



Managing quality registry data for effective exploration

a quality perspective

The process of data exploration



Getting data into
the systems

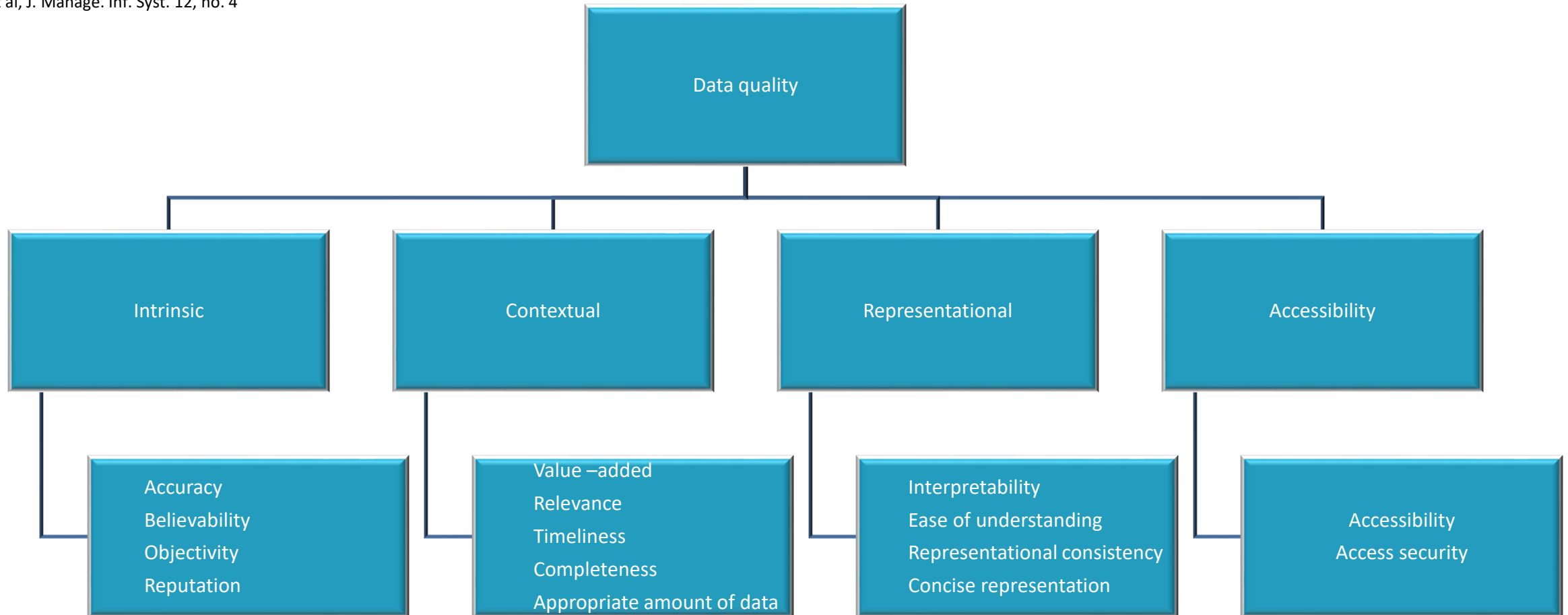
Cataloguing and
annotation for
querying and
retrievals

Algorithms for
data evaluation
and insight



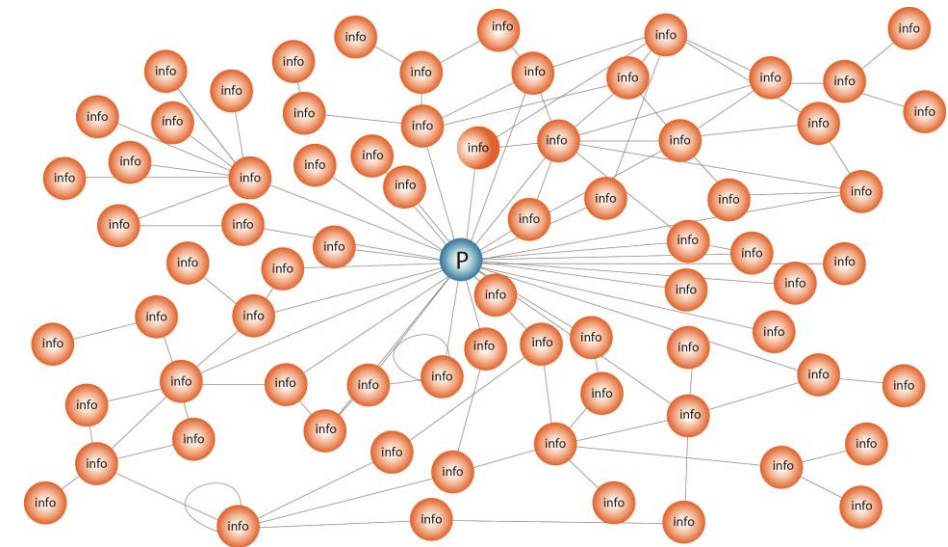
Data Quality - Beyond accuracy

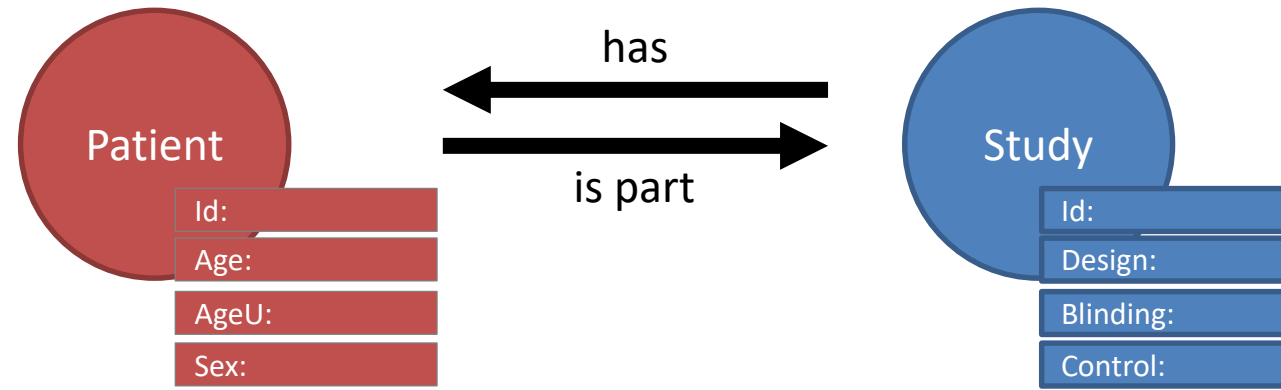
Wang et al, J. Manage. Inf. Syst. 12, no. 4



Formal representation of a knowledge domain, describing its entities, events and processes and the relationships connecting these entities, events and processes

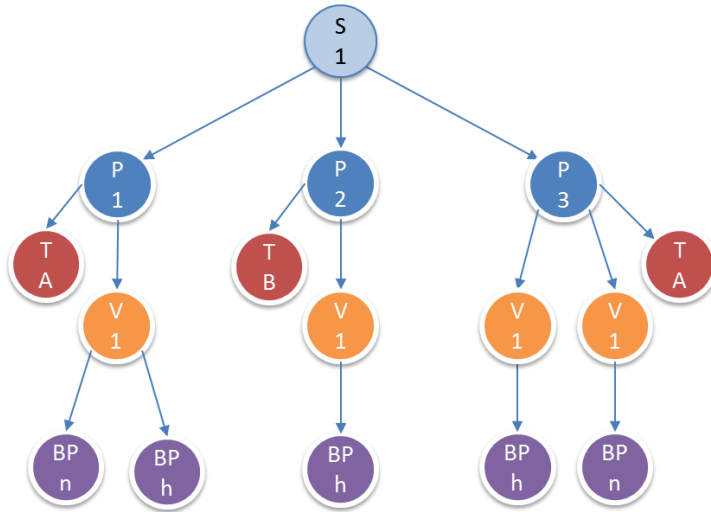
- To share **common understanding** of the structure of information among people or software agents
- To enable **reuse** of domain knowledge
- To make domain assumptions **explicit**
- To separate domain knowledge from the operational knowledge
- To **analyse** domain knowledge





- A concept that can be interpreted by itself
- Classified according to content
- Contains information
 - Fields, groups and attributes
- Contains relations to other Holons
- Each relation has a specific meaning

Indices vs graph traversal

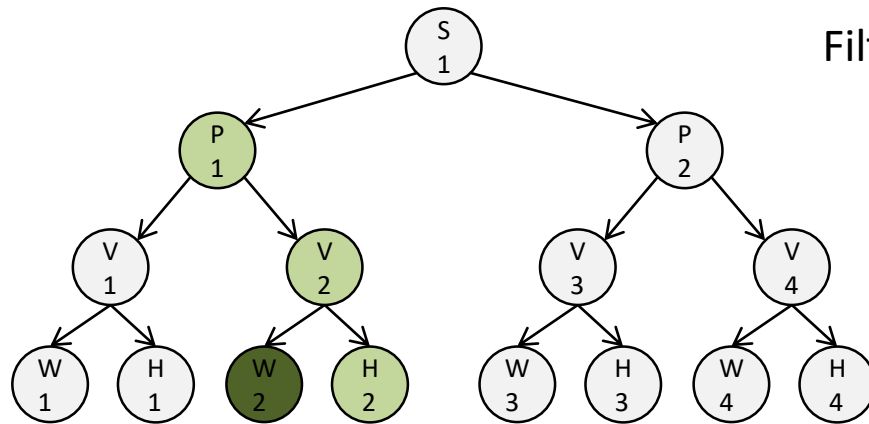


- individual nodes (identity index)
- node types (node type identity index)
- property values (property index)
- existence of indirect relationships (relation index)

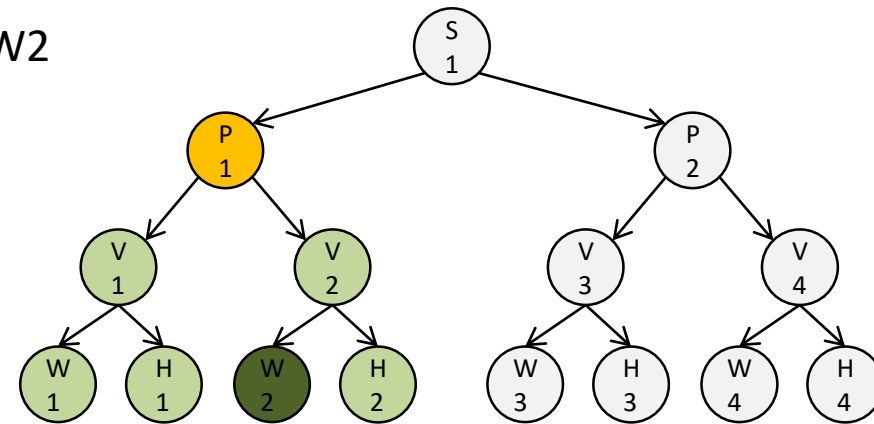


new paradigm on how to effectively query and retrieve information from datasets in an easy and flexible way

Without reflection



With reflection in P



● = Information matching filter ● = Information in result
● = Reflection point Information ○ = Information not in result



Making the most of data collected in a quality registry

COLLABORATION WITH CPUP



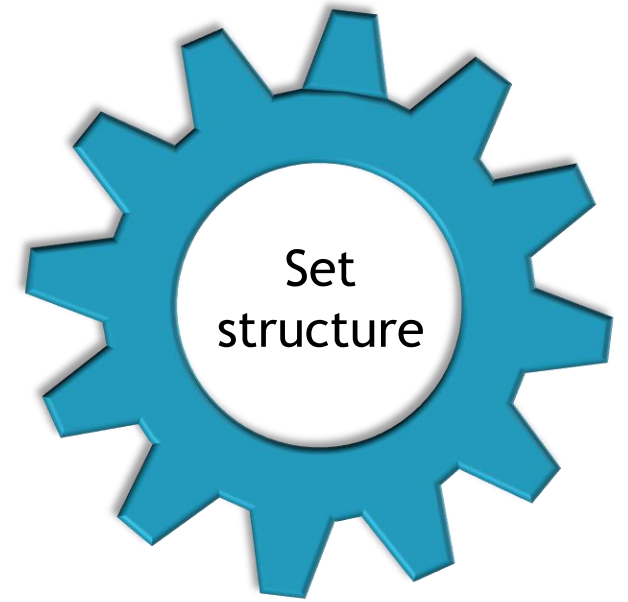
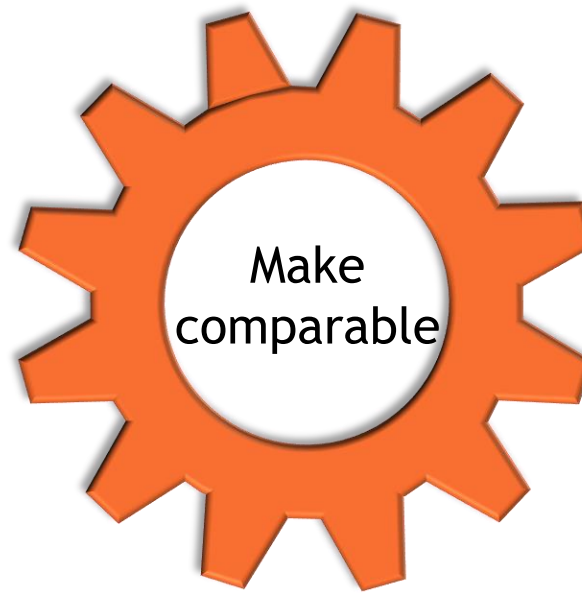
CPUP

- a follow-up surveillance program for people with cerebral palsy (CP)
- a National Quality Register
- started in 1994
- a cooperative project between the pediatric orthopedics and child habilitation centers
- prevent the occurrence of hip dislocation and severe contractures by creating a system to survey people with CP in an organized manner throughout childhood.



- Evaluating ways of expanding research projects, by interacting and exploring data more dynamically, e.g. longitudinally as opposed to the traditional cross-sectional analysis
- Proof of concept for an enhanced data curation process and software tool aimed at streamlined, intuitive and efficient data exploration. A confirmation that the chosen approach will fill a gap for the health care industry



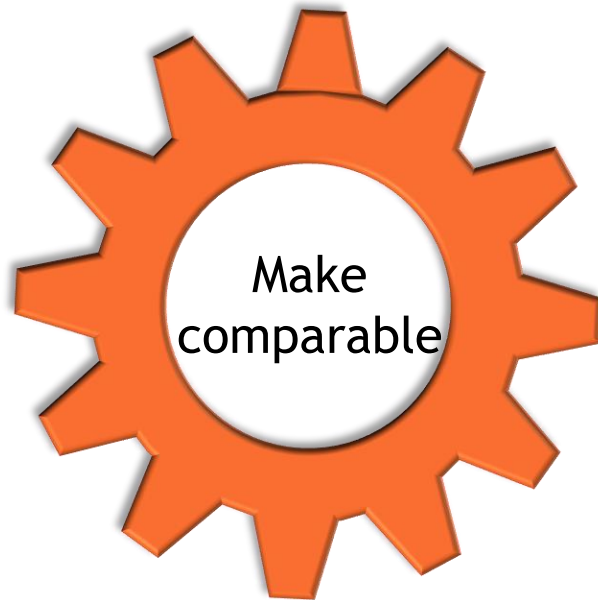


Step 1: Ensure accuracy



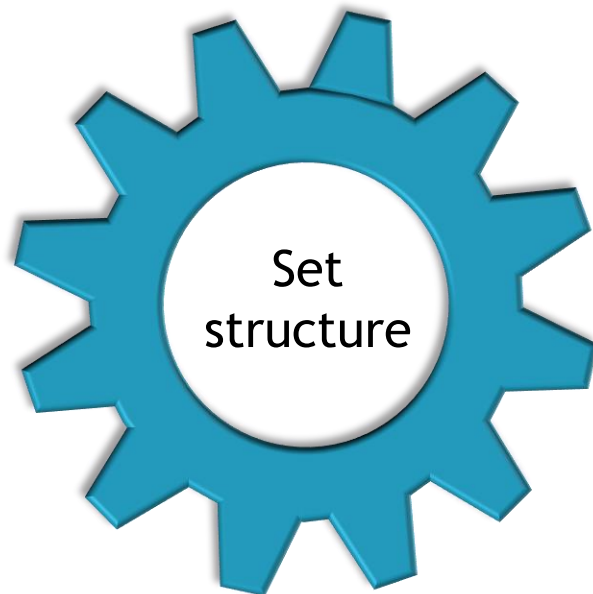
Data Quality Control

- Duplicate entries
- Conflicting answers
- Comments in result fields
- Differently spelled values
- Dates



Standardization

- Data was
 - standardized to ISO, ICD10 etc.
 - translated to a common language
 - compared to references
- A uniform terminology was used
- Common measurement units were ensured
- Coded values were mapped to understandable terms



Effective Modelling

- Data was
 - grouped into well-known concepts
 - appended with metadata
- Time was related to events for individual patients
- Episodes were created
- Summaries were created

Botox
Muscle relaxant, other

yes ☒ no ☐
yes ☒ no ☐



Medication

Botox
Muscle relaxant, other

Wheelchair Electric outdoor
Wheelchair manual indoor
Ankle-Foot Orthosis Left Side
Ankle-Foot Orthosis Both Sides
Ankle-Foot orthosis Right Side
Corset
Rolling Walker
Hip Orthosis Left Side
Hip Orthosis Right Side
...

yes ☐ no ☐
yes ☐ no ☐
yes ☐ no ☐
yes ☐ no ☐
yes ☐ no ☐
yes ☐ no ☐
yes ☐ no ☐
yes ☐ no ☐
yes ☐ no ☐
yes ☐ no ☐
...



Assistive Device

Wheelchair Electric outdoor
Wheelchair manual indoor
Ankle-Foot Orthosis Left Side
Ankle-Foot Orthosis Both Sides
Ankle-Foot orthosis Right Side
Corset
Rolling Walker
Hip Orthosis Left Side
Hip Orthosis Right Side
...

hdlsenefvrlrngning vd, hamstringsfvrlrngning hv.



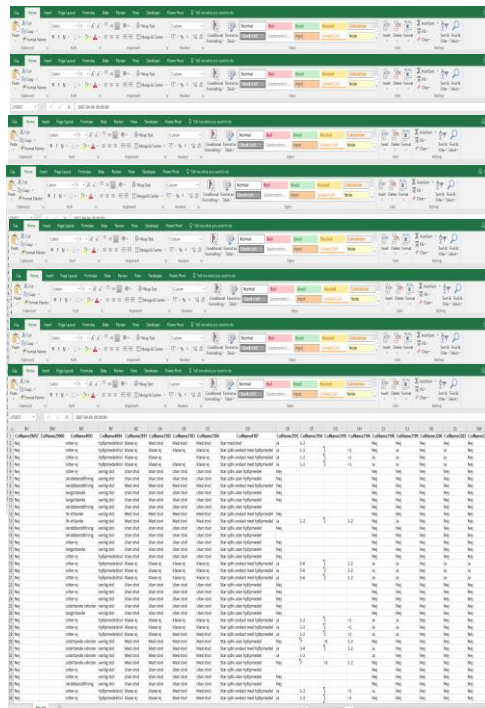
hälseneförlängning vä, hamstringsförlängning hö.



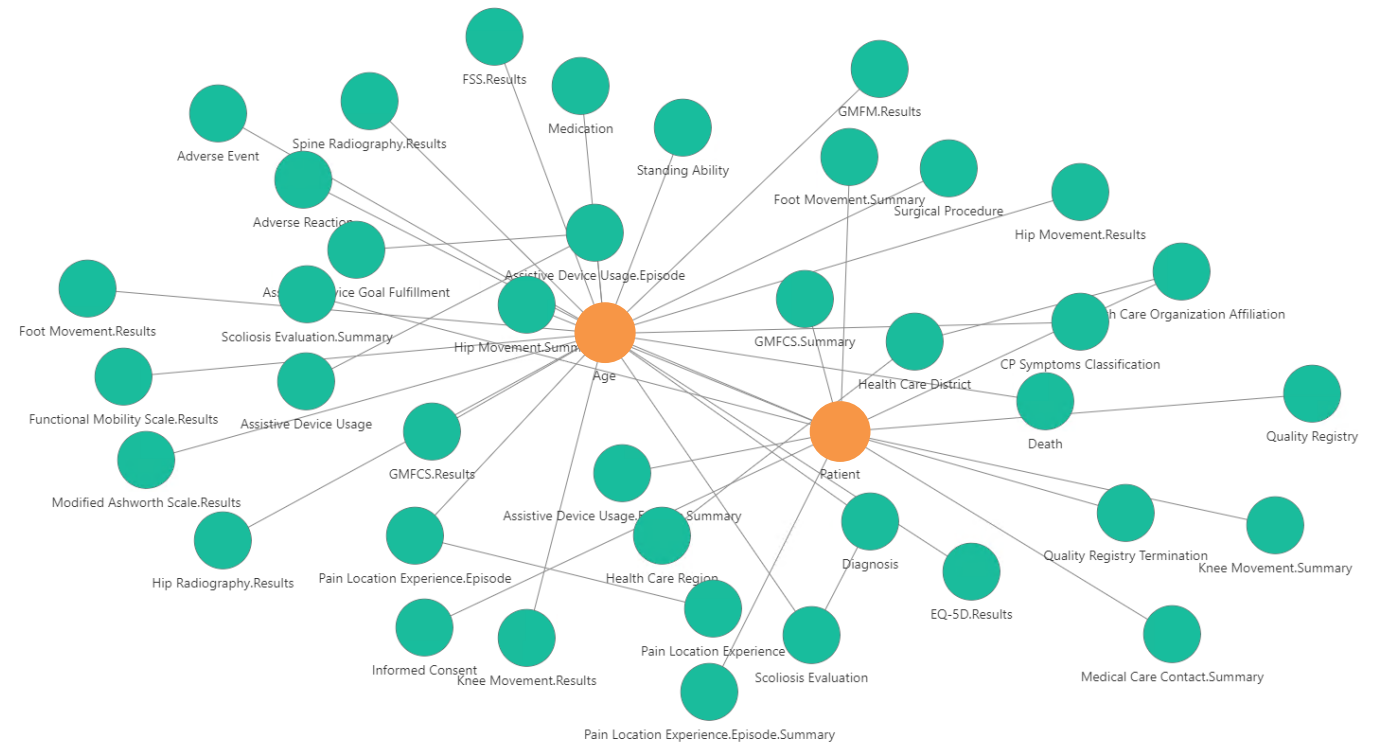
<b Achilles tendon> <p elongation> <bl left>,
<b m. hamstrings> <p elongation> <bl right>.



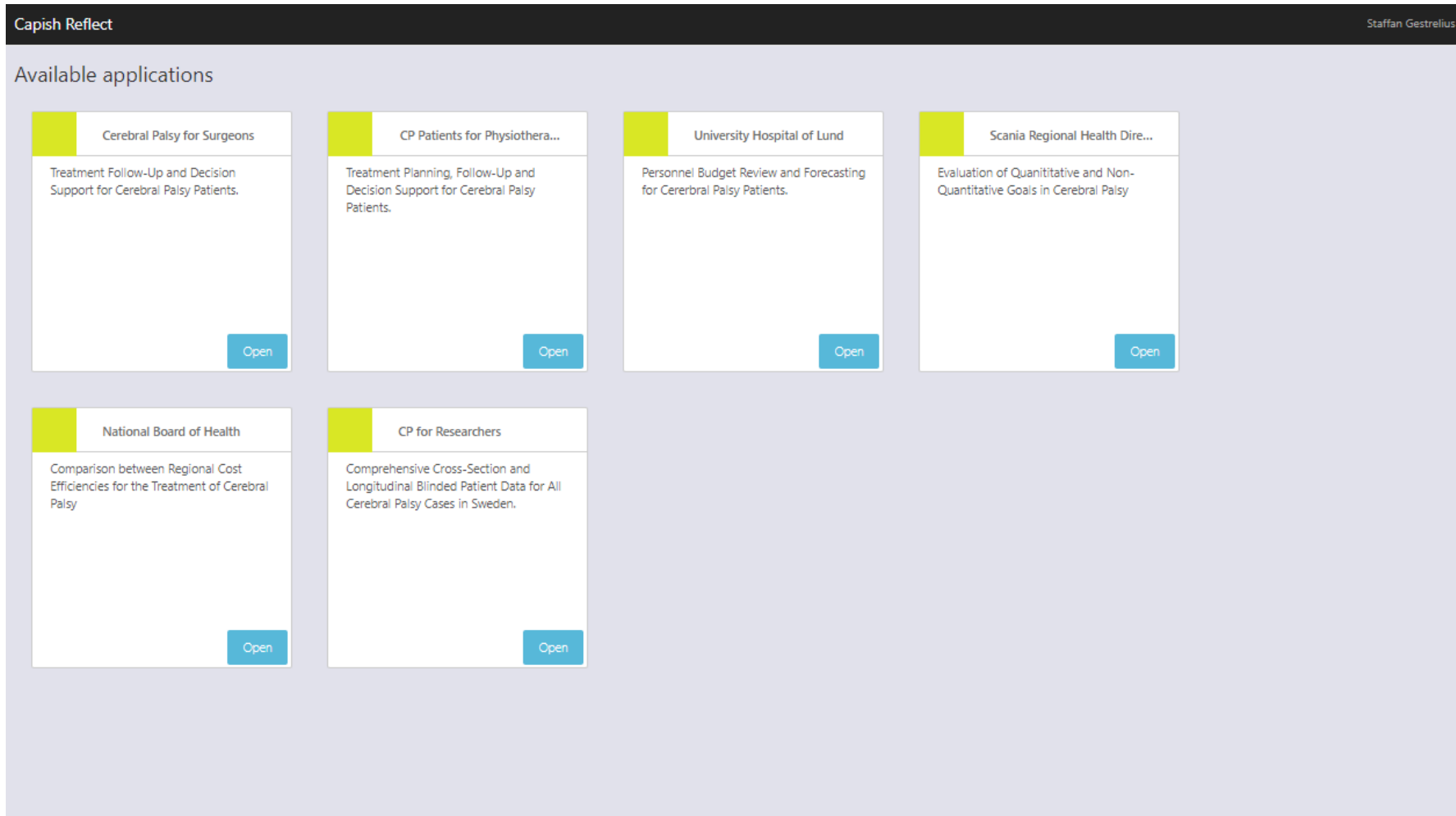
CPUP ontology



The image shows a stack of five screenshots of a clinical data interface. Each screenshot displays a different tab or view, including patient information, clinical notes, and a large data table. An orange arrow points from the bottom screenshot to the right, indicating a transition to the ontology diagram.



Same Tool for Many Uses by Different Users

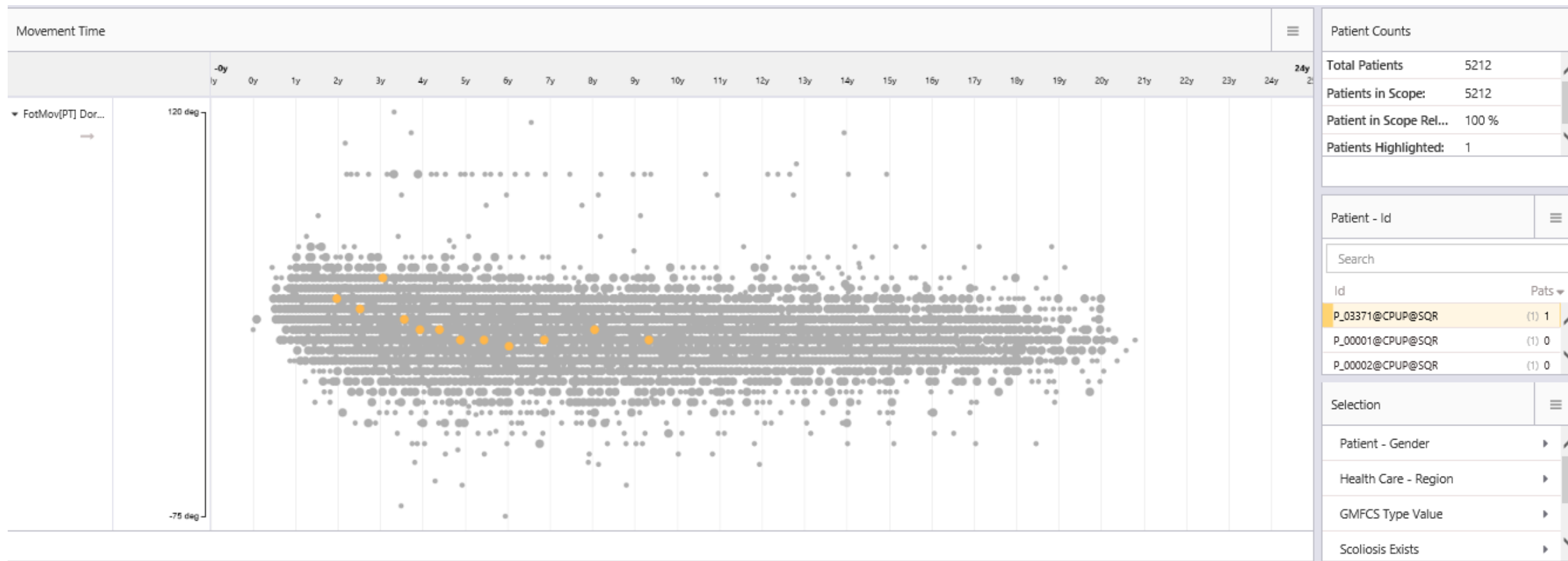


The screenshot displays the 'Capish Reflect' interface. At the top, a black header bar contains the text 'Capish Reflect' on the left and 'Staffan Gestrelus' on the right. Below the header, the main area is titled 'Available applications'. It features six application cards arranged in two rows of three. Each card has a yellow header bar with a title, a white body with a description, and a blue 'Open' button at the bottom right.

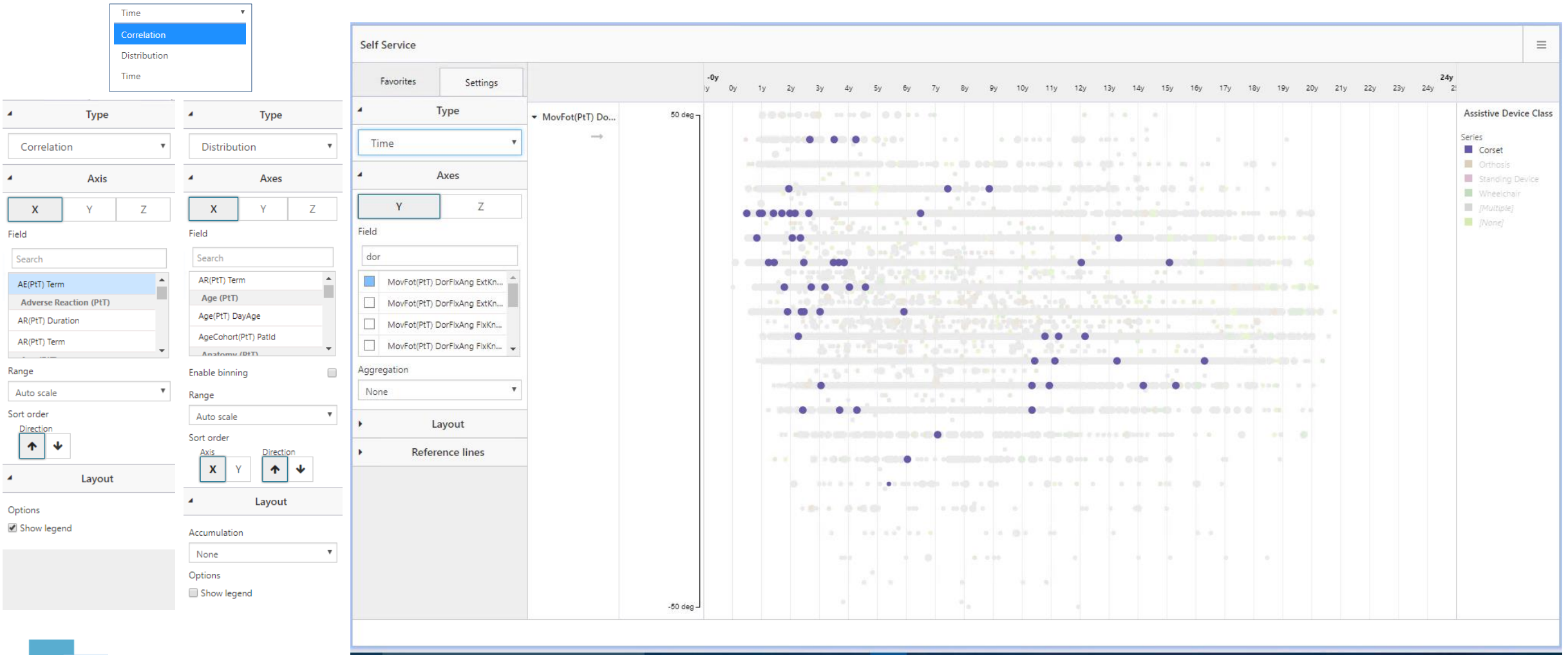
Application Title	Description
Cerebral Palsy for Surgeons	Treatment Follow-Up and Decision Support for Cerebral Palsy Patients.
CP Patients for Physiothera...	Treatment Planning, Follow-Up and Decision Support for Cerebral Palsy Patients.
University Hospital of Lund	Personnel Budget Review and Forecasting for Cerebral Palsy Patients.
Scania Regional Health Dire...	Evaluation of Quantitative and Non-Quantitative Goals in Cerebral Palsy
National Board of Health	Comparison between Regional Cost Efficiencies for the Treatment of Cerebral Palsy
CP for Researchers	Comprehensive Cross-Section and Longitudinal Blinded Patient Data for All Cerebral Palsy Cases in Sweden.



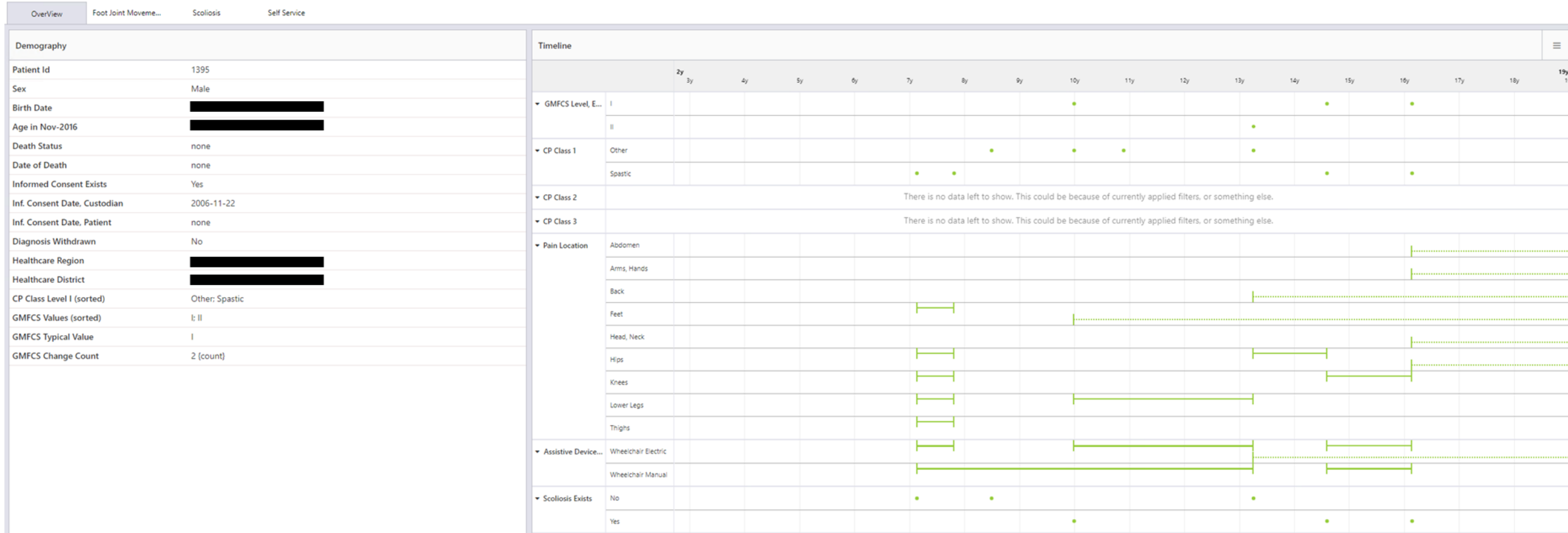
Patient in context - guided analytics



Self Service Exploration



Individual patient timeline



Capish

- Staffan Gestrelus
- Eva Kelty
- Catharina Dahlbo
- Anna Berg

CPUP

- Gunnar Häggglund
- Ann Alriksson-Schmidt

Dr Peter Tormay
peter.tormay@Capish.com

