Semantic Awareness in Product Lifecycle Management Systems
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Abstract
Large enterprises turn to Product Lifecycle Management (PLM) systems to organize product development and to reduce time to market. Semantic awareness has the potential to enrich PLM systems, yet semantic functionality has not gone mainstream. The goal of this research was to discover the barriers to and opportunities for adopting semantic functionality in PLM systems.

How is semantic awareness useful in engineering design?
- Meaning of data is captured and can be acted upon
- Deeper integration between tools reduces redundant work
- Actions can be automated
- Transparency – all product knowledge is centralized

Research goals
A case study was conducted to:
- Evaluate e-Design Center’s semantic framework
- Observe barriers to semantic adoption
- Explore opportunities for semantic functionality

What is semantic awareness?
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Methods
1. Engineering design and analysis performed
2. Data manually entered into PLM system
3. Semantic knowledge manually entered into e-Design Framework

Conclusions
- Current engineering tools lack semantic features
- Standalone semantic knowledge capture is cumbersome
- Semantic knowledge has value but is not well integrated

Recommendation
- Semantic knowledge capture must be integrated into existing tools for maximum effectiveness
- Implementation should focus on seamless usability

Future Work
The e-Design Center should work closely with industry partners to bring intuitive semantic functionality to engineering tools.

Acknowledgements
Douglas Eddy, Graduate Mentor; PTC for providing Windchill license and assistance; Siemens for providing Teamcenter software and assistance; NSF for funding this work

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Large enterprises turn to Product Lifecycle Management (PLM) systems to organize product development and to reduce time to market. Semantic awareness has the potential to enrich PLM systems, yet semantic functionality has not gone mainstream. The goal of this research was to discover the barriers to and opportunities for adopting semantic functionality in PLM systems. It was observed that simple and intuitive features trump cluttered or complex ones. Additionally, users are more likely to use a simple feature which can easily be understood rather than a confusing or obscure feature, no matter how great the potential gain. These findings suggest that usability is crucial to new software features in general, but especially to the adoption of new semantic functionality in PLM systems.

See [http://edesign.ecs.umass.edu/](http://edesign.ecs.umass.edu/) for more info.