The iPC project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 826121.
If data is broadly available, experts can create effective personalised therapies for kids with cancer.

Let’s join forces in creating a massive knowledge base for a joint fight against paediatric cancer.
Welcome to the Webinar!

Housekeeping

- The webinar is being recorded.
- The session and material will be available on the iPC website.
- Raise hand / use chat.

Agenda

- About iPC
  Lisa Burgstaller
  Technikon
- iPC Data Catalogue
  Alejandro Canosa
  Barcelona Supercomputing Center (BSC)
- Moving Forward
  Jolanda Modic
  XLAB
About iP C

Lisa Burgstaller
(Technikon)
iPC Consortium - 21 Partners from 3 Continents
iPC in a Nutshell

- iPC assembles, standardizes and harmonizes high-quality multi-disciplinary data on paediatric cancers that are made accessible to researchers, clinicians and stakeholders through a cloud-based platform.
- iPC leverages collected data to construct predictive models for paediatric cancer patients, tumours and treatments.
- iPC verifies the quality of predictions using dedicated data from clinical trials and preclinical models.
- iPC builds a cloud-based service with an HPC backend to produce personalized treatment recommendations for paediatric cancer patients.
Discover iPC

https://ipc-project.eu/

@iPC_H2020

/company/ipcproject/

/vimeo.com/technikon
The Structure / Purpose of the Core Presentation

- Understanding the background
  What it is, how it works, how it fits into the iPC Platform?

- Seeing it in practice
  Live demo: How you can search, filter, select, and use data?

- Opportunities for collaboration
  How you can help us move forward?

*iPC is here to help YOU advance YOUR research in paediatric cancer.*
Let us know if you see opportunities for improvements.
iPC Data Catalogue

Alejandro Canosa
(Barcelona Supercomputing Center - BSC)
We aim to create a platform where scientists can visualize, search, filter, select, and analyze data related to paediatric cancer.

iPC Catalogue will host:
- Newly produced data.
- Data from existing repositories hosting paediatric data (Kids-First, R2, dbGaP...)

all this while...
Data Access procedures and compliance to Data protection laws are simplified.

Which are our main objectives (so far) ?

- Development of a computational framework.
- Development of a central platform for data/metadata storage.
iPC Platform architecture

Metadata
Catalogue portal

Data Mgt.

Data Analysis

Data/Access portal

Data Visualization

Data Analysis

Other resources

iPC – individualized Paediatric Cure
iPC Access/Data portal

How does the platform work?

iPC platform gathers data from different sources and also data analysis tools in an integrated environment.

- Access platform services from one single place and one single login.
Implementation of a central platform for data/metadata storage.

➢ Overture’s stack
  □ Arranger: Data portals UI components.

➢ Arranger example
  □ Kids First Data Portal
Implementation of a central platform for data/metadata storage.

Logstash → Elasticsearch → Kibana

Data ingestion → Indexing and metadata storage → Visualization

Views generation

Overture Arranger

iPC – individualized Paediatric Cure
Implementation of a central platform for data/metadata storage.

➢ Arranger server UI

❏ Generate views from an ElasticSearch index
iPC Catalogue - Data visualization based on Arranger

Dashboard  Data Management  File Repository  Logout

React

iPC Data Catalogue: Open Paediatric Brain Tumor Atlas
Open Pediatric Brain Tumor Atlas (PBTA)

- Genomic dataset (whole genome sequencing, whole exome sequencing, RNA sequencing, proteomic, and clinical data) for nearly 1,000 tumors.
- Metadata publicly available at Kids First Data Portal.

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<td>WXS</td>
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</tr>
</tbody>
</table>
iPC Catalogue - Open Pediatric Brain Tumor Atlas.

A. Extraction

Data handling:

Phenotypic and file descriptors

B. Processing

Participant → Biospecimen 1 → File 1

Biospecimen 2 → File 2

Biospecimen n → File n

C. Ingestion

Participants list and associated metadata from Pediatric Brain Tumor Atlas

iPC – individualizedPaediatricCure
iPC Catalogue - Outbox API

Data model

Phenotypic descriptors: Which?

File descriptors: Where?

Catalogue

mongoDB

Outbox API
iPC Catalogue - Analysis - Data storage

File descriptors: File ID, Locator, ES_index

Outbox API

Catalogue

File descriptors

File ID, ES_index

Metadata

File ID, ES_index

Locator

File path

Virtual Research Environment

CAVATICA

Nextcloud

Storage

Analysis

File ID, ES_index

Metadata

File descriptors
Implementation of a central platform for data/metadata storage.

Authentication: Technikon’s Keycloak

Nextcloud personal dashboard
iPC Catalogue - Select data from Arranger table

Add selected data to the cart for a later analysis
iPC Catalogue - Data Management section

- Expose selected metadata to openVRE (Outbox API) or Cavatica (not yet).
- Data Access Requests ¿?
iPC Catalogue - Analysis (open VRE)

Data sets available to the iPC openVRE:

Inspect and/or remove already loaded data sets into VRE.

fileID: NC_demo_03

Go to iPC openVRE

File descriptors: Locator
Moving Forward

Jolanda Modic
(XLAB)
Moving Forward

*iPC is here to help YOU advance YOUR research in paediatric cancer.*

- **Provide metadata**
  
  *Help us grow the data model, make the most of the available, public and private, data sources.*

- **Provide data**
  
  *Help us grow the data catalogue, make the most of iPC resources.*

- **We’d love to hear from you**
  
  Reach out to [alejandro.canosa@bsc.es](mailto:alejandro.canosa@bsc.es) and [jose.m.fernandez@bsc.es](mailto:jose.m.fernandez@bsc.es)
Thank you!
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