Exchange of Experience Session I

How to reach financial and managerial maturity?

JIVE / H. van Langevelde

The national stakeholders, who also have direct representation in the board, support the base functions of JIVE by (usually) five-year commitments, in some cases through national funding agencies. It has been necessary to build up considerable financial reserves in order to have a sizeable fraction of the staff on permanent contracts. This has given JIVE a mature management structure with the capability to acquire additional project funding for innovation and scientific excellence.

1. How to build a business model and an investment plan for your RI and how does this helps to convince governments to invest??

C-ERIC / F. Mazzolini

CERIC (www.ceric-eric.eu) is a distributed research facility, which has been proposed in 2011 as an European Research Infrastructure Consortium (ERIC) by the Goverments of *Austria, Croatia, Czech Republic, Hungary, Italy, Poland, Romania, Serbia, Slovenia* and open to other interested Countries.

CERIC strongly relies on macroregional aspects in an area where material characterization and material synthesis are traditionally important for industry and where competences in these fields are well embedded.

It is based on the integration of already existing, complementary, high-quality, national resources into a unique international research infrastructure. CERIC includes one Partner Facility (PF) per Country, proposed by each Government and accepted after an independent international evaluation. These PFs will be further integrated and upgraded in response to international competition in a coordinated way.

CERIC will have a single and effective governance and a single management in charge of its integrated operation.

It will offer unique services in nanoscience and nanotechnology (nano-level analysis and synthesis of materials and biomaterials) through a common entry point for incoming users proposals and through a single peer review evaluation system to select them, based solely on excellence.

Every PF of CERIC will also act as national entry point to outreach both different local scientific communities and industries, and to connect with other institutions in the Region, acting also to ensure and increase the local socioeconomic returns of internationally competitive research (connecting global and local aspects).

CERIC's business model is characterized by different aspects.

Firstly, the national expenditure will be improved in quality and in returns, by opening national infrastructures and integrating them into a world level competitive environment. The added value resulting by this integration will be mainly obtained through "in kind" contribution by the participating

Countries ("transferring or sharing values instead of money"), i.e. through investments in the Partner Facilities. These "in kind" contributions represent the largest part of the values conferred to CERIC (in the order of more than 100 million euro of cumulative investments and more than 10 million euro/year operation and upgrades).

Secondly, the Country hosting the statutory seat will ensure the resources for the common centrally coordinated operational activities of the Consortium, including any funding needed to this end. The activities will include training and hiring personnel (i.e. for the scientific, technology transfer, administration, and communication activities) to operate into a distributed facility by making full use of ICT and decentralized administration technologies. This personnel will integrate different cultures, "feeling at home" in any of the Partner Facilities, while working as a distributed team.

Moreover, CERIC will review on time the different possibilities offered by the EU funds, preparing reports and distributing them to all the CERIC partners, involving the competent National and Regional Authorities, as well.

Finally, part of the advantage due to the integration within an ERIC will be given by VAT, Excise Duty and other exemptions granted to CERIC-ERIC. These will only apply to purchases made by the Consortium as well as to those made by each Member or Representing Entity, acting as such, solely for goods acquired for institutional use, and conferred to CERIC-ERIC as in-kind contributions for the official and exclusive use of the Consortium (for purchase made solely for the non-economic activities of CERIC-ERIC in line with its activities).

ELIXIR / A. Smith

The users of the infrastructure must be engaged early on, and indeed the whole initiative must be built around their needs. In parallel, there is a need to engage closely the Member States and national funding bodies to ensure that they participate in the defining of the business model and the investment plan. The message of the importance of the infrastructure should come not just from the Hub but also from the national scientific community themselves.
Showing how local industry benefits from the infrastructure is important as is demonstrating how any national investments in the infrastructure (ie Nodes) complement and add value to the strategic priorities of that country (for example, ELIXIR Node in Norway focusses on fish genomics, the ELIXIR Node Portugal on services relating to the cork tree). Having an infrastructure on a national roadmap certainly helps join, but doesn't guarantee that a country participates immediately.

ESS / M. Tiirakari

A solid technical design and program plan help to convince the stakeholders.

INSTRUCT / S. Daenke

The Instruct business model follows the Hub/node structure of the RI. The nodes comprise Centres of excellence that are funded nationally and make a proportion of their capacity available for Instruct activity. This is the major part of the national contribution. In addition, each member contributes a flat fee that supports the activities of the Hub – ie staff and running costs for coordinating the Instruct activities (access, training, networking, secretariat). This is attractive to national funders where the contribution to the administrative hub is strictly limited and the majority national contribution goes

towards the provision of the infrastructure. Instruct benefits the member by helping to develop the scale and quality of the infrastructure at the Centre/node and a user base that may be broader than is already established. The Centre also has the opportunity to benefit from new potentially high impact scientific collaborations that come via the access process.

JIVE / H. van Langevelde

In our trade it has been of crucial importance to build up a very trusted relation with our scientific customers, who request the best possible data quality, stimulating interaction and direct support (for students). Combining user statistics and a vision for scientific and technical innovations are a starting point for the continuous efforts to align the international partners to fund this truly European effort.

SKA / P. Diamond

SKA is constructing a business case to present to governments for construction funding through the following processes:

- Establishment of an in-house policy development team at the SKA Organisation
- Establishment of a sub-committee of the SKA Board to develop plans for governance, the funding framework and a procurement strategy; the subcommittee will bring on board experts as and when required
- The SKA Members are funding the detailed design phase of the SKA (to the tune of €120M) to deliver design packs to industry once funding is available

These actions and the documents prepared will convince the partner governments of the maturity of SKA.

2. How to combine different funding?

C-ERIC / F. Mazzolini (Including answers to question 3)

In order to fulfill the obligation to invest in the Partner Facilities, it is important for the CERIC Members and Representing Entities to review the funding possibilities for their activities in CERIC using structural funds and, if relevant, make provisions for the allocation of the funds in the relevant documentation (Partnership Contract, Smart Specialisation Strategy, Operational Programmes), and to be able to coordinate these funding mechanisms with the participation in the Horizon 2020 programme.

The most relevant structural funds for CERIC could be: *(i)* the European Regional Development Fund (ERDF), which foresees fixed investments in equipment, support to public research and innovation bodies and investment in technology and applied research in enterprises, networking, cooperation and exchange of experience between regions. Moreover ERDF is expected to contribute to enhancing research and innovation infrastructure and capacities to develop R&I excellence; *(ii)* the European Territorial Cooperation (ETC), in particular the Transnational Cooperation Programme – funding for projects between national, regional and local entities in larger geographical areas, e.g. Central Europe. It has its own Operational Programme and funds which are allocated through calls. In addition, both the EU Strategy for the Danube Region (EUSDR) and the EU Strategy for the Adriatic-Ionian Region (EUSAIR, currently under development), are of interest to CERIC. These strategies are mainly about closer cooperation, rather than funding, however, it is expected that EU structural (ERDF)/pre-accession funds will be the main source of funding for its activities; *(iii)* the European Social Fund (ESF), which supports

the development of human capital, contributing to strengthening research, technological development and innovation, through the development of post-graduate studies, the training of researchers, networking activities and partnerships between higher education institutions, research and technological centres and enterprises.

These three funds will be available to all EU regions although the majority of the ERDF and the ESF will be allocated to the less developed regions. These funds will be the main European instruments for supporting local projects to increase jobs and growth.

CERIC, through its partners, will try to use these different funds in a more complementary and integrated way, with projects connecting different workpackages in structural funds and in Horizon 2020.

ELIXIR / A. Smith

A range of sources can be used. For construction of the infrastructure this can include:

- Structural Funds,
- National capital investment funds, or even
- EIB loans.

For operations this can include:

- National funding,
- Co-financing,
- Industry funding, or
- Structural Funds to an extent

Collectively, European research funds can also be used for aspects of construction and operations. Whilst the idea of combining different funding sources makes perfect sense, achieving it can be more difficult. The challenge for the Hub is to coordinate this process even when most of the work for national funding will be done by the Nodes, and where the timings of decisions are different from country to country. It is important to have a clear funding strategy as part of the Business Case to ensure that everyone involved is aware of the types of funding available, and the process they need to follow to access it.

ESS / M. Tiirakari

In-kind, grants, EU-funding and cash contributions need clear specifications (need, purpose, expenditure, timescale etc.)

INSTRUCT / S. Daenke

As above, there are different routes of funding for Instruct (national funding for infrastructure at the nodes and a flat fee for supporting the Hub). These are managed totally independently. In addition, the business model allows for contributions towards access costs from grants. Other sources of funding may be used for training and networking activities. All income and expenditure is audited according to the rules for not-for profit operation.

JIVE / H. van Langevelde
Besides our base budget we acquire an almost equal amount of funding through the EC and national agencies for specific projects. This results in a complex patchwork in which non-permanent staff rotates on various projects, within the limits of national employment rules.

SKA / P. Diamond
I am unclear what this question is asking.

3. How to use structural funds for implementation and operation?

C-ERIC / F. Mazzolini
See answer to question 2.

ELIXIR / A. Smith
Some ELIXIR Nodes have successfully used Structural Funds to contribute to the construction or operation of their activities:

- The ELIXIR Finland Node stores its data in a data centre that was converted from a paper mill using Structural Funds.
- The ELIXIR Estonia Node uses national Structural Funds programme for infrastructural support to participate in ELIXIR.
- A partner in the ELIXIR Czech Node is CEITEC, which has benefitted immensely from Structural Funds.

The Nodes themselves have to take the lead and work closely with their regional managing authorities for it to happen.
However, using Structural Funds to the extent that the ELIXIR management would have liked has been a challenge. The reasons are manifold.
Partly it turned out to be difficult to fund smaller, less visible infrastructure activities through Structural Funds. In other cases it was difficult to use them for operations as opposed to construction. Finally, there is difficulty in working with so many managing authorities across Europe.

ESS / M. Tiirakari
We at ESS are at a learning curve on this, but some of our member states are already active on the combination of their in-kinds.

INSTRUCT / S. Daenke
Instruct is hosted in the UK and does not have direct access to structural funds. Other Instruct member states have benefitted from significant support via national structural funds. The situation is variable across European states.

JIVE / H. van Langevelde
Assuming this means structural funds for regional development, I am aware there is some support for national radio telescope infrastructure, but at the moment this is not used for JIVE.

SKA / P. Diamond
The SKA is a global project, with the RI to be built in Australia and South Africa. As such, structural funds are not an option.

4. How to involve industrial partners or/and provide services to industry?

ELIXIR / A. Smith

Understanding the needs of industry is critical, and building regular dialogue is the first step. Industry is already a heavy user of bioinformatics resources across Europe and many ELIXIR Nodes already have their own well-established and functioning industry programmes. ELIXIR's overarching industry programme tries to build on and compliments these local interactions.

ELIXIR had an industry Work Package in the Preparatory Phase, which was led by industry representatives. This set out the initial 'needs' of industry from a publicly-funded data infrastructure for the life sciences. Since then, ELIXIR has commissioned a more recent and detailed follow on exercise, carried by Connected Discovery, an independent life science consultancy company. This involved meetings and interviews with over 40 companies across Europe and came up with a series of recommendations, which will now be implemented through the ELIXIR Programme stipulating ELIXIR's scientific strategy for the coming five years. Having this exercise carried out by an independent company worked well for ELIXIR and ensured that the feedback we got from industry was honest and open.

Other ESFRI RIs already receive direct funding from industry for their operations: EuroBioImaging, for example, has a staff post in the Hub, funded through contributions from industry.

ESS / M. Tiirakari

Established ILO-network, regular industry days within the member countries, networking via the delegates and ministries/funding agencies.

EPOS / R. Evans

Most of the public sector organizations that operate national RIs related to EPOS have experience of working with industry partners, providing services to them and enlisting their support. EPOS will seek to work with those national partners, and will assist them in their individual interactions.
In areas such as resource exploration, public sector geoscience organizations have long played a key role in providing baseline information (for example, geological and geophysical maps) that is used by industry players. These users include not only exploration and exploitation companies, but consultants offering added-value products based on the information provided by the public sector organizations.
EPOS is likely to find itself in a position that parallels that of the national RIs. Information and data products that improve standards and lower costs across the board are invariably welcomed by all parties, but the provision of products or services that offer competitive advantage to one player are often seen as inconsistent with a public service mission.
EPOS will therefore seek to work with industry bodies and where possible to set up supporting consortia, to ensure that its developments are of value to the relevant industry, that EPOS itself receives some return for the reductions in cost that its services provide, but that it does so in a manner that is neutral in respect of individual players.

INSTRUCT / S. Daenke

Instruct has formal and informal relationships with a number of commercial science organisations and manufacturers. Mostly the relationships involve development and implementation of infrastructure (instrumentation, software). The mutual benefits are that the industrial organization has the

opportunity to make advances to its instrumentation with the advice/knowledge of experienced end-users and it can be tested in situ by the same. Instruct benefits from being able to provide access to the newest and novel technologies on offer, including input into future technical applications or modifications that may in turn develop new scientific approaches.
Instruct can provide access to industrial users based on the model used by synchrotrons: 1) industrial users may access Instruct infrastructure through the peer-reviewed academic route for pre-competitive work. In this case, the user must agree to publish the work and not unreasonably withhold the data and the access is supported as for academic projects; 2) industrial users may pay for the access service. In this case, there is no obligation to disclose the data nor publish. Instruct has not yet offered this 'pay as you go' service access.

JIVE / H. van Langevelde
Industrial partners are regularly involved in upgrade and development projects. We are serious about disseminating our scientific and technical achievements at various levels. Providing services to industry is however not part of our scientific mission.

SKA / P. Diamond
SKA is engaging industrial partners as sub-contractors in the various design consortia we have established. We are also meeting with senior people (CEO, CTO, V-P level) in iconic, global companies to brief them on SKA, to let them know that construction contracts will be forthcoming and to seek advice on our complex procurement strategy.

5. Where and how does risk management help?

C-ERIC / F. Mazzolini
The main risk for the Consortium is the possible loss of trust among the partners, for example not delivering on time the drive towards the increase in quality of the single PF. This will be managed by ensuring the highest level of international peer review for science and by appropriate training and motivation.

ELIXIR / A. Smith
For ELIXIR it was necessary to separate risks concerning the physical construction of the ELIXIR Hub and the off-site data storage (where the risks concerned more natural or man-made threats, slippage in construction, etc.) with the risks relating to the operations of the infrastructure including the Hub and Nodes (where the risks concern more IPR infringements, ethical considerations, etc).
The risk register for the construction of the Hub building is owned by a programme manager appointed through the Large Facilities Capital Fund, as part of the UK's contribution to hosting ELIXIR. For the operations of ELIXIR, the risk register is 'owned' by the ELIXIR Grants and programme manager in the ELIXIR Hub, and the ELIXIR programme for 2014-2018 is used to monitor and evaluate these risks. The ELIXIR risk register lists a number of risks in the following areas: scientific; users; operational; organisational; financial; and political. It assigns a risk factor and mitigation measure next to each one. The value of having effective risk management procedures not only ensures that construction and operations are more likely to progress as planned, or that mitigation procedures can be established

more rapidly, but that Member States themselves have confidence in the construction and operation of the infrastructure.

ESS / M. Tiirakari
It helps the management to convince the funding partners. It is import to have proper risk management system, which is up-dated and established by specialist.

INSTRUCT / S. Daenke
Instruct has a risk register based on the operational capacity of the nodes and a separate risk register for the coordinating Hub. The risk register allows triaging of risk and early intervention for red risks. It aids updating of the business plan, future strategic planning including financial planning.

JIVE / H. van Langevelde
Risk management is part of our normal (self-)evaluation procedures and all of our project management.

SKA / P. Diamond
We have a detailed risk register for each design consortium and the overall system. We are also engaging a major insurance company to advise on the risks to the RI and personnel on our remote desert sites during construction and operations.

6. How do you demonstrate the added value of financing a central hub?

C-ERIC / F. Mazzolini

Due to its organizational model, CERIC will have a light central managing structure, which will be financially supported by the Country hosting it.

The consequent added value for this Country will be connected to the improvement in its visibility and attractiveness, as well as in ensuring that its scientific, managerial and technical staff will be driven to a more competitive environment, thus increasing the overall quality of the investment. This will be also ensured by the integration of the PFs into the Consortium on an “equal opportunity” basis: in particular, the CERIC Statute foresees a cyclical evaluation of the central hub every five years, with the possibility to move it to another Country.

No specific contribution by the other Members to finance a central hub is foreseen.

ELIXIR / A. Smith
The economic impact of genomics generally has been demonstrated in many leading studies . However, establishing a robust methodology to calculate the exact economic impact of distributed infrastructures can be difficult (an on-going EC-funded project is currently attempting this for some), and because ELIXIR is an Open Access infrastructure, with millions of users across the globe, it becomes even more challenging to generate an exact quantitative figure for return on investment.

Therefore in order to demonstrate the added value of the Hub (and also the Nodes), ELIXIR has developed a scorecard of Key Performance Indicators (KPIs) and uses a range of quantitative and qualitative methods and case studies/narratives to assess the added value. These include metrics to

assess: capacity building (ie, number of Members and Observers, number of ELIXIR kite-marked services, number of collaborations ELIXIR has participated in); service deliverables (ie, number of users trained); industry usage (ie, increase in users from industry).

In addition, Hub activities have intentionally been focussed on actions that deliver demonstrable returns for the infrastructure as a whole. These types of activities carried out by the Hub include: coordination of the ELIXIR's external funding strategy; coordination of ELIXIR's industry programme; and responsibility for engaging new Members. Indeed, the Hub plans to recruit a member of staff in 2014 dedicated to monitoring and implementation of KPIs.

[i] http://battelle.org/media/press-releases/updated-battelle-study-genetics-and-genomics-industry

ESS / M. Tiirakari

By savings (monetary), less red tape in administration, one system – one goal…

INSTRUCT / S. Daenke

The Instruct Hub coordinates access for the user through a sequence of technologies (at different Instruct Centres) that is specified in the access proposal and has been approved by the review process. This requires the Hub team to help to schedule and monitor progress for the user, identify new opportunities, problems, bottlenecks and suggest solutions to help the user get the best outcome from the Instruct access.

Apart from delivering Instruct activities (monitoring and administering the access process, organizing and monitoring training and networking events; undertaking central financial and other administrative tasks including all the Governance committee work) the central hub team has been instrumental in securing grant funding to support staff and provide resources for Instruct activities and secure sponsorship for Instruct meetings, thereby adding to the activities that Instruct can provide to its membership.

The Instruct Hub is the central contact and dissemination point for Instruct, has established a broad awareness of Instruct through campaigns, on social media and in various publications. The Hub team maintains the Instruct website and provides a rapid response communication route for members, users, funders, sponsors, potential new members and all other stakeholders and interested parties. The Hub team directly supports activities at the nodes by centrally administering funding reimbursement for access, internships, fellowships and Research and Development Pilot awards.

JIVE / H. van Langevelde

In the case of the EVN, the need for a central hub is almost self-evident. JIVE implements the central data processing, user services and quality control. It plays a major role in the vital innovation programme of the research infrastructure and it acts as the point of contact and expert centre for joint (EC) projects.

SKA / P. Diamond

With the RI itself located in two desert sites in distant countries, the advantages of a European-based HQ and, ultimately, SKA data centres are easily demonstrated, since scientists will not be visiting the RI itself.