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University Hospital Basel, May 24th, 2018

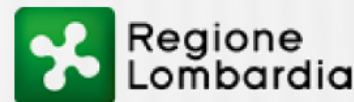


ASSESSING SNOMED CT FOR LARGE SCALE EHEALTH DEPLOYMENTS IN THE EU

Stefan Schulz, Medical University of Graz, Austria
(on behalf of ASSESS CT consortium)

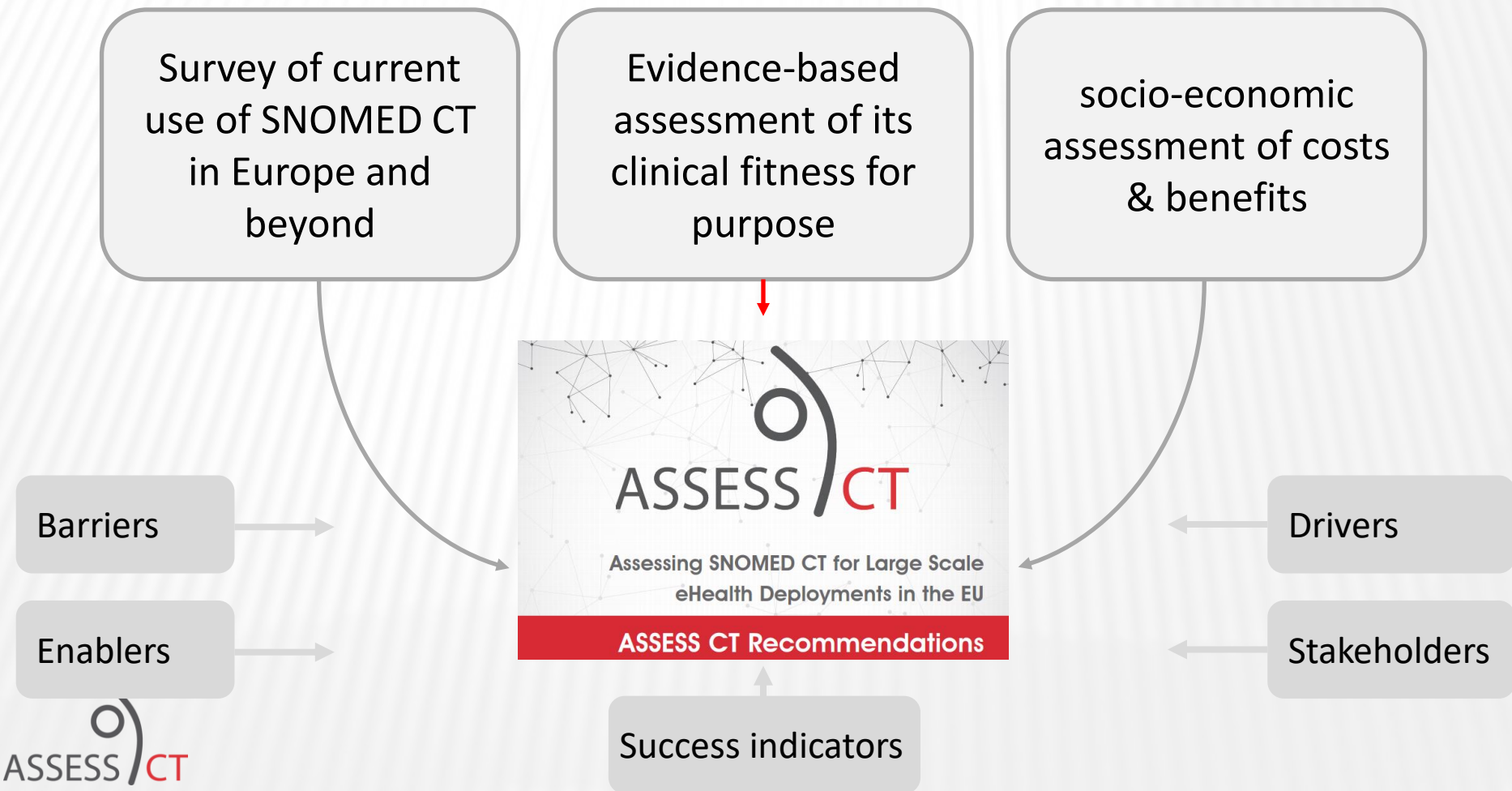
ASSESS CT GOAL

- To contribute to the debate on semantic interoperability of eHealth services in Europe.
- To investigate SNOMED CT's fitness for EU-wide eHealth deployments.
- Within the Horizon 2020 Program of the European Commission
- Duration February 2015 - July 2016
- 14 European partners



ASSESS CT METHODOLOGY

Goal: investigate the fitness of SNOMED CT as a potential core reference terminology standard for EU-wide eHealth deployments



ASSESS CT OBJECTIVES

Goal: investigate the fitness of SNOMED CT as a potential core reference terminology standard for EU-wide eHealth deployments

Survey of current use of SNOMED CT in Europe and beyond

METHODS:

Literature review, Questionnaires, Workshops, Focus groups, Case studies

RESULTS

- Use of SNOMED CT rather limited (2016)
- Reuse and standardisation major benefits
- Need to map to local terminologies and information models
- Tooling & Education crucial for adoption
- Context of use to be well-defined
- Incremental, use case based introduction
- International collaboration
- Ecosystem of standards needed
- Major barriers: expertise, licence policy, costs, complexity

Barriers

Enablers

ASSESS CT OBJECTIVES

Goal: investigate the fitness of SNOMED CT as a potential core reference terminology standard for EU-wide eHealth deployments

METHODS:

Annotation experiments for multilingual clinical corpus and information models
NLP compared to human annotation
SNOMED CT compared to UMLS-based terminology scenario

Barriers

Enablers

Evidence-based assessment of its clinical fitness for purpose



Success indicators

RESULTS

- For English: concept coverage (70-90%) and agreement comparable / better than alternative
- Generally fair / poor inter-annotator agreement (40-60%)
- Partly localised versions (NL, FR): insufficient coverage
- NLP comes 80% close to human annotations
- Term coverage: acceptable only for English → need for interface terms
- Feasibility of bootstrapping interface terminology

ASSESS CT OBJECTIVES

Goal: investigate the fitness of SNOMED CT as a potential core reference terminology standard for EU-wide eHealth deployments

METHODS:

- economic and financial analysis of SNOMED CT adoption
- business modelling
- develop indicators for cost/benefit modelling
- analyse adoption barriers

RESULTS

- Business model with step-wise path to adoption
- Cost indicators: Licence, decision-making, release management, translation, mapping, piloting, terminology mapping, capacity-building, tooling
- Net economic value of SNOMED CT adoption and implementation yet to be demonstrated
- Observatory needed collecting and analysing existing regional and MS evaluations

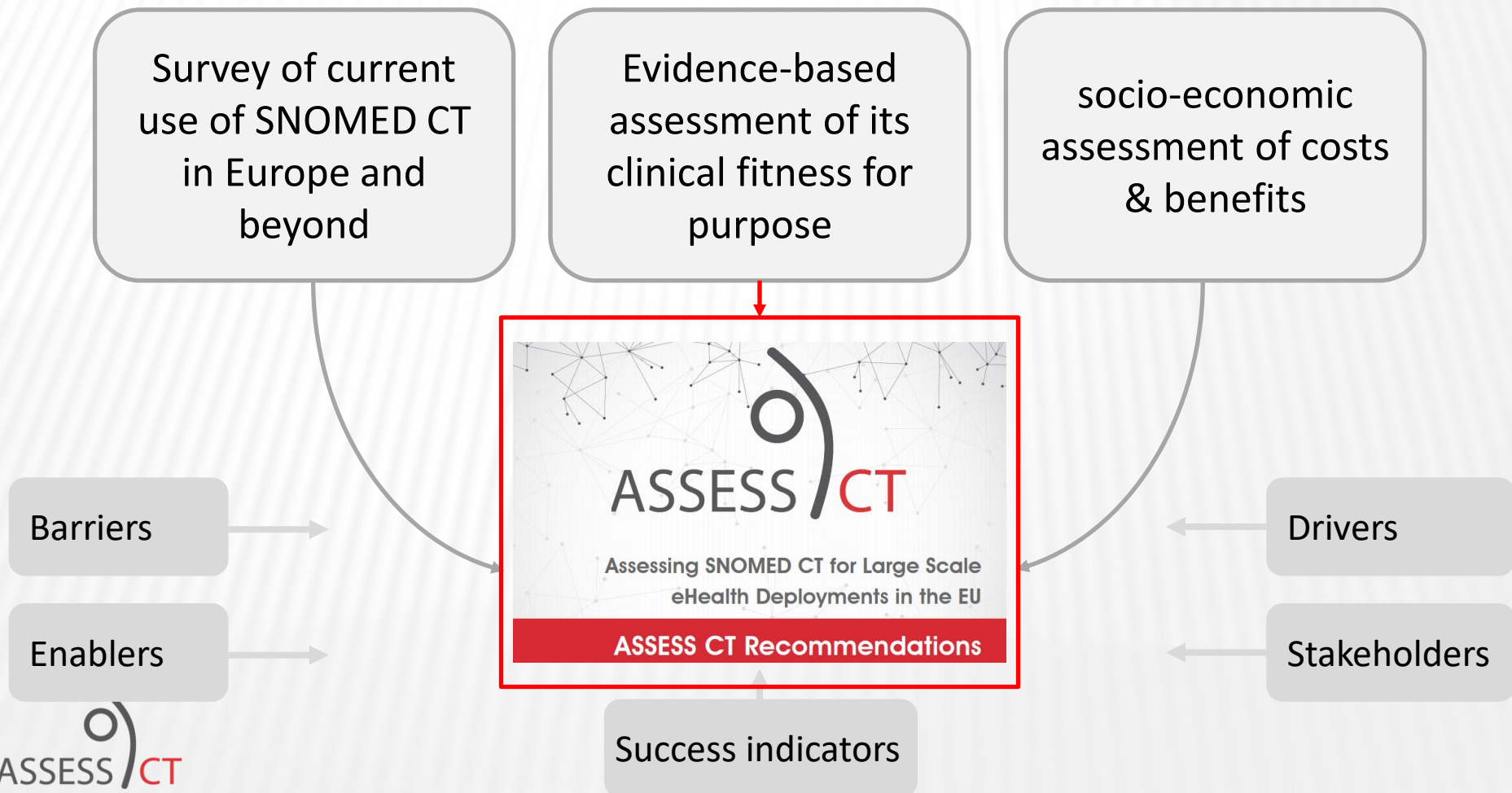
socio-economic
assessment of costs
& benefits

Drivers

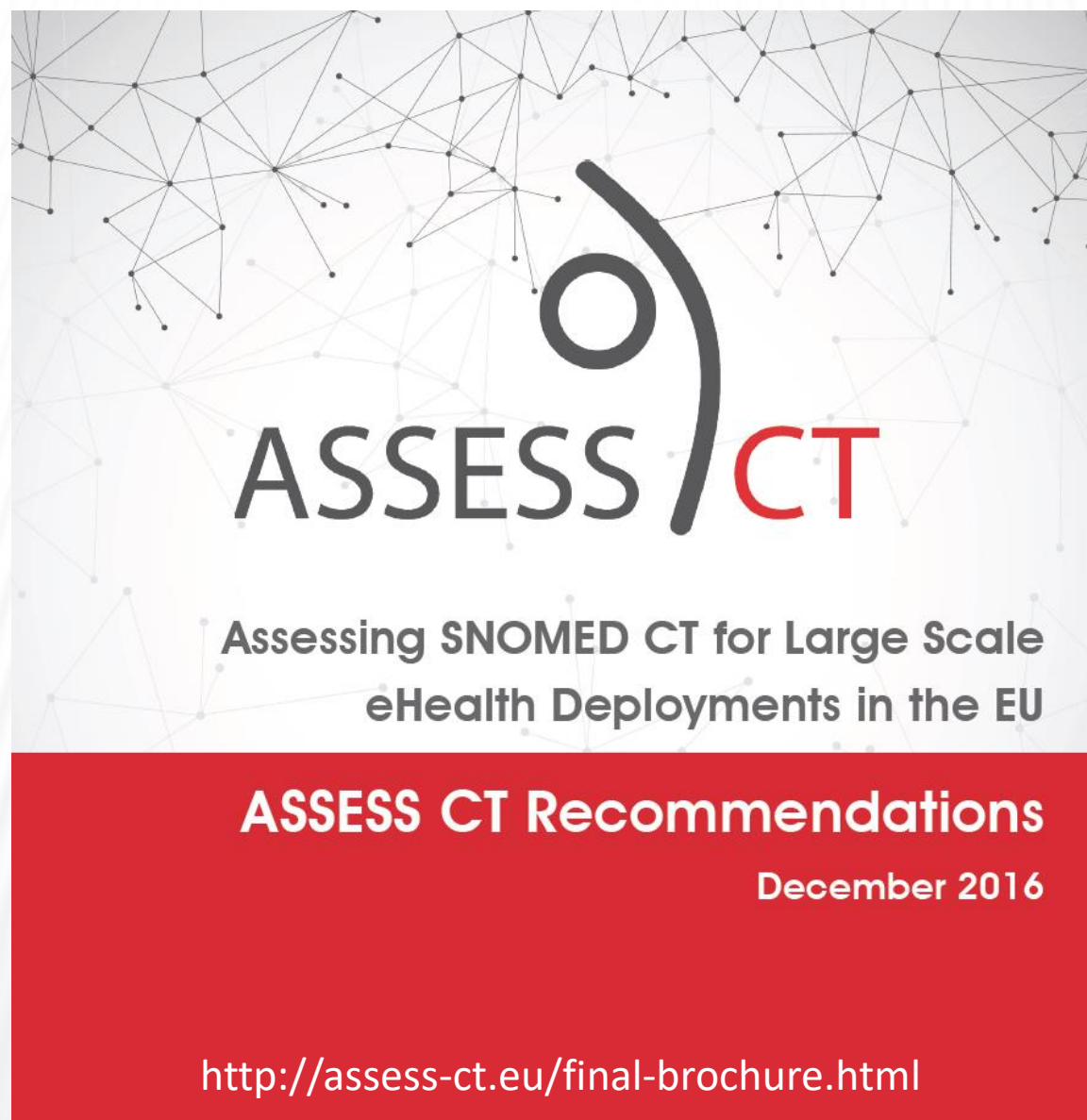
Stakeholders

ASSESS CT METHODOLOGY

Goal: investigate the fitness of SNOMED CT as a potential core reference terminology standard for EU-wide eHealth deployments



FIVE RECOMMENDATIONS



FIRST RECOMMENDATION

Any decision about the adoption and role of terminological resources, including SNOMED CT, must be **part of a wider**, coherent and priority-driven **strategy** for optimising the benefits of **semantic interoperability** in health data, and of the overarching eHealth Strategy of the European Union and its Member States.

SECOND RECOMMENDATION

SNOMED CT is the **best candidate** for a core reference terminology for cross-border, national and regional eHealth deployments in Europe.

THIRD RECOMMENDATION

SNOMED CT should be part of an **ecosystem of terminologies**, including international aggregation terminologies (e.g., the WHO Family of **Classifications**), and including local/national user **interface terminologies**, which address multilingualism in Europe and clinical communication with multidisciplinary professional language and lay language.

FOURTH RECOMMENDATION

The adoption of SNOMED CT should be realised **incrementally** rather than all at once, by developing terminology subsets that address the interoperability requirements for **prioritised use cases**, and expanding this set over some years.

FIFTH RECOMMENDATION

Mechanisms should be established to facilitate and co-ordinate European Member State **co-operation on terminology and semantic interoperability**, including common areas of governance across national terminology centres, eHealth competence centres (or equivalent national bodies).

ACKNOWLEDGEMENTS



THANK YOU FOR YOUR ATTENTION



Contact:

Veli Stroetmann

assessct@empirica.com

Stefan Schulz

stefan.schulz@medunigraz.at



www.assess-ct.eu



@assessct

Scientific coordination

Prof. Sylvia Thun, MD, PhD
Hochschule Niederrhein
University of Applied Sciences
Sylvia.Thun(at)hs-niederrhein(dot)de



Gesundheitswesen
Faculty of Health Care

Administrative coordination
and networking
EUROREC

Veli Stroetmann, MD, PhD
empirica Communication & Technology Research
ASSESSCT(at)empirica(dot)com



Medizinische Universität Graz

empirica



Betere zorg
door betere informatie
Nictiz



TERVEYDEN JA
HYVINVOINNIN LAITOS

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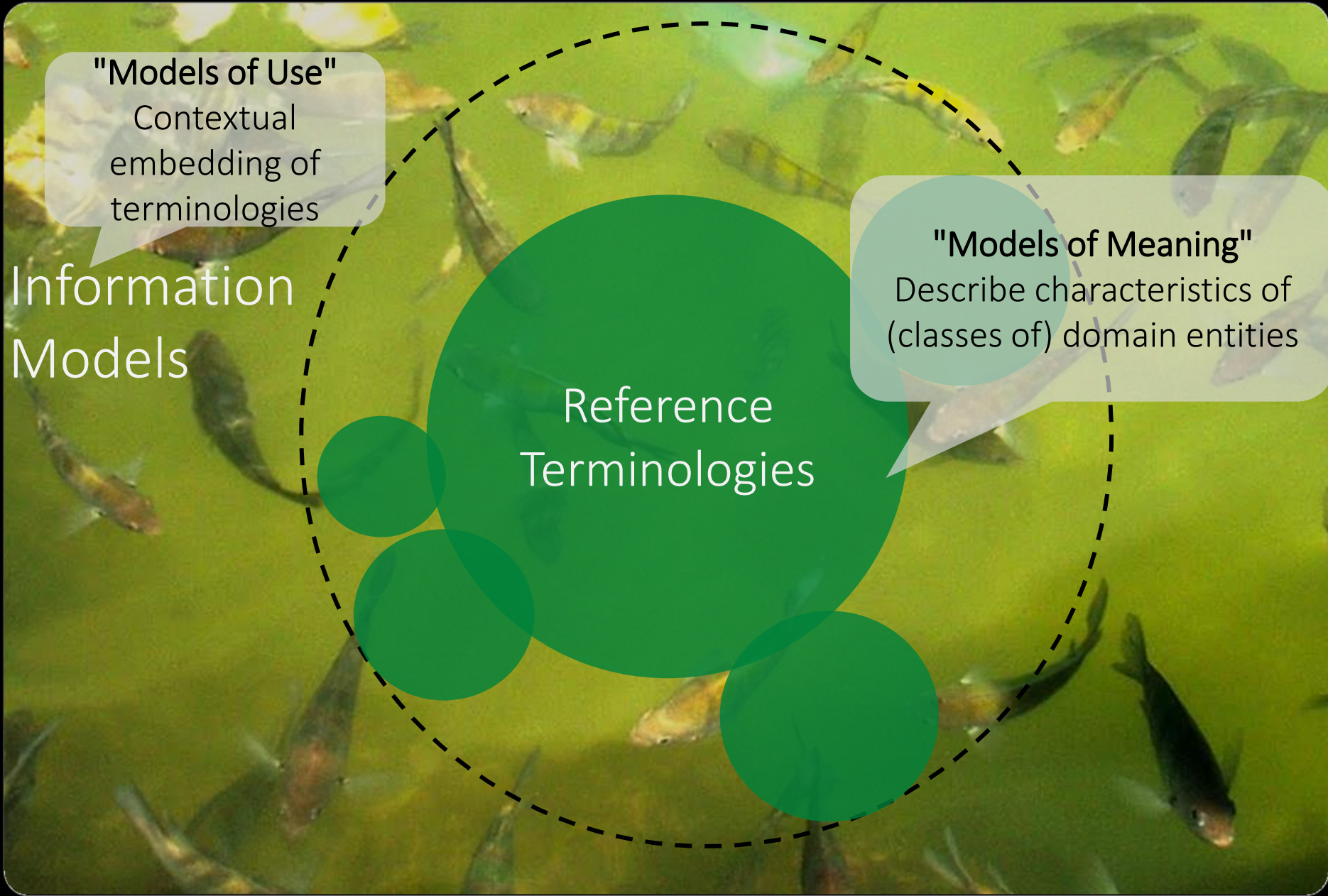
Regione
Lombardia



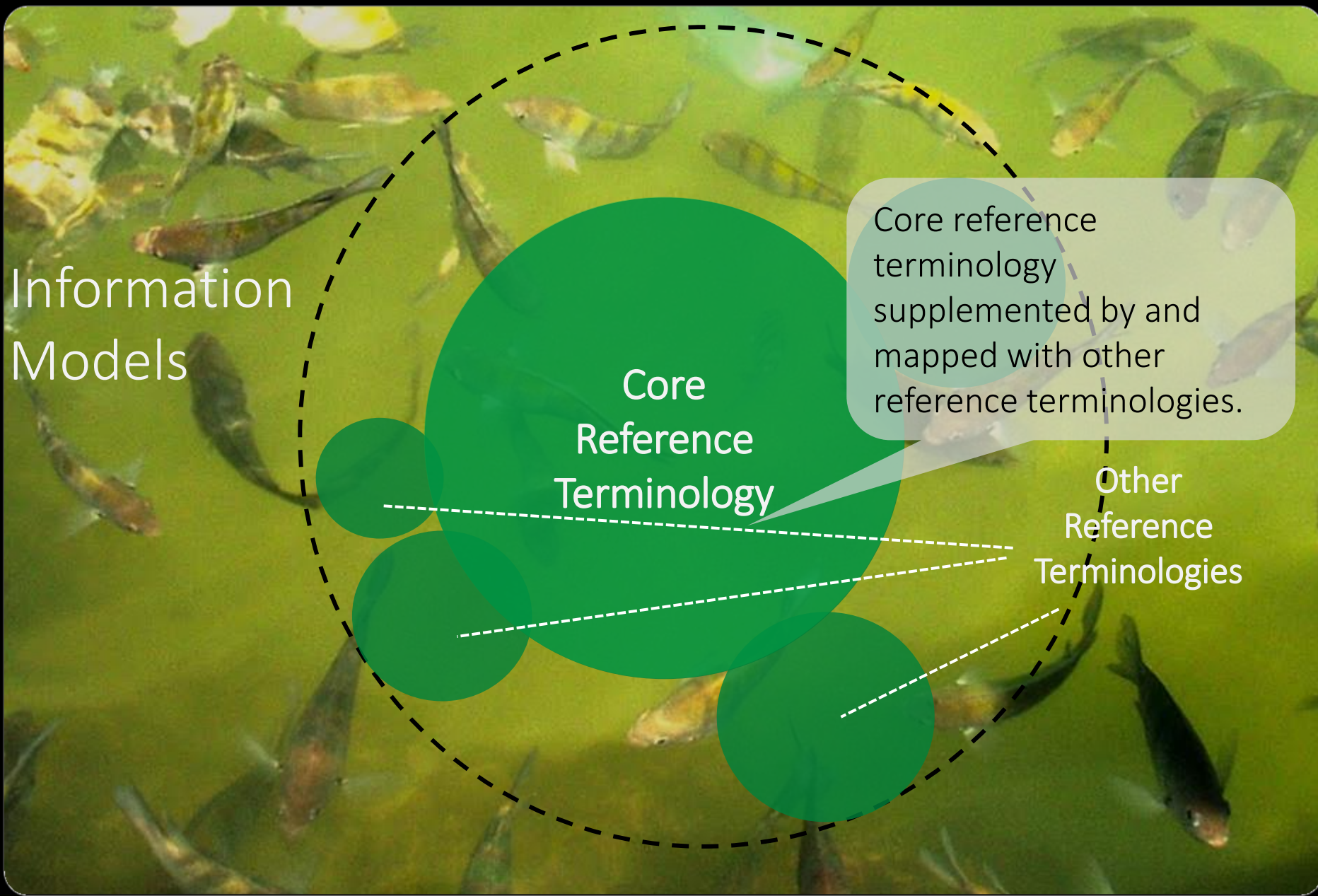
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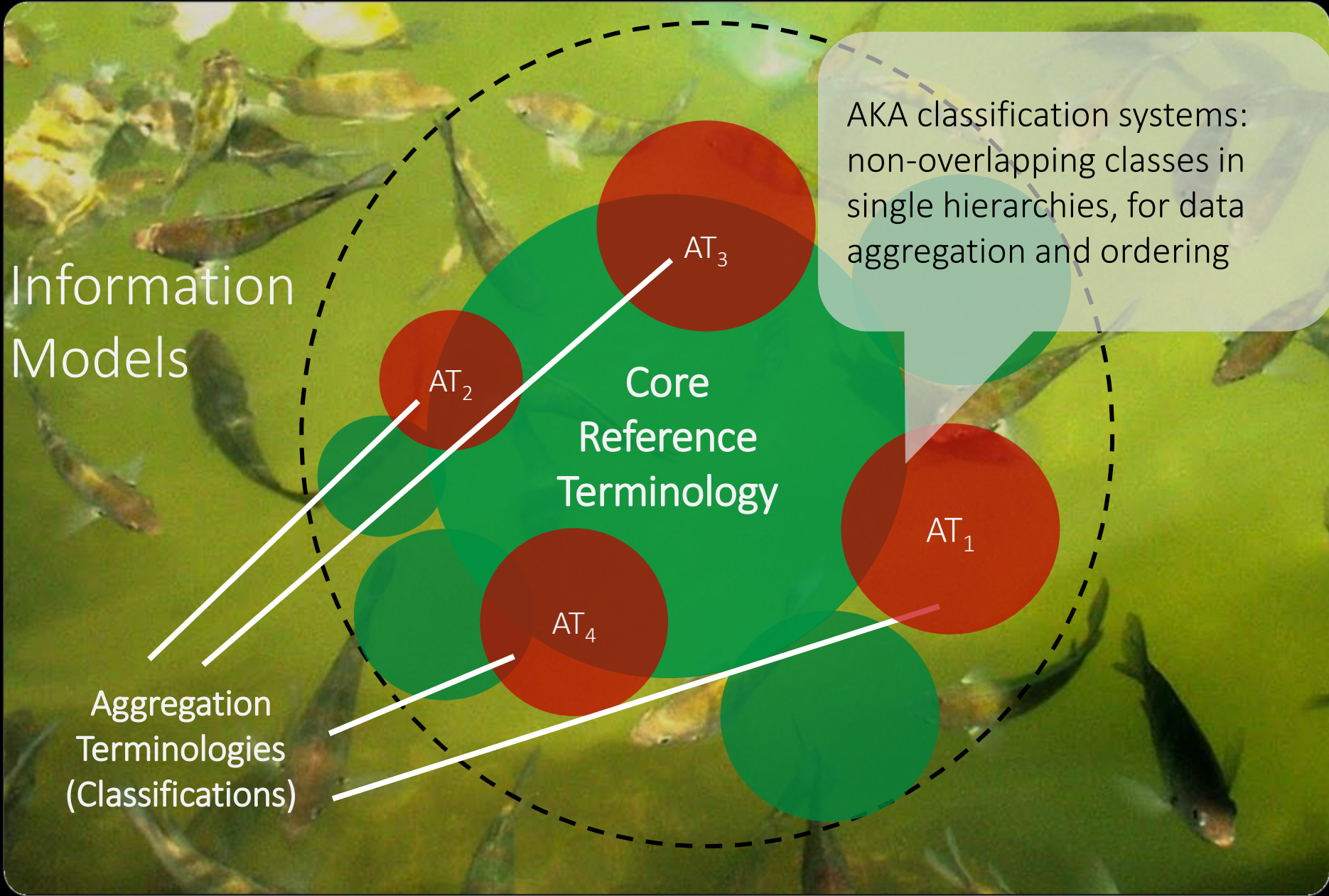
Interoperability ecosystem



Interoperability ecosystem



Interoperability ecosystem



Interoperability ecosystem

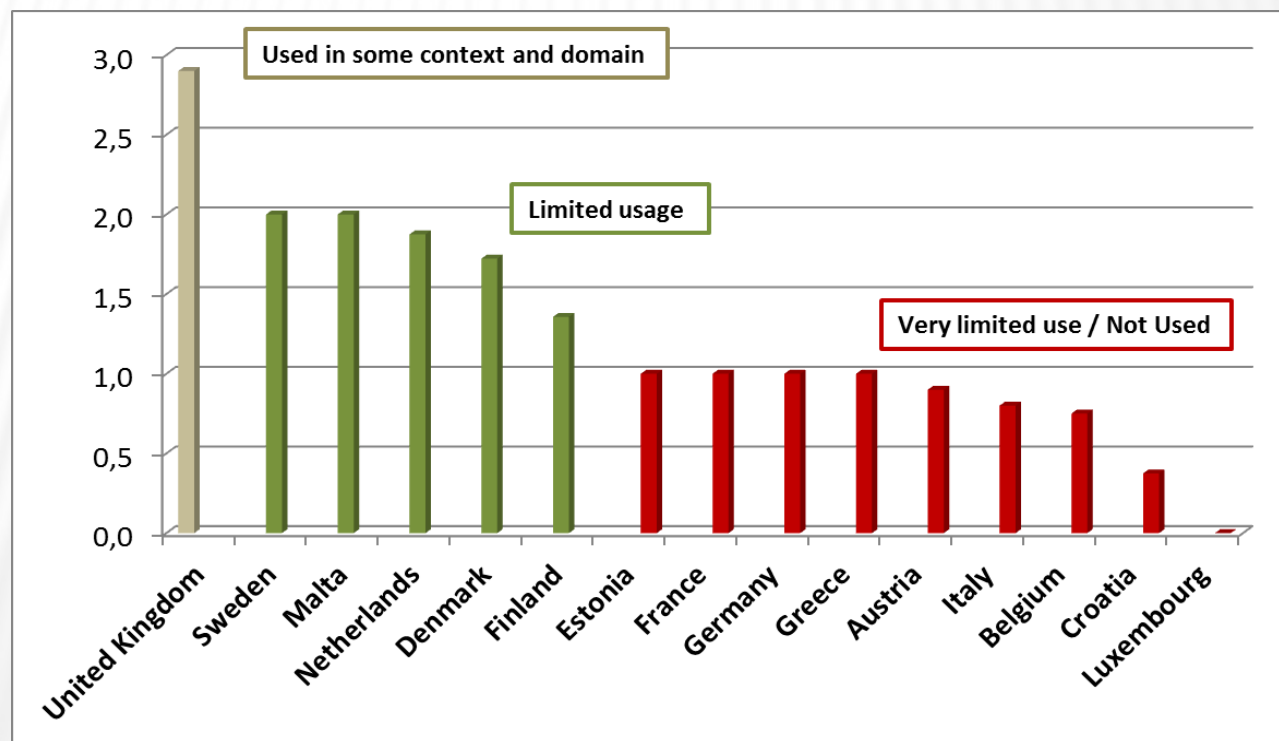
Information
Models

The diagram illustrates an interoperability ecosystem. At the center is a large green circle containing the text "SNOMED CT". Surrounding this central circle are six smaller circles, three of which are red and three are green, arranged in a ring. These smaller circles overlap with the central green circle and with each other. The entire set of circles is enclosed within a dashed black circle. The background of the slide is a photograph of many goldfish swimming in a pond with green lily pads.

SNOMED CT

CURRENT USE OF SNOMED CT

- Methodology:
 - Literature review
 - Focus groups, Questionnaires, Workshops
 - Case studies



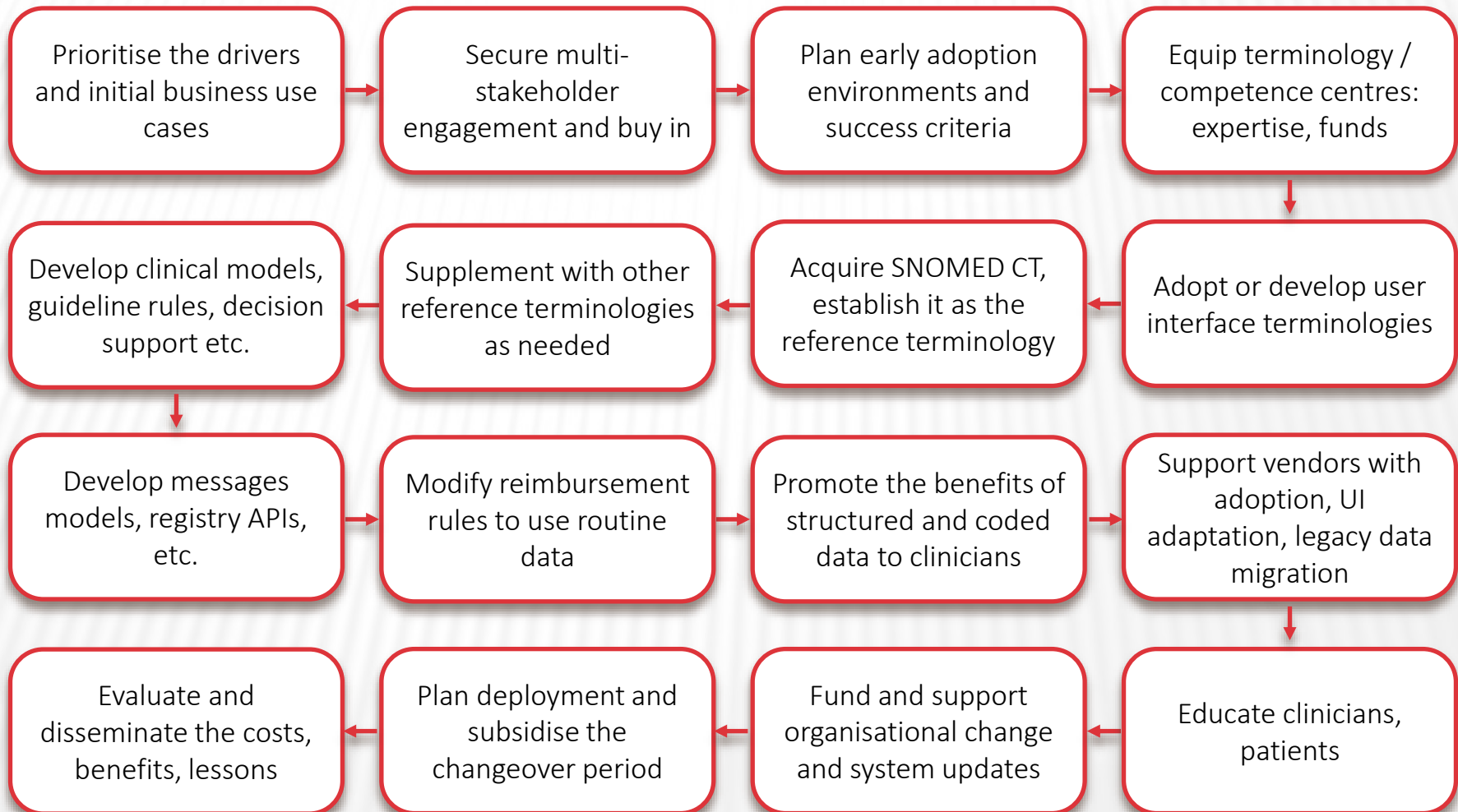
CASE STUDIES: DRIVERS FOR ADOPTION

| Driver | | X-Border PS Problem List | | Rare Diseases Registries | | National PS Problem List | | National Laboratory Report | |
|--|---|--------------------------|---|--------------------------|---|--------------------------|---|----------------------------|---|
| Better quality and safety of care to individual patients | More complete coded documentation. | | ↑ | | ↑ | | → | | ↑ |
| | Better overview of each patient's information. | | ↑ | | ↑ | | → | | ↑ |
| | Better records to enable decision support. | → | ↓ | ↑ | → | → | → | ↑ | ↑ |
| | Support the adoption of point of care evidence based clinical guidelines | | ↓ | | ↑ | | ↓ | | → |
| | Improved patient safety | | ↑ | | ↑ | | → | | ↑ |
| Enriched EHR data exchange for continuity of care | Underpinning multi-professional collaboration. | → | → | → | → | → | → | ↑ | ↑ |
| | Sharing EHRs with patients. | | → | | ↑ | | → | | → |
| Cost reduction (in the healthcare system) | Reduce duplicate data capture through better interoperability | | → | | ↑ | | ↑ | | ↑ |
| | Capture reporting and reimbursement codes at source, in a more efficient way. | → | ↓ | ↑ | ↑ | → | → | → | ↓ |
| | Consolidate from multiple existing terminologies. | | ↑ | | → | | ↓ | | ↑ |
| Optimising reimbursement | | ↓ | | ↓ | ↓ | → | | ↓ | |
| Analysis (secondary) uses | | ↓ | | ↑ | ↑ | → | | ↑ | |
| Cross-border information and knowledge sharing | | ↑ | | ↑ | ↑ | → | | → | |

Legenda

| | | | | | | | | | |
|---|-----|---|-------------------|---|-----------|---|------------------|---|----|
| ↑ | Yes | → | Substantially Yes | → | Partially | → | Substantially No | ↓ | No |
|---|-----|---|-------------------|---|-----------|---|------------------|---|----|

AN EXAMPLE ADOPTION WORKFLOW



ANNOTATING VALUE SETS

- End point: Concept coverage
- Methods
 - ADOPT: SNOMED CT only
 - ALTERNATIVE: UMLS subset
 - ABSTAIN: local German terminologies

