Faceted Classification Scheme ODP

Motivation

- There are domain concepts that can be represented according to multiple alternative classification criteria
- This pattern mitigates the opportunity for ad-hoc decisions in such ontology modelling scenario

FCS Generic Structure

- TDC: Target Domain Concept
- Facet_i: Facet_e, Facet_{i+1}, ..., rest of facets
- F_i,Term_{j}: Terms or foci organized by facets
  - Facet_i: F_i,Term_{j}, F_i,Term_{j+1}, ..., rest of terms in Facet_i
  - F_i,Term_{j}: F_i,Term_{j+1}, F_i,Term_{j+2}, ..., rest of terms in Facet_{j+1}
- Item_{x}: Set of items to classify: Item_{x}, Item_{x+1}, ..., rest of items

Normalisation ODP Generic Structure

- owl:Thing
  | — | Module_i
  | — | :Class
  | — | TargetDomainConcept (or :TDC)
  | — | :SpecificTDC

Alignment of a Faceted Classification Scheme and the Normalisation ODP

<table>
<thead>
<tr>
<th>Information Science</th>
<th>Ontology Modelling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faceted Classification Scheme</td>
<td>Normalisation ODP</td>
</tr>
<tr>
<td>TDC</td>
<td>:TDC</td>
</tr>
<tr>
<td>Facet_i</td>
<td>:Module_i</td>
</tr>
<tr>
<td></td>
<td>:hasModule_i</td>
</tr>
<tr>
<td>F_i,Term_{j}</td>
<td>:M_i,Class_j</td>
</tr>
<tr>
<td></td>
<td>:M_i,Class_TDC</td>
</tr>
<tr>
<td>Item_{x}</td>
<td>:SpecificTDC_{x}</td>
</tr>
</tbody>
</table>

Dish Detergent FCS Example

<table>
<thead>
<tr>
<th>Facet</th>
<th>Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agent</td>
<td>dishwasher, person</td>
</tr>
<tr>
<td>Form</td>
<td>gel, gelpac, liquid, powder, tablet</td>
</tr>
<tr>
<td>Brand Name</td>
<td>Cascade, Electrosol, Ivory, Palmolive, President's Choice, [...]</td>
</tr>
<tr>
<td>Scent</td>
<td>green apple, green tea, lavender, lemon, mandarin, ocean breeze, [...]</td>
</tr>
<tr>
<td>Effect on Agent</td>
<td>aroma therapy (subdivisions: invigorating, relaxing)</td>
</tr>
<tr>
<td>Special Property</td>
<td>antibacterial</td>
</tr>
</tbody>
</table>

Alignment Guidelines

- owl:Thing
  | — | :Agent
  | — | :Person
  | — | :Dishwash
  | — | :Form
  | — | :Gel
  | — | :Gel pact
  | — | (...) rest of terms in the facet "Form"
  | — | :BrandName
  | — | :Cascade
  | — | :Electrosol
  | — | (...) rest of terms in the facet "BrandName"
  | — | :Scent
  | — | :GreenApple
  | — | :GreenTea
  | — | (...) rest of terms in the facet "Scent"

Dish Detergent FCS Normalisation Example

- owl:Thing
  | — | :DishDetergent (:TDC)
  | — | :ManualDishDetergent
  | — | :DishwasherDishDetergent
  | — | :GelDishDetergent
  | — | :Gel PacDishDetergent
  | — | (...) rest of subclasses for each term in the facet "Brand Name"
  | — | :CascadeDishDetergent
  | — | :ElectrosolDishDetergent
  | — | (...) rest of subclasses for each term in the facet "Scent"
  | — | :GreenAppleDishDetergent
  | — | :GreenTeaDishDetergent
  | — | (...) rest of subclasses for each term in the facet "Agent"