



Frontier Technology, Inc.

Crafting Quality IT and Engineering Solutions

Product Information

Release History

ICETM Version 6.1.0 – Planned for Spring 2008

- Add capability to incorporate Cost Analysis Improvement Group (CAIG) format cost data from Visibility and Management of Operations and Support Cost (VAMOSOC) for Navy systems and ships, once Navy approval is received.
- Add capability to incorporate VAMOSOC commodities cost data for replaceable Navy ship components, once Navy approval is received.
- 2007 Air Force Total Ownership Cost (AFTOC) data updates.

ICETM Version 6.0 – August, 2007

The ICE version 6.0 upgrades and enhancements include:

- Completing a major refinement to the estimate schedule, including implementing a user-specified Development Start Date (month/year) and a user-specified Production Start Date (month/year), and updating all by-year reports to show costs based on the appropriate user-specified start dates. [These changes eliminated the previous ground rule that production starts in the last year of development.]
- Updating the WBS reports to show all User Other Questionnaires.
- Updating the ICE-SEER H questionnaire to reflect changes in SEER-H 7.x for the custom chip usage inputs.
- Updating several databases with data for the current year: ICE Inflation tables, AFTOC NSN and CAIG data, and AFI65-503 tables for the CORE model.

ICETM Version 5.8.0 – July, 2006

The ICE version 5.8 upgrades and enhancements include:

- Updating the ICE-Facilities database to most recent version of data from the DoD Facilities Handbook Version 7.0.
- Improving notification of user when notional data is used in the cost estimate. Also add warning labels on the ICE reports.
- Updating and documenting AFTOC data import process.

ICETM Version 5.7.0 – April, 2005

The ICE version 5.7 upgrades and enhancements include:

- Updating the User Hardware questionnaire to include options to allocate costs by year.
- Combining the User Removed Hardware and Software questionnaire with the standard User Hardware or Software.
- Integration of the Commercial Off-The-Shelf (COTS) software capability from SEER-SEM into an ICE-SEER-COTS questionnaire.
- Updating the installation procedure to remove the “swap” folder requirement so that users do not need to copy the SEER flx files manually.
- Updating the knowledgebases for SEER-H and SEER-SEM.
- Updating the AFI 65-503 tables as data were available.
- Updated the AFTOC National Stock Numbers (NSN) and Cost Analysis Improvement Group (CAIG) tables for 2004.
- Updated the inflation factors for 2005.
- Updated “User Other” lookup factors to ESCP 173-2A (January 2002).

- Refinement of compatibility with SEER-H 6.0.
- Updating AFTOC contact information.

ICETM Version 5.6.0 – August, 2004

The ICE version 5.6 upgrades and enhancements include:

- Compatibility with SEER-H 6.0.
- Integration of the AFTOC Cost Analysis Improvement Group (CAIG) data to use for an analogy-based Operations and Support (O&S) cost estimate.
- Integration of an O&S cost-growth adjustment factor to represent increasing O&S costs per year.
- Implementation of concept cost rollup features that sum the costs across concepts in a group or file.
- Updates to the schedule to provide default values for the production and installation quantities from the baseline inventory.
- Enabling user to select SEER defaults for material composition and circuitry composition in the SEER-H questionnaires.
- Updates to the AFI 65-503 tables as data were available.

ICE™ Version 5.5 Release – April 2004

The ICE version 5.5 upgrades and enhancements include:

- Three Business Case Analysis (BCA) report templates
- Several common investment metrics on the ICE cost estimate summary screen to support the BCA. These investment metrics include the Net Present Value, Return on Investment, the Savings to Investment Ratio, and the Internal Rate of Return.
- Integration of the SEER Design for Manufacturability (SEER-DFM) model, to include process parameter questionnaires based on predefined manufacturing processes. The model implementation includes a calculator for system development cost to supplement DFM's production cost estimate.
- A database of "typical" development and production cost factors integrated for the user to reference when completing the "User Other" questionnaire.
- A flexible timing option for a cost estimate, providing the user a capability to select a start year separate from the estimate base year.
- A concept level "Save As" feature to allow the user to save a concept using a new name, after making changes, without affecting the original concept.
- A capability to export and import a Work Breakdown Structure work-element into an ICE analysis. This capability enables the ICE user to export a single WBS item and its associated model-interface questionnaire (inputs) and then import that WBS element into another ICE concept.
- A "favorites" feature to enable users to store web links to cost data and sources. Preset links include the URL for the Air Force Association's annual almanacs for the USAF and space systems and links to the Air Force Cost Analysis Agency's multi-metrics tool and the AFI 65-503 cost data website.
- A "User Other" questionnaire with an option to allocate input costs to specific years or split equally among the production phase years.
- Air Force Total Operational Cost database updated to contain years FY99 – FY03. The database now includes depot level repairable data on systems other than aircraft such as munitions, space systems, and available ground systems.
- Additional cost element detail from SEER-SEM, SEER-H, PRICE H, and PRICE S models integrated into ICE for development and production cost estimates.
- Improved ICE reporting capability to provide user-selectable choices to tailor the items included in a cost estimate report, expand the detail of each estimated work breakdown structure item, and include all user-completed note and comment fields. Also, a new option to print the ICE settings and configuration is included.
- Updated aircraft Operating and Support Data from AFI 65-503, to include the latest information available from official Air Force sources.

ICE™ Version 5.4 Release - September 2003

The ICE version 5.4 upgrades and enhancements provide ICE users with:

- Business Case Analysis (BCA) reports – two templates added to the reporting capability: a standard RTOC format and a simplified ICE format.
- Improved the reporting capability to provide user selectable choices to tailor the items included in a cost estimate report, expand the detail of each estimated work breakdown structure item, and include all user completed note and comment fields.
- Integrated a database of “typical” Development and Production cost factors for the user to reference when completing the “User Other” questionnaire.
- Added the capability to remove “other” elements of cost with a “User Other Removed” questionnaire.
- Added flexible timing for an estimate by providing user-selectable start year, which can be separate from the estimate base year.
- Incorporated the capability to report detailed cost breakdown structure elements as estimated by the SEER-H model integrated into the ICE for the development and production phases.
- Added the capability to export and import by WBS work-element. This enables the ICE user to export a WBS item and its associated model-interface questionnaire for import into another ICE concept.
- SEER Design for Manufacturability (SEER-DFM), second iteration of model integration – implements user process parameter questionnaires based on predefined manufacturing processes, plus an calculator for development cost to supplement DFM’s production cost estimate.
- Data updated to include the latest information available from the published sources.
- Updated ICE Settings to include defaults for model selections.

ICE™ Version 5.3 Release - May 2003

ICE v5.3 includes several significant new features and enhancements. The most significant items include:

- The obsolescence capability introduced in previous versions of ICE is enhanced further in ICE v5.3. The user interface for operation of the Mitigation of Obsolescence Cost Analysis (MOCA) model is expanded to include additional data parameters and a means to import a detailed bill of materials into MOCA. With these additions, MOCA can estimate the potential impact obsolescence could have on an electronic system based on the bill of materials. The internal ICE obsolescence calculator interface is refined and the obsolescence data expanded to include additional mitigation strategy factors and introduces several predetermined nominal obsolescence mitigation plans. To show how the estimated obsolescence can affect cost, an obsolescence report debuts in ICE 5.3 that provides an estimated baseline cost before obsolescence is considered, and the estimated cost after an obsolescence scenario is considered.
- With the release of ICE 5.3, the capability to save a concept’s parametric model inputs is improved. Now ICE saves the user’s input in the selected parametric cost model’s file format. This enables an ICE user to open directly the saved file with the selected parametric model with the information already input into ICE. This enables the user to obtain a greater level of fidelity provided by the detailed parametric model if necessary. This capability includes both the SEER and the PRICE families of parametric models.
- The parts repair data available within ICE 5.3 now has five years of historical cost data from the Air Force Total Ownership Cost (AFTOC) data system. Previously, only four years of data were available to provide the means to view the repairable parts’ historical cost to reveal trends.
- To enable an estimate of the cost impact when a system undergoes an inventory reduction at the planned end of its operational life, ICE 5.3 includes the capability to “retire” systems by decreasing the Air Force published inventory quantity over the time period used for the cost estimate.
- New with ICE v5.3 is the initial integration of Galorath’s SEER Design for Manufacturability (DFM) model. With this new model, ICE 5.3 includes an interface to this process-based model to estimate in detail, the materials, processes, and labor required to manufacture and assemble a part or system.
- ICE v5.3 expands on the existing, robust cost-estimating capability ICE provides for both the experienced cost analyst, who needs a “quick-turn” analysis capability, and the scientist / engineer / planner who is not experienced with cost, but has to understand the cost / affordability impacts when accomplishing component-level or system analyses.

ICE™ Version 5.2 Release - January 2003

In addition to all the previous features of ICE™, Version 5.2 adds these features and enhancements:

- Previously, the cost of replaced components were based on the latest full year of data published in the Air Force Total Ownership Cost data system (AFTOC). The tool now supports user selection of a specific year or multiple years of AFTOC Depot Level Repairable (DLR) data to be used as a “rolling average.” This capability enables the ICE™ user to view multiple years of historical costs to determine trends, fluctuations, and/or a DLR part’s transaction history over a period of years. ICE™ 5.2 features a database from the last four years of AFTOC data. Future updates will expand the data set to five years of data. From that point on, FTI plans to maintain the latest five years of DLR historical costs for use within the ICE™ tool.
- ICE™ now includes the DoD Facility Sustainment Model and its data repository. The Facility Sustainment Model (FSM) provides ICE™ users with a set of estimates for the new construction and annual maintenance of nearly 400 facility types. Included are the cost factors for all facility types compiled in the DoD Facilities Cost Factors Handbook, version 3.0, published by The Deputy Undersecretary of Defense for Installations. Based on the best commercially available data sources, FSM also benefits from the knowledge of each military service’s unique facility requirements. In ICE™, the implementation of FSM will provide a methodology and guidance to apply these construction and sustainment cost factors. The data also includes “area” cost factors to modify a basic estimate for almost any location on the globe for construction, modifications, and maintenance and repair of facilities over a 50-year service life.
- The Obsolescence Calculator included in ICE™ version 5.1 has been upgraded. It now includes a database of average, non-recurring obsolescence factors, each related to a specific mitigation strategy which the user can select. The selected mitigation strategy is applied to a cost estimate as the impact of obsolescence over time.
- ICE™ also includes another model to estimate the impact of obsolescence. The Mitigation of Obsolescence Cost Analysis (MOCA) is a cost model developed by University of Maryland research. MOCA is designed to examine a bill of materials for an electronic device and determine the lowest cost option to mitigate obsolescence of the parts. This model is now integrated into ICE™ and can be used with a user-supplied parts list or a provided top-level generic parts list derived from the SEER-H cost model. How to request MOCA from the University of Maryland is available as a pre-formatted request letter.
- The questionnaire for the concept production schedule now shows both the Primary (PI) and Backup (BI) Inventory quantities for the platform being estimated. This capability ensures the user has the complete platform inventory quantity, enabling the user to adjust the concept’s production schedule to accommodate any spares for both the primary platforms and the “rest of the fleet” as appropriate.
- Today, numerous organizations use the ACEIT cost tool for cost estimating and aggregation. Some of these users have expressed an interest in having a means to translate ICE™ outputs into ACEIT. To facilitate this data translation, an ICE™ output report was created to provide cost data for each hardware and software cost element of the system concept being estimated. This report, created in Microsoft Excel, can be easily imported into ACEIT.
- An engine-specific cost report is now available to include the output of several new engine-related cost calculators.
- The ICE™ user guide and online help are greatly improved and updated to include the additional, new features.

ICE™ Version 5.1 Release - December 2002

Description: Development efforts over the past several months have enabled the release of ICE™ 5.1 for delivery to both Industry and Government users. The latest version upgrades the basic ICE™ capability in several ways. These new capabilities are the result of suggestions by Government cost analysts using the tool day-to-day, and FTI’s internal testing and feedback from various technical review board sessions. The comments from users are especially beneficial to ensure the capabilities of ICE™ actually reflect the identified needs as “real” cost analysts, researchers, and program managers use the tool.

This release of a new revision of ICE™ represents the continuing progress made in the overall ICE™ capability development. It continues as the basis for affordability / cost analysis tools being developed by FTI for many organizations. ICE™ continues to evolve as the premiere cost-evaluation tool for conceptual systems within the Department of Defense and for cost-conscious industries.

Features and Enhancements:

- The ICE™ Settings Utility is expanded to include the means to set the defaults for the platform type and configuration file for a specific installation. In addition, a new licensing methodology for ICE™ was implemented to require users to enter the “License Owner” and “License Key” in the Settings Utility to open the ICE™ application.
- The main ICE™ Interface has an improved Concept “wizard” to enhance the interface with the Work Breakdown Structure (WBS) component identification and to provide the questionnaire inputs on the same page.
- The file saving process is streamlined to reduce the size of ICE™ files and substantially improved the backward compatibility for files from prior ICE™ versions.
- More cost modeling rules are provided to filter the selection of applicable models and options.
- A “Calculator” section is added to provide additional specific adjustment options by WBS element.
- The user’s selection of “Platform” type is enhanced with an improved GUI to enter user-named platforms.

- Aircraft engines are added to the database so they can be estimated as platforms in a manner similar to aircraft platforms. Propulsion-specific WBS structure files are added to facilitate this capability.
- Notional aircraft systems (Fighter, Bomber, Cargo, etc., designations) are added with notional data to support O&S cost estimating.
- The User Guide for v5.1 is updated and new links are available from within ICE™.
- The inflation factors are updated for 2002.
- The user software questionnaire is restructured to include inputs for software production costs.
- A new “removed software” questionnaire is added for calculating savings due to software that is no longer supported.
- The PRICE® H interface now includes implementation of integration components.
- A general ICE™–Excel interface is now available to enable the output from any model to be transferred into ICE™ via an Excel workbook.
- The new calculator section includes a Parts Obsolescence Calculator to estimate the cost impact on support costs due to electronic parts obsolescence.
- A calculator for scheduled and unscheduled engine removals is available to supplement the propulsion Depot Level Repair (DLR) cost estimates from either of the primary hardware models in ICE™.
- A spares estimation option is incorporated to estimate initial spares by WBS item and to sum the spares with the production quantity for both SEER-H and PRICE® H.
- Several of the ICE™ reports were updated for better readability. A new WBS report was also added to show costs and key factors by WBS element.

ICE™ Version 5.0 Release - Date: February 2002

Features and Enhancements:

- Integration of the PRICE® H hardware model with the previously integrated PRICE® S software cost model, increases the ICE™ tool’s parametric estimating capability. The integration of PRICE® H gives ICE™ users more cost model choices to provide cost estimates for hardware development and support.
- Enhanced CORE model implementation, enabling the user to access more of the CORE input parameters providing flexibility in specifying operations and support parameters, and related cost estimates.
- Incorporation of updated, critical cost estimate databases populated with vital operation cost, support cost, and cost saving data.
- Incorporation of updated, CORE operation and support model that uses Air Force FY 2001 factors and updated Air Force Total Ownership Cost FY 2000 commodity data (Depot Level Repairable).
- Improved implementation of inflation factors, to translate the base-year cost estimate to a “then-year” estimate for the future.

ICE™ Version 4.2 Release - Date: March 2001

Description: Development efforts over the past several months have matured two new releases of ICE™ for delivery to both commercial and Air Force users. The latest version, designated Version 4.2, upgrades the basic ICE™ capability several ways. These new capabilities are the result of suggestions by Air Force cost analysts using the tool day-to-day, and FTI's internal testing and feedback from various technical review board sessions. The comments from users are especially beneficial to ensure the capabilities of ICE™ actually reflect the identified needs as "real" cost analysts, researchers, and program managers use the tool.

Features and Enhancements:

- Adds PRICE® S as another software estimating model.
- Provides a basic Concept Comparison feature for comparing side-by-side all the concepts in a file.
- Updates aircraft inventory data to the 2001 AFTOC values.
- Although not a "capability", AFTOC data for ICE™ is now available directly through the AFTOC program office.

ICE™ Version 4.1 Release - Date: December 2000

Features and Enhancements:

- Includes a Work Breakdown Structure (WBS) import function to load an existing WBS from a Microsoft Excel worksheet into ICE™.

- Adds a SEER-H parameter sensitivity function to rank order the importance of each input parameter to the specific hardware cost element.
- Provides a new cost estimate Summary Report choice. This optional report shows the CORE calculations at the third level of the Cost Analysis Improvement Group format versus just the first level of the standard summary report.
- Updates the Platform and O&S databases to the latest information available from AFI 65-503 data tables and where applicable, the AFTOC data warehouse. This release of a new revision of ICE™ represents the continuing progress made in the overall ICE™ capability development. It continues as the basis for affordability / cost analysis tools being developed by FTI for many directorates within the Air Force Research Laboratory and other organizations. ICE™ continues to evolve as the premiere cost-evaluation tool for conceptual systems within the Department of Defense and is becoming an attractive commercial product for cost-conscious industries.

ICE™ Version 3.1 Release - Date: July 1999

Features and Enhancements:

- Added an option to estimate costs in then year dollars. Evaluation results and reports may be displayed in base year or then year dollars.
- Added an option for the user to select LRU data from an aircraft other than the aircraft(s) being modified.
- Added an option for the user to specify a fraction that the modification represents of the total LRU.
- Added additional factor adjustments for support equipment and tech orders costs. These costs may be supplied as a factor or a dollar amount.
- Updated and improved the report format. Added more details for inventory by year, added cost summary and net costs by year section, added charts/graphs, and added a LRU's removed by NSN section.
- Updated the AFTOC data to the most recent available.
- Added an option for the user to search LRU's by keyword.
- Added a feature to display the top cost factors in the AFTOC database. This item will show, by aircraft and or Federal Stock Class, the components with highest maintenance costs.

ICE™ Version 3.0 Release - Date: March 1999

Features and Enhancements:

- Incorporates all improvements and fixes of previous releases.
- Added capability to select helicopters as the platform and describe helicopter specific systems and elements.
- Added several more parameters for describing software elements.
- Replaced previous CORE data with latest AFTOC DLR and man power data.
- LRU's are grouped by federal stock class (FSC) and listed by national stock number (NSN).
- Added the capability for the user to add/remove the enclosure for electrical elements. Previous versions automatically created an enclosure element with most electronic elements.
- Changed the reporting funding profile to be more realistic. Also, removed Evaluation Module Settings section from the report, because it was not used.
- Reviewed and revised all questions and text on all forms. Some questions were re-written to clarify their meaning. All grammar and spelling errors were corrected.
- Updated the grid functionality for improved usability.
- Added the current aircraft inventory to the grid displays to help the user with production quantities and inventory adjustments.
- Updated the Contractors Tool questionnaires to reflect new questions.
- Added on-line help to the Contractors Tool.
- Updated the ICE™ user's manual and help file to reflect latest version changes.
- Added a "latest files opened" list to the File Menu
- Tested and verified compatibility of ICE version 3.0 with latest SEER applications; SEER-H ver. 4.0.11 and SEERSEM
- ver. 5.01.

ICE™ Version 2.4 Release - Date: February 1999

Description: Release for FM and the Propulsion SPO

Features and Enhancements:

- Fixed a CORE calculation error on the aircraft fleet total costs.
- Fixed a calculation error on the element production quantity.

ICE™ Version 2.3 Release - Date: January 1999

Description: Release for FM

Features and Enhancements:

- Fixed an error in the SEER connection timeout feature.
- Fixed a calculation error that occurred only when the user specified a fixed EMD cost.

ICE™ Version 2.2 Release - Date: December 1998

Description: Release for FM

Features and Enhancements:

- Same as version 2.1 except all systems and LRU's were made available.

ICE™ Version 2.1 Release - Date: November 1998

Description: Release for Propulsion SPO

Features and Enhancements:

- Fixed error where the questions being displayed in a grid were truncated.
- Fixed issues with network functionality by creating a "swap" directory on the server. ICE and SEER use this directory to exchange inputs and outputs.
- Implemented a SEER connection timeout feature to force ICE™ to wait a user specified amount of time for SEER to execute.

ICE™ Version 2.0 Release - Date: November 1998

Description: Initial release for the Propulsion SPO

Features and Enhancements:

- ICE™ was updated to 32-bit software. ICE™ requires Microsoft Windows 95 or NT to run.
- Updated the windows with improved graphical user interface. Including: Welcome dialog form, CCF form (concepts list form), Concept form, and the Report form.
- Removed the SEER/CORE evaluation module options. The SEER/CORE evaluation module is the only type of evaluation module available, so it is added automatically at startup. The settings for the evaluation module only need to be entered when the tool is run for the first time, not with each new concept call file as in previous versions. Removed
- Insert from the Edit menu.
- Only systems and LRU's related to propulsion were incorporated.
- Initial release of ICE™ for use with a network installation of SEER-H and SEER-SEM.
- Added the option to report results by platform. Results were previously only reported by data sets.
- All costs are now reported in thousands of dollars instead of millions.