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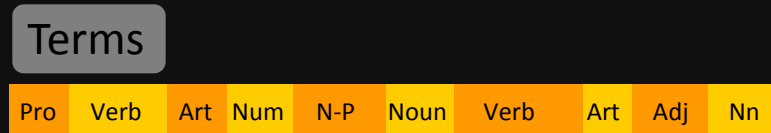
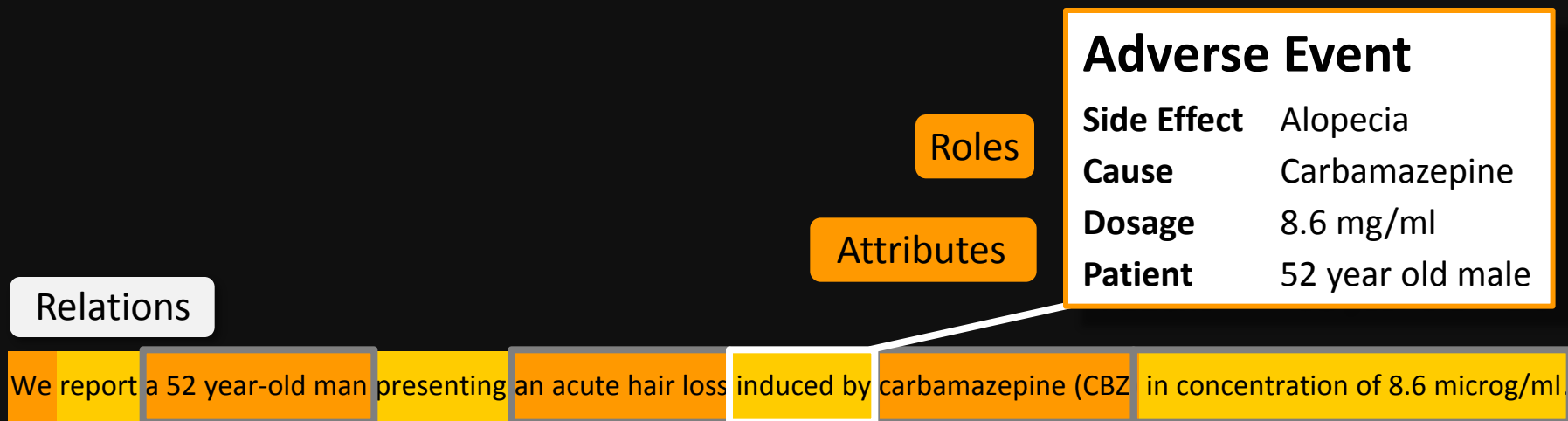
*E-Production
Seminar 2013*

Connected Workflows For Semantic Enrichment

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What Is Semantic Content Enrichment?

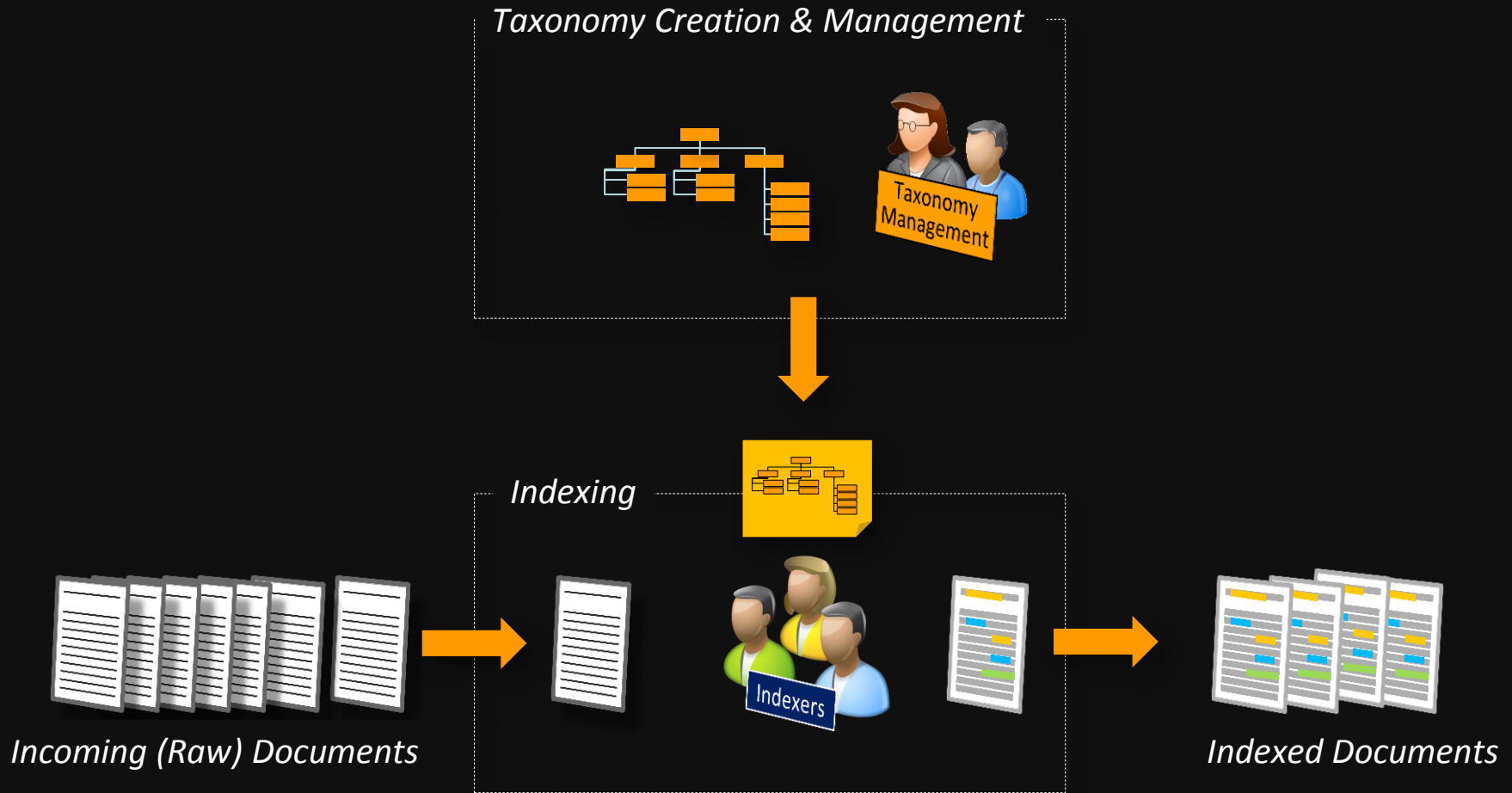
Starts with automated extraction of information



- Powered by**
- Thesaurus / Taxonomy / Ontology
 - Morpho-syntactic reasoning
 - Machine learning / Statistics

Traditional Workflow

Manual



Automated Indexing Going Mainstream

Top 3 reasons

Speed

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

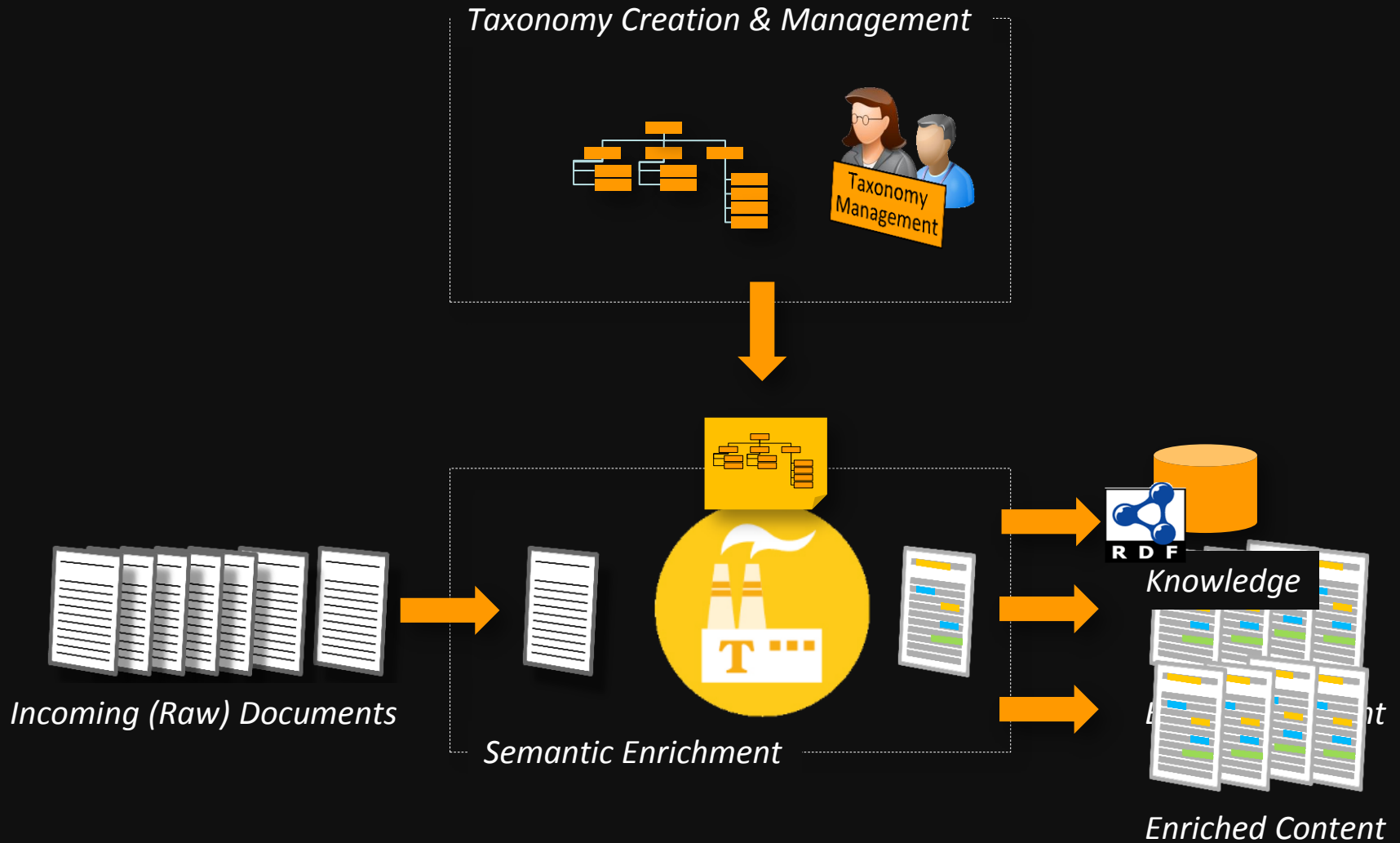
Savings

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

Scalability

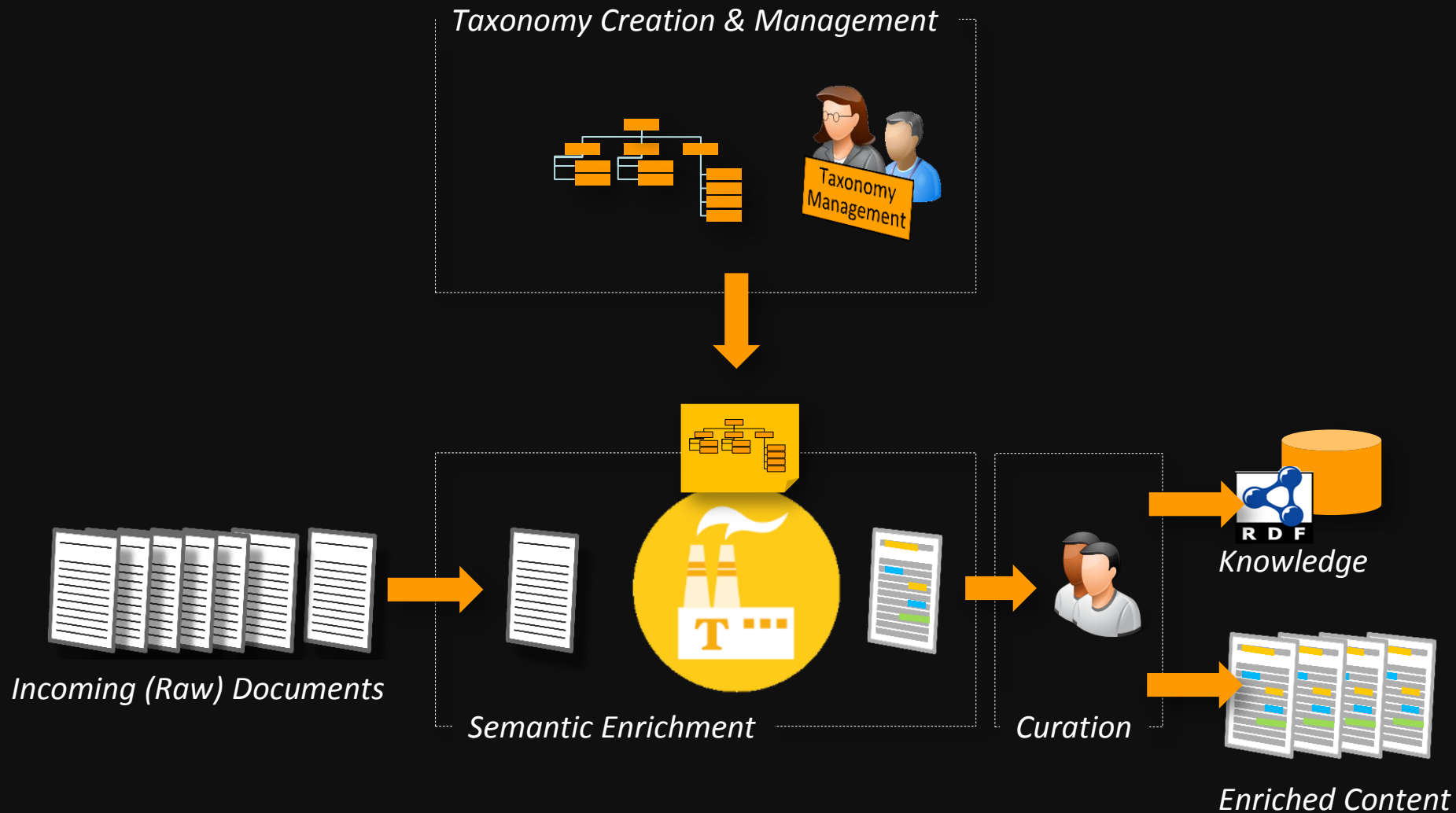
x8 Volume of indexed documents
(stable team size)

Automated Workflow



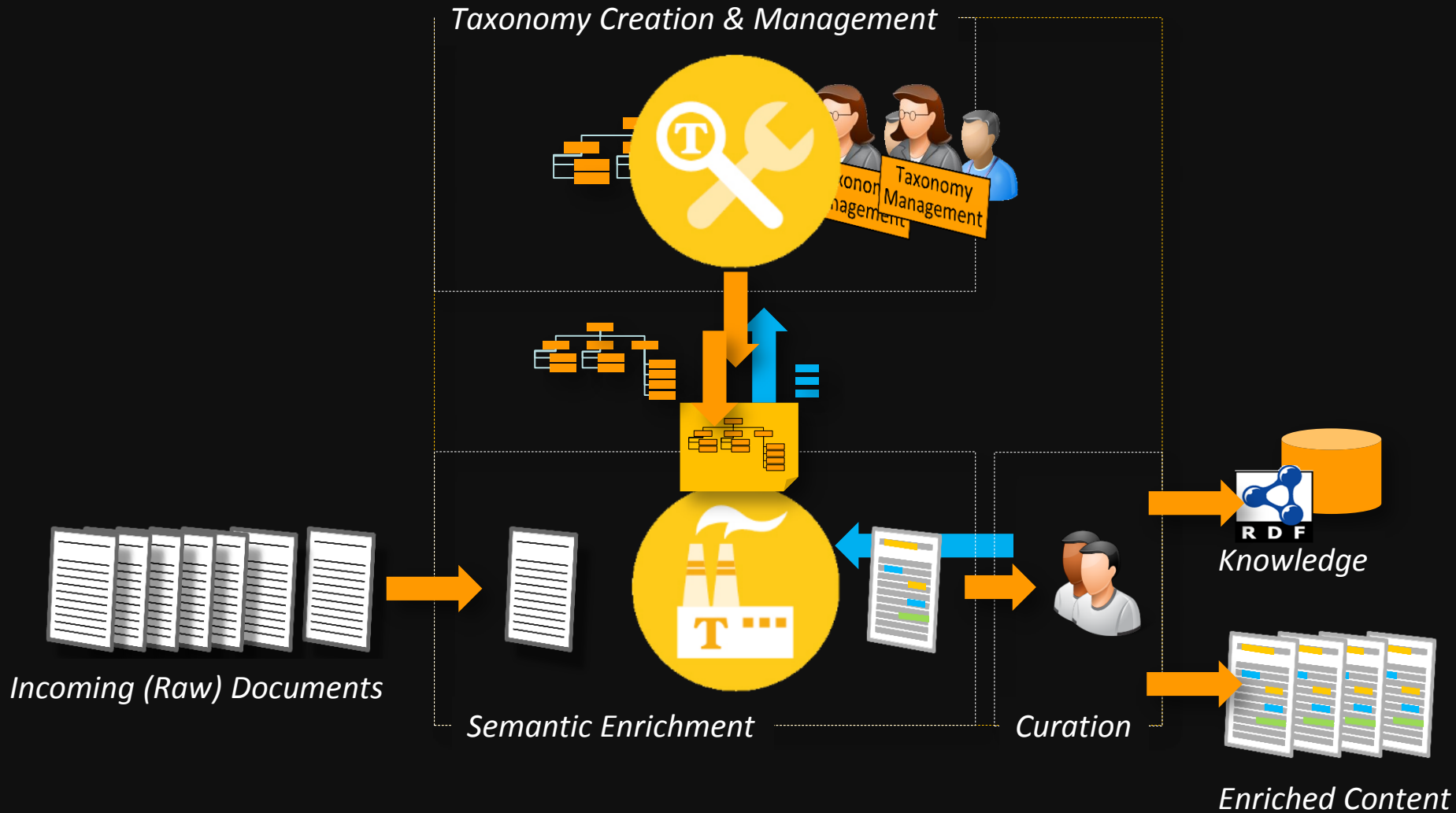
Automated Workflow

Fully or semi-automated



Connected Workflow

Integration enables feedback



Connected Workflow

Thesaurus/Taxonomy/Ontology Maintenance

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- ▶ Animal Science and Animal Products
- ▶ Biological Sciences
- ▶ Breeding and Genetic Improvement
- ▶ Economics, Business and Industry
- ▶ Farms and Farming Systems
- ▶ Food and Human Nutrition
- ▶ Forest Science and Forest Products
- ▶ Geographical Locations
- ▶ Government, Law and Regulations
- ▶ Health and Pathology
- ▶ Insects and Entomology
- ▼ Natural Resources, Earth and Enviro...
 - ▶ atmospheric sciences
 - ▶ earth system science
 - ▶ **ecology**
 - ▶ environment
 - ▶ environmental programs
 - ▶ environmental science
 - ▶ fire science and management
 - ▶ geography
 - ▶ geology
 - ▶ hydrology
 - ▶ marine science
 - ▶ natural resource management
 - ▶ natural resources

NAME	LANGUAGE	BROADER	VARIANT	VARIANT.FRENCH
agroecology	english	ecology		
animal ecology	english	Animal Science and Animal Pr...		
chemical ecology	english	ecology		
community ecology	english	ecology	synecology	
ecological processes and phen...	english	ecology		
ecological zones	english	ecology	ecozones; ecological zonation	
ecosystems	english	ecology	biomes	

ecosystems

BROADER

ecology 🗑️

LABEL

all : ecosystems 🗑️

LANGUAGE

english 🗑️

VARIANT

all : biomes 🗑️

all :

french :

Connected Workflow

Automated Candidates Suggestion

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- NAME
- ▶ Animal Science and
- ▶ Biological Sciences
- ▶ Breeding and Genetic
- ▶ Economics, Busines
- ▶ Farms and Farming :
- ▶ Food and Human Nu
- ▶ Forest Science and F
- ▶ Geographical Locatio
- ▶ Government, Law an
- ▶ Health and Pathology
- ▶ Insects and Entomol
- ▼ Natural Resources, E
- ▶ atmospheric scie
- ▶ earth system scie
- ▶ **ecology**
- ▶ environment
- ▶ environmental programs
- ▶ environmental science
- ▶ fire science and mana...
- ▶ geography
- ▶ geology
- ▶ hydrology

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

all : ecosy

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

Connected Workflow

Extraction Preview

Luxid WEBSTUDIO

Descriptors | **Candidates**

ecosystem 135	ecology 40	ecosystem function 34
ecologist 19	forest ecosystem 14	aquatic ecosystem 11
ecological process 8	ecosystem property 8	mangrove ecosystem 7

ecosystems

BROADER

ecology

Preview

ecosystems

SENTENCE	VALIDATION
At large spatial scales, we observed broad differences in periphyton $\delta^{13}C$ among biomes and consistent longitudinal variation related to watershed area.	OK NOK
A changing climate induces shifts in the location of biomes.	OK NOK
Translation into an internally consistent classification scheme using 28 biomes.	OK NOK
Important differences were noted between the two forest biomes investigated.	OK NOK
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.	OK NOK
We synthesised data from 29 studies with contrasting biomes, crop species and pollinator	OK NOK

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**



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Thank you !

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