Connected Workflows
For Semantic Enrichment

Daniel Mayer
VP Marketing, TEMIS
daniel.mayer@temis.com
What Is Semantic Content Enrichment?

Starts with automated extraction of information

We report a 52 year-old man presenting an acute hair loss induced by carbamazepine (CBZ) in concentration of 8.6 microg/ml.

Adverse Event

- Side Effect: Alopecia
- Cause: Carbamazepine
- Dosage: 8.6 mg/ml
- Patient: 52 year old male

Powered by

- Thesaurus / Taxonomy / Ontology
- Morpho-syntactic reasoning
- Machine learning / Statistics
Traditional Workflow

Manual

Incoming (Raw) Documents

Taxonomy Creation & Management

Indexing

Indexed Documents
Automated Indexing Going Mainstream
Top 3 reasons

**Speed**
- x18 Indexing of 10M abstracts
  - 2 months vs. 36 months (manual)

**Savings**
- 95% Legal citation linking & case redaction
  - /4 Resources for legal consolidation

**Scalability**
- x8 Volume of indexed documents
  - (stable team size)
Automated Workflow

Taxonomy Creation & Management

Incoming (Raw) Documents → Semantic Enrichment → Enriched Content

Knowledge
Automated Workflow
Fully or semi-automated

Taxonomy Creation & Management

Incoming (Raw) Documents → Semantic Enrichment → Curation → Enriched Content

Knowledge
Connected Workflow
Integration enables feedback

Incoming (Raw) Documents → Semantic Enrichment → Curation → Enriched Content
## Connected Workflow
### Thesaurus/Taxonomy/Ontology Maintenance

#### Luxid WebStudio

<table>
<thead>
<tr>
<th>Name</th>
<th>Language</th>
<th>Broader</th>
<th>Variant</th>
<th>Variant French</th>
</tr>
</thead>
<tbody>
<tr>
<td>agroecology</td>
<td>english</td>
<td>ecology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>animal ecology</td>
<td>english</td>
<td>ecology</td>
<td>Animal Science and Animal Prod.</td>
<td>Synecology</td>
</tr>
<tr>
<td>chemical ecology</td>
<td>english</td>
<td>ecology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>community ecology</td>
<td>english</td>
<td>ecology</td>
<td></td>
<td>Synecology</td>
</tr>
<tr>
<td>ecological processes and phenomena</td>
<td>english</td>
<td>ecology</td>
<td></td>
<td>Ecozones; Ecological zonation</td>
</tr>
<tr>
<td>ecological zones</td>
<td>english</td>
<td>ecology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ecosystems</td>
<td>english</td>
<td>ecology</td>
<td></td>
<td>Biomes</td>
</tr>
</tbody>
</table>

#### Ecosystems

- **Broader**
  - ecology

- **Variant**
  - all: biomes
  - all: 
  - french: 

- **Label**
  - all: ecosystems

- **Language**
  - english
Connected Workflow
Automated Candidates Suggestion

Luxid WEBSTUDIO

Descriptors | Candidates

- ecosystem
  - 135
- ecology
  - 40
- ecosystem function
  - 34
- molecular ecology
  - 24
- ecologist
  - 19
- forest ecosystem
  - 14
- aquatic ecosystem
  - 11
- ecosystem process
  - 10
- ecological process
  - 8
- ecosystem property
  - 8
- mangrove ecosystem
  - 7
- invasion ecology
  - 6

Variance in these traits was between biomes, only 15% was between communities within biomes and as much as 60% occurred within communities. We synthesised data from 29 studies with contrasting biomes, crop species and pollinator...
Connected Workflow
Extraction Preview

At large spatial scales, we observed broad differences in periphyton 13C among biomes and consistent longitudinal variation related to watershed area.

A changing climate induces shifts in the location of biomes.

Translation into an internally consistent classification scheme using 28 biomes.

Important differences were noted between the two forest biomes investigated.

Results While 35% of the global variance in these traits was between biomes, only 15% was between communities within biomes and as much as 50% occurred within communities.

We synthesised data from 29 studies with contrasting biomes, crop species and pollinator
Benefits of a Connected Workflow
Machines and Humans working together

- Efficient thesaurus/ontology management
  - Streamlined updates: automated candidates suggestion
  - Improved quality: organic relationship to actual content
  - Faster cycle time: verify & correct taxonomy ‘indexing quality’

- Efficient indexing
  - Engines learn from human operators
  - Less overhead: reduced tool-switching

- Go beyond thesauri/taxonomies
  - Bridge to Ontologies & Knowledge Bases
  - Harvest Entities & Facts
Thank you!

Daniel Mayer
VP Marketing, TEMIS
daniel.mayer@temis.com