

### Biobank Catalogue

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This project will be conducted in a 1 year period (May 2014– May 2015) aims to develop and implement a global biobank catalogue that registers and keeps track of the bio-resources in the BCNet member's biobank. The design of the data model of the catalogue will be in accordance with pre-established standards for biobank data representation and sharing (MIABIS 2.0) as well as other standards for biomedical research. It will contribute to the efficient use and re-use of bio-resources as well as promote the collaboration between the network members and scientists worldwide.

#### Background

- IARC holds one of the largest sample collections in the world with approximately 7 million biological samples from around 2.0 million individuals from several continents. Biobanks,
- BCNet member's labs and facilities are distributed in over 15 countries making it difficult to trace and identify samples and associated data for inclusion in multi-centre studies.
- On other hand, "Biobanking and Biomolecular Resources Research Infrastructure" (BBMRI-ERIC) has experience in harmonization and standardization of biobanking in Europe. A standard for biobank data sharing called MIABIS (Minimum Information About Biobank data Sharing) has been designed and it will be the "de facto" standard for sharing data among biobanks all over Europe. The standard provides a formal representation of the main components needed for sharing bio-medical research data and biobank data.
- In addition, BBMRI has a vast experience in standardization and harmonization of biobanking, Lab Information Management Systems (LIMS), implementation of legal and ethical framework for personal and scientific data protection as well as its implementation in informatics systems.

#### Specific Objectives

1. Design a catalogue for registering and keeping track of bio-resources from BCNet.
2. Create a data management policy that defines the users and access to the catalogue data.
3. Facilitate data transfer from LIMS, databases, etc. to the catalogue's database.
4. Promote collaboration between research institutions.
5. Facilitate the quality control, management and tracking of use and re-use of bio-resources.
6. Provide the required software documentation and training for an efficient exploitation of the software.
7. Create a systematic way to upgrade and update the software beyond the project's lifetime.

#### Expected benefits

- Provide a tool that allows the storage, management and tracking of the bio-resources in the BCNet including bio-specimens, sample collections, studies, services, data, etc.
- Contribute to the bio-molecular research on cancer by improving the accessibility to samples and sample information.
- Provide the possibility of integrating biobank with existing infrastructures for data storage and high throughput data analysis.
- Create a bridge to enhance biomedical research collaboration between BCNet members and the international research communities by implementing harmonization and standardization in biobanking and bio-molecular research towards a controlled bidirectional interchange of research data, bio-resources and knowledge; observing the ethics and regulations for sharing biomedical data.
- Contribute to the knowledge discovering on human diseases by improving the availability of samples and sample data generated by studies done on IARC samples.

## **Project Plan**

### **Task 1: Identification of key use cases and requirements (M1-M2)**

This phase of the project will identify key issues to be taking into consideration for the implementation of the catalogue. It will allow getting a good understanding of the scope of the whole platform related to:

- Hardware requirements according to local conditions, users, etc.
- Basic software requirements: operative system, databases, word processors, etc.
- Identification of requirements related to catalogue user interface, data transfer, archiving, etc.
- Identification of processes to be designed and implemented in the catalogue in order to couple with specific requirements from IARC biobanking.
- Definition of hardware and software to be used to deploy and maintain the application
- Strategies for upgrading and updating the catalogue

### **Task 2: Software design (M2-M4)**

This task involves software requirement analysis and the definition of the software data model based on the identified requirements in Task 1. Documentation will be generated as part of the software engineering. UML (Unified Model Language) will be used.

### **Task 3: Prototype (M4-M6)**

The catalogue will be implemented according Task 2. This implementation, as part of the software cycle will provide inputs from users and the system itself. Not all the functionalities will be included in the prototype but the main functionalities will be ready for testing. This phase will allow detecting issues that were not covered in Task 1 and Task 2 meaning that those tasks are retaking as part of the software cycle.

### **Task 4: Implementation and deployment of the catalogue (M6-M10)**

After testing the prototype, the rest of functionalities from Task 1 and Task 2 will be added to the system and a new test period will be needed to refine the final product. Documentation will be generated regarding

### **Task 5: Documentation and education (M10-M12)**

All the catalogue's functionalities will be documented and a training plan will be designed to facilitate and promote the use of the catalogue. This task will cover:

- Hardware documentation regarding all hardware components and user guides for the system setup
- Software documentation according to software engineering
- User guides
- Planning of training for technical personnel and researchers

## References

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Ref.no.	Document name, document designation	Edition, date
1	IARC <a href="http://www.iarc.fr/">http://www.iarc.fr/</a>	Website
2	BBMRI-ERIC <a href="http://bbmri.eu/">http://bbmri.eu/</a>	Website
3	A Minimum Data Set for Sharing Biobank Samples, Information, and Data: MIABIS <a href="http://online.liebertpub.com/doi/full/10.1089/bio.2012.0003">http://online.liebertpub.com/doi/full/10.1089/bio.2012.0003</a>	Paper, 2012
4	MIABIS 2.0: Minimal Information about Biobank data Sharing <a href="http://bbmri-wiki.wikidot.com/en:dataset">http://bbmri-wiki.wikidot.com/en:dataset</a>	website
5	Developing a semantically rich ontology for the biobank-administration domain. <a href="http://www.ncbi.nlm.nih.gov/pubmed/24103726">http://www.ncbi.nlm.nih.gov/pubmed/24103726</a>	Paper, 2013