

Pharma Ontology

HCLSIG F2F Meeting, MIT, Cambridge, MA, 2009/04/30

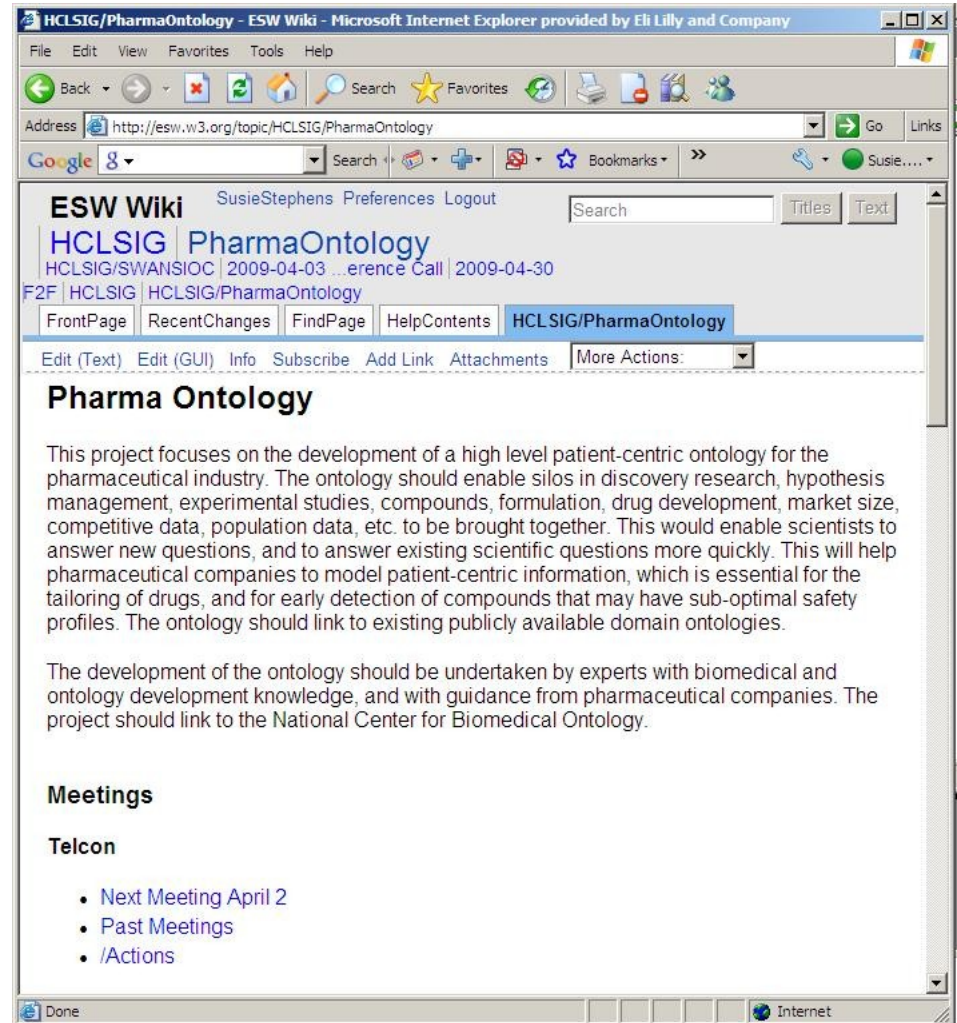
Susie Stephens – Principal Research Scientist, Eli Lilly

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Pharma Ontology

<http://esw.w3.org/topic/HCLSIG/PharmaOntology>

Focus on development of a high level patient-centric ontology.



The screenshot shows a Microsoft Internet Explorer browser window with the title "HCLSIG/PharmaOntology - ESW Wiki - Microsoft Internet Explorer provided by Eli Lilly and Company". The address bar shows the URL "http://esw.w3.org/topic/HCLSIG/PharmaOntology". The page content includes a search bar, navigation links like "FrontPage", "RecentChanges", "FindPage", "HelpContents", and "HCLSIG/PharmaOntology", and a main section titled "Pharma Ontology" with a detailed description of the project's goals and a "Meetings" section with a "Telcon" subsection containing a bulleted list of links.

ESW Wiki SusieStephens Preferences Logout

HCLSIG | PharmaOntology
HCLSIG/SWANSIOC | 2009-04-03 ... erence Call | 2009-04-30
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FrontPage RecentChanges FindPage HelpContents **HCLSIG/PharmaOntology**

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Pharma Ontology

This project focuses on the development of a high level patient-centric ontology for the pharmaceutical industry. The ontology should enable silos in discovery research, hypothesis management, experimental studies, compounds, formulation, drug development, market size, competitive data, population data, etc. to be brought together. This would enable scientists to answer new questions, and to answer existing scientific questions more quickly. This will help pharmaceutical companies to model patient-centric information, which is essential for the tailoring of drugs, and for early detection of compounds that may have sub-optimal safety profiles. The ontology should link to existing publicly available domain ontologies.

The development of the ontology should be undertaken by experts with biomedical and ontology development knowledge, and with guidance from pharmaceutical companies. The project should link to the National Center for Biomedical Ontology.

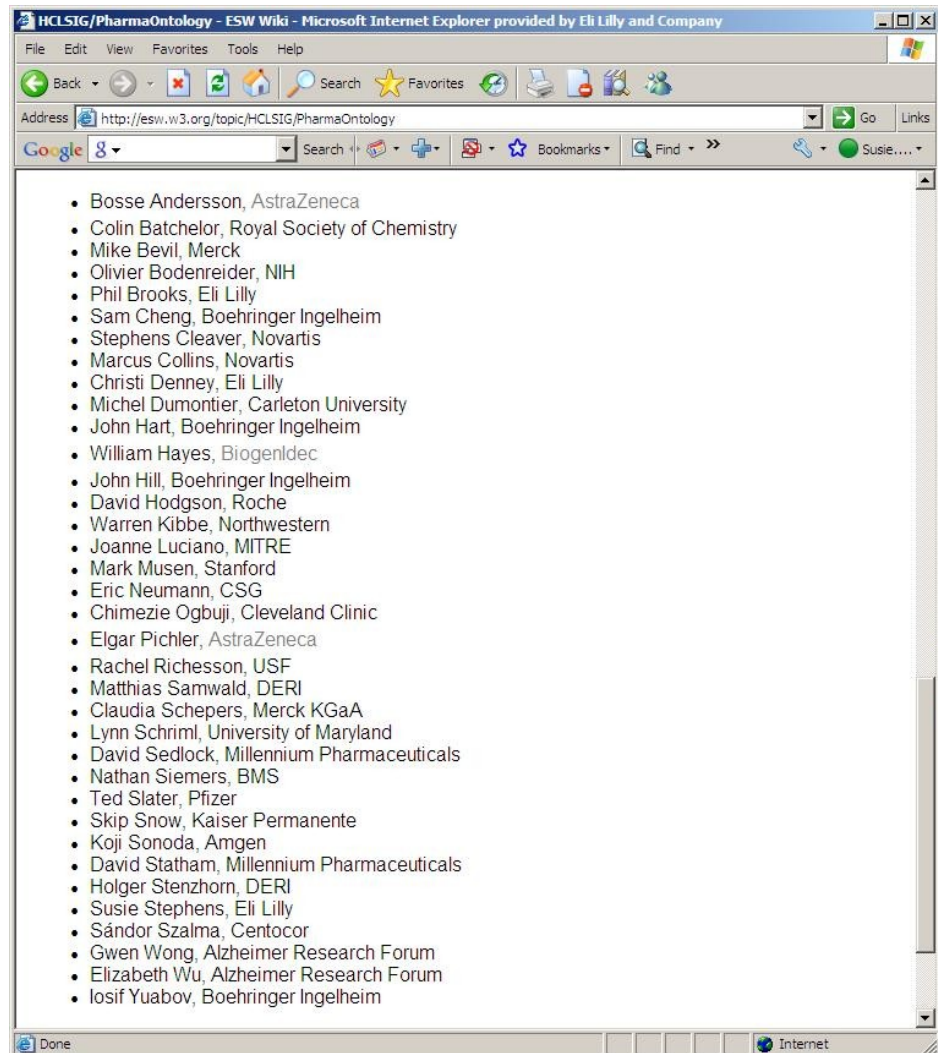
Meetings

Telcon

- [Next Meeting April 2](#)
- [Past Meetings](#)
- [/Actions](#)

Participants

- ~40 participants.
- Representatives from pharma/biotech and academia.

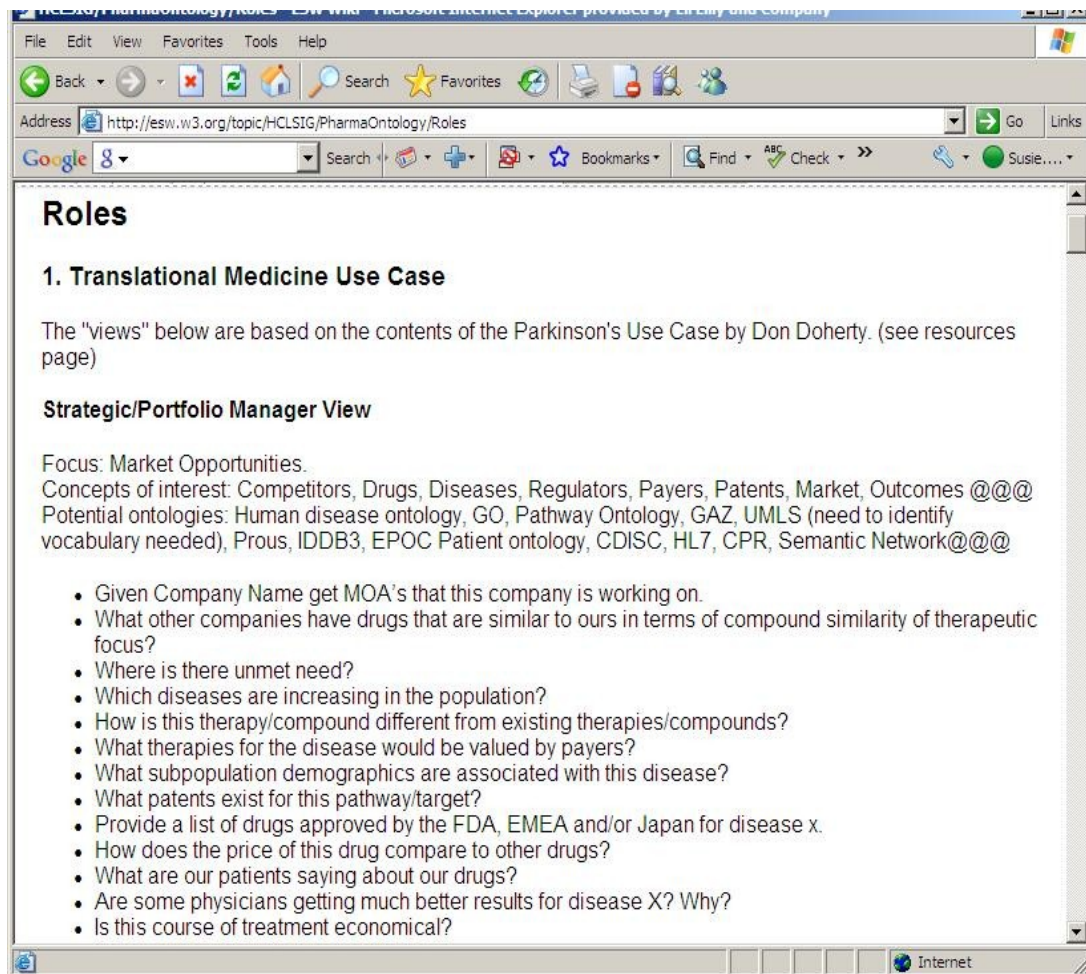


Pharma Ontology Goals & Deliverables

- Identify scope of a pharma ontology through understanding of employee roles.
- Identify roughly 30 entities and relationships for template ontology.
- Create 2-3 sketches of use cases (that cover multiple roles).
- Select and build out use case (including references to data sets).
- Review existing ontology landscape.
- Build relevant components of ontology for the use case.
- Build an application that utilizes the ontology.

Roles within Translational Medicine

- Strategic/Portfolio Manager View
- Project Manager
- Immunologist
- Cheminformatician
- Systems Physiologist
- Cellular and Molecular Biologist
- Medicinal Chemist
- In-Vitro/Vivo Biologist
- Clinical Trial Formulator/Lead Physician
- Clinical Decision Support System Implementer
- Statistician
- Sales and Marketing
- Primary Care Clinician
- Specialty Medical Provider
- Health Plan Provider



The screenshot shows a web browser window with the address bar containing the URL <http://esw.w3.org/topic/HCLSIG/PharmaOntology/Roles>. The page content is as follows:

Roles

1. Translational Medicine Use Case

The "views" below are based on the contents of the Parkinson's Use Case by Don Doherty. (see resources page)

Strategic/Portfolio Manager View

Focus: Market Opportunities.
Concepts of interest: Competitors, Drugs, Diseases, Regulators, Payers, Patents, Market, Outcomes @@@
Potential ontologies: Human disease ontology, GO, Pathway Ontology, GAZ, UMLS (need to identify vocabulary needed), Prous, IDDB3, EPOC Patient ontology, CDISC, HL7, CPR, Semantic Network@@@

- Given Company Name get MOA's that this company is working on.
- What other companies have drugs that are similar to ours in terms of compound similarity of therapeutic focus?
- Where is there unmet need?
- Which diseases are increasing in the population?
- How is this therapy/compound different from existing therapies/compounds?
- What therapies for the disease would be valued by payers?
- What subpopulation demographics are associated with this disease?
- What patents exist for this pathway/target?
- Provide a list of drugs approved by the FDA, EMEA and/or Japan for disease x.
- How does the price of this drug compare to other drugs?
- What are our patients saying about our drugs?
- Are some physicians getting much better results for disease X? Why?
- Is this course of treatment economical?

Entities of Interest

Disease

Drug

Patient

Target

Gene

Risk

Pathway

Population

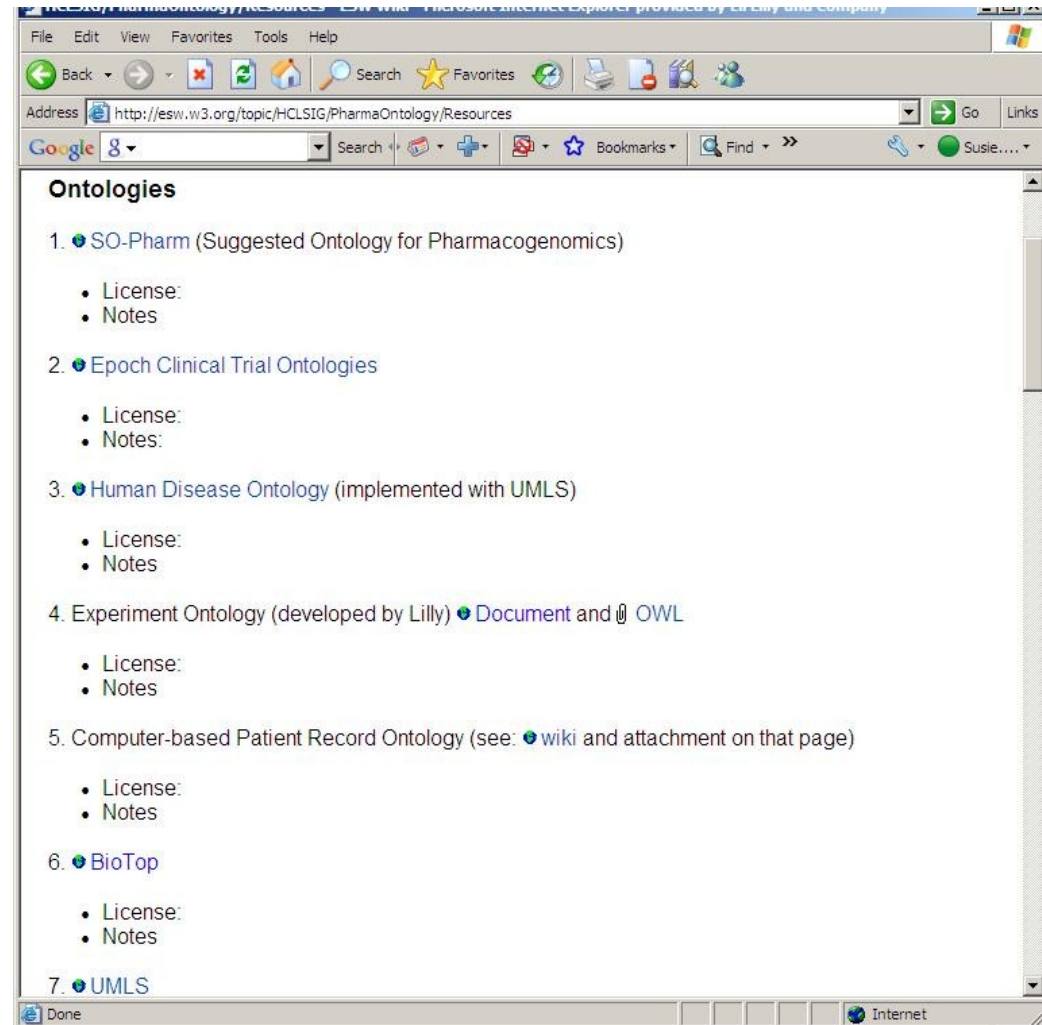
Phenotype

Treatment

...

Existing Resources

- Ontologies, taxonomies, vocabularies.
- Data.
- Tools.



Technical Challenges

- Selecting less than 50 classes to bridge translational medicine.
- Identifying ontologies for connecting with the Pharma Ontology.
- Enable interoperability across domain ontologies.
- Deciding upon the necessary level of expressivity.

Next Steps

- Determine key entities and predicates.
- Create a few use cases and decide which one to implement.
- Prepare poster for [ICBO](#) (International Conference on Biomedical Ontology).

Task Alignment

- Gain access to data for the use case from LODD (Linked Open Drug Data).
- Provide an ontology template that Scientific Discourse can utilize.

Summary

- Develop a high-level, patient centric ontology for translational medicine, which will draw on existing domain ontologies.
- Few ontologies exist that bridge genomics, chemistry, and medicine.
- Align Pharma Ontology with BFO (Basic Formal Ontology) and OBO (Open Biomedical Ontologies) Foundry to ease interoperability.
- Work to finalize key entities and predicates and determine the application for implementation soon.