Introduction

Requirements engineering is essential to ensure companies produce a correct product in a timely manner. Ensuring completeness of the requirements traceability through the complete data tree cause many issues:

- Requirement interpretation may change through the data flow
- Manual mapping of documents with identifiers is time-consuming and subject to error
- Translation or moving of data may cause corruption or error
- Link to proofs of implementation/results is currently manual
- Visibility of Requirements through the entire tree is complex

The requirements are then refined into a hierarchy. The refinement is a continuous process. A requirement can be broken down into sub-requirements, and these sub-requirements can be further refined. This process is repeated until the requirements are at a level that is acceptable.

Terminology

- **Requirements**: Objectives and expectations of a product.
- **Features**: Functions needed to satisfy the Requirements- proven via sub features or goals to achieve their specified metrics.
- **Goals**: The atomic unit of a feature or sub feature to which metrics (coverage/tests) are mapped. (associated).
- **Metrics**: A test or coverage item used to validate a goal.

Features

asureSIGN™ incorporates the following features:

- **Dashboard**: contains an overview of the project's progress over time which presents:
  - A table of Regressions which have been imported into the project database (asureSIGN™ interfaces to any regression runner being used)
  - The number of Requirements in the project, including information on those that are Mapped/UnMapped to Tests (metrics) and which Milestones have been achieved. This data is also available in a graph for quick review.
- **Plan Editor**: a window that supports Change Management of Features/Goals and for mapping of Goals to Metrics. The user can adapt the Features/Goals position within the project hierarchy, as well as update their metadata in asureSIGN™, or they can use the Partial Import function to assist with reuse and variant management.
- **Analysers**: a window used to review the project in detail. It contains the project hierarchy so that the user can review a particular Feature or Goal, or the entire project with regards to:
  - **Mapped**: All the metrics a selected Goal is mapped to
  - **Unmapped**: All Goals
  - **Unexecuted**: All Goals
  - **All Executed**: All Goals
  - **Goal Grading**: Details of all Goals in the Project
  - **Feature Grading**: Details of all Features in the Project

**Command Line Instructions**: Regression Results are imported into asureSIGN™ from external testing tools such as UCDB/UCIS or log files via command line instructions.

Interoperability

- Supporting a common xml schema asureSIGN™ is able to transfer data safely between itself and other tools in the flow
  - Requirements can be imported from an external tool (or entered manually) which is a Top-Level Test Plan
  - The requirements are then refined into a Bottom-Level Test Plan which are then mapped to goals (Tests/coverage points etc)
- **Test Mapping** is implemented in asureSIGN™ in many ways this includes automatic mapping to test results within the tool, for this the requirements are mapped to a test, assigned a type and the details on how to recognise a passing result are configurable within the tool to allow for automation.
- **Supports Acceleras’ Unified Coverage Interoperability Standard UCIS (and its forerunner UCDB)**
- **Mapping within the tool reduces risk due to minimising the tooling interfaces**
- **PDF Export for Review**: For audit processes all information on the user configuration, goals, goal pass criteria, passing result, manual sign-off criteria and any URL links to visual sign-off criteria are all available within asureSIGN™. A PDF document can be exported and put into a configuration management tool for audits and review.