



### Safety-Critical Software

Software plays an ever-increasing and pivotal role in the control of current and future Safety-Critical systems. A level of trust is placed on such software. The degree of this trust depends on the magnitude and impact of problems that could occur if the software was to malfunction.

The basis for establishing this trust depends on many elements of evidence derived from the development and verification of the software. The evidence must be produced, recorded, checked, catalogued and rechecked. This needs to be done in a tightly controlled and very methodical manner, in compliance with regulations dictated by the certification authorities. These regulations specify objectives that must be met depending on the assurance level of the software, for both development and verification activities.

### VEROCEL–The Software Verification Company

VEROCEL is a company which provides expertise and services for Software Verification. This includes development and review of plans and standards, software structural coverage analyses, traceability, and outsource support for software verification activities.

The company philosophy is based on our belief that Safety-Critical software needs the care, attention and rigor necessary to be confident that systems will not fail.

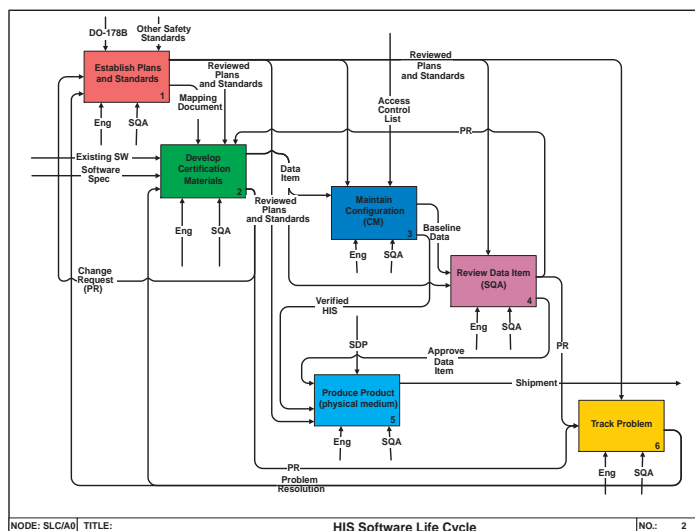
### Software Certification Life-Cycle Data

The Software Life-Cycle Data for certifiable software is comprised of requirements, designs, source code, tests, test results and any other components identified as part of the certification materials. The actual development of high-level requirements, design and source code are part of the software development process, and are the responsibility of the domain experts. The review, analysis and testing of the software and its related components needs to be performed independently by verification experts.

VEROCEL provides the verification expertise in process and standards as well as review, test and analysis.

VEROCEL has developed a set of generic plans and standards which support the most stringent criticality level (Level A) for DO-178B. These plans may be augmented by project specific supplements to support a particular process or methodology used. Existing plans and standards may be reviewed and recommendations provided to achieve compliance with DO-178B objectives.

VEROCEL also undertakes the development of all verification materials—analysis and reviews of design, code, or tests. If software tests need to be developed, then VEROCEL will review the requirements and develop the tests against those requirements.





## Software Coverage

To obtain evidence of structural coverage, *VEROCEL* has developed a verification tool called *VEROCODE*. This tool measures structural coverage on the target computer at the object code level without instrumenting the source code and without the need for additional hardware. In particular, when used with certain recommended coding conventions, it is particularly suitable for showing Modified Condition Decision Coverage (MCDC). *VEROCODE* is available with qualification materials, making it applicable for use on Level A systems.

## Traceability

A large volume of verification materials is often generated as certification evidence. These materials need to be catalogued, cross-referenced, and saved. The *VEROCEL* approach to this task is to use the *VEROTRACE* tool. *VEROTRACE* gathers information in a database, and then automatically generates a web-based representation using the latest XML standards. A standard web browser enables a reviewer or auditor to navigate the data materials effortlessly. The data materials are linked by references based on the inherent relationships between the components.

Since the information is automatically generated from the database, a review of the database relationships guarantees the traceability of the verification artifacts as required by DO-178B. All materials may be saved for delivery on a CD-ROM, making baseline delivery an easy process.

## Outsource-Services for your Software Certification Project

*VEROCEL* can provide all or part of the verification process from training, consulting, and mentoring to full software verification services, including:

- Review of high level requirements
- Development and review of low level software requirements
- Design capture and review
- Code review
- Test development
- Test result analysis
- Structural Coverage analysis

## *VEROCEL* Can Help

If you already have a certification process and are producing a new or upgraded product—then *VEROCEL* can help!

If you have a product developed under a different, perhaps less stringent standard and need to supplement the verification evidence—then *VEROCEL* can help!

If you want to outsource your software verification activities—then *VEROCEL* can help!