaborative research projects, on the sole condition of scientific excellence. Through the launch of 3 calls the EUROFLEETS projects has provided a total of 186,5 ship-time days to 20 high-quality research projects in all fields of marine science and operating around Europe from the Baltic to the Black Sea, which corresponds to a EU funding of circa 2.6 million Euros.

IAGOS – In-service Aircraft for a Global Observing System

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»In-service Aircraft for a Global Observing System



IAGOS will establish a research infrastructure for high-quality observations of atmospheric composition at the global scale by implementing autonomous instrumentation on a fleet of passenger aircraft. Partners are leading institutions engaged in atmospheric research from Germany, France and the U.K., the WMO, several airlines and partners from aviation industry. It is foreseen to expand the cooperation to other countries from Europe and worldwide, e.g., USA, Taiwan, Australia, and to operate the infrastructure over more than 2 decades in order to establish trends of greenhouse gases (GHGs), air pollutants, aerosol and cloud particles in the free troposphere and in the tropopause region, where changes in GHGs like water vapour and ozone have the largest potential to influence global and regional climate. IAGOS will form an essential element of the global observing system, in addition to the ground based networks and remote sensing from space.

Environmental Sciences

ICOS – Integrated Carbon Observation System

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»ICOS in the global carbon observing strategy

ICOS is a recently-launched, world-class environmental research infrastructure dedicated to the monitoring and improved understanding of greenhouse gas sources and sinks. It consists of complementary, harmonized networks of long-term atmospheric, ecosystem and ocean monitoring stations focusing on Europe and adjacent



regions. The stations network is expected to be operational in 2014. The networks will be coordinated through a set of central facilities with the mission to process, validate and distribute data to end-users. ICOS will notably provide key data for the monitoring and assessment of the impact of greenhouse gas mitigation strategies. ICOS is expected to provide key data to international initiatives such as the GMES and GEOSS (see GEO Carbon Strategy Report 2010). Collaboration with NOAA/ESRL and NEON, its counterparts in the USA, for example, are already ongoing. These collaborations contribute to an improved international coordination for greenhouse gases under the GCP, WMO and Fluxnet umbrellas.

INTERACT – International Network for Terrestrial Research and Monitoring in the Arctic

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🌐 www.eu-interact.org

»INTERACT – A circumarctic network of research infrastructures

INTERACT is an EU-funded project of SCANNET, a network of more than 40 terrestrial research infrastructures located throughout the Arctic and also in alpine areas

of central Eurasia. This project has a main objective to build capacity for identifying, understanding, predicting and responding to diverse environmental changes throughout the wide environmental and land-use envelopes of the Arctic. Cooperation with relevant international organisations is being developed to coordinate our efforts and the network is directly linked to several Arctic Council and EU initiatives (e.g. AMAP, CBMP, SIOS) and also hosts a large number of international research and monitoring networks, programmes and projects. The INTERACT project has four main fields of focus: 1) Management and Coordination, 2) Cooperation, 3) offers of transnational access by 20 research stations and 4) Joint Research Activities. The INTERACT network is expanding and has already facilitated access to the Arctic for hundreds of researchers.



LifeWatch – LifeWatch e-Science and Technology Research Infrastructure on Biodiversity and Ecosystems Research

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»CREATIVE-B, Coordination of Research e-Infrastructures Activities Toward an International Virtual Environment for Biodiversity

The CREATIVE-B project will seek to support the interaction between the LifeWatch ESFRI Research Infrastructure with Research Infrastructures on biodiversity and

ecosystems research in other parts of the world. The immediate objective is to define a roadmap for interoperability on the technological level, on the governance level and on the interrelation with the scientific communities using the RIs. The project will therefore be a catalyst for worldwide collaboration in this field by supporting and initiating coordination activities of these RIs. The greater objective of this collaboration is to serve the goals of GEOSS. At the same time, the international outreach of LifeWatch can lead to further international collaboration on interoperability of these infrastructures to even better serve research communities worldwide.



NERA – Network of European Research Infrastructures for Earthquake Risk Assessment and Mitigation

The logo for NERA (Network of European Research Infrastructures for Earthquake Risk Assessment and Mitigation) features the word "NERA" in a bold, sans-serif font. The letters "N" and "E" are red, while "R", "A", and "R" are black.

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The overall aim of NERA is to achieve a measurable improvement and a long-term impact in the assessment and reduction of the vulnerability of constructions and citizens to earthquakes. NERA will integrate the key research infrastructures in Europe to monitor earthquakes and assess their hazard and risk, and will combine expertise in observational and strong-motion seismology, modelling, geotechnical and earthquake engineering to develop activities to improve the use of infrastructures and facilitate the access to data. NERA will ensure the provision of high-quality services, including access to earthquake data and parameters and to hazard and risk products and tools. NERA coordinates with other EC projects (SHARE, SYNER-G) a comprehensive dissemination effort. NERA contributes to the OECD-initiated GEM program and to the EPOS ESFRI infrastructure.

Biological and Medical Sciences



BBMRI – Biological and BioMolecular resources Research Infrastructure

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»European Research Infrastructure for BIONBANKS

Human biological samples including associated medical data and biomolecular research tools are key resources in unravelling the interplay of genetic and environmental factors causing diseases and impact on their outcome, identification of new targets for therapy and reduction of attrition in drug discovery and development.

BBMRI ERIC integrates 280 centers and 51 research institutions from 31 countries. It aims to set up a research infrastructure for biobanking and related fields. BBMRI will increase the scientific excellence and efficacy of European research in the biomedical sciences as well as expand and secure competitiveness of European research and industry in a global context and attract pharmaceutical and biomedical research facilities.

{ No logo }

BioMedBridges – Building data bridges between biological and medical infrastructures in Europe

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»BioMedBridges: Building Europe's bio-medical data bridges

The ESFRI infrastructures in Biological and BioMedical Sciences face substantial challenges in accessing and sharing data and resources. The BioMedBridges consortium brings together the established ESFRI infrastructures with common goals

of defining, implementing and delivering data interoperability across the biological and biomedical domains. From the setting of common standards and access rules, which will govern the sharing of sensitive data between countries, to the need to preserve the data generated through these Research Infrastructures, the international dimension is at the heart of BioMedBridges. The global life sciences community is vast, and the improvement that research in this domain makes to health, wellbeing and society around the world is pivotal. BioMedBridges will lay the foundation for data preservation from the key European Research Infrastructures. With open access to data of the highest quality, life sciences researchers throughout the world can reap the benefits.

EATRIS – EATRIS European Infrastructure for Translational Medicine

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»EATRIS – Shaping European Translational Research in Medicine

Tremendous progress has been made in biomedical research in genomics, proteomics and metabolomics, which has led to increasing insight into the molecular mechanisms that drive diseases. Yet the output of disease prevention, diagnosis and treatment solutions remains low. To overcome this fate a number of European countries

have gathered to take new actions for improving the translation of fundamental research from the bench to routine clinical use at the bedside, and vice versa. EATRIS is a not-for-profit organization established to integrate basic and clinical research in dedicated European institutes of translational excellence organized around five product areas, namely Biomarkers, Molecular Imaging & Tracers, Advanced Therapy Medicinal Products, Vaccines and Small Molecules. Via a 'One-Stop-Shop' mechanism, EATRIS serves the needs of European academia and industry in translational medicine by providing access to cutting edge facilities and scientific experts, for top researchers with projects showing the highest potential for patient benefit.



Biological and Medical Sciences



ELIXIR – The Life Sciences Infrastructure for Biological Information

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»ELIXIR: Enabling the Life Science Community to Solve Global Challenges

Such is the potential reach of ELIXIR that it is one of the few ESFRI Research Infrastructures considered to be of 'Global Significance'. Whilst ELIXIR begins as Europe's Life Sciences Infrastructure for Biological Information, the benefits to researchers of having freely accessible biological data are truly global. ELIXIR will ensure that researchers throughout the world have access to the biological data needed to solve some of the most pressing Global Challenges, such as the health of the ageing population. Global Challenges require global solutions. These are issues of such complexity that no one Member State or continent can tackle alone. Likewise, the challenge of responding to the data deluge cannot be met in isolation. As ELIXIR begins to bring together leading institutes from around the world, so it will ensure that Member States avoid duplication of effort and that researchers globally will have access to the most complete data available.



EMBRC
EUROPEAN
MARINE
BIOLOGICAL
RESOURCE
CENTRE

EMBRC – European Marine Biological Resource Centre

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Marine organisms are becoming increasingly important both as biological models for researchers and as a source of innovative products and services for society. Their unique features can be translated, through R&D, into industrial applications and novel products. EMBRC will be a distributed research infrastructure consisting of leading marine biological stations across Europe. It will provide access to marine organisms at research and training facilities to end-users from academia, industry and policy makers. EMBRC is now in its preparatory phase. Additional marine institutes can join as aspiring partners and become full partners in the construction and operation phases if they fit the strategic plan for EMBRC and obtain the support from their member states. In addition, EMBRC explores collaborations with other RIs in the ERA and with similar organizations and sister marine biological institutes in other countries.



EPPN – European Plant Phenotyping Network

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🌐 www.plant-phenotyping-network.eu

The ability to quantitatively analyze plant phenotypic traits and their response to the environment is an essential requirement for genetic and physiological research to enable application of scientific findings in bioeconomy. Today molecular technologies allow the generation of large amount of data at a still decreasing cost. The understanding of the link between genotype and phenotype has progressed slowly because of insufficient technical and conceptual capacity to probe existing genetic resources. Europe has become a key driver in defining innovative solutions for the development of infrastructures for plant phenotyping. The European Plant Phenotyping Network (EPPN) aims at creating synergies between the leading plant phenotyping institutions in Europe as a nucleus for the development of a strong European plant phenotyping community. EPPN will strengthen Europe's leading role in plant phenotyping research and application by creating of a community of research institutes, universities, industry and SMEs.

Biological and Medical Sciences

EU-OPENSREEN – European Infrastructure of Open Screening Platforms for Chemical Biology



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EU-OPENSREEN, the European Infrastructure of Open Screening Platforms for Chemical Biology, aims to satisfy the needs for new bioactive compounds in all fields of the Life Sciences (e.g. human and veterinary medicine, systems biology, biotechnology, agriculture and nutrition). It will involve Europe's leading compound

screening sites open to external users and cover all technologies and resources required for the discovery of biologically active substances. The EU-OPENSREEN facilities will be used by researchers from universities, research institutes and SMEs, who either have only limited in-house facilities or no access at all to such resources and expertise. EU-OPENSREEN will help to increase knowledge of the bioactivities of chemical substances, as well as the responses of biological systems to challenge with these substances by collecting all generated data in a central database. EU-OPENSREEN is currently in its early 2nd year of the Preparatory Phase.

Euro-Biolmaging – European Research Infrastructure for Imaging Technologies in Biological and Biomedical Sciences



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»The ESFRI Biomedical Imaging Research Infrastructure Euro-Biolmaging: European and International Collaborations

Euro-Biolmaging is a large-scale research infrastructure project on the ESFRI Roadmap and will deploy a pan-European distributed biological and biomedical imaging infrastructure in a harmonized manner. The infrastructure will provide access to and training in cutting edge imaging technologies as well as resources for sharing image data. In a 3-year preparatory phase (2010-2013) Euro-Biolmaging closely collaborates with national imaging communities and consults with imaging infrastructure users and providers (pan-European survey, proof-of-concept studies) in order to define eligibility criteria for future infrastructure nodes. An international External Advisory Board (USA, Australia) regularly advises Euro-Biolmaging in technological and strategic matters. International collaborations and practical workshops with the Australian Microscopy & Microanalysis Research Facility are ongoing and enable the exchange of information and sharing of best practice.

EVA – European Virus Archive

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The concept of EVA is unique. There is no equivalent virus collection; neither does any other collection provide the accessibility, reagent backup, sequence data, provenance, quality control, and capacity to inform, through the web. The EVA consortium is dedicated to the provision of unique collections of high quality and authenticated

virus strains through its virtual bio-resource centre, for fundamental and applied research. The nine core partners of the EVA consortium have merged their specialised collections to create a catalogue advertising these viruses through a web portal. The attractiveness of the project has raised the interest of Global Health Agencies like WHO and CDC's and of other institutions, currently, 13 of them have integrated the EVA Consortium as associated partners. EVA is in the third year of its existence under Framework Programme 7. The ultimate objective of EVA is to make it a permanent archive that can provide access to viruses and reagents globally. This will be achieved through extension of the funding arrangements and also through expansion of the range of contributors to the collection.



Infrafrontier – The European research infrastructure for phenotyping and archiving of model mammalian genomes

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🌐 www.infrafrontier.eu

Medically related life sciences use mouse models to understand the functional basis of mammalian gene function. EMMA – the European Mouse Mutant Archive preserves mouse models and distributes them to the biomedical research community. These world-leading facilities provide a strong research base for Europe and play an important role in international activities such as the International Mouse Phenotyping Consortium (IMPC) and the International Federation of Mouse Resources (FIMRe). However, the existing capacities do not match the increasing demand by the community. Moreover, sustainable funding solutions are not always in place. These problems are being addressed by the ESFRI project Infrafrontier. Infrafrontier shapes the European Research Area by providing a sustainably funded pan-European research infrastructure for systemic phenotyping, archiving and distribution of mouse models and by coordinating its international activities.



Instruct – Instruct Integrating Biology

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»Instructenablesresearcherstopoolresourcesforanintegratedviewofcellstructure

To study the components and interactions of a cell, spanning broad spatial (atomic to macromolecular) and temporal resolutions, scientists need many sophisticated technologies that no one laboratory can afford. Instruct makes access to structural biology technologies more systematic and where unavailable through national centres, uncouples it from the need for formal collaborations with those providing the instrumentation. Instruct coordinates 22 centres providing access and expertise through a single on-line application, greatly empowering the use of an integrated experimental approach to solving fundamental scientific questions. By liaising with other European infrastructure, coordination and training programmes, Instruct will provide significant opportunities to expose researchers to new technologies and new creative approaches. Instruct launched formally on 23rd February 2012 and the first access proposal is approved and in process, signifying the official opening of Instruct for business.



WeNMR – A Worldwide e-Infrastructure for NMR and structural biology

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»WeNMR: bringing Grid computing to a worldwide structural biology community

WeNMR brings together research teams in Structural Biology into a Virtual Research Community (VRC). The WeNMR platform integrates and streamlines the computational approaches necessary for NMR and SAXS data analysis and structural modelling making use of a grid-based e-Infrastructure fully integrated into EGI. Web portals provide user-friendly access to the grid, shielding end users from the complexity of the grid. WeNMR has grown to become the largest VRC in life sciences, accounting for more than 30% of CPU usage. WeNMR is linked to INSTRUCT in line with the ESFRI roadmap, but also aims at serving all relevant worldwide communities. Nowadays more than 20% of the users come from outside Europe, covering both North and Latin America, Africa and Asia Pacific. WeNMR is tightly interacting with the EGI, various European projects and with the US Open Science Grid in order to facilitate and support its operation and continuing expansion.

Materials and Analytical Facilities

CRISP – Cluster of Research Infrastructures for Synergies in Physics

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CRISP allows RIs to strengthen their role in the advancement of knowledge and stimulates scientific and technological progress. CRISP activities are of enormous benefit to large scale facilities – such as national light and x-ray sources, high-energy and nuclear facilities - in the European Research Area and beyond. The objective of the eleven participating Research Infrastructures (RIs) is to build up collaborations

and to create long-term synergies to facilitate their implementation and enhance their efficiency and attractiveness. The CRISP project focuses on four areas: (i) Accelerators, (ii) Instruments & Experiments, (iii) Detectors & Data Acquisition, and (iv) Information Technology & Data Management. The exchange of know-how, together with the combined complementary expertise of CRISP members, ensures cost-efficient and coherent scientific progress.



EMFL – European Magnetic Field Laboratory

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The mission of the European Magnetic Field Laboratory (EMFL) is to develop and operate world class high magnetic field facilities and to use them for excellent research by in-house and external users. EMFL consists of four sites; Dresden (DE), Grenoble (FR), Nijmegen (NL) and Toulouse (FR) all possessing a large infrastructure to generate the highest fields with the most powerful magnets and equipped to

do a wide variety of advanced experiments with them. EMFL will manage the scientific access of its users to its installations, the selection of the proposals being made by an independent external selection committee. EMFL has been granted a 3-year EU Preparation Phase Project (2011-2013) and is now in the process of being founded as an AISBL legal entity, to formalise the already far going cooperation between the four sites. EMFL will allow Europe to take the lead in the production and use of very high magnetic fields for scientific goals and face the global competition.



ESRFUP – ESRF Upgrade

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The European Synchrotron Radiation Facility is funded and shared by 19 countries and brings together a wide range of disciplines including physics, chemistry and materials science, biology, medicine, environment and archaeology. With some 6400 scientific user visits each year, resulting in more than 1800 refereed publications, the ESRF is recognised as the world's number one synchrotron light source. In order to

maintain its leading role and to respond to emerging scientific challenges, the ESRF has been implementing since 2009 an ambitious ten-year Upgrade Programme, comprising (i) the construction of new and upgraded beamlines with unique performances, ensuring new scientific opportunities, (ii) major improvements of the accelerator complex, (iii) the development of productive science and technology driven partnerships with academic institutes and industrial partners, and (iv) the extension of the experimental hall to ensure the thermal and vibrational stability needed by the new beamlines.



Materials and Analytical Facilities



EUMINAFab – Integrating European research infrastructures for micro-nano fabrication

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»EUMINAFab – Open access to European nano and micro centres

Nano and Microsystems technologies are widely accepted to have key relevance for a broad range of application areas. EUMINAFab is a European Research Infrastructure focusing on multimaterial micro- and nanofabrication and characterization technologies. Innovative ideas employing solutions using these techniques require not only access to high end equipment but also the essential highly skilled personnel. The coordination of the facilities available at EUMINAFab's specialist European partner sites leverages this innovation potential for the wider community. The environment of open innovation allows not only no-fee access to the technologies but also the necessary technology expertise and advice required to transform the innovative ideas of our users into reality. The FP7 Capacities funding enables us to accommodate users from academia and industry on a no fee basis for public research. The aim is to facilitate the use of high end nano and micro technologies to enable next generation products.

EuroFEL – Free electron lasers of Europe

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»IRUVX-PP: The preparatory phase of EuroFEL



The IRUVX-PP project (April 2008 to March 2011) has prepared the creation of the EuroFEL consortium (previously called IRUVX-FEL) of national free electron laser (FEL) light sources as a unique, distributed European research infrastructure providing world-class instruments and service for novel and wide-ranging studies of matter by a multi-disciplinary science community. Its ensemble of light sources will complement present synchrotron radiation sources and conventional lasers. FELs are the flash cameras for the molecular world, adding the femto-second time scale to nanometer microscopy for observing e.g. the fundamental processes governing all chemical phenomena. Scientific challenges and opportunities will open for a wide range of scientific disciplines, ranging from the physics of atoms, molecules and clusters to plasma physics, chemistry, materials and life sciences.

FRM II – Forschungs-Neutronenquelle Heinz Maier-Leibnitz

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»FRM II: Neutrons for Research, Industry and Medicine



The Technische Universität München (TUM) operates the neutron source Heinz Maier-Leibnitz in Garching, Germany. The scientific use is managed by a consortium of the TUM and centers of the Helmholtz association in Jülich (FZJ), Geesthacht (HZG) and Berlin (HZB). The neutron source acts as a service facility for national and international scientists. Applications for beam time are peer reviewed by international committees twice a year. Funded as a national, German facility, European users are supported by an Integrated Infrastructure Initiative NMI3, funded up to now through FP6 and FP7. About 40% of the available beam time is attracted by international research teams. In addition to basic research a special focus is on industrial and medical usage of the FRM II. Whereas the irradiation facility for transmutation doping of Si plays the most important role for industrial applications, radioisotope production and direct treatment of patients with fast neutrons cover the medical usage.

Materials and Analytical Facilities

QNano – A pan-European infrastructure for quality in nanomaterials safety testing



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QNano is a research infrastructure for characterisation of nanomaterials for safety assessment, funded through the FP7 Capacities programme. QNano is creating a neutral space for nanosafety evaluations shaped by best practice and mutually recognised round-robin validated methodology. QNano has created an integrated framework for funded access to leading facilities for nanomaterials synthesis and characterisation facilities and provides an extensive range of support services for users and stakeholders. Access is via 6-monthly calls announced on the QNano website: www.qnano-ri.eu. Dynamic networking activities are conducted through a series of hubs, including one fostering excellence in knowledge transfer for safety assessment and another focusing on development and provision of positive and negative control nanomaterials for selected biological endpoints. Partners in QNano are conducting research activities including refining current approaches for the reduction in variability between nanomaterial batches, developing reliable labeling techniques and proposing new methods for identification and characterisation of nanomaterials in situ.



ELI – Extreme-Light-Infrastructure

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ELI will be the first laser research infrastructure resulting from a truly crossborder effort. Apart from the pioneering character of its scientific mission, ELI will be a major contribution to the development and the balance of the European Research Area, as it will be the first research infrastructure to be implemented in the newer Member States (CZ, HU, RO) thanks to the use of structural funds. The project calls for intense cooperation between the three host countries, and will require strong involvement of partners from Europe and the rest of the world. This international cooperation will be reflected at the local implementation level, but also through the creation of an ELI Delivery Consortium involving many European partners. The poster will focus on these characteristics of ELI and on the project's dependency on international cooperation.



European XFEL – European X-Ray Free-Electron Laser Facility GmbH

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The European X-Ray Free-Electron Laser facility (European XFEL) was one of 35 large-scale research infrastructure projects of the ESFRI roadmap published in October 2006. Construction in Northern Germany started in January 2009. From end of 2015 on, XFEL will generate extremely intense coherent X-ray flashes of unique properties for researchers from all over the world. They will investigate nanometer-scale structures, fast processes, and extreme states, developing 3D images of viruses or proteins, and filming chemical reactions. The new facility will benefit many scientific fields—among them biology, chemistry, medicine, physics, materials science, nanotechnology, energy technology and electronics.



FAIR – Facility for Antiproton and Ion Research in Europe

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»International Facility for Fundamental Physics and Applications

The Facility for Antiproton and Ion Research in Europe (FAIR) is one of the largest accelerator projects in the world to understand fundamental questions of the structure of matter and its building blocks, and the evolution of the universe. In addition, FAIR will offer research opportunities for space missions, biophysics and material testing, for example. From 2018 on, 3,000 scientists from 50 countries will profit from FAIR. The facility will be built in cooperation with the international scientific community at Darmstadt in Hesse, Germany. The Federal Republic of Germany will provide the major part of the budget together with the State of Hesse. International partner states in Europe and overseas will make substantial contribution as well, six of them being shareholders of FAIR already. FAIR will use the existing GSI accelerators as injectors.



ILC-HiGrade – International Linear Collider and High Gradient Superconducting RF-Cavities

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The International Linear Collider (ILC) is the next large facility to be realized after the successful start-up of the Large Hadron Collider (LHC) at CERN. The emerging physics results of the LHC call for a facility that unravels their detailed structure. Because of the simplicity of the electron and positron, the ILC complements the discovery potential of the LHC. The design and planning of the ILC proceeds in a truly global fashion. ILC-HiGrade constitutes a major activity in Europe and addresses the efficient acceleration of particles in superconducting RF cavities, the key high-technology component and a major cost driver of the ILC. ILC-HiGrade has also made great strides in understanding the mechanisms for realising the project both in Europe and elsewhere.

Physical Sciences and Engineering



NEUTRONS
FOR SCIENCE®

ILL 20/20 – The Upgrade of the Institut Laue Langevin
Mrs Eileen Clucas | ✉ clucas@ill.fr | 🌐 www.ill.eu
The Institut Laue-Langevin is an international research centre at the leading edge of neutron science and technology. It operates one of the most intense neutron sources in the world feeding intense beams of neutrons to a suite of 40 high-performance instruments. These are constantly upgraded - recently with Commission support. ILL's facilities and expertise is available to visiting scientists; it receives ~1200 researchers from 40+ countries to conduct over 800 experiments each year. Research focuses on fundamental science. It covers nuclear and particle physics, earth sciences, condensed matter physics, chemistry, biology, materials and engineering; it impacts societal challenges - sustainable energy sources, better health-care, cleaner environments, and new materials for the latest technologies. ILL scientists' expertise in neutron research and technology (chemists, physicists, biologists, crystallographers, magnetism and nuclear physics) is available for the scientific community.



LHC – The Large Hadron Collider complex

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»The Large Hadron Collider: an example of global venture

The Large Hadron Collider and its physics detectors are amongst the largest and most ambitious research infrastructures ever built. Necessarily, given the scientific and technical challenges requiring the best competences, and the need to share cost, the collider and its detectors are global ventures. While they are perceived as components of CERN activities, it is perhaps not widely known that they obey different organizational rules, experimented over decades. The collider has been studied and built by the CERN laboratory, an integrated collaboration of 20 Member States, with in-kind contributions from the USA, Japan, Russia, Canada and India. The largest physics detectors are collaborations of over 130 institutes from over 35 countries, with original organizations based on the search of consensus and a combination of in-kind and cash contributions. This poster describes the respective benefits and challenges, and the evolutions foreseen to prepare the upgrade of infrastructures for the next decade.



NOT – Nordic Optical Telescope

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»The Nordic Optical Telescope: Towards the Joint European Facility

The 2.5m Nordic Optical Telescope (NOT) was inaugurated in 1990 as a standalone international facility for a wide range of Nordic research projects in optical astronomy in the northern hemisphere. Today the context is totally changed: The global-scale southern-hemisphere facilities of the European Southern Observatory (ESO) dominate the scene, and the ASTRONET Science Vision and Infrastructure Roadmap have laid out a coherent strategy for the future of ALL European infrastructures for ALL of European astronomy. The NOT is leading the way by specializing its role to the study of supernovae and other transient and variable sources by a broad European - and eventually global - user community, as part of the future 2-4m telescope facility being organized through ASTRONET. Its training activities are also being optimized for the European multiwavelength infrastructures of tomorrow.

Physical Sciences and Engineering



SKA – Square Kilometre Array and archiving of model mammalian genomes

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The SKA is a global science project to build the world's largest and most sensitive radio telescope. Scientists and engineers from more than 20 countries, together with industry partners, are participating in research and development for the SKA which will be capable of answering some of the most fundamental questions about the

Universe. The SKA Organisation has recently been set up which has formalised the relationships between international partners and centralised the leadership of the project. Founding members are Australia, China, Italy, the Netherlands, New Zealand, South Africa and the UK, which hosts the organisation. Further countries are expected to join over the next few years and commit additional resources. Two candidate locations are under consideration: Australia - New Zealand and Southern Africa. A decision on where the telescope will be sited is expected in the first half of 2012.

SPIRAL2 – Système de production d'Ions Radioactifs en Ligne de 2ème génération

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»GANIL-SPIRAL2

SPIRAL2 (Second Generation System On-Line Production of Radioactive Ions) is a new infrastructure for the study of fundamental nuclear physics and multidisciplinary research at GANIL (Caen, France). It is as large as the current GANIL facility and

will complete its existent installations with new exceptional beams and instruments. SPIRAL2 is currently under construction and will start the operation in 2014. The European FP7 Project SPIRAL2 Preparatory Phase allows the participation of 25 European partners in the construction of SPIRAL2 via the development of the technological, financial, legal and organisational issues. Since the start of SPIRAL2 project, numerous international collaborations were developed with partners from Russia, China and India. Alongside the construction of SPIRAL2, international collaborations of physicists and engineers are developing new detectors with unprecedented performance adapted to SPIRAL2 high intensity beams.



TIARA – Test Infrastructure and Accelerator Research Area

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»TIARA: Structuring and enhancing particle accelerator R&D in Europe

Accelerator R&D and its applications often lead to innovations with strong socio-economical impacts. Indeed, particle accelerators are vital state-of-the-art instruments for both fundamental and applied research but they are also used for other purposes in a huge variety of fields: Health and Medicine, Industry, Energy and Environment.

As new accelerator developments require more and more sophisticated and expensive prototypes and test facilities, many of those involved in the field felt the need to establish a new initiative, TIARA, with the aim of providing a more structured framework for accelerator R&D in Europe. This project involves 11 institutes from 8 European countries. The main objective of TIARA is the integration of national and international accelerator R&D infrastructures into a single distributed European accelerator R&D facility with the goal of developing and strengthening state-of-the-art research, competitiveness and innovation in a sustainable way in the field of accelerator Science and Technologies in Europe.

E-Infrastructures



agINFRA / BioVeL / ViBRANT

☛ Dr. David Roberts | ✉ dmr@nomencurator.org |

🌐 <http://aginfra.eu> | <http://biovel.eu> | <http://vbrant.eu>

»Integration of services across biodiversity science

agINFRA, BioVeL and ViBRANT are three independently-funded international projects in the field of biodiversity informatics. At a recent co-ordination meeting they have agreed a collaborative framework to deliver additional value beyond each of their separate, individual objectives. Biodiversity informatics is fundamental to many areas of current concern, including the impact of climate change, food security, the management of invasive species, evaluation of ecosystem services and biodiversity loss. Together these three projects are leading an initiative to formulate a community-wide view of biodiversity informatics that will establish community priorities over a 10-year period, intending to address issues around data access, to make modelling and planning both easier and more reliable.

CHAIN – Co-ordination and Harmonisation of Advanced e-Infrastructures



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»Intercontinental e-Infrastructures for Science

The CHAIN project, co-funded by the European Commission aims to coordinate and leverage the efforts made over the past 6 years to extend the European e-Infrastructure (and particularly Grid) operational and organisational principles to a number of regions in the world. CHAIN uses their results with a vision of a harmonised and optimised interaction model for e-Infrastructure and specifically Grid interfaces between Europe and the rest of the world. The project is defining a strategy and a model for external collaboration, in close collaboration with EGI.eu, which will enable operational and organisation interfacing of EGI and external e-Infrastructures. It is working to validate this model, as a proof-of-principle, by supporting the extension and consolidation of worldwide Virtual Research Communities, which require distributed facilities across the regions for trans-continental research.

EDGI – European Desktop Grid Infrastructure

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»Getting the most out of Desktop Grids for your application



EDGI - European Desktop Grid Infrastructure develops a middleware to support European Grid Infrastructure (EGI) and National Grid Infrastructures' user communities - to extend their ecosystem with Desktop Grids and Clouds. The project is focused on heavy users of Distributed Computing Infrastructures that require an

extremely large number of CPUs and cores EDGI has also established the International Desktop Grid Federation to coordinate DG-related activities in Europe and worldwide both for solving technical issues as well as to attract volunteer DG resource donors by disseminating results of the EDGI and EGI-related projects. The EDGI project is supported by the FP7 Capacities Programme of the European Commission. More information on EDGI is available at <http://edgi-project.eu>.

E-Infrastructures



EGI – European Grid Infrastructure

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EGI provides European scientists and their international partners with a sustainable, reliable e-Infrastructure that supports their needs for large-scale data analysis. This is essential for solving the big questions facing science today. Through the EGI-InSPIRE project, EGI aims to integrate Distributed Computing Infrastructures such as clouds, supercomputing networks and desktop grids, to benefit user communities within the European Research Area. EGI collects user requirements and provides support to current and potential new user communities, such as the ESFRI projects, high energy physics, computational chemistry and life sciences. EGI collaborates with international partners, including Technology Providers, to develop and deliver robust and user-centric software, Resource Infrastructure Providers, to share geographically distributed ICT resources and Virtual Research Communities, which use EGI to collaborate across borders and produce and share scientific results. EGI is also involved in international policy bodies and standards organisations, to produce strategic and technical policies for European e-Infrastructures.



EMI/ScienceSoft – Open Software for Open Science

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🌐 <http://eu-emi.eu> | <http://sciencesoft.web.cern.ch/sciencesoft/>

»Instructenablesresearcherstopoolresourcesforanintegratedviewofcellstructure
Research and innovation are key drivers of Europe 2020 - to speed up and improve the way we conceive, develop, produce and access products and services. In response to this challenge, EMI and a number of other projects aim to strengthen Europe's science base by promoting the broad use of open source solutions. Transparency, openness and freedom-of-choice in open source development, more than just low cost, create better software and more collaboration. ScienceSoft aims to support research by promoting user- and market-driven open source development by establishing a community of open source software developers and users for scientific research in Europe. The ScienceSoft Marketplace is where developers and service providers can advertise their open source offerings, and where users and entrepreneurs can look for open source solutions. Software directories, peer-reviews by users and collaboration tools will help the development of efficient products and services and innovation in more mature software markets.



ENGAGE – An Infrastructure for Open, Linked Governmental Data Provision towards Research Communities and Citizens

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🌐 <http://greece.micnetwork.org>

The main goal of ENGAGE project is the deployment and use of an advanced service infrastructure, incorporating distributed and diverse public sector information resources as well as data curation, semantic annotation and visualisation tools, capable of supporting scientific collaboration and governance-related research from multi-disciplinary scientific communities, while also empowering the deployment of open governmental data towards citizens. The ENGAGE consortium comprises of 9 partners from Belgium, Germany, Greece, Israel, the Netherlands and the United Kingdom, with an excellent track record both in the eInfrastructures and the Governance domain including world-leaders in cloud infrastructures and a large network of scientific data diffusion (EUROCRIS). ENGAGE has established links with numerous public sector organisations, research communities, open data experts and standardisation fora.

E-Infrastructures



EU-Brazil OpenBio – EU-Brazil Open Data and Cloud Computing e-Infrastructure for Biodiversity

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The project focuses on providing interoperation of existing Brazilian and European e-Infrastructures in the distributed computing, scientific data and portals & platform domains. The project aims to make available a rich set of facilities and tools developed by extending, enriching, and integrating open software implemented in

the context of Brazilian and European projects, such as Catalogue of Life, speciesLink, openModeller, D4Science-II and Venus-C. Particular attention is paid to putting together a broad set of services that exploit, harmonise, and improve the quality of the large variety of open access data. The efficiency of the chosen approach will be demonstrated through two Use Cases: (i) integration of Regional & Global Taxonomies and (ii) Data usability and ecological niche modelling. Also an analysis of the current state-of-the-art of EU and Brazilian e-Infrastructure and Cloud Computing projects and initiatives will be carried out in order to identify how the collaborations initiated by the project in support of the biodiversity domain can be continued and further expanded.

EUDAT – European Data Infrastructure

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»TOWARDS A COLLABORATIVE DATA INFRASTRUCTURE

EUDAT is a new European initiative working on the establishment of a Collaborative Data Infrastructure (CDI) with the capacity and capability for meeting future researchers' needs and enabling cross-disciplinary science in a sustainable way. This pan-European infrastructure will build upon the data and metadata solutions that have

been established in the participating communities and provide common services to access and preserve scientific data. This will become increasingly important over the next decade as we face the challenges of massive expansion in the volume of data being generated and preserved (the so called 'data tsunami') and in the complexity of that data and the systems required to provide access to it. The EUDAT project is co-funded by the EC FP7 and coordinated by CSC – IT Center for Science, Finland. It comprises 25 European partners, including data centres, technology providers, and research communities and funding agencies from 13 countries.

GLOBAL Excursion – Global Excursion – Extended Curriculum for Science Infrastructure Online

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The GLOBAL excursion project will offer teachers and students access to the experimental laboratories and resources of selected scientific experiments in order to enrich science curricula by expanding schools' existing teaching and learning materials. By connecting science e-Infrastructures, resources and tools with schools,

students can experience challenging and authentic learning scenarios. Students can engage and gain insights into authentic scientific research; they can even contribute to it and reawaken interest in natural science education. The scientific disciplines involved are nano- and biotechnologies, as well as volunteer computing and life sciences. In addition to connecting to the different scientific resources and experiments, GLOBAL Excursion will also offer communication, collaboration and networking facilities for researchers, teachers and students. The GLOBAL excursion project aims to engage with students studying science in an approachable and progressive fashion and to enable communication between the current science community and its future protagonists.



GLORIA – GLObal Roboti telescope Intelligent Array for escience

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GLobal Roboti telescopes Intelligent Array for e-Science

GLORIA is an innovative citizen science project with the aim of creating the first network of robotic telescopes which will give free access to a virtual community via the Internet with the following objectives:

- 1° GLORIA is a social network for researching astronomy.
- 2° GLORIA is going to increase the number of robotic telescopes.
- 3° GLORIA will increase the number of research experiments.
- 4° GLORIA is going to engage newcomers.
- 5° GLORIA is going to continue in the future.



HOST – HPC Service Centre

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»HPC as a Service – reaching high scalability and elasticity

The West University of Timisoara runs the first Romanian supercomputer, an IBM Blue Gene P, as well as two clusters. The current research activities of the team in the frame of FP7 project HOST are based on the supercomputer for satellite image processing, and on clusters for simulations of application portability between Clouds and automated management of resources on Cloud provide side. Beyond the infrastructure and collaborations presentation, the poster will points to the latest results of teams involved in these collaborations (a highly scalable algorithm of image classification, and an open-source platform for portable Cloud-based applications). The infrastructure is also used in the frame of other EC projects like FP7 HP-SEE for environmental studies and the COST Action ComplexHPC in numerical simulations.

HPC-EUROPA2

📧 Ms Francesca Garofalo | ✉️ f.garofalo@cineca.it | 🌐 www.cineca.it



»WeNMR: bringing Grid computing to a worldwide structural biology community

HPC-Europa2, with a history now spanning two decades, is currently based on a partnership of 7 of Europe's leading HPC centres, working together to offer a high-level service of access to HPC infrastructures. With an independent international peer-review procedure, an extremely large basin of users (numbering a few thousand) and a wide and structured group of scientific hosts (more than one thousand), HPC-Europa2 has, over the last 8 years, allowed around 2000 researchers to benefit from access to the most advanced HPC infrastructures in Europe, supplemented by a wide and structured training scheme and in-depth scientific tutoring. In-person visits to scientific host sites supported by funds for travel, accommodation facilities, minimal bureaucracy and effective scientific and technical support and collaboration make HPC-Europa2 a reliable, efficient and essential tool for researchers to get started with HPC.

HPCWORLD

HPCWorld

✉ Ms Francesca Garofalo | ✉ f.garofalo@cinea.it | 🌐 www.hpcworld.eu

HPCWorld (hpcworld.eu) – a consortium of high-performance computing centers primarily based in Europe – is sponsored by the European Commission DG INFSO to edit the handbook of best practices for the effective allocation of HPC resources. The main purpose of the “Handbook of HPC e-Science Infrastructure Allocation Reviewing, Selection and Management”, published in November 2011, is to summarize

a set of best practices, to be used by all types of RIs, based on the peer-review process as the means by which proposals would be assessed. The aim of the project is to enhance the effectiveness and coherence of national and community research policies by strengthening international cooperation beyond continental boundaries and by promoting synergies among the EU RIs and similar infrastructures and programmes from other regions (e.g. US, New Zealand, Australia).

HP-SEE & SEERA-EI

✉ Dr. Ognjen Prnjat | ✉ oprnjat@admin.grnet.gr |

🌐 www.hp-see.eu | www.seera-ei.eu

»South East European eInfrastructures: Status and Vision.

HP-SEE & SEERA-EI projects

eInfrastructures are a key element in the development of scientific research & Information Society in Europe. Enabling sustainable, transparent, ubiquitous eInfrastructures,

open to a wide range of user communities worldwide, contributes significantly to the growth of scientific research, education, and innovation. High-Performance Computing Infrastructure for South East Europe's Research Communities - HP-SEE is one of the core e-Infrastructure projects in the area of South-East Europe. The project works across several strategic lines of action such as linking the existing HPC facilities in the region into a common infrastructure and providing operational and management solutions for it. South East European Research Area for eInfrastructures SEERA-EI project supports the technical initiatives by linking together policy bodies in the region and defining the longer-term strategy and vision. HP-SEE and SEERA-EI projects have a significant role in establishing an e-Infrastructure compatible with European developments, thus ensuring equal participation of the region in European networking and computing trends.

i4Life – Indexing for Life

✉ Dr. Alastair Culham | ✉ a.culham@reading.ac.uk | 🌐 www.i4life.eu

»Using the Catalogue of Life

The i4Life Project (Indexing for Life) is creating a Virtual Research Community to develop and harmonise the various species catalogues used by six of the world's global biodiversity programmes using the Catalogue of Life as a yardstick. One of the great issues in biodiversity science is how to synthesize a comprehensive view of the

entire biodiversity to better understand how it functions, and to model and forecast how it will respond to major anthropogenic pressures. Six 'global biodiversity programmes', the Global Biodiversity Information Facility (GBIF), the European Nucleotide Archive (part of INSDC), the Barcode of Life initiatives, the IUCN Red List, the LifeWatch project, and the Encyclopedia of Life, join with the Catalogue of Life to explore the full extent of species covered. The target is to enable each programme to enhance its catalogue with the assistance of the others, and to create a harmonised list for all named species.



HP-SEE
High-Performance Computing Infrastructure
for South East Europe Research Communities



seera-ei
South East European
Research Area
for eInfrastructures



E-Infrastructures

LinkSCEEM-2 – Linking Scientific Computing in Europe and the Eastern Mediterranean



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The LinkSCEEM-2 project aims at the establishment of a high performance computing (HPC) eco-system in the Eastern Mediterranean region by interlinking and coordinating regional computer, storage and visualization resources to form an integrated e-infrastructure. The main project objective is to enable scientific research

in the region by engaging and supporting research communities with an initial emphasis in the fields of climate research, digital cultural heritage and synchrotron radiation applications. To achieve its mission, the project will link e-resources, provide user support and training, carry out targeted networking activities, and, develop and implement a well-structured HPC resource allocation mechanism. Three regional HPC centres, namely CaStoRC, BA and NARSS contribute computational resources to the integrated e-infrastructure of LinkSCEEM-2. Additional computational centres from the region may participate through integrating their resources during the course of the project.

MMM@HPC – Multiscale Materials Modelling with High Performance Computing



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🌐 www.multiscale-modelling.eu

In MMM@HPC simulation expert groups unite with computational resource providers to deliver an integrated infrastructure for multi-scale materials modelling.

MMM@HPC will be an open platform to integrate of existing software modules into customizable, high performance protocols and workflows. We will provide the European research community with a leading edge software infrastructure to exploit the highest quality software and computational resources; enabling Europe to address the emerging grand challenges in materials science and engineering. MMM@HPC will strengthen Europe's international role as software provider and nucleate a unified community of computational scientists to address emerging computing needs of the research community with a very efficient, evolving research tool. The project will demonstrate a direct impact towards solving visible European R&D challenges in the areas of energy storage, energy conservation, carbon based devices for electronics and polymer based electronics.

NordForsk

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»NordForsk – focus on Research Infrastructure



NordForsk

NordForsk is an organisation under the Nordic Council of Ministers that provides funding for Nordic research cooperation as well as advice and input on Nordic research policy. With the purpose to promote excellence in research, the organisation

launches strategic initiatives which bring together national research groups in large-scale Nordic programmes based on common pot. NordForsk strives to find added value in common ground between initiatives. One priority in NordForsk strategy is research infrastructure. NordForsk's efforts in this area have increased over the years as research infrastructures has become one of the most important research policy areas. In many countries, including the Nordic, initiatives have been taken to formulate long-term strategies for the establishment of research infrastructure. Read more: www.nordforsk.org



OpenAIREplus – 2nd Generation Open Access Infrastructure for Research in Europe

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Support the research work of European scientists by creating and operating a robust, sustainable, and participatory open access infrastructure responsible for the overall management, analysis, manipulation, provision, and (most importantly) cross-linking of a very broad spectrum of scientific publications and a selected subset of related datasets through a suite of generic services and technologies developed, supported by a European-wide multiplier network established.

OSIRIS – Towards an Open and Sustainable ICT Research Infrastructure Strategy



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The main aim of the OSIRIS project initiative is to build the platform, mechanism and models required to secure the efficient involvement of Member States, Associated Countries and regions to develop cross border public-public partnerships and to establish a coordinated approach to future large scale investments in transnational European ICT RIs. The targeted areas are those that require large investments, such as micro/nanoelectronics, organic electronics and photonics, high performance computing facilities and experimental facilities for networks, data infrastructures and future internet. Within the project tools have been developed that facilitate easy access to information on ICT Research Infrastructures as well as models which help to understand their operational principles. In depth studies on several key RIs have been performed and the results of these will be provided.

PRACE – Partnership for Advanced Computing

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»PRACE enabling International Competition in HPC



The Partnership for Advanced Computing in Europe (PRACE) is a unique persistent pan-European Research Infrastructure for High Performance Computing (HPC). PRACE forms the top level (Tier-0) of the European HPC ecosystem and provides access to computing resources at the highest performance level and offers sophisticated services for scientific simulations in all fields of research and engineering. PRACE enables European

scientist and industry through a sustained program of continuous investment in new systems to stay globally competitive. PRACE and its partners have on going international cooperations with major stakeholders in HPC, e.g. XSEDE (USA), contributing to the global effort in using HPC as a powerful instrument to solve our socio-economic challenges of the next years. Access to PRACE resources is open to European researchers and their international collaborators from academia and industry.



SeaDataNet – Pan-European infrastructure for ocean and marine data management

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SeaDataNet has developed an efficient distributed Marine Data Management Infrastructure for the management of large and diverse sets of data deriving from in situ and remote observation of the seas and oceans. Professional data centres, active in data collection, constitute a Pan-European network providing on-line integrated databases of standardized quality. The on-line access to in-situ data, meta-data and products is provided through a unique portal interconnecting the interoperable node platforms constituted by the SeaDataNet data centres. The development and adoption of common communication standards and adapted technology ensure the platforms interoperability. The quality, compatibility and coherence of the data issuing from so many sources, is assured by the adoption of standardized methodologies for data checking, by dedicating part of the activities to training and preparation of synthesized regional and global statistical products from the most comprehensive in-situ data sets made available by the SeaDataNet partners. Data, value added products and dictionaries serve wide uses: e.g. research, model initialisation, industrial projects, teaching, marine environmental assessment.

VAMDC – Virtual Atomic and Molecular Data Centre

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»Virtual Atomic and Molecular Data Centre: A new way to disseminate atomic and molecular data

Atomic and molecular (A+M) data are of critical importance across a wide range of applications such as astrophysics, atmospheric physics, fusion, environmental sciences, combustion chemistry, health and clinical science including radiotherapy and underpin a range of industries ranging from technological plasmas to lighting. The Virtual Atomic and Molecular Data Centre (VAMDC) is a major new European initiative that is now building a unified, secure, documented, flexible and interoperable e-science environment-based interface to 17 existing A+M databases. VAMDC combines the expertise of existing A+M databases, data producers and service providers with the specific aim of creating an infrastructure that is easily tuned to the requirements of a wide variety of users in academic, governmental, industrial or public communities. The VAMDC project encompasses the construction of the core consortium, the development and deployment of the infrastructure and the development of interfaces to existing A+M Databases such that by its completion, at the end of 2012, VAMDC will have established itself as the preeminent data distribution system for the its seventeen composite A+M databases, based in the ERA and in Russia, which will be open to ERA users and regulated by registration of users on a portal.

VENUS-C – Virtual Multidisciplinary Environments Using Cloud Infrastructures

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VENUS-C (Virtual Multidisciplinary EnviroNments USING Cloud Infrastructures) is a pioneering project for the European Commission's 7th Framework Programme that draws its strength from a joint co-operation bringing together industrial partners and scientific user communities. The aim is to develop, test and deploy an industry-quality cloud computing service to empower researchers through the easy deployment of end-user services, underpinned by Windows Azure and its European data centres, the Engineering data centre and two European High Performance Computing centres: The Royal Institute of Technology (KTH, Sweden) and the Barcelona Supercomputing Center (BSC, Spain). VENUS-C user communities stem from seven partner affiliations developing applications for the Cloud across four thematic areas: Biomedicine, Architecture and Civil Engineering, Civil Protection and Emergencies, and Marine Biodiversity Data. VENUS-C has also provided seed funds for 15 pilots through an Open Call process. 5 voluntary experiments are also taking part in VENUS-C. Applications span architecture and civil engineering, astrophysics, biology, bioinformatics, chemistry, civil protection and emergencies, earth sciences, healthcare, maritime surveillance, mathematics, mechanical engineering and social media assessment.

ECCSEL – European Carbon Dioxide Capture and Storage Laboratory Infrastructure



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Carbon dioxide capture and storage (CCS) is identified as a future key technology for reducing emissions from fossil fuels. Global demand is large, in particular from emerging economies. However, further research and technological development is urgently needed if CCS is to become viable and cost-effective. The mission of ECC-

SEL is to form a pan-European distributed CCS Research Infrastructure (RI). The ECCSEL laboratories will provide an integrated foundation for the experimental research needed to bring forward improved CCS-technologies. ECCSEL will help to maintain Europe at the CCS forefront, increase the attractiveness of the European Research Area and optimize the value of the Community financial support.

IFMIF – International Fusion Materials Irradiation Facility



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»Engineering Design and Engineering Validation Activities for IFMIF

The International Fusion Materials Irradiation Facility (IFMIF) is projected to provide an accelerator- based, D-Li neutron source to produce high energy neutrons at sufficient intensity and irradiation volume to allow simulating the first wall neutron spectrum of the future nuclear fusion reactors as closely as possible. By providing

the same nuclear responses which affect the material behaviour under irradiation, engineering data will be generated for setting-up DEMO design rules for “End-of-Life” conditions. Further, materials and sub-components will be tested prior to approval for application in Power Plants. Currently, Engineering Validation and Engineering Design Activities are being performed by the IFMIF/EVEDA project in the framework of the Broader Approach agreement between EURATOM and Japan to validate the continuous and stable operation of the IFMIF subsystems. An Intermediate IFMIF Engineering Design report is to be issued in 2013.

RIEEB – Research Infrastructures for Energy Efficiency in Buildings



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🌐 www.energiainedificacion.com

The construction sector is the highest energy consumer in EU (about 40%) and main contributor to GHG emissions (about 36% of the EU's total CO₂ emissions). Therefore the EC sets clear goals for 2020 for buildings: to be nearly zero energy. Experimental research infrastructures play an increasing role in the advancement of knowledge,

technology and their exploitation, contributing therefore to the achievement of the mentioned goals for construction sector. These infrastructures shall contribute to (1) the implementation of Europe-wide harmonised and standardised labelling system, (2) cross national analysis of construction solutions to increase energy performance of buildings, (3) validation of design and assessment models through analysis under real conditions to increase reliability of simulation software and labelling and (4) increase the cross-national networking activities of the industrial construction sector by providing a unified, European-wide network of experimental facilities.

WINDSCANNER – WindScanner.eu – A new Mobile Facility for Wind Energy and Turbulence Research

DTU Wind Energy

Department of Wind Energy

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The new WindScanner.eu facility is a unique, distributed and mobile research infrastructure that will provide fundamentally new knowledge about the wind and will lead to more efficient, stronger and lighter wind turbines. DTU Wind Energy have been leading the development of the new mobile energy research infrastructure.

The Danish Agency for Science Technology and Innovation has supported the establishment of the national facility. DTU will host and coordinate the establishment of the corresponding joint European research infrastructure now under preparation. The mobile 3-D remote sensing wind scanners will be deployed and operated by (currently) seven large renewable energy research organizations, all members of the European Energy Research Alliance (EERA), but also in close collaboration with SMEs. The aim is to collaborate scientifically with initially the National Renewable Energy Laboratory (NREL), Golden, Colorado <http://www.nrel.gov> and Wind & Water Power Technologies, Sandia National Laboratories, Albuquerque, New Mexico <http://www.sandia.gov>. They both have an outstanding knowledge in the field of wind energy, especially wind turbine testing and scaled and instrumented test wind turbines.

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