

SJD Children's Hospital Digital and Data Strategy Towards a DDO

Workshop: Building the data-driven hospital and facing the challenges: from EHRs to data ecosystems

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Hospital Highlights

2020 Activity



21,947
Discharges

272,078 (42,9% homecare)
Outpatient visits

14,472
Surgical operations

3,392
Deliveries

91,243
Emergencies

2020 Resources



2,265
Professionals

302
Beds

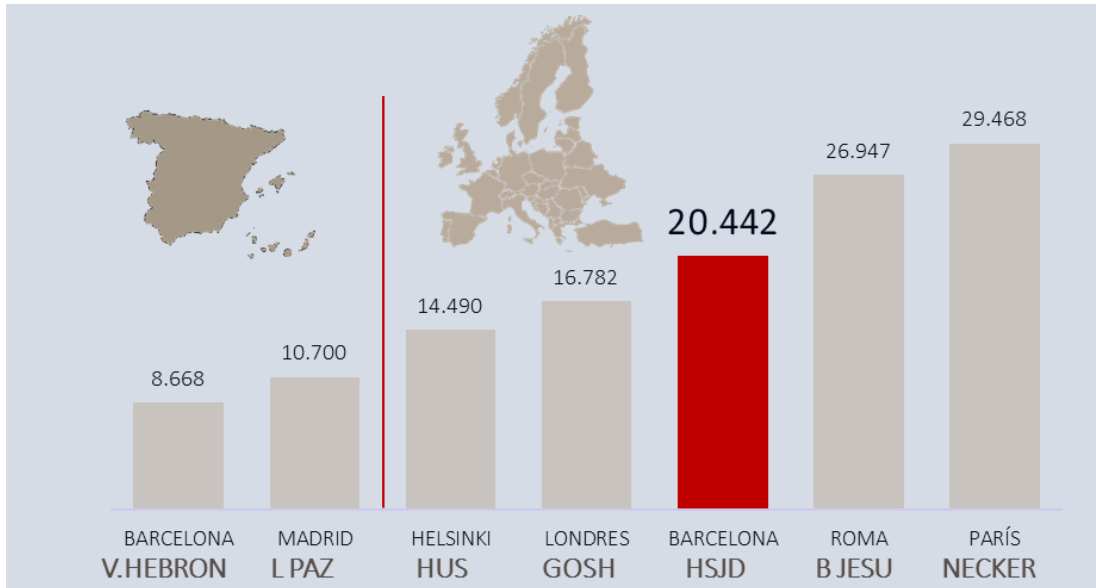
2020 Financial Data



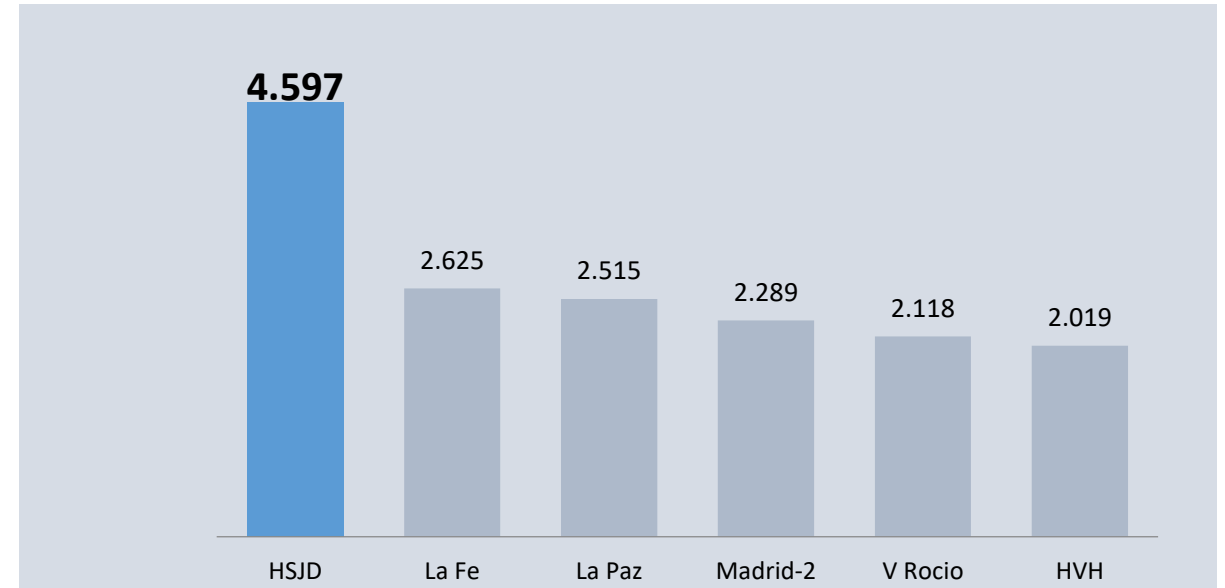
€160.9M
Annual Budget

€8.5M
Investments

350,000
Patients/year



First pediatric center in size in Spain and third in Europe



The center with the highest tertiary pediatric activity in Spain

H2O+ Herramientas digitales y sociales

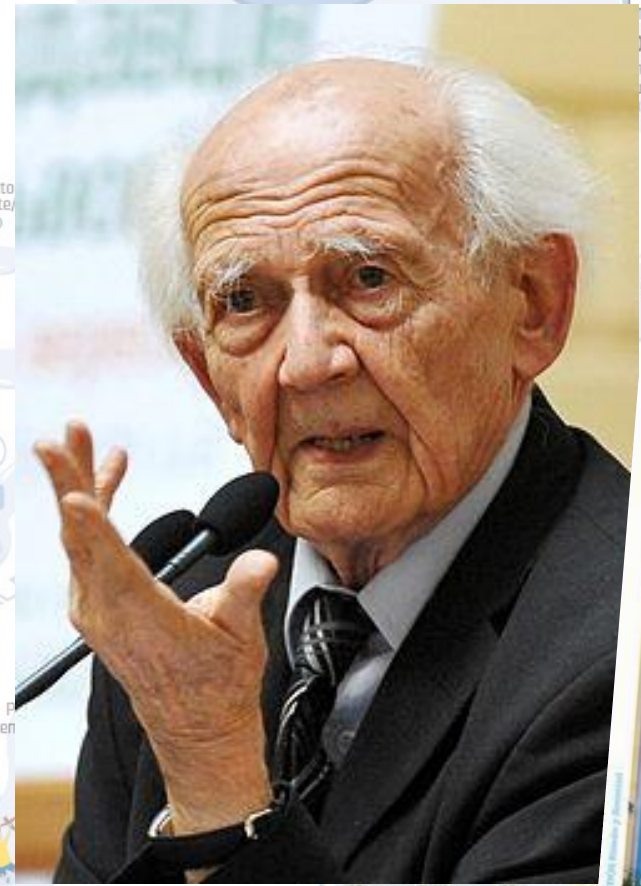
Hospital

LIQUIDO COMO EL AGUA, nuestro concepto de hospital donde la información fluye gracias al uso de las nuevas tecnologías

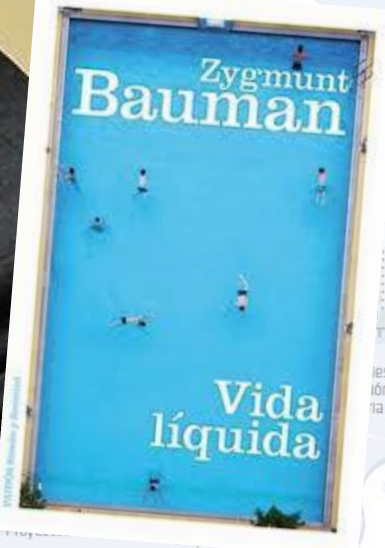
QUÉ ESTAMOS HACIENDO PARA LOS PACIENTES...



NUEVO CONCEPTO DE 'SALUD'



Zygmunt Bauman
(Poznan, 1925 – Leeds, 2017)



- QUÉ NOS APORTA**
- A los pacientes**
 - Acceso universal 24/7
 - Calidad de vida
 - A los profesionales**
 - Mejor preparación
 - Mejores resultados de salud
 - A la Institución**
 - Mayor eficiencia

HOSPITAL LÍQUIDO
INNOVACIÓN AL SERVICIO DEL PACIENTE Y LA FAMILIA

Sant Joan de Déu
HOSPITAL MATERNOINFANTIL - UNIVERSITAT DE BARCELONA



Hospital

LIQUIDO COMO EL AGUA, nuestro concepto de hospital donde la información fluye gracias al uso de las nuevas tecnologías

QUÉ ESTAMOS HACIENDO PARA LOS PACIENTES...

NUEVO CONCEPTO DE 'SALUD'



Because the world has changed



For the hospital's survival strategy

QUÉ NOS APORTA A los pacientes

- Acceso universal 24/7
- Profesionales
- Mejor preparación
- Resultados salud

A la Institución

- Mayor eficiencia

Paidhos 2008-2014



PAIDHOS 2020

Liquid Hospital

To go beyond the hospital building

SIGLO XX
 Medicina paternalista. El médico determina lo que es bueno para el paciente. Toda la atención ocurre dentro del hospital.

PATERNALISTIC
HOSPITAL CENTRIC
REACTIVE
1 SIZE FITS ALL
SILO'D



DESDE 2005
 Medicina participativa. Papel activo del paciente en el cuidado de su salud, gracias a las nuevas herramientas digitales y sociales.

PARTICIPATORY
VIRTUAL
REACTIVE
1 SIZE FITS ALL
SILO'D



FUTURO
 Medicina colaborativa. Procesos de decisión clínica conjuntos y compartidos. La atención tiene lugar dentro y fuera del hospital.

COLLABORATIVE
PREDICTIVE
PREVENTIVE
PERSONALIZED

Liquid Hospital

To go beyond the walls of the hospital

In Person Contact Points



Digital Contact Points



Actividad presencial



Actividad virtual

Multiplying the impact by 100

862
visitas ambulatorias

1.201
visitas a la web Sant Joan de Déu

309
urgencias

2.315
visitas a la web Faros

50
ingresos

3.057
visitas a la web Guía Metabólica

63
intervenciones

118.846
visitas a Facebook

10
partos

77.337
visitas a Twitter

1.264
Daily In-hospital
Contacts

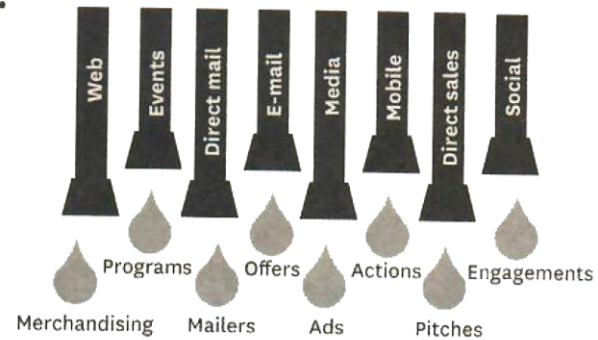
202.756
Daily Virtual Contacts

Complex **Digital and Data** Ecosystem "SILOS"

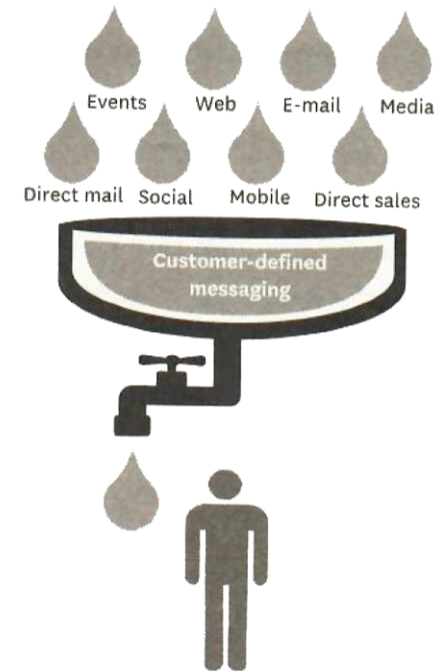


Simplification

From ...



To ...



Liquid Hospital 4.0

FEDER-RIS₃CAT 2015-2019



Objectives “Hospital Liquid 4.0”

1

Model of attention and provision of services that ensures multi-channel:

- CRM – Contact Center – COACH
- NEW Patient Portal
- Health Literacy



“FRONT-OFFICE”

2

Create value from the data:

- Health Data Management (HDM)



“BACK-OFFICE”

Order the data in a single repository from different sources in "silos" to exploit them [Big Data & AI]

"Past "

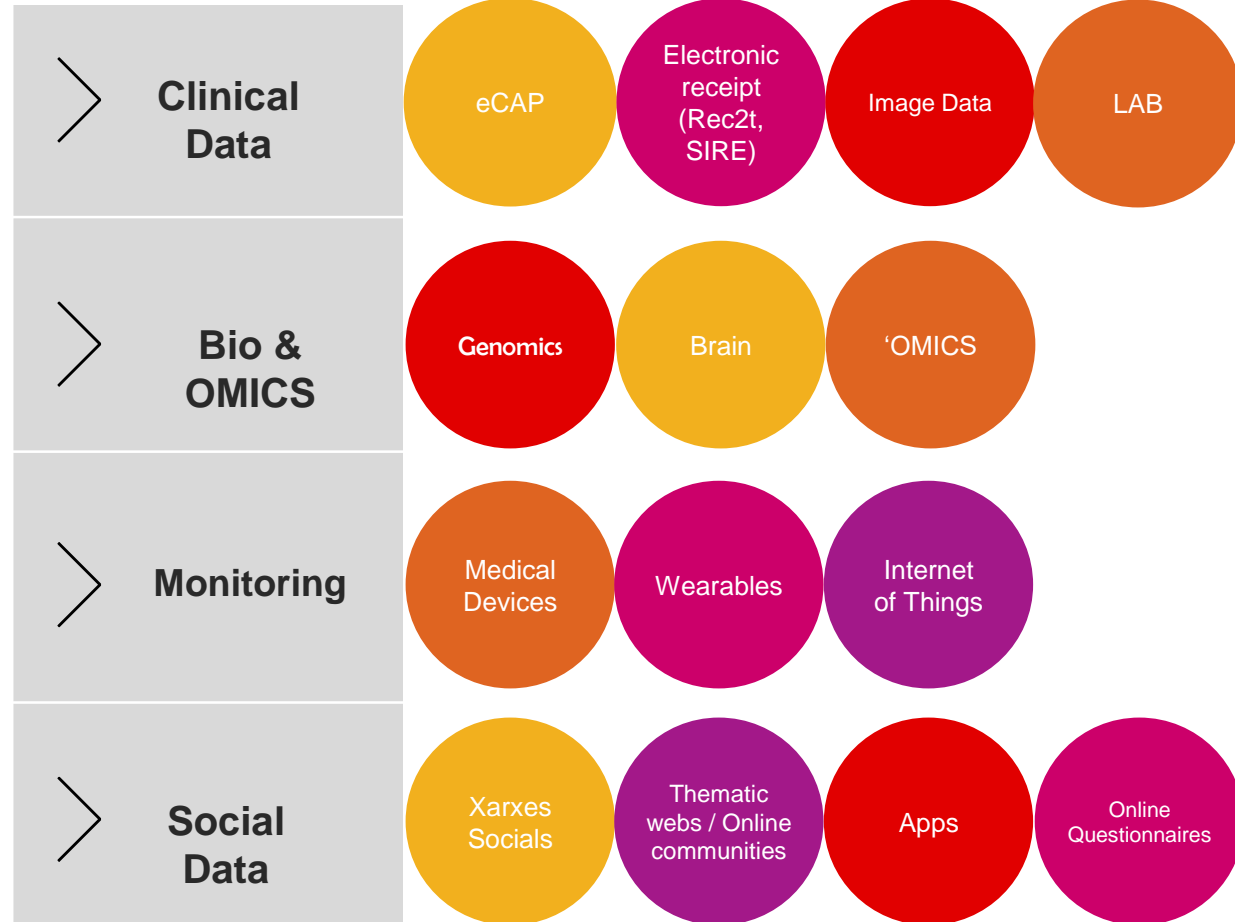
Patient



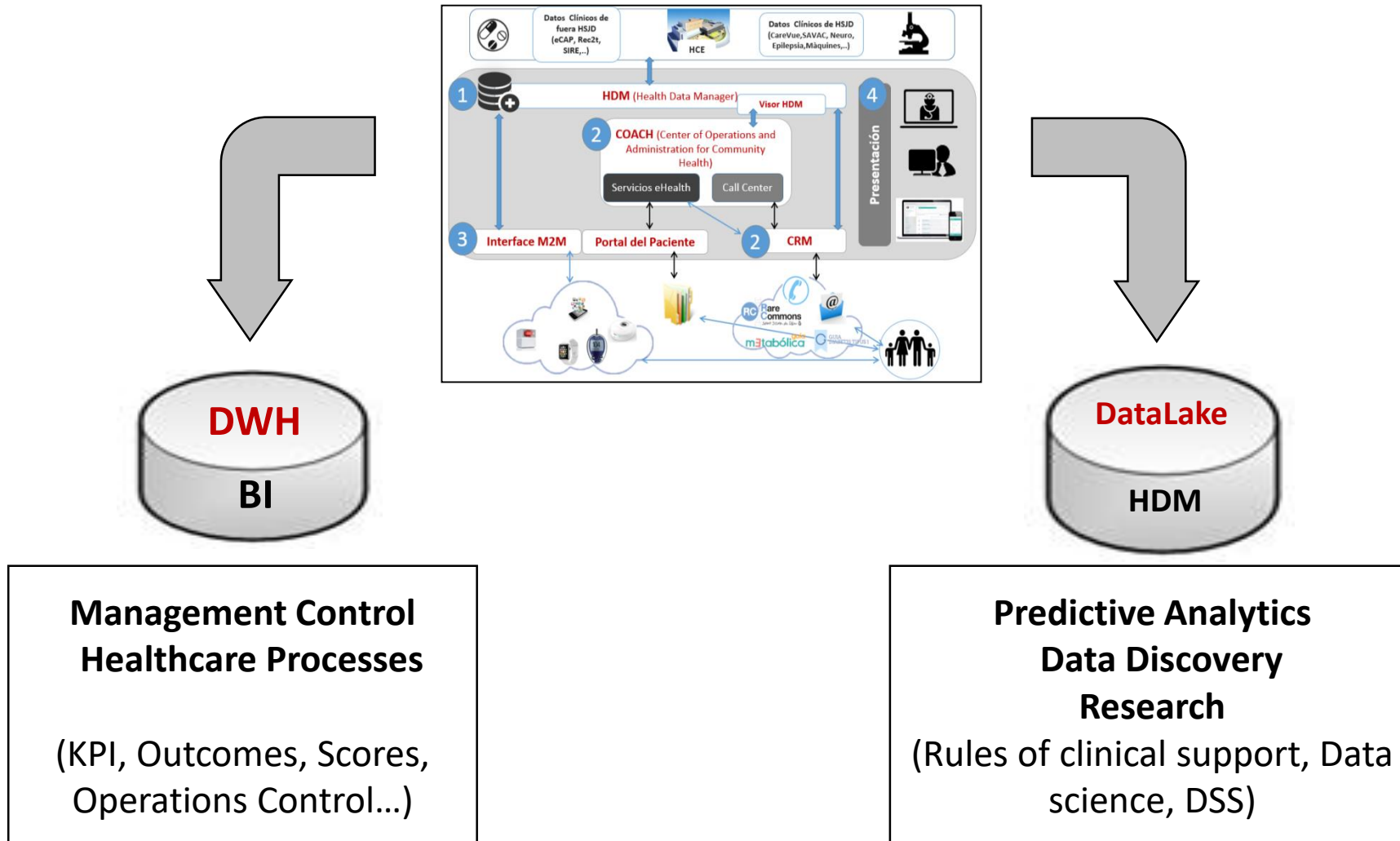
EHR
Hospital



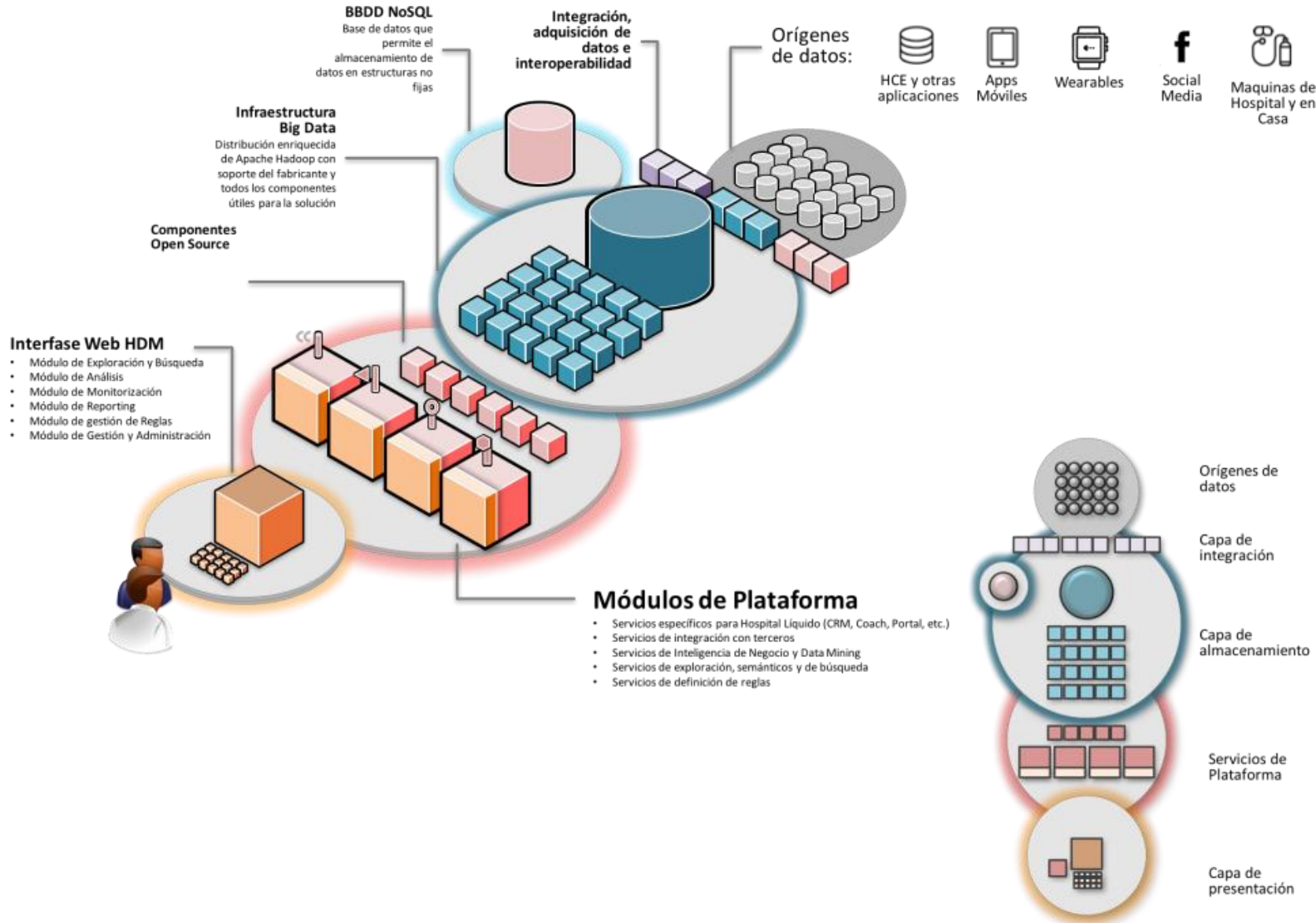
"Present/Future"



HL4.0



HL4.0 – Health Data Manager [HDM] Data Lake



- **1.642.967 Data Subjects**
- **11 services**
- **21 data origins** (HCE, SAVAC, LAB., ANAT. PAT., DXI,..)
- Search response time < **430 ms**
- **Standard HL7**
- **CIE 10 (ICD 10), ORPHA**

HL4.0 – HDM

Cloud-based Data Lake



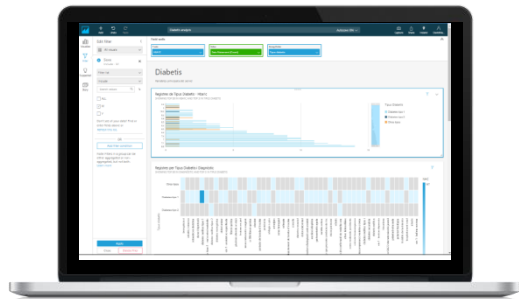
**Clinical Decision
Support System**



Research

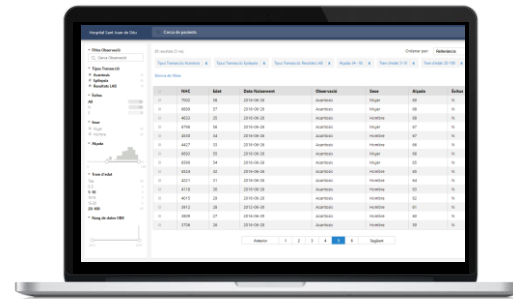
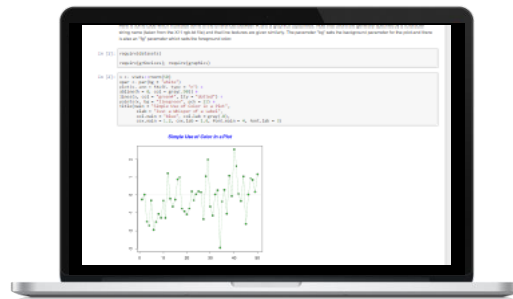


**Data Analysis
and Exploration**



OBESITY

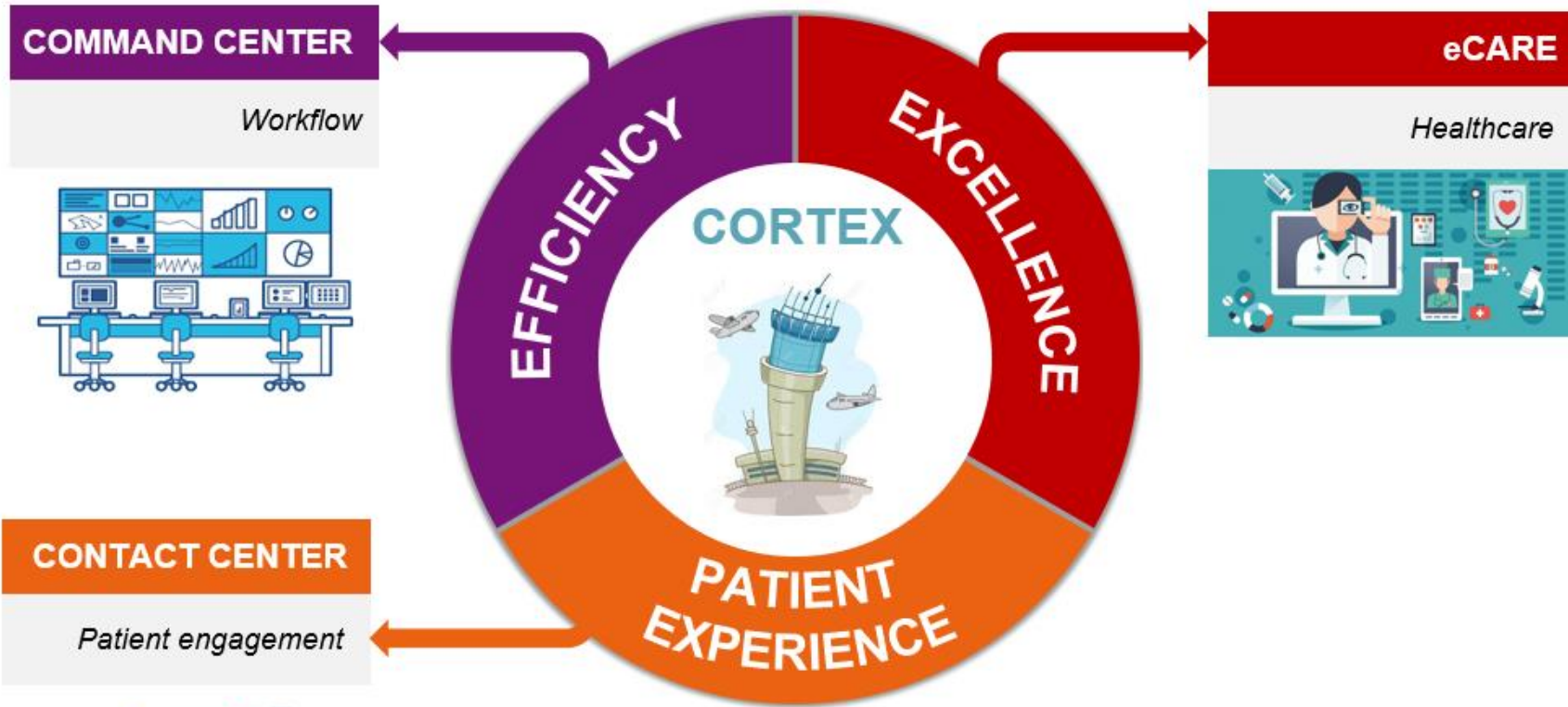
**360° view of the
patient**



DIABETES

**Prediction of crises
(hypoglycemic events)**

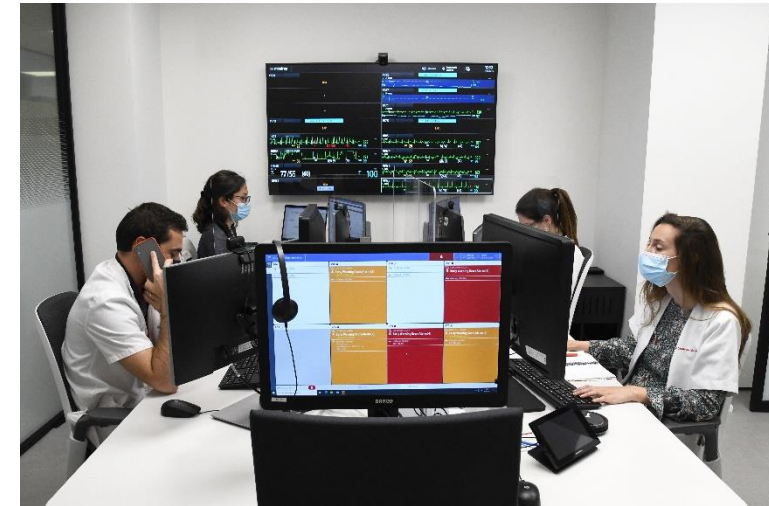
CORTEX SJD



Telemetry and Command Center for Patient monitoring



The Cardio eCare is a centralized cardiological monitoring center for patients, whether in the hospital or at home, with a physical space dedicated to this task and operated by specialized professionals.



MULTIDISCIPLINARY IMPLEMENTATION
TEAM

Home Monitoring

PREVENGO. Telemonitoring obese pediatric patients "Hybrid health": technology (Patient Portal, Fitbit) + Health Coach

PEOPLE



Dra. Marta Ramon
(Responsible
Endocrinologia)



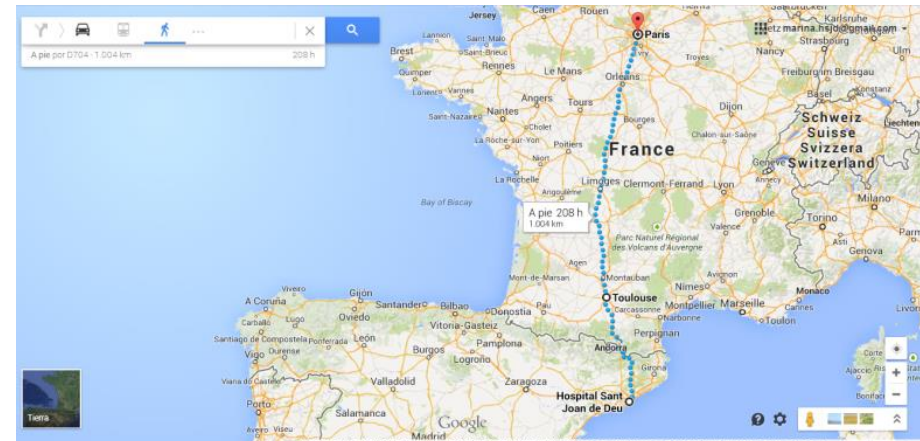
Marina Llobet
(Nutritionista)



Mª Jesús Witt
(Nutritionista)



DEVICES



Where do we go now?

DATA DRIVEN HEALTHCARE ORG. (DDHO)

Efficiency

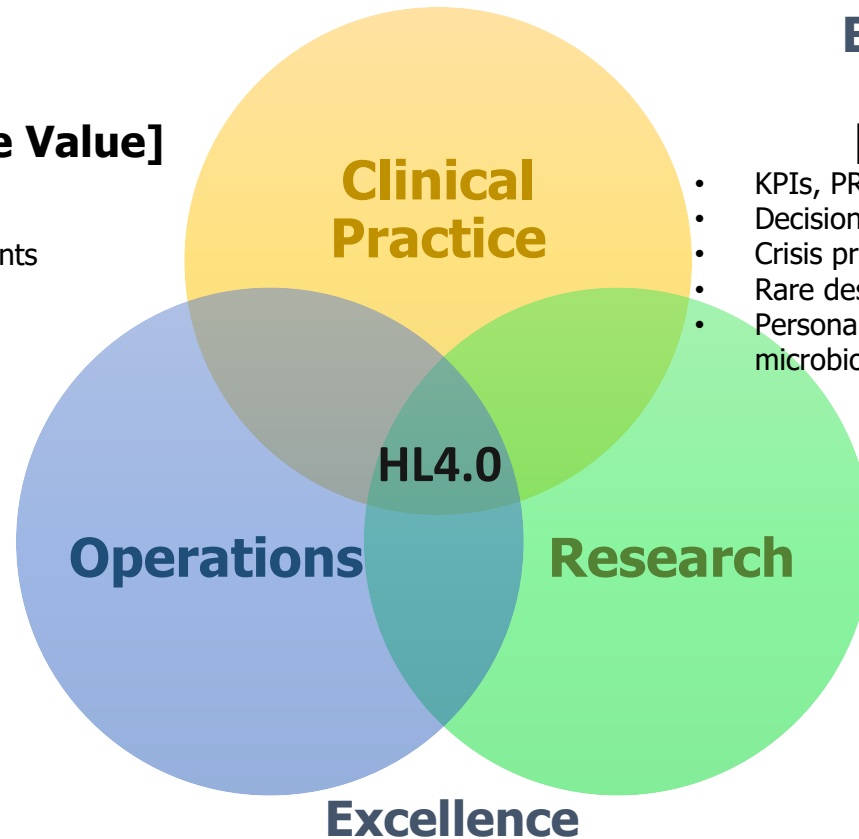
[Lower Costs, More Value]

- KPIs
- Surgery queues
- Monitoring of chronic patients
- Scheduling optimization
- Emergency flows

Better Health

[Value Based]

- KPIs, PROMs, PREMs
- Decision Support Tools
- Crisis prediction (diabetes,..)
- Rare diseases improvement
- Personalized medicine (genomics, microbioma,..)

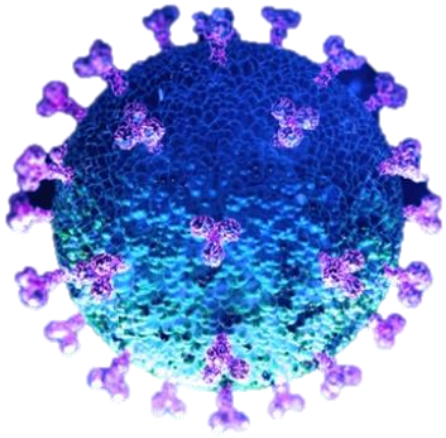


[Improve Healthcare Delivery: Patient and Professional Experience]

- Benchmarking Pediatric Hospitals and KPIs
- Customer Engagement – Smart Call Center – CRM

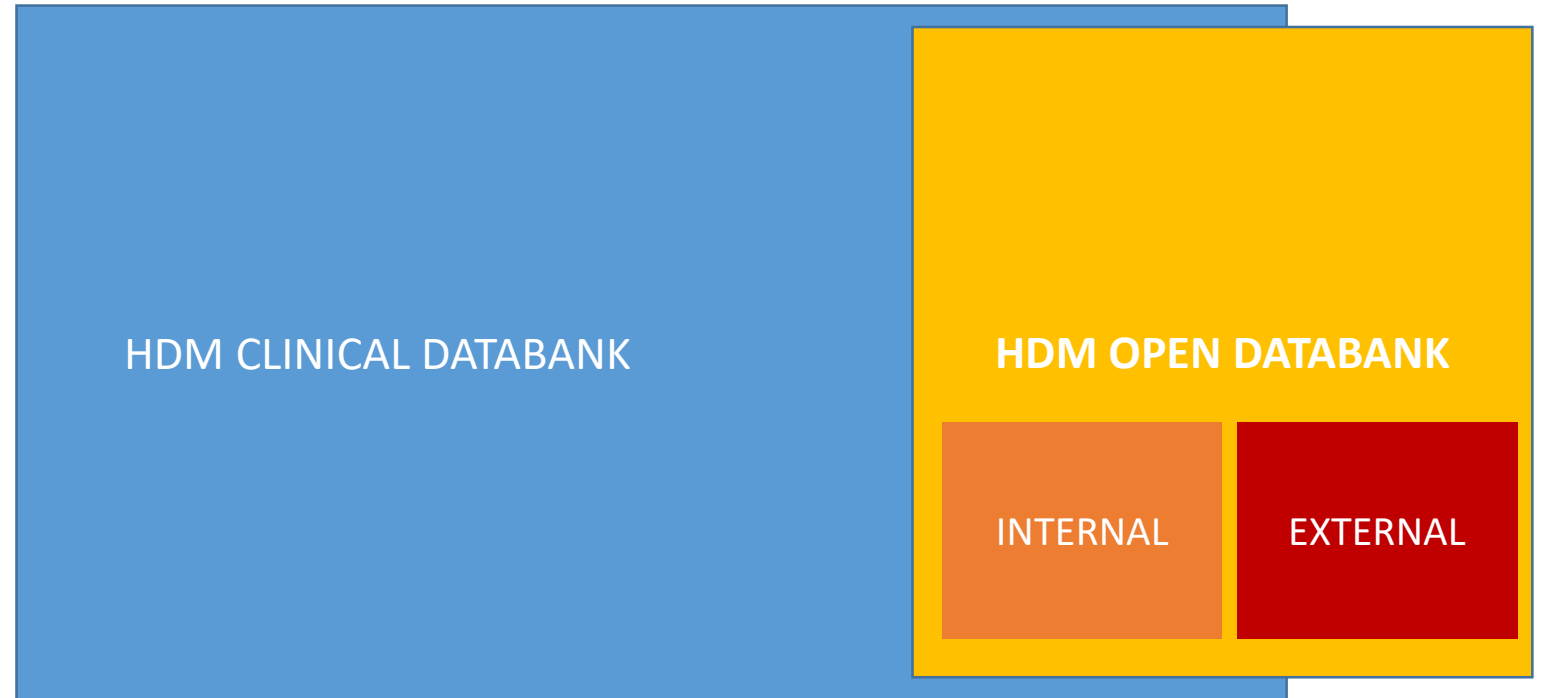


<https://healthmanagement.org/c/healthmanagement/issuearticle/going-liquid-digital-transformation-and-big-data-strategy-in-sjd-childrens-hospital>

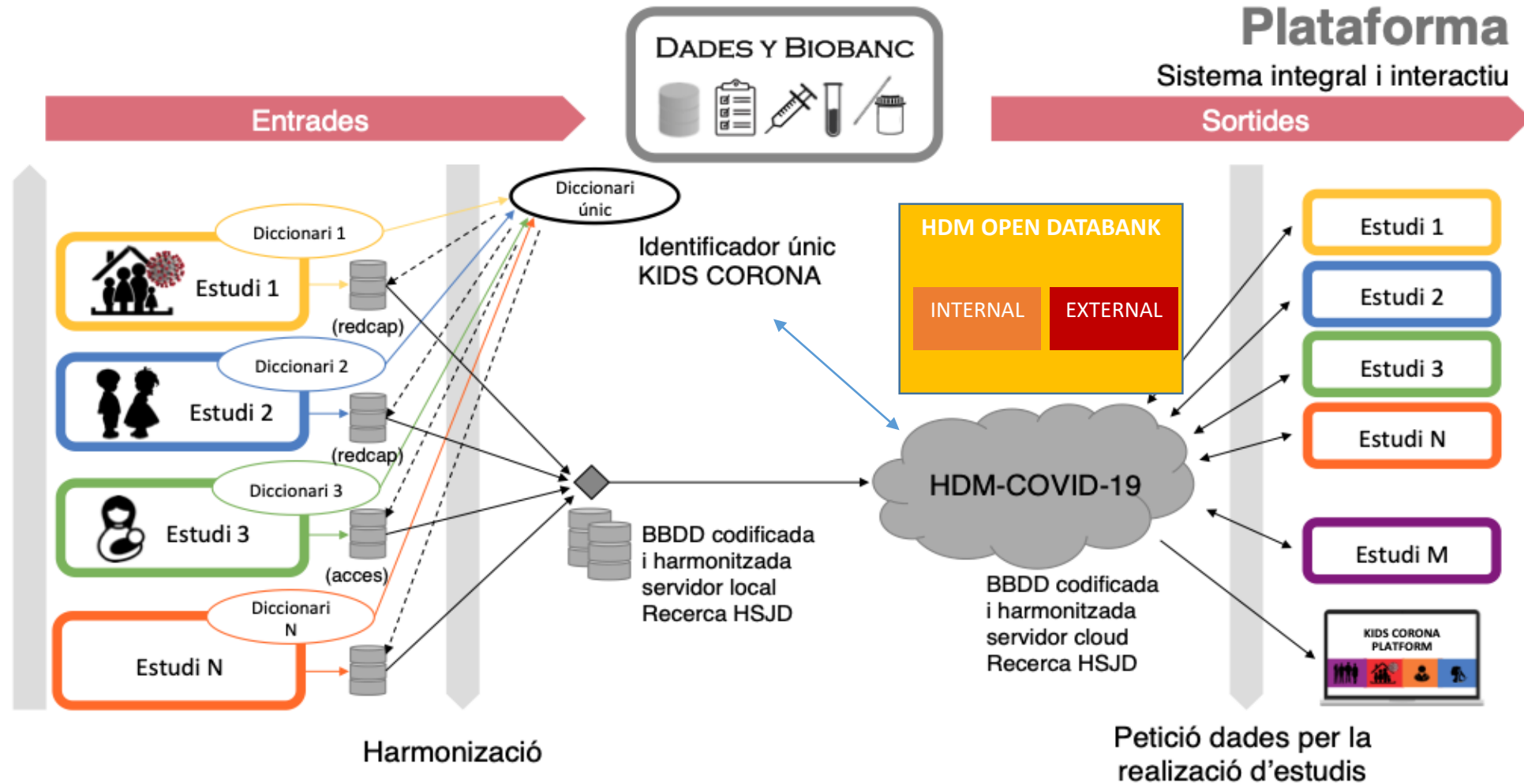


A safe environment in which to carry out clinical research and research with third parties in a structured and standardized way.

Covid Pandemics:
How to accelerate innovation in Healthcare



Entry of Projects and Data to the platform





Kids Corona Research

Innovation, science and excellence

The Kids Corona HDM: Open data biobank

Our HDM (Hospital Data Manager) makes the data collected in our COVID-19 research projects available to the scientific community. Any researcher, whether internal or external, can request access to the study data stored in our system and, after security checks, download and use them.

ACCESS KIDS CORONA HDM



6

Datasets

**Pediatric,
Adult,
Pregnant**

Dataset populations

17227

Subjects

7267

PCRs

4338

Serological samples



<https://kidscorona.irsjd.org/>



AICCELERATE

smart hospital care pathway engine

Smart Hospital Care Pathway Engine

AICCELERATE aims at developing AI-based solutions that optimise hospital processes and improve the quality of patient care.

Consequently, a tool will be developed – Smart Hospital Care Pathway Engine. This cloud-based tool collects information from different sources and generate outputs using AI, Machine Learning, 3D Modelling, etc. The main goal is to improve decision making regarding hospital management and patient care.

<https://aiccelerate.eu/>

The project consortium, led by Helsinki University Hospital (HUS), is made up of 16 partners from 8 European countries.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement n° 101016902. This document reflects only the author's view and the Commission is not responsible for any use that may be made of the information it contains.

Datasets Heterogeneous

- Standards
- Terminologies
- Diccionario

Silos

- Many origins
- Data in non-integrated databases

Interoperability

- Lack of APIs
- Little homogeneity



Barriers

Fear of change

- Cloud Infrastructure
- GDPR
- Policies

Co-existence of Codings Ontologies

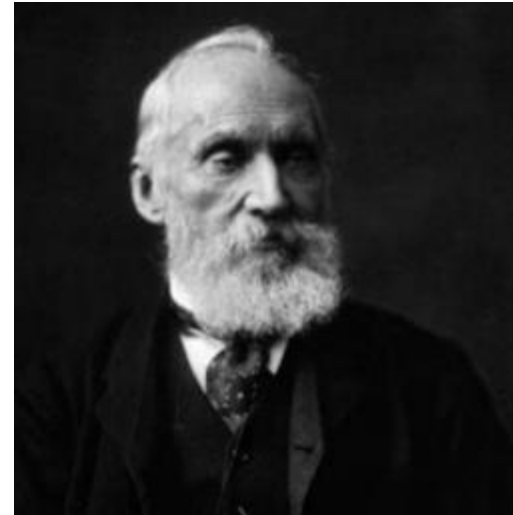
- ICD10-2018 / CIE09
- ORPHA
- ...

Fear of sharing data

- Governance
- Traceability
- Security
- Ethics

Data will transform....

- 1.- **Medicine** (as a Science)
- 2.- **Healthcare** (as an Industry)
- 3.- **Care delivery** (as a Service)



If You Cant
Measure It You
Can't Improve It.

Lord Kelvin



Thank you!

Arnau Valls

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