# iNEMI Statement of Work (SOW)
# Environmentally Conscious Electronics TIG
# iNEMI Eco-Impact Evaluator for ICT
# (Information and Communication Technology) Equipment Project,
# Phase 2 (LCA Estimator Tool Development)

**Version: 2.1**
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## Basic Project Information

### Scope of Work

An eco-environmental impact assessment estimating tool will be developed for information and communication technology (ICT) equipment.  The estimator will be used to determine the major eco-environmental impacts of different categories of ICT equipment, with a degree of accuracy commensurate with the intended use of the information within both the ICT manufacturing

sector and the first tier suppliers' industry.  A major goal of the estimator is to provide a more simplified means of determining the key eco-environmental impact and improvement opportunities of a particular product type over its lifecycle stages (e.g., raw materials extraction, manufacturing, installation, use, end-of-life treatment, etc.). Such simplification shall have a scientific basis to support the estimation approach, and elements of uncertainty will be specified in the data and simplification analysis.  The estimator tool should provide results in a form that is acceptable to the industry for communications and information sharing with related stakeholders. The project should also include a mechanism for updating the data and impact assessment methods (algorithms) over time.  The major phases of this project are anticipated to be completed in approximately 12 months.

## *Purpose of Project*

This project aligns with the Eco-Sustainability Summit's Life Cycle Analysis Team and their roadmap for developing a simplified tool to more easily derive key eco-environmental information for ICT equipment and assets.  The project will provide a solution in the form of an estimator tool that will categorize targeted products and assets and establish a unified format for requesting LCA information from suppliers.  Key elements within these categorized product and asset types will be defined based on their relative importance in contributing to the overall eco-environmental impact of ICT equipment.  Providing eco-impact for ICT products is becoming a rapidly increasing requirement for placing products on the market.  As such, the benefits of this eco-environmental impact estimator will provide iNEMI members with a more simplified means of evaluating such impacts, summarizing the results, communicating the information within the industry, and requesting necessary information from the supplier industry.  There are clearly areas here where efficiency can be gained, such as in methodologies and shared information and data, without compromising any intellectual property rights or uniqueness in our businesses. iNEMI member companies will be able to use the estimator to demonstrate scalable and traceable continuous improvement processes related to products and the supply chain.

This project is broken into two phases.  The first phase, completed in September 2010, was devoted to defining the methodology and modules to be used in developing the estimator. This included identifying mechanisms for updating the methodology and the tool itself as new data, products, and algorithms are developed, evaluating the methodology and modules through a pilot test using a generic product, refining the methodology, and defining the tasks necessary to develop the simplified tool.  The remaining phase, Phase 2, will use the information generated in Phase 1 to outline the elements needed for the simplified tool.  At the end of Phase 1 the team recommended that the project continue with the development of the estimator tool.

## *What the Project Is / Is Not*

| This Project IS: | This Project IS NOT: |
|---|---|
| **Phase 2** ||
| Focused on developing an estimator tool that will provide a degree of accuracy relative to the end results intended use | Intended to address competitive assertions between products, equipment assets, components or materials that highlight unique company proprietary technology |
| Building on the knowledge from the ICT industry, published literature, and publicly available data / information | |
| Final development and deployment of the data collection and maintenance survey | |

## Business Impact

The business impact resulting from the development of this estimator tool is the following:

- **Brand Image** – Building this capability improves the member company's brand image to customers, shareholders and stakeholders in the industry.
- **Design Processes** – Such a tool can aid in early design for environment processes that can be embedded into a company's product lifecycle.
- **Product and Supply Chain Efficiencies** – Products can be designed with less material use, leading to less waste. In addition, the tool can aid in modeling impacts around transport and use phases in a product's lifecycle, leading to efficiencies in the supply chain and in energy consumption during the product's usage.
- **Productivity** – Such a streamlined tool allows for faster modeling of products. Users can spend more time improving products rather than spending weeks to assess their products.
- **Integrity** – The estimator tool will provide a degree of accuracy that is suited to the industry's needs for such information, while the means of simplification in deriving the tool's calculative elements shall have a vetted scientific basis to support the estimation approach.

## Previous and Current Related Work

The Project Team will further assess related research work, published literature, and developing work on LCA-type estimator tools within the industry to determine its value and relevant use for incorporation into the development and implementation of the LCA estimator tool.

## Participants

Participants on this project may include:

- Original Equipment Manufacturers
- Original Design Manufacturers
- Electronic Manufacturing Services
- Component Manufacturers
- Academic Researchers
- LCA Consultants

| *Potential Company Participation / Interest* |
| --- |
| Alcatel-Lucent, Celestica, Cisco, Dell, Delphi, HP, Huawei, Industrial Technology Research Institute (ITRI), Integrated Service Technology (IST), Intel, Massachusetts Institute of Technology (MIT), NIST, Purdue University, Albemarle, California Berkeley University, PE International, EarthShift, FT/Orange, O2/SFR. |

# Project Schedule with Milestones – Phase 2

| Phase 2, LCA Estimator Tool Development | 2011 Q1 | | | 2011 Q2 | | | 2011 Q3 | | | 2011 Q4 | | | 2012 Q1 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Simplified Tool Development w/ plug in database | | | ■ | ■ | ■ | ■ | | | | | | | | | |
|   a. Assessment of software features needed for tool development | | | � | | | | | | | | | | | | |
|   b. Determine development strategy/roadmap | | | | ▒ | | | | | | | | | | | |
|   c. Funding of tool development (if necessary) | | | | ▒ | | | | | | | | | | | |
| 2. Refine category algorithms (including I/Os) and link to appropriate databases | | | | ■ | ■ | ■ | | | | | | | | | |
| 3. Develop input / output formats | | | | | ■ | ■ | | | | | | | | | |
|   a. Develop data extraction framework to pull data from BOMs (e.g. from Pro-E, Agile...) | | | | | | ▒ | | | | | | | | | |
|   b. Develop LCIA data framework/format (include other impacts but don't populate data) | | | | | | | ▒ | | | | | | | | |
| 4. Build Tool based on strategy and tasks 1-3 (details TBD) | | | | | | | ■ | ■ | ■ | | | | | | |
| 5. Test prototype / compare w/ known LCA results | | | | | | | | | ■ | ■ | | | | | |
| 6. Data collection and maintenance | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
|   a. Assess data repository needs w/ external orgs w/ similar role | ▒ | ▒ | | | | | | | | | | | | | |
|   b. Evaluate immediate data needs and prioritize | | | ▒ | | | | | | | | | | | | |
|   c. Collect readily available additional data and incorporate into tool database | | | | | | ▒ | ▒ | | | | | | | | |
|   d. Develop active collaboration w/ key suppliers to improve / refresh data needs / updates | | | | | | | | | ▒ | ▒ | | | | | |
| 7. Prepare guidance / maintenance manual and training module for tool | | | | | | | | | | ■ | ■ | | | | |
| 8. Determine deployment strategy and gain approval from iNEMI (internal vs. external) | | | | | | | | | | | ■ | ■ | | | |
| 9. Deploy tool within iNEMI and establish mechanism for external ICT industry deployment | | | | | | | | | | | | | ■ | | |
| 10. Generate and publish final reports | | | | | | | | | | | | | | ■ | |

## Resources Required from Participants

The Eco-Impact Evaluator for ICT Equipment Project, Phase 2 asks each participating company to commit to the following:

1) Agree to appropriate resources to meet the project timeline and targeted end dates

2) In the event project expenses are incurred, the costs will be shared evenly among participants

3) Agree that this consortium will provide technical support within its membership in sharing knowledge regarding LCA methodologies and eco-environmental information

4) Design and carry out tests and evaluations as determined by the team to fulfill the goals defined in the SOW

5) Collaborate to provide input to tool development and issuance of a final report

6) Document results and publish findings to iNEMI members

## *Detailed Information*

### *Phase 2, LCA Estimator Tool Development*

Task 1.    Simplified Tool Development with plug-in database

 a.  Assessment of software features needed for tool development
- Resources
  - Team members to be identified based on interest and knowledge of software development
- Materials and processes
  - Provide software capabilities assessment

 b.  Determine development strategy and roadmap
- Resources
  - Team members to be identified based on interest and knowledge of strategy / roadmap development
- Materials and processes
  - Provide strategy and roadmap

 c.  Funding of tool development (if needed)
- Resources
  - All team members to be included in this funding development
- Materials and processes
  - Develop funding mechanism and appropriation

Task 2.    Refine category algorithms (including I/Os) and link to appropriate databases
- Resources
  - Team members to be identified based on interest and knowledge of task
- Materials and processes
  - Refine algorithms with links to appropriate databases

Task 3.   Develop input and output formats
- o Resources
  - ▪ Team members to be identified based on interest and knowledge of task
- o Materials and processes
  - ▪ Refine algorithms with links to appropriate databases

a.   Develop data extraction tool to pull data from BOMs
- o Resources
  - ▪ Team members to be identified based on interest and knowledge of task
- o Materials and processes
  - ▪ Assess and develop data extraction tool to pull data from BOMs (e.g., ProE, etc.)

b.   Develop LCIA data framework/format (include other impacts but don't populate data)
- o Resources
  - ▪ Team members to be identified based on interest and knowledge of task
- o Materials and processes
  - ▪ Develop framework and format


Task 4.   Build Tool based on strategy and Tasks 1-3 (details TBD)
- o Resources
  - ▪ Programmers working with Excel spreadsheet and Visual Basic
- o Materials and processes
  - ▪ Build tool based on team input and work output from Tasks 1-3


Task 5.   Test prototype and compare with known LCA results
- o Resources
  - ▪ Team members to be identified based on interest and knowledge of task
- o Materials and processes
  - ▪ Test prototype and compare with known LCA results


Task 6.   Data collection and maintenance, including:
- Assess data repository needs with external orgs with similar role
- Evaluate data needs and prioritize
- Collect readily available additional data and incorporate into tool database
- Develop active collaboration with key suppliers to improve / refresh data needs / updates

- o Resources
  - ▪ Team members to be identified based on interest and knowledge of task.

- o Materials and processes
  - ▪ Collect readily available additional data and incorporate into tool database.\


Task 7.   Prepare user guide and training module for tool
- o Resources
  - ▪ Team members to be identified based on interest and knowledge of task
- o Materials and processes
  - ▪ Prepare guidance / maintenance manual and training module for tool

Task 8.   Determine deployment strategy and gain approval from iNEMI (internal vs. external)
   o Resources
      ▪ Team members to be identified based on interest and knowledge of task
   o Materials and processes
      ▪ Determine deployment strategy and iNEMI approval


Task 9.   Deploy tool within iNEMI and establish mechanism for external ICT industry deployment
   o Resources
      ▪ Team members to be identified based on interest and knowledge of task
   o Materials and processes
      ▪ Deploy tool within iNEMI and establish mechanism for external ICT industry deployment


Task 10.   Generate and publish final reports
   o Resources
      ▪ Team members to be identified based on interest and knowledge of task
   o Materials and processes
      ▪ Generate and publish final reports


## *Project Monitoring Plans*

- Planned teleconference schedule:  Biweekly conference calls on Thursday mornings from 8:00 a.m. to 9:00 a.m. (PST/PDT)

- Meeting minutes provided through e-mail

- Follow-up with individuals on an as-needed basis

- Workshops and face-to-face meetings as appropriate

- Progress reports will be issued as tasks are completed

- A mid-point progress update will be made to the iNEMI Technical Committee at the end of Task 3 (prior to review by iNEMI members)

- Provide quarterly reports briefly indicating progress.  This could be a short series of PowerPoint slides showing the work in progress.

- Review all project requirements with prospective participants before the project begins.

## *Outcome of the Project*

- Issue report on the closure of the project and make recommendation for any further projects or additional actions.

- A final report will be issued documenting the estimator tool at the conclusion of the project.

- Project success includes the full development and deployment within iNEMI of a simplified LCA estimator tool for ICT products.  This will include a unified data request asking the supplier industry to provide current LCA-type data for use in the estimator.  Project results will be posted on the iNEMI website for use by iNEMI Working Group members.

## *General and Administrative Guidelines*

General and Administrative Guidelines for this project and all other iNEMI Projects are documented at http://thor.inemi.org/webdownload/join/gen_guidelines.pdf.