Towards a Common Semantic Data Model to Support Slaintecare in Ireland: Tackling the Interoperability Problem

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About ELITE-S

• ELITE-S relates to providing leadership for ICT standardisation in the EU offers training and scholarship through Marie Curie. 16 fellowships awarded across the EU

• Our focus is on creating a common semantic data model (CSDM) and providing access to open source resources for knowledge sharing and advancing data interoperability.

https://elite-fellowship.eu/
About ADAPT and CeIC

Adapt SFI Research Centre in Dublin with experts producing ground-breaking digital media innovations
https://www.adaptcentre.ie/

•CeIC DCU focuses on HOW to solve problems with data interoperability for eIntegrated care in order to improve health and wellbeing https://www.ceic.ie/
Researchers

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Centre Director
School of Nursing, Psychotherapy & Community Health

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PostDoctoral Researcher

- Nursing
- NSAI-HISC
- Funded Investigator of ADAPT
- Associate Prof. Faculty of Health Sc.

https://www.dcu.ie/snpch/people/pamela-hussey.shtml

- Ontology
- EU project International Patient Summary
- Research Fellow CeIC & ADAPT

https://www.dcu.ie/snpch/people/Subhashis-Das.shtml
**Problem**

**Existing Approach**

**CSDM Approach**


b [https://elite-fellowship.eu/fellows/subhashis-das/](https://elite-fellowship.eu/fellows/subhashis-das/)
CSDM Potential for Impact

- Knowledge translation on standards NSAII HISC - CEN TC 251 & ISO 215
- Design for interoperability using different standards at different junctions of the project lifecycle.
- Building on existing experts
- Task Force ISO 13940
- Tooling for demonstrators on open standards for interoperability
The CSDM seeks to

- Conduct ontological scrutiny of the standard ISO 13940 Contsys UML model [https://contsys.org/page/default](https://contsys.org/page/default)
- For example in Contsys the explicit relationship name for use in a system needs to be identified in our case we provide the following example
The CSDM seeks to

Top-Level Alignment

Explicit relationship
### Standards in use in this Research

<table>
<thead>
<tr>
<th>Standards &amp; Techniques</th>
<th>Category</th>
<th>Framework Development Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 22272</td>
<td>Enterprise</td>
<td>Used to define Business mission aims and objectives, conceptual model and capacity building</td>
</tr>
<tr>
<td>Contsys ISO 13940</td>
<td>Computer</td>
<td>Overarching ontology framework designed in OWL as a formalised web ontology (publish on May 2020) <a href="https://contsys.org/pages/Guest%20blog/FormalOntology">https://contsys.org/pages/Guest%20blog/</a></td>
</tr>
<tr>
<td>HL7 FHIR v.4</td>
<td>Computer</td>
<td>Used to specify Observation, MedicationStatement, MedicationAdministration, MedicationDiagnosticReport, Patient</td>
</tr>
<tr>
<td>EHRcom ISO 13606</td>
<td>Engineering</td>
<td>Reviewed in terms of harmonisation of HI standards to describe distribution of objects and applications across platforms</td>
</tr>
<tr>
<td>IHE CCR</td>
<td>Information</td>
<td>Provides a patient health summary standard which facilitates timely and focused transmission of information across and between health professionals involved in the delivery of patient’s care</td>
</tr>
<tr>
<td>Snowmed-CT ICNP</td>
<td>Information</td>
<td>Formalised reference terminologies used for semantic mapping of concepts in health care systems</td>
</tr>
<tr>
<td>Graph DB</td>
<td>Engineering</td>
<td>Used as a specification with common functions providing a technology-neutral architectural framework and database support</td>
</tr>
</tbody>
</table>
Discussion

- Relational databases in existence and GraphDB linkage
Additional Links

• Provide a summary of dissemination links for further reading
  Linking with original task force participants through social media blog is available from
  [https://contsys.org/pages/Guest%20blog/FormalOntology](https://contsys.org/pages/Guest%20blog/FormalOntology)

• Full formal ontology version 1.1 has been published and is available on bio portal
  [https://bioportal.bioontology.org/ontologies/CONTSONTO/?p=summary](https://bioportal.bioontology.org/ontologies/CONTSONTO/?p=summary)

• ADAPT McGlinn K. and Hussey P. paper on analysis of demographic data in the domain to support semantic uplift
  [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7303677/](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7303677/)
Thank you!

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www.adaptcentre.ie