Title: Environmentally Friendly Product Selection Web Interface API

Office: Applied Economics Office, Engineering Laboratory, NIST
POC: Priya Lavappa, priya.lavappa@nist.gov

In 2011, NIST's Applied Economics Office (AEO) released its most recent version of its BEES (Building for Environmental and Economic Sustainability) software tool, which implements a powerful technique for selecting cost-effective, environmentally-preferable building products. Named BEES Online, this version shifted from an executable to a web interface design to allow for use across all platforms without any installation requirements. BEES uses multiple data sources to calculate the economic and environmental performance of a product using life-cycle methodologies (life-cycle costing and life-cycle assessment, respectively) to allow for rigorous, science-based comparisons between building products.

Since BEES Online was released, there have been significant advances in life-cycle assessment (LCA) methodologies, data sources, and processes. One change has been the publication of well-defined rules and requirements for the development of product LCAs for a given product category, called Product Category Rules (PCRs). A common set of agreed upon rules and requirements should lead to communication of transparent and comparable information about the life-cycle environmental impacts of products in the same product category. Reporting of product LCAs based on PCRs has recently been incorporated into the material selection portions of green building certification programs, increasing the need for tools that assist in selecting building products that meet certain environmental impact reductions. Many government agencies have also developed green product acquisitions programs with specific product attribute requirements, such as minimum recycled content. AEO desires to develop a new version of BEES that targets this growing interest in green building product selection that is flexible enough to meet the needs of each potential user base. The tool should guide users to the desired comparisons and allow for downloading results as well as visual representations of the data including tables and graphs.

Our goal for the hackers is to help develop a new web application that allows for selection and comparison of building products across their economic and environmental performance based on the user's specific needs and preferences. The application should be able to collect user inputs from a graphical user interface, use those inputs to select data from a database or csv files, apply some business rules on the data and then display the data in the form of a graph, table and downloadable data file.

Hopeful Outcome:

An easy-to-use web interface that guides a user throughout the input process, auto-populating inputs when appropriate, in order to select products for comparison that

meet a user's desired attributes and generate results and comparisons that assist the user in product selection.

Create a prototype or concept for design that will:

- Allows user to compare similar products on life-cycle costs (LCCs) and life-cycle impact assessment (LCIA) metrics
- Based on user selected product category, analysis type, product attribute requirements, LCIA methodology, and discount rate
- Auto-populate values when appropriate given the desired type of analysis to be completed
- Ability to review and change selected inputs
- Give users ability to export results for selected product(s) (flat files)
- Display and print basic comparative analysis on selected product results across LCCs and LCIAs

Skills Needed:

Coding/ application development experience
Experience using web development technologies: Javascript, jquery, HTTP (requests, response), HTML, CSS, python, C# or other current technologies
Experience using data access and data storage technologies
See Additional Documents and embedded links for additional information.

Data Source:

Program page: http://ws680.nist.gov/Bees/