HELPSEEKER TECHNOLOGIES

KOMPAS PLATFORM

Centre for Social Services Engineering
UNIVERSITY OF TORONTO

Data Consolidation: How we Solved it with Kompas Ontology and Data

Matt Parker [1], **Bart Gajderowicz**[2], Lester Lym[2], Daniela Rosu[2], Alina Turner[1] & Mark S. Fox[2]

[1]Help Seeker Technologies

[2]Centre for Social Services Engineering, University of Toronto

6th Annual Data That Makes a Difference Conference

May 17th, 2023

Calgary, Alberta, Canada

Land Acknowledgement

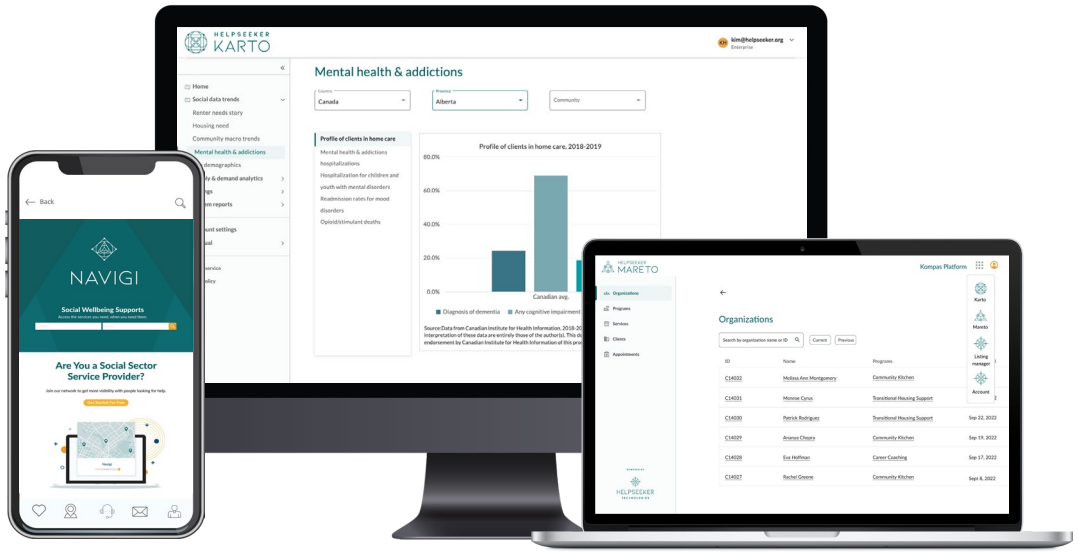
Our team members live across **Turtle Island** in what is today known as Canada. We acknowledge that the places we call home today have deep ties to the Indigenous peoples that have stewarded this land **since time immemorial.**

We are a **settler organization** working in and with Indigenous communities and people. We work in systems that have long histories as colonial actors that still deny Indigenous people their rights to **self-determination and sovereignty,** which we strive to be **allies in** challenging through our work.

This is why we commit our organization to aligning our efforts to the advancement of the **United Nations Declaration on the Rights of Indigenous Peoples** and the **Calls to Action of the Truth and Reconciliation Commission.**

About HelpSeeker

Data, Software, and Expertise for Breakthrough Social Impact



We build solutions that empower leaders on the frontlines of solving the world's most complex social challenges.

As a social enterprise, we prioritize improving our offerings to generate more social impact. We truly believe in a future where tech and business can be a force for social good.

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Certified B Corporation

About Centre for Social Services Engineering

Engineering Design for Social Impact

Our mission is to make social services more effective and efficient by delivering the right services to the right people at t he right time.

The Centre for Social Services Engineering is the first of its kind to broaden the scope of engineering research to the social services sector, in collaboration with Department of Psychiatry, Faculty of Social Work, and Department of Industrial and Systems Engineering.

Today's Speakers

Speaker

Matthew Parker, PhD MBA | HelpSeeker
EVP Technology & Data

Speaker

Bart Gajderowicz, PhD | Centre for Social Services Engineering, University of Toronto
Director

Agenda:

1. Motivation
2. Data Analysis
3. Unified Data Model
4. Taxonomy Alignment

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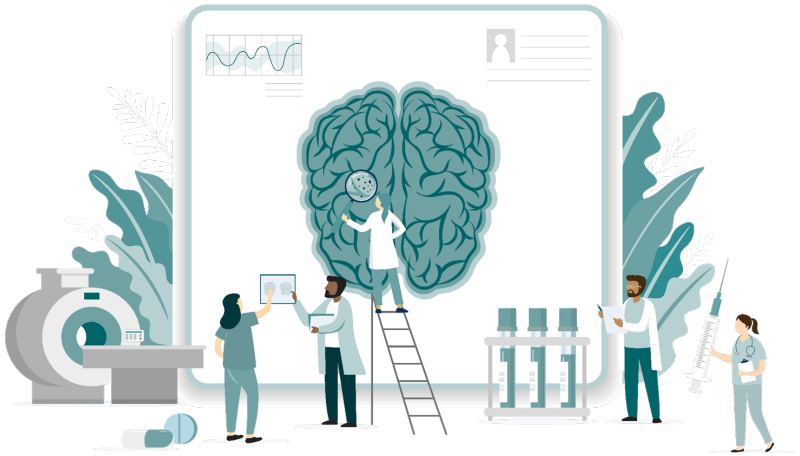
Motivation

Why our Data Wasn’t Working

Why Isn’t Our Data Working?



Large amount of unstructured data, but large challenge to transform data into a usable format and link disparate data sets

Fragmented Nature

89%
of public sector unprepared for data growth

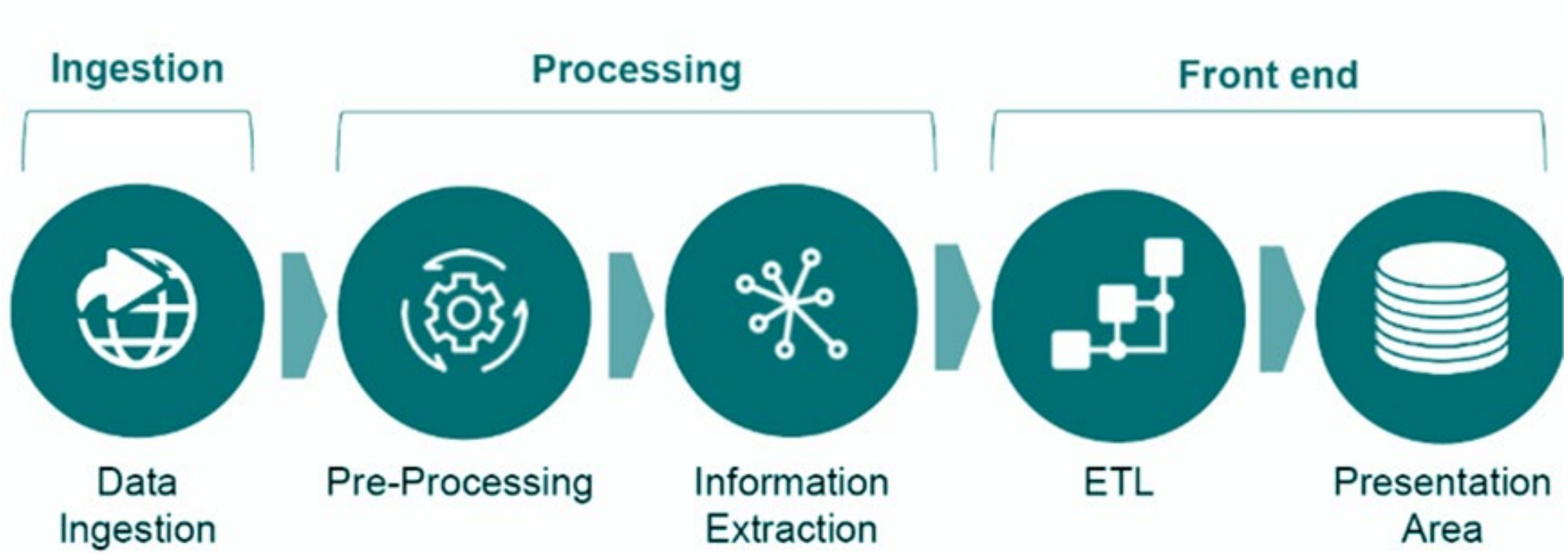
115
Initiatives under ‘data for good’ or ‘AI for good’

Data Issues

80%
Of data is unstructured

96%
of Canada’s service providers have less than 100 employees

Data Ecosystem



- ➔ Data collected, standardized, linked and tools applied
- ➔ BUT large chunks of data very sensitive and need to be protected and consent respected
- ➔ Reviews of challenges have highlighted challenges with tools, unstructured data, siloing of data & lack of appropriate impact data
- ➔ How to approach without boiling the ocean?

Kompas Project

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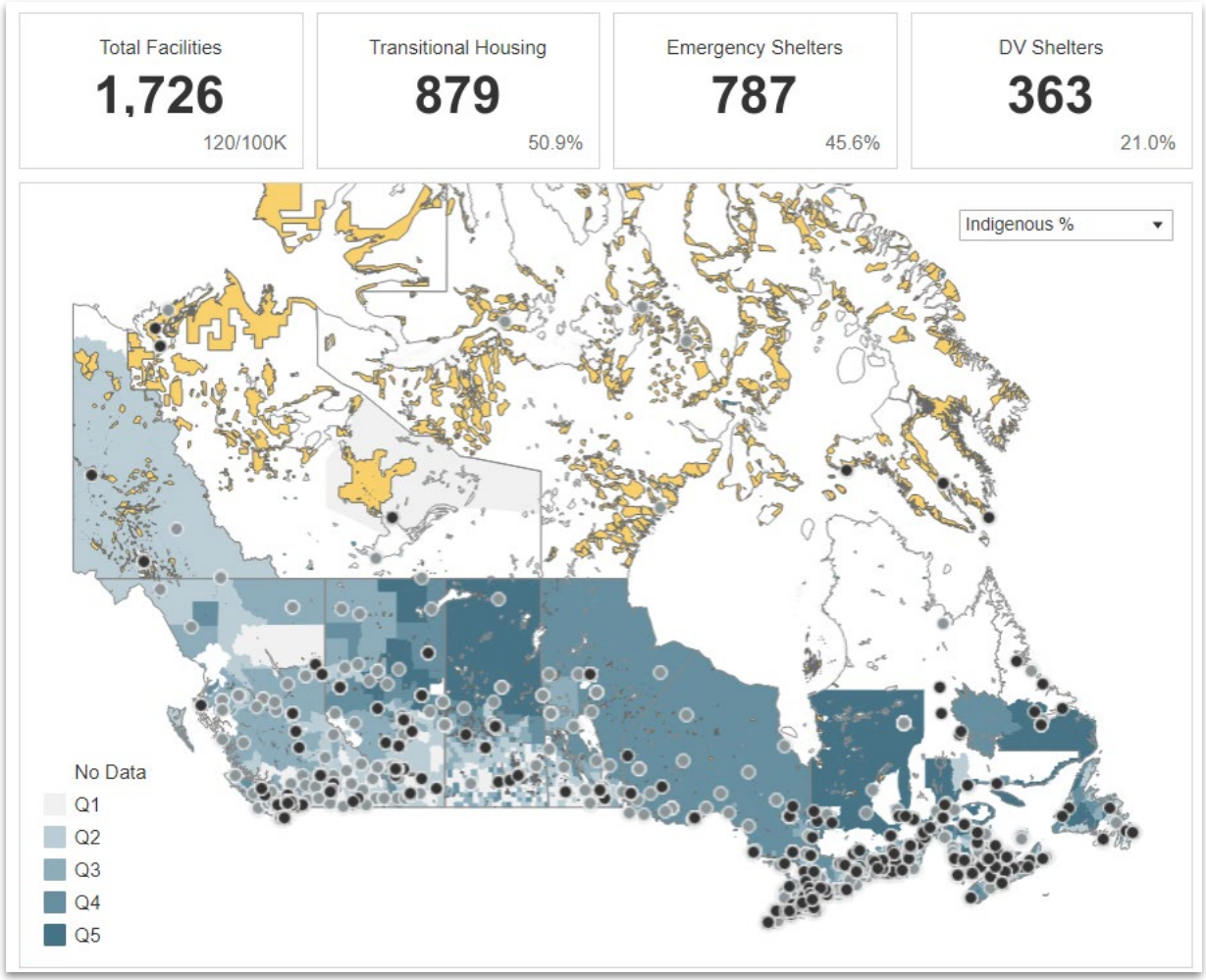
Created a partnership with researchers, communities, service providers and data companies to build stronger tools, infrastructure and data transformation

18 month project,
tools being utilized today

Key outcomes were:

data/software tools to organize and structure data, initial version of ontology, and much more



Data and Reporting

How we Transitioned our Tools

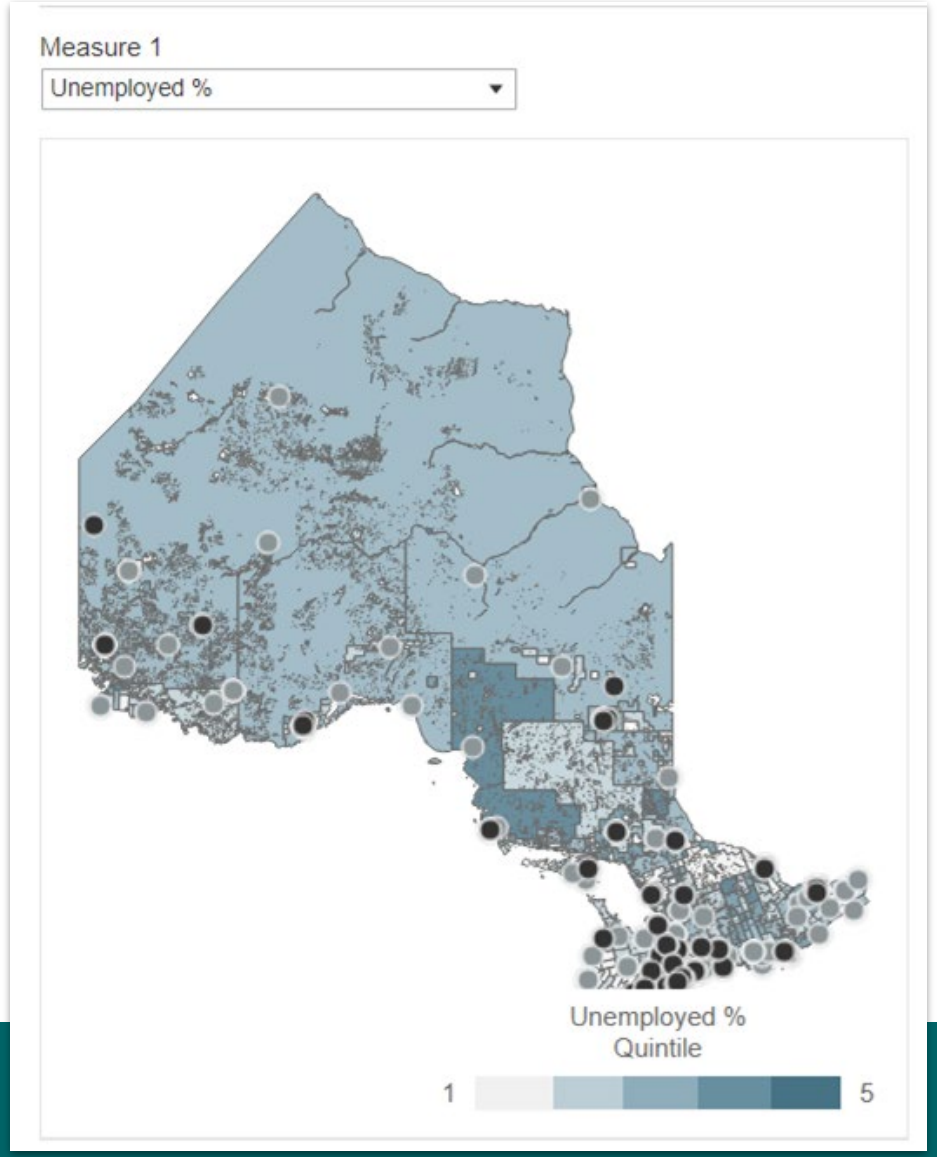
Why Wasn't Our Data Working?

80%+
of our data was unstructured

100,000s
programs with little associated structured data

5
Different catchments

0
Unique identifiers uniform across data



Example: Housing Continuum

- Example below is CMHC housing continuum
- Depending on partner involved, different definitions. Also different types of services affect the continuum
- Different types of data, collected in different ways
- Question can be as simple as what is the supply in my community?

Example Data Sources

Housing Statistics & Demographics

Census, provincial agencies, one off reports

Health & Wellbeing Data

CIHI, provincial datasets, local datasets

Scraped Data

Additional current data on service providers/statistics (e.g. rental rates

Service Provider Lists

HelpSeeker, local/national organizations lists

Business/Charity Data

CRA, provincial sources, etc

Velocity of Data Sources

2-5 Years

Housing Statistics & Demographics

1-2 Years

Health & Wellbeing Data

Service Provider Lists

Business/Charity Data

>1 Year

Scraped Data

Linkage of Data Sources (Location Based)

Provincial

Housing Statistics & Demographics

Health & Wellbeing Data

Municipal

Business/Charity Data

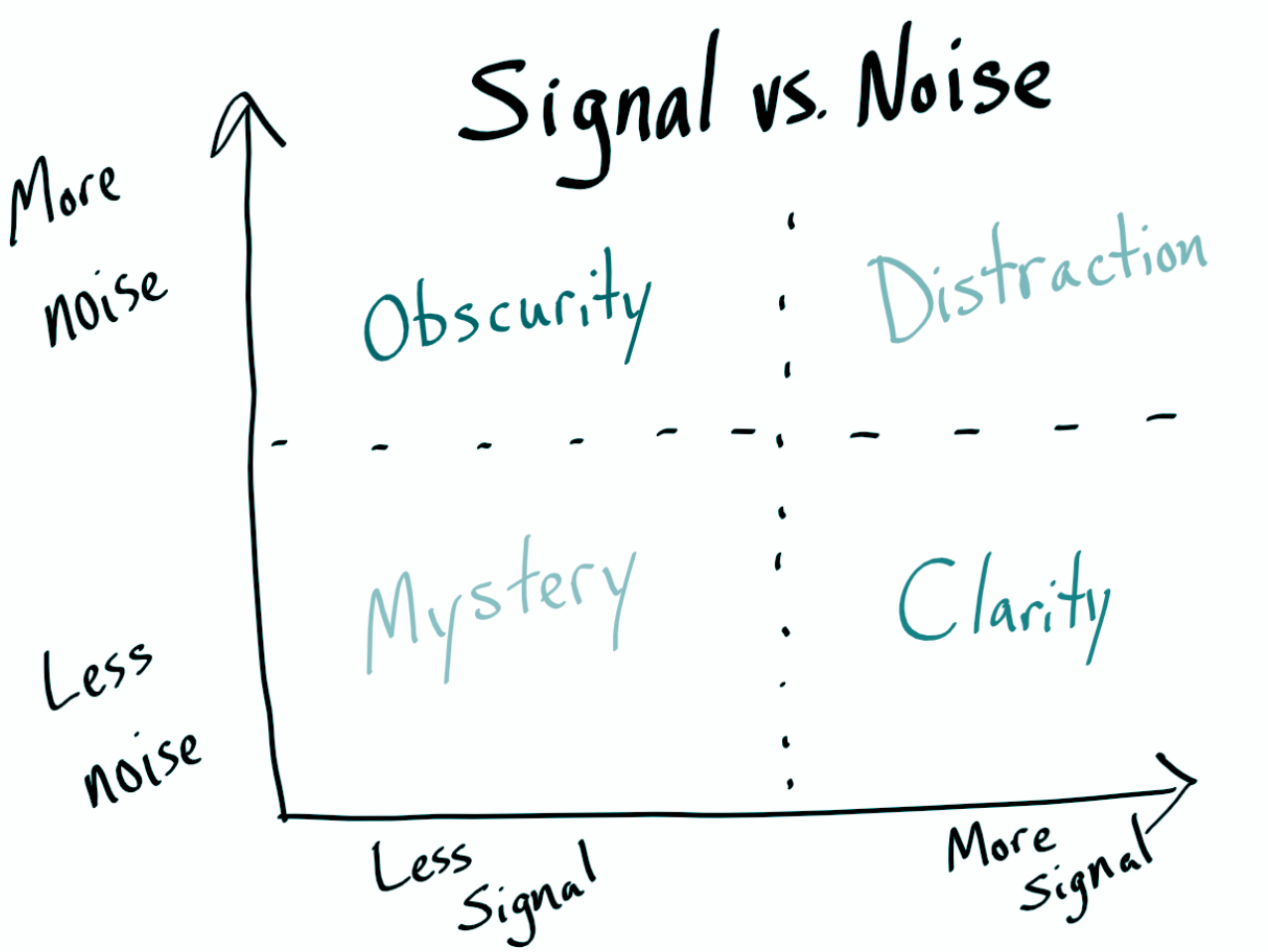
Various

Scraped Data

Service Provider Lists

Signal Through Noise

- Choice of data analysis often driven by access
- Important signals can be underrepresented or hidden in the data we have
- Challenging to understand the interplay in different datasets



Importance of the Relationships

Specificity is where the greatest value lies but need to apply structure to do this.
E.g. intersection of social need and climate change

Risk

The greatest risk for climate change will be linked to the specific community

Inequality

Subset of Canadians will feel the effects of climate change much more acutely, yet all over Canada communities already lack the appropriate services and supports for those who will be hardest hit

Specificity

No two communities will experience climate change the same. A targeted approach will be required to best meet the needs of Canadians as we adapt to our changing climate

It Comes Down to Tools

- ➔ To be able to tackle these large questions, we needed to create a new ontology, generate the necessary ETL process, create new data architecture/infrastructure, etc
- ➔ Not a one size fits all process
- ➔ Investment in data/tools has changed the paradigm at HS on how we utilize data
- ➔ Continuous journey

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	Transitional Housing	Emergency Shelter	DV Shelter	On Reserve	Indigenous Focus	Indigenous Led	Female	Male	Gender Inclusive	Children
Emergency Shelter	1									
DV Shelter	2	14								
On Reserve	0	0	0							
Indigenous Led	0	0	0	0						
Indigenous Focus	1	1	1	0						
Female	39	60	16	0	1	0				
Male	33	54	0	0	0	0	54			
Gender Inclusive	15	26	3	0	0	0	40	36		
Children	8	20	12	0	2	0	28	10	5	
Youth	17	15	1	0	0	0	29	26	20	7

Unified Data Model

How to make Impact Data interoperable

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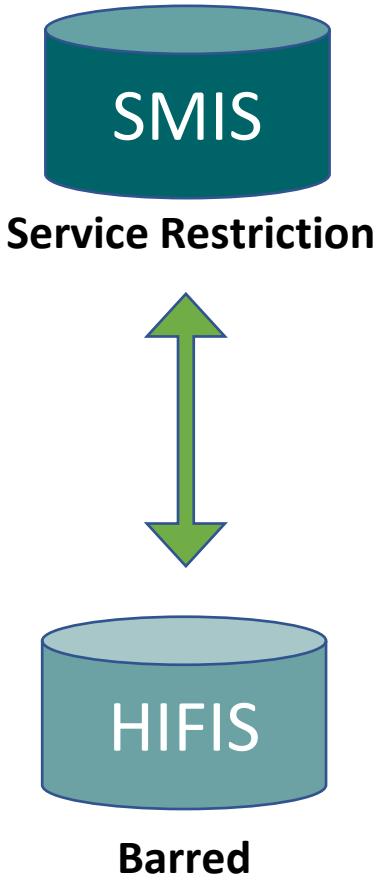
Challenge: Semantic Interoperability

Ability of computer systems to exchange data with unambiguous, shared meaning.

A requirement for machine reasoning, knowledge discovery, and data federation across information systems.

Challenge: Semantic Interoperability



User	Client No.	Program	Restriction Reason	Notes	Date	Length (days)
Admin1	123	Detox	Assault of a client	fight over program resources	01/01/2018	60

?

User	Client	Reason	Comment	Start Date	End Date
MarySmith	G456	Safety / Security Risk	assaulted a client	01/01/2018	03/03/2018
MarySmith	G456	Disruptive Behaviour	threatening a client	01/01/2018	03/03/2018

Benefits of Adopting Data Standards

Impact Standards provide a framework with which to think about the impact on stakeholders

Interoperability

- Organizations and experts can use the same language and a shared understanding.
- Align your objectives with other stakeholders (community, funders, etc).
- Promote knowledge transfer and innovation.
- Raise awareness of emerging needs and trends.
- Machine interoperability.

Benchmarks

- Define terms for measurements and tests.
- Aggregate data in a usable format.
- Identify gaps and duplication in services and funding.
- Identify future service offerings and direction.

Benefits of Adopting Kompas

The adoption of the Kompas Data Model provides a framework for representing impact models.

1. Framework with which to think about the impact on stakeholders.
2. Compatibility with the internationally recognized frameworks and all theories of change.
3. Standardization of existing formal and informal adoption of theories of change.
4. Build and maintain the infrastructure that supports activities defined by an organization's theory of change.
5. Resolves limitations around interoperability with other SPOs, service partners, funding agencies, and other stakeholders.
6. Increase accountability through transparent and standardized reporting.
7. Maintain public-facing web content tagged with a vocabulary, to ensure webpages are more discoverable by search engines.

Impact Management Project Framework

The IMP reached global consensus that impact can be measured across five dimensions: What, Who, How Much, Contribution and Risk

Impact Dimension	Impact question each dimension seeks to answer
What	▪ What outcome is occurring in the period?
Who	▪ Who experiences the outcome? Who should be?
How much	▪ How much of the outcome is occurring – across scale, depth, and duration?
Contribution	▪ How big of a contribution the outcome makes?
Risk	▪ What is the risk to people and the planet that impact does not occur as expected?

Common Impact Data Standard => Compass Ontology

How

▪ The processes by which a Social Purpose Organization delivers Outcomes to its Stakeholders.

Input → Activity → Output → Outcome

After hundreds of in-person and virtual conversations, the IMP, a Practitioner Community of over 2,000 organizations, reached consensus

Source: Impact Management Project

Common Impact Data Standard: Impact Model Classes

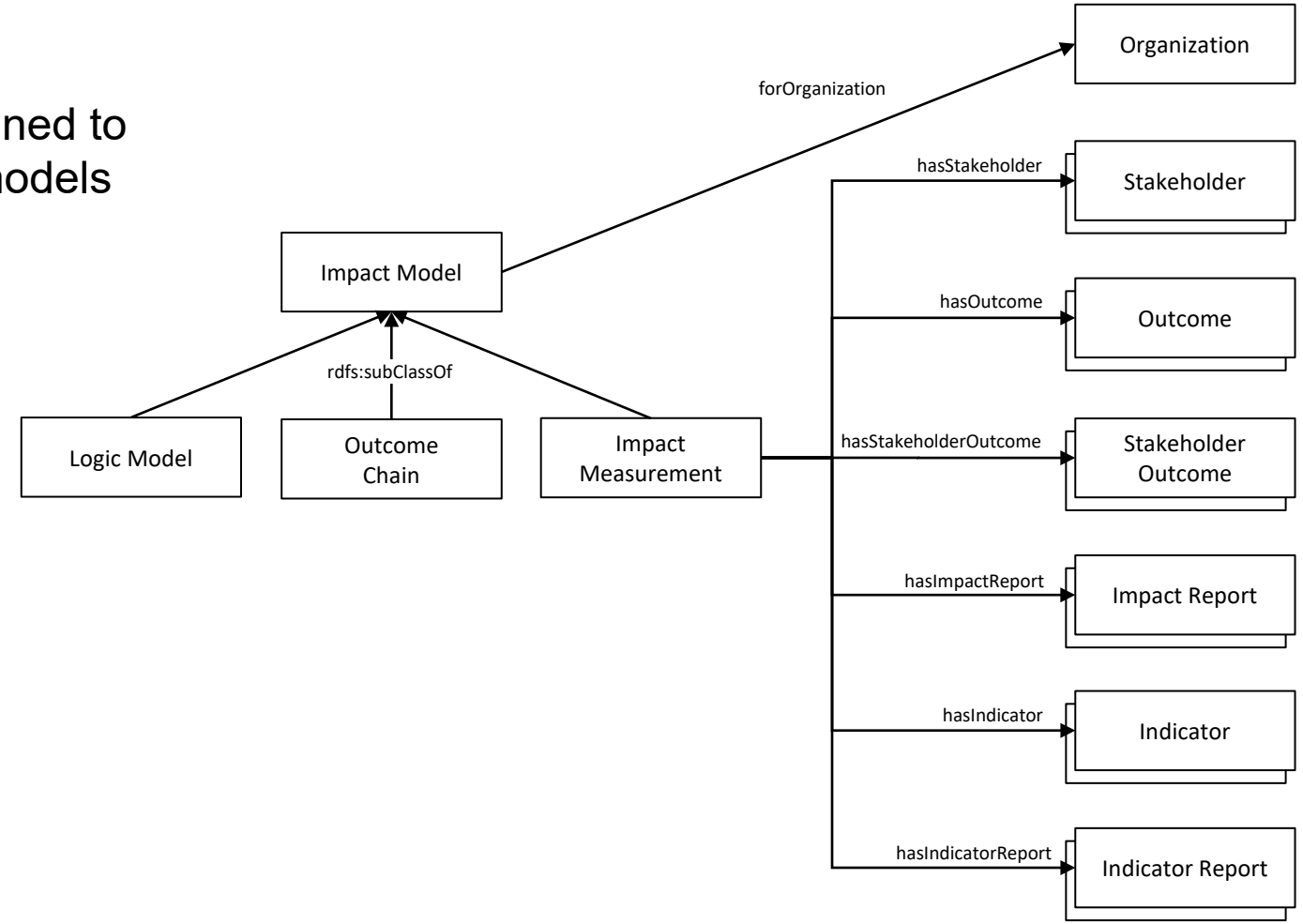
The Common Impact Data Standard is designed to represent the different variations of impact models in use by Social Purpose Organizations.

The Impact Model class is the root of a taxonomy of impact models.

In this presentation we elaborate on three:

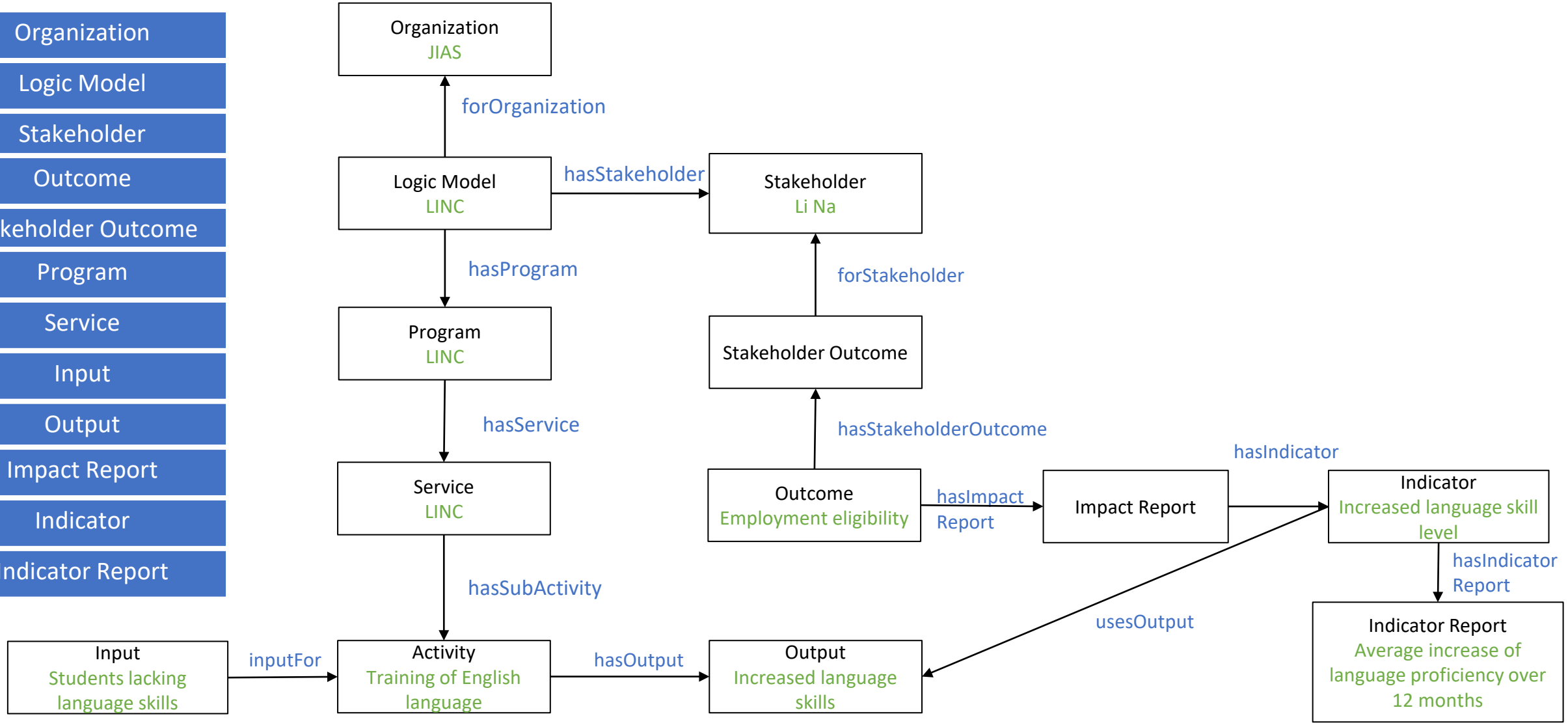
- Logic Model, Outcome Chain, and Impact Measurement.

The properties of each reflect the differences in focus and levels of detail.



Logic Model Example: Education

- Organization
- Logic Model
- Stakeholder
- Outcome
- Stakeholder Outcome
- Program
- Service
- Input
- Output
- Impact Report
- Indicator
- Indicator Report



Taxonomy Alignment

How to speak the same language

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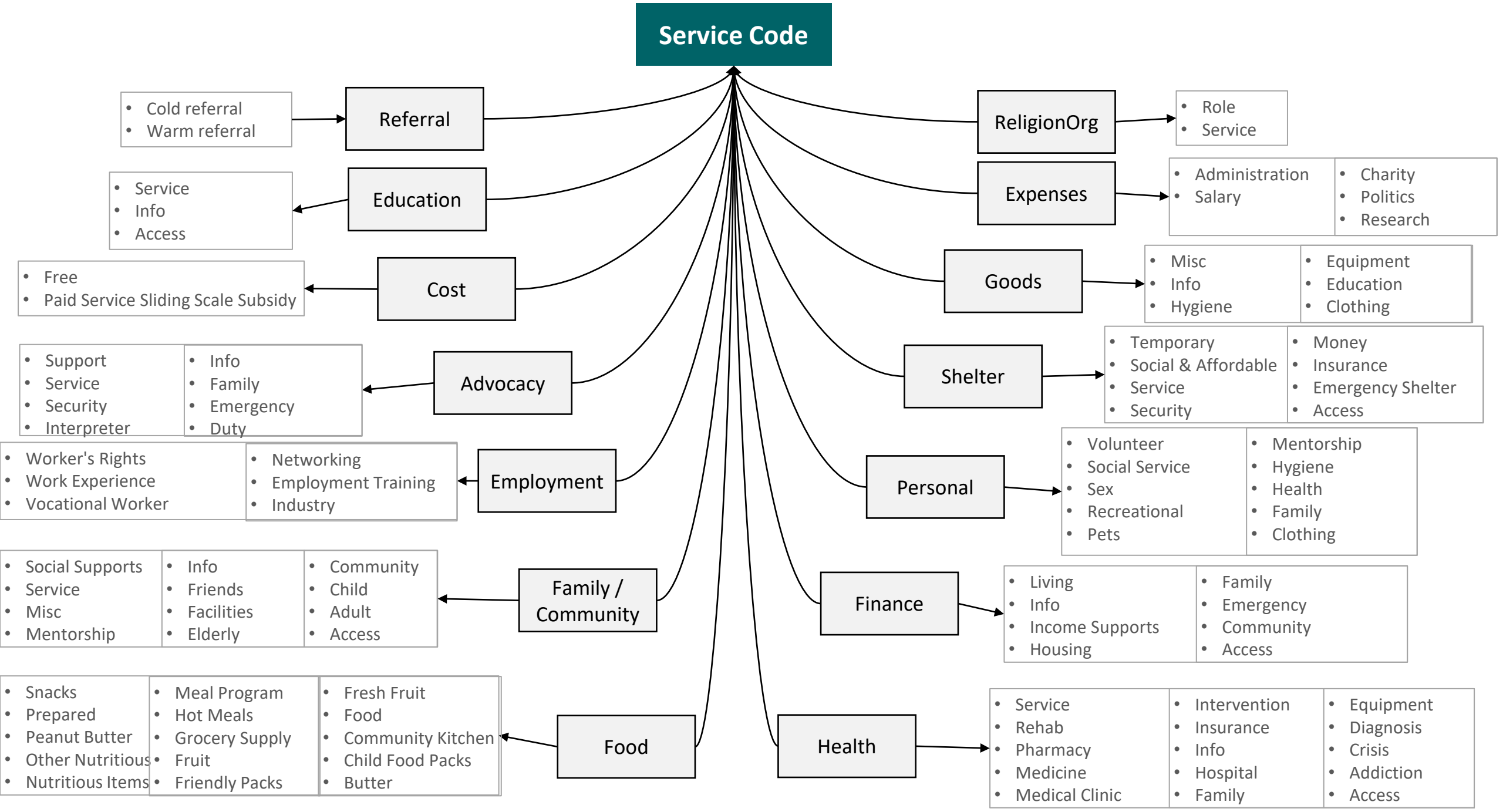
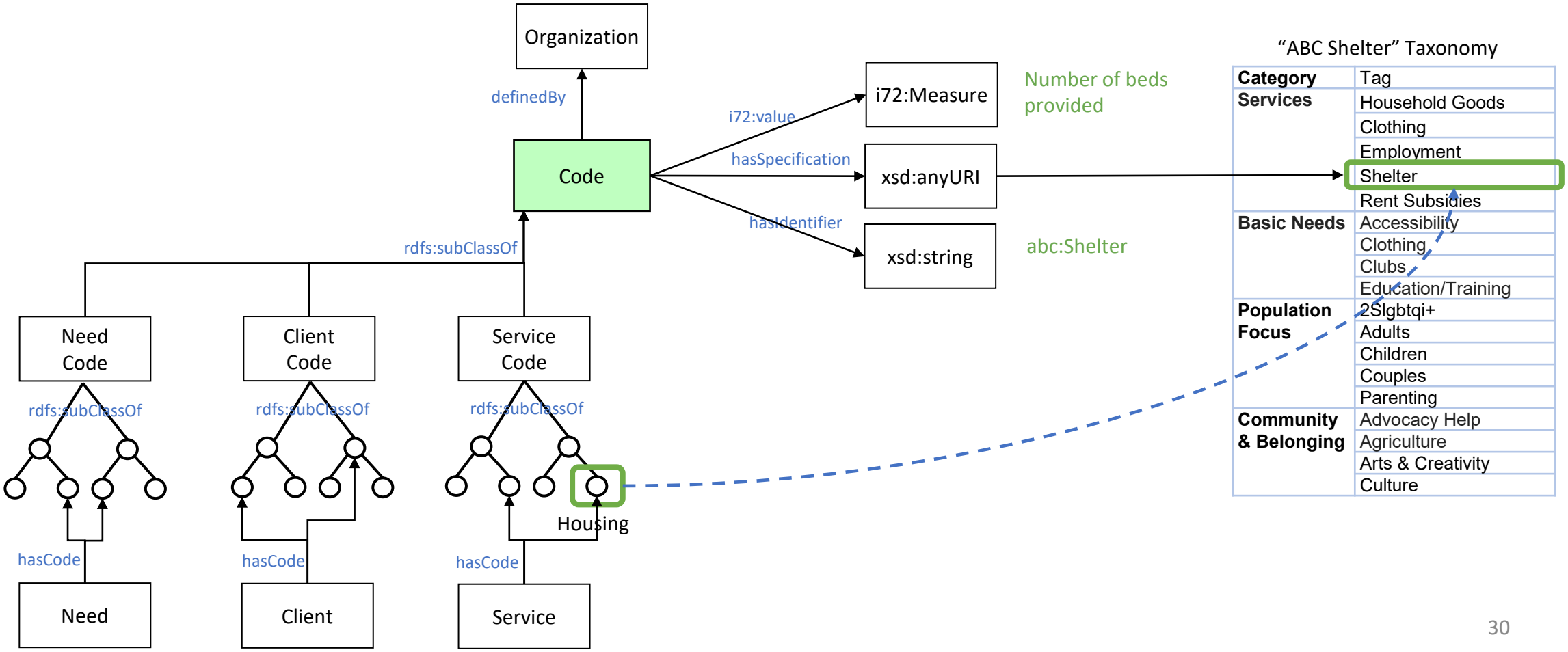
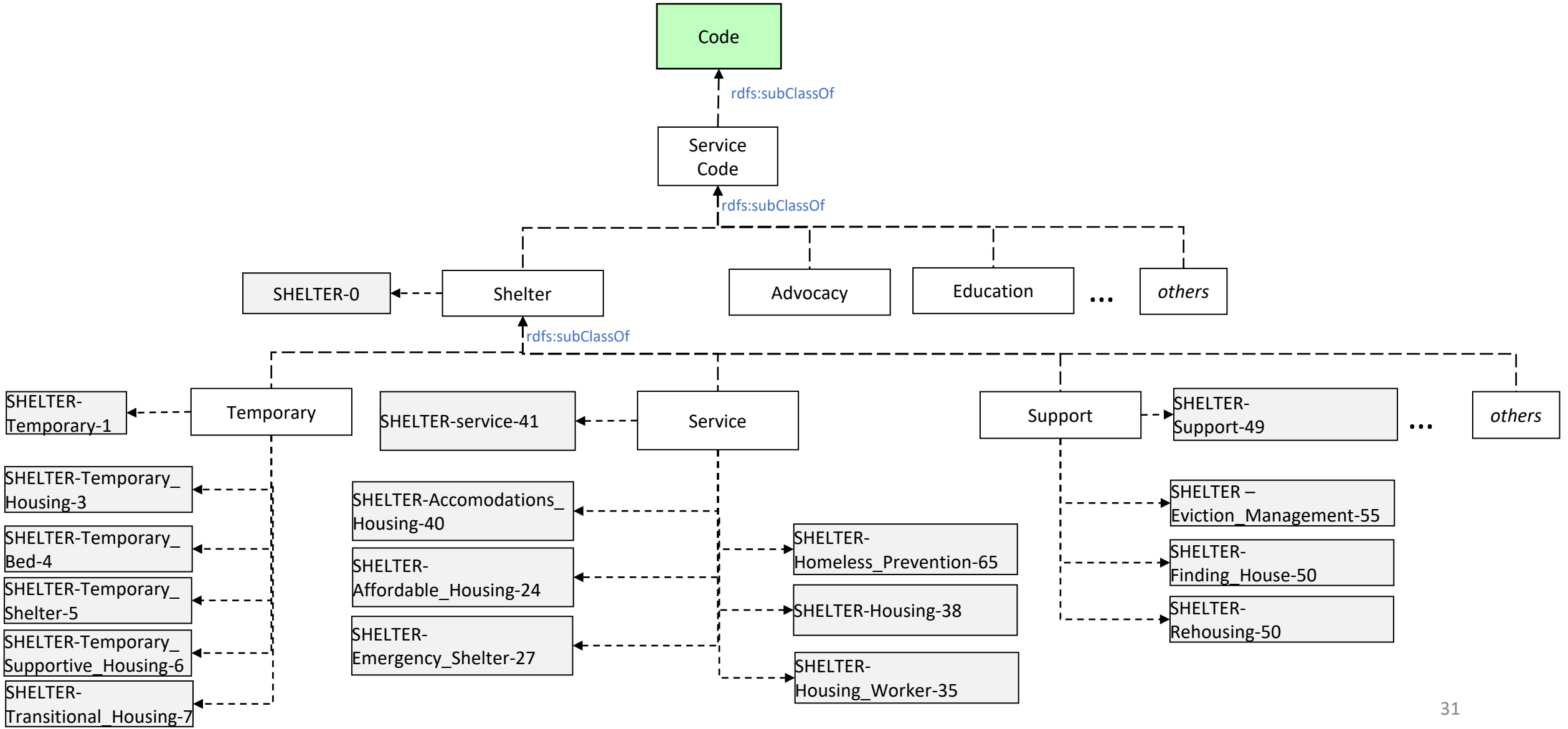

Service Code
Referral
Cold referral
Warm referral
Education
Service
Info
Access
Cost
Free
Paid Service Sliding Scale Subsidy
Advocacy
Support
Service
Security
Interpreter
Info
Family
Emergency
Duty
Employment
Worker's Rights
Work Experience
Vocational Worker
Networking
Employment Training
Industry
Family / Community
Social Supports
Service
Misc
Mentorship
Info
Friends
Facilities
Elderly
Community
Child
Adult
Access
Food
Snacks
Prepared
Peanut Butter
Other Nutritious
Nutritious Items
Meal Program
Hot Meals
Grocery Supply
Fruit
Friendly Packs
Fresh Fruit
Food
Community Kitchen
Child Food Packs
Butter
Health
Service
Rehab
Pharmacy
Medicine
Medical Clinic
Intervention
Insurance
Info
Hospital
Family
Equipment
Diagnosis
Crisis
Addiction
Access
Finance
Living
Info
Income Supports
Housing
Family
Emergency
Community
Access
Personal
Volunteer
Social Service
Sex
Recreational
Pets
Mentorship
Hygiene
Health
Family
Clothing
Shelter
Temporary
Social & Affordable
Service
Security
Money
Insurance
Emergency Shelter
Access
Goods
Misc
Info
Hygiene
Equipment
Education
Clothing
Expenses
Administration
Salary
Charity
Politics
Research
ReligionOrg
Role
Service

Codes and Taxonomies: Example

Kompas provides three main taxonomies related to the three core classes: Client, Service, and Needs. Each taxonomy defines terms related to the one of the core classes. Each can be mapped to external taxonomies or vocabularies.



Kompas Code Taxonomy (Service)



Thank You!

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Matthew Parker | PhD, MBA
EVP Technology & Data
mattparker@helpseeker.org

Bart Gajderowicz | PhD
Director, Centre for Social Services Engineering, University of Toronto
bartg@mie.utoronto.ca