Researchers preview easier way of writing product manufacturing information

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A better way of describing a part like this one to varying systems across a manufacturing enterprise

Credit: National Institute of Standards and Technology

In manufacturing, a product's information must move across various systems in the production enterprise, from design to product support. This information flow is enabled by a family of standards called STEP (STandard for the Exchange of Product model data), which is the purview of ISO, an international standards organization.

STEP standards are written using an information modeling language EXPRESS that describes information elements and their relationships. Product information can include 3D geometric models of part designs, assemblies, and information about how that part must be manufactured, for example. Engineers are continually adding new STEP capabilities to support changing industry requirements. The EXPRESS language has a formal grammar that computers can understand.

However, EXPRESS models are commonly written in simple text editors that do not support the language features. Developing an EXPRESS schema is a complex and error-prone process that relies on an author's understanding of EXPRESS constructs and specifications. Moreover, schema files can be lengthy, with many references to other schema, which are hard to read and navigate. Improved readability also depends on manually formatting the syntax.

Seeking to provide a better user experience, NIST researchers developed "easyEXPRESS" to help EXPRESS authoring. They previewed the new tool at a recent meeting of the ISO 10303's Technical Committee 184, Sub Committee 4, which is pursuing development and implementation of STEP Application Protocols and methods.

Designed to write accurate EXPRESS schemas, easyEXPRESS provides modern development capabilities to the EXPRESS community such as:

- Syntax validation and highlighting
- Intelligent code completion
- Semantic validation and error reporting
- Automated code fixes
- Quick file and symbol navigation
- Reference management

easyEXPRESS allows authors to focus on information modeling rather than trivial file formatting or navigation. easyEXPRESS will is undergoing final release testing and will be available as an extension to Visual Studio Code.

Provided by National Institute of Standards and Technology

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