

D 7.10 Project showcase

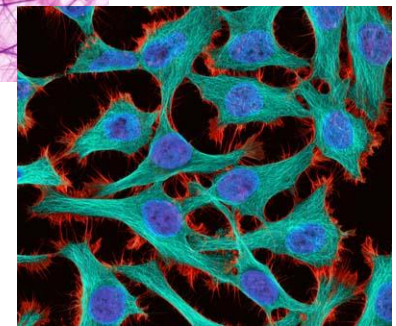
eMedica

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Use case

- The **biomedical researcher** needs a **specific and important number of samples** to be able to carry out their research with different objectives such identify the best treatment/target molecular obtaining significant results.



State of the art

- The biobanks have **organised collections of samples** usually collected in various **different formats**, and stored in **separated databases** and facilities.
- Nowadays, the researchers have to **contact several biobanks and pathologists along the world** to find the appropriated samples for their research.
- They establish the **contact by email or by phone** with their colleagues.
- There are **no system** in the market that allow the researchers **to search and find samples in a global and centralized way**.



Neccesity to solve

- A **global catalogue of samples**. **Sufficient samples of multiple pathologies**. The researchers need hundred of samples for a project.
- **Reliable and fast access to information**, a powerful search engine.
- Full information about the samples; **Clinical data and images**.



How the system works (I)

- The BIOPOOL system gives a **user friendly Web Search Engine** to perform **sample queries based on histological image similarities and clinical data**.
- **No installation is needed.**
- The biobanks share their samples in the network, a low-copy is generated, the descriptors are extracted and then the samples are deleted. **The original sample only resides in the owner biobank.**
- **The quality of the samples is validated** before include them in the network.
- Nowadays, BIOPOOL network includes **5 biobanks** with samples of **colon, breast and lung**.



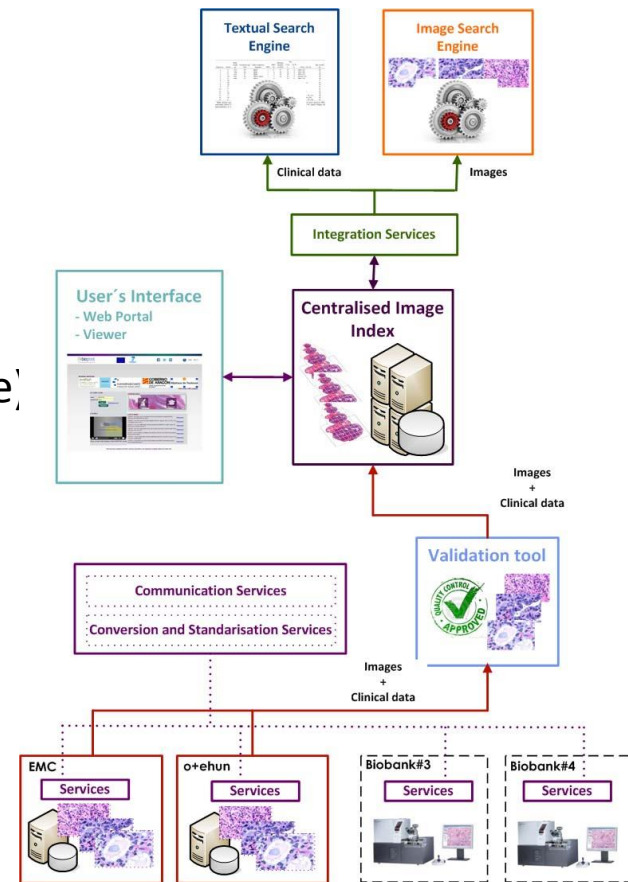
How the system works (II)

- The researchers can **search and find samples by clinical data and images**. The **favorite searches** can be stored in a researcher private area.
- The researchers can **refine the search based on the results** of the previous search to adjust the results.
- The retrieved samples include **full information** (% similarity, images and clinical data) to select the most adequate one.
- **The images can be explored** with a full image viewer, **measured and annotated** for reviews.
- The researchers can express interest in requesting samples and **get information to establish contact with the owner biobank**.



Resources that have been created

- **Upload tool** to share the samples in the network from the biobanks. Services to compress/decompress the huge images of the samples and standardize them.
- **Validation tool** to validate the quality of the samples.
- **Centralized Index** to centralize the information.
- **Web Portal** to search the samples (by text and/or image), save favourite searches and request samples.
- **2 Search engines**, by text and image.



Key factors

- **Number of biobanks** involved/interested
- **Number of samples and pathologies** indexed
- **Effective, fast and easy searches**
- **Economic efficiency against possible competitors**
- While image collections carry very valuable knowledge in several fields, their exploitation requires tools to gather, access, visualize, and process large images.



Evolution

- **Complete the existing organs** with **all the pathologies** of them.
- **TMA** (Tissue Micro Array):
 - The researchers would see as a big plus to request samples in TMA format, instead of individual samples.
 - It would be very valuable to provide them hundred of samples of one pathology from different biobanks.



- Include a **shopping cart** in the Web to complete the request process and avoid the researchers to get in touch with different biobanks in order to ask the wanted samples.

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