Socrates
Assurance Case Editor

A BETTER WAY TO BUILD ASSURANCE CASES

Assurance cases are complex engineering artifacts. Creating an assurance case is a 'team sport' requiring contributions from experts across an engineering organization.

In many instances, assurance cases are managed using legacy approaches like email and spreadsheets. These methods fail to scale effectively as the system becomes more complex, resulting in assurance cases that are difficult to evolve and maintain.

Designed by engineers for engineers, Socrates helps tackle the challenge of assuring modern and complex systems. The tool allows your team to create a live assurance case that evolves alongside your system.

WHAT IS AN ASSURANCE CASE?

An assurance case is a "structured argument, supported by a body of evidence, that provides a compelling, comprehensible and valid case that a system is safe for a given application in a given environment" (UL 4600). Assurance cases are typically expressed using graphical notation and are required for compliance with internationally recognized standards like ISO 26262, CENELEC EN 50126, UL 4600, UK Def Stan 00-56 and those published by the IAEA.

CSL AT CANSEC

Today's defence systems are complex and require designers and operators to balance safety, cybersecurity, and mission assurance. Use Socrates to untangle this web of objectives by creating assurance cases that blend technical, operational, contractual, and organizational arguments and connect them with supporting evidence. Show compliance with key standards, such as MIL-882, Def Stan 00-056, ISO 26262, and organizational specific regulations and policies.

CYBER SECURITY

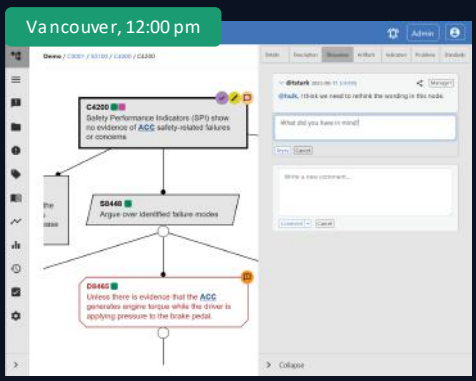
Modern infrastructure and defense systems are vulnerable to cybersecurity attacks. Use Socrates to prepare cybersecurity assurance cases and manage these risks. Socrates helps demonstrate that a system meets its security objectives and complies with cybersecurity regulations and standards by linking specific security policies and controls to your organization's to-level security objectives.

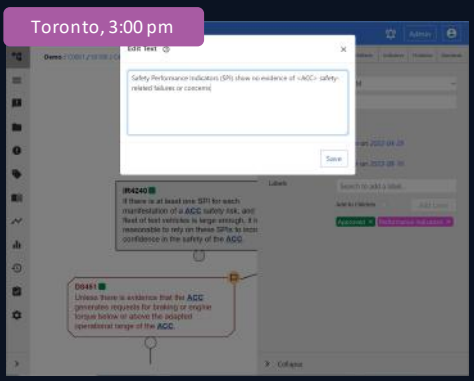
KEY FEATURES

- **Notation Support** - Prepare arguments using EA, GSN, FAN or CAE notations.
- **Comments & Issues** – Leave comments and track issues to facilitate reviews and team discussions.
- **Indicators** – Track performance indicators in Socrates and view them in the context of the argument.
- **Standards** – Import and assess compliance of your arguments against industry standards.
- **Versioning –** Take 'snapshots' of an argument and track changes over time with version management.
- **Labelling –** Organize your work by creating customizable labels.
- **Report Generation –** Export content from the argument in Microsoft Word, Microsoft Excel, and JSON formats.
- **Metrics –** Get a bird's eye view of the argument from the metrics dashboard.
- **Collaboration Without Borders** - Work as a team on a live argument from anywhere in the world.
- **Evidence Management** - Link and manage artifacts to add supporting evidence to the assurance case.
- **Patterns** – Create a library of re-usable pattens and templates.
- **Glossary –** Keep terminology consistent throughout the argument with the Socrates' dynamic glossary.
- **Argument Filtering –** Filter your argument to show specific criteria.
- **Away Nodes –** Link multiple independent arguments together using away nodes.
- **Flexible Integration –** Use the REST API to integrate Socrates into your organization's workflow.
- **Confidence Assessment –** Evaluate confidence in your argument and evidence using analytical methods.

SOCRATES MAKES COLLABORATION SIMPLE.

Systems assurance is a team sport requiring input from many contributors, each offering their own expertise. Socrates simplifies collaboration for your dispersed, multidisciplinary team and keeps your group unified and organized with a “live” assurance case.

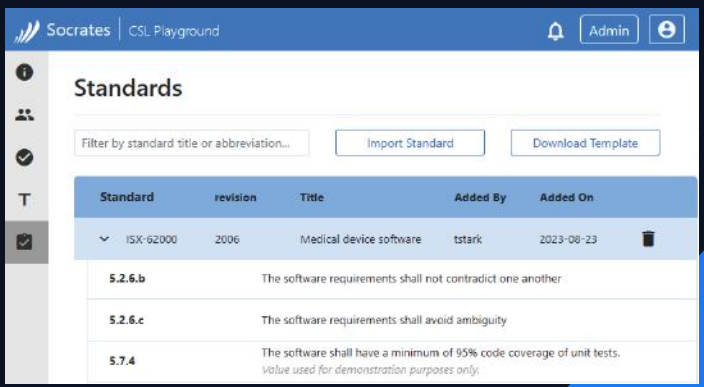




ASSESS COMPLIANCE WITH STANDARDS.

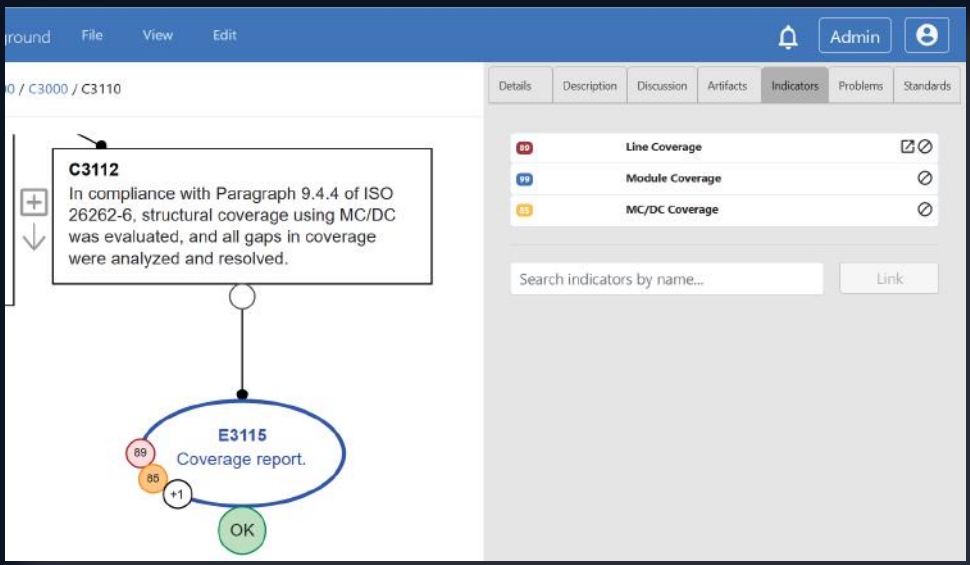
Many systems must comply with a complex web of technical standards or regulatory codes. The Socrates standards mapping feature helps your team track and assess compliance right inside the assurance case.

You can link sections, clauses, or requirements from a standard to nodes in the argument and then review the coverage to find gaps in compliance.



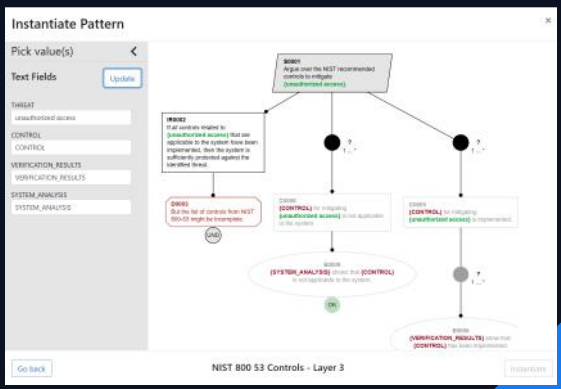
TRACK PERFORMANCE INDICATORS.

Socrates allows your team to embed performance indicators right in the argument, so you can assess them with all the right context.



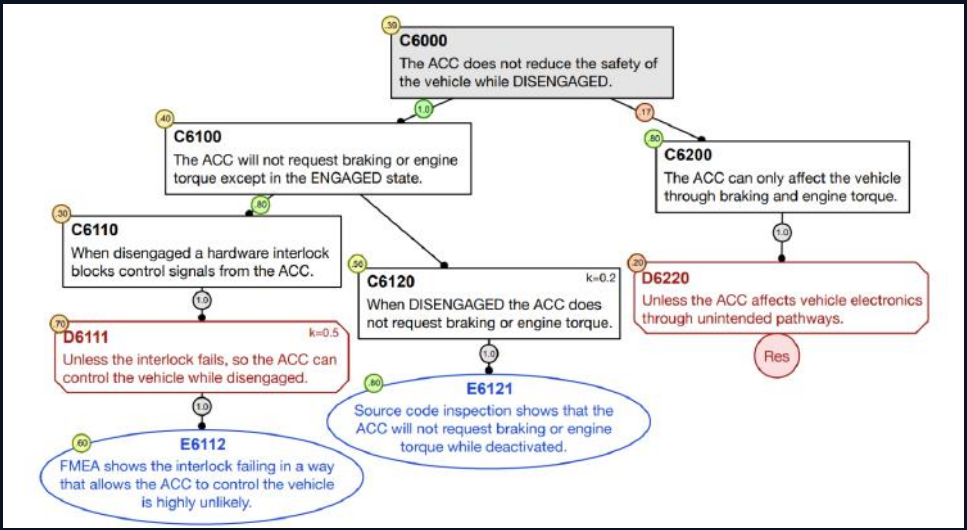
PROMOTE RE-USE WITH ARGUMENT PATTERNS.

Reduce repetitive work in Socrates by defining a library of patterns (aka 'templates'). Create patterns using the GSN pattern notation and then incorporate them into an argument using the pattern instantiation wizard.



CONFIDENCE ASSESSMENT

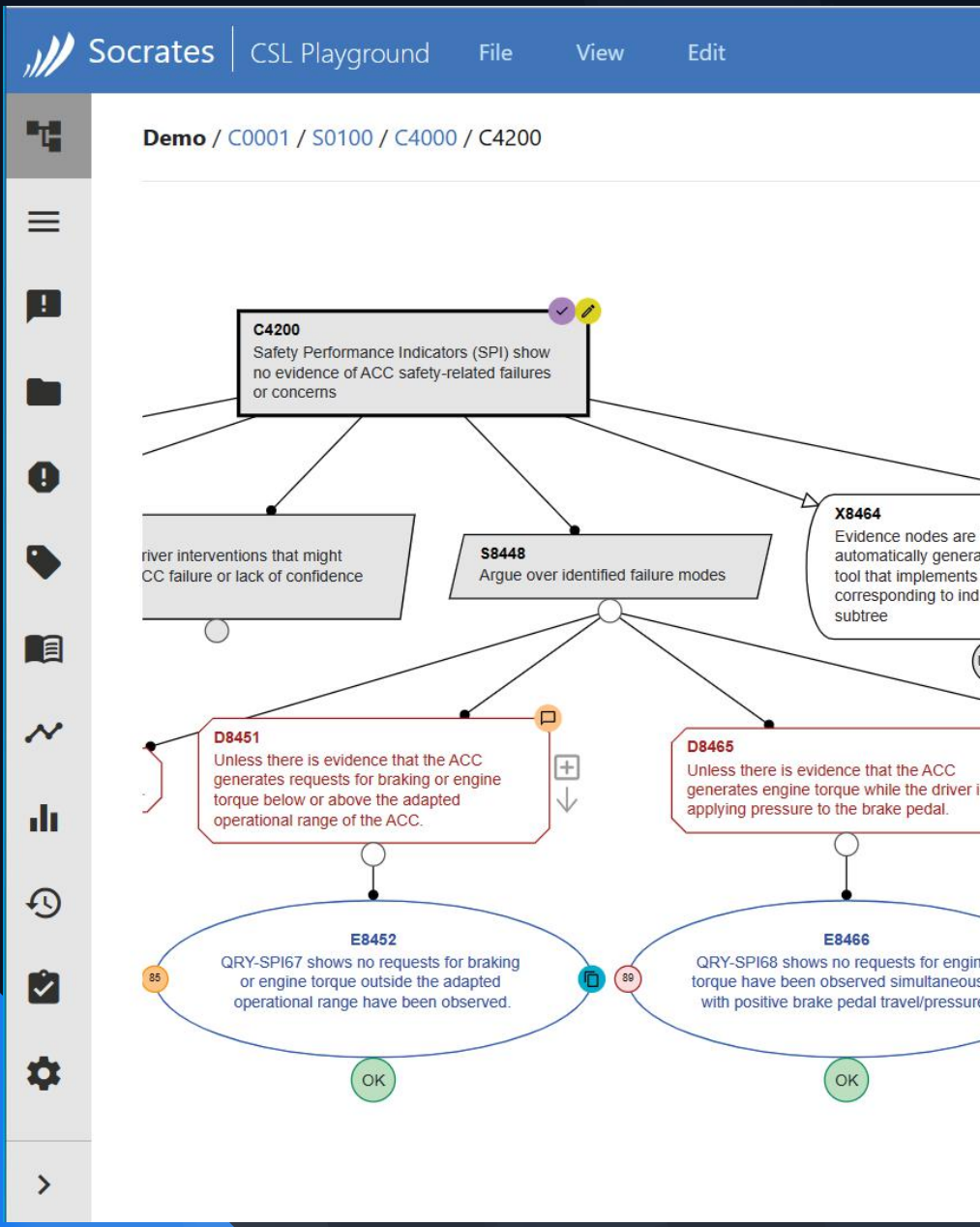
Evaluate confidence in the argument and its supporting evidence to produce an overall confidence score. Socrates supports state-of-the-art confidence assessment methods, such as Bayesian Belief Networks and Dempster-Shafer Theory based approaches. Visualize confidence directly on the argument to see where to improve the argument.

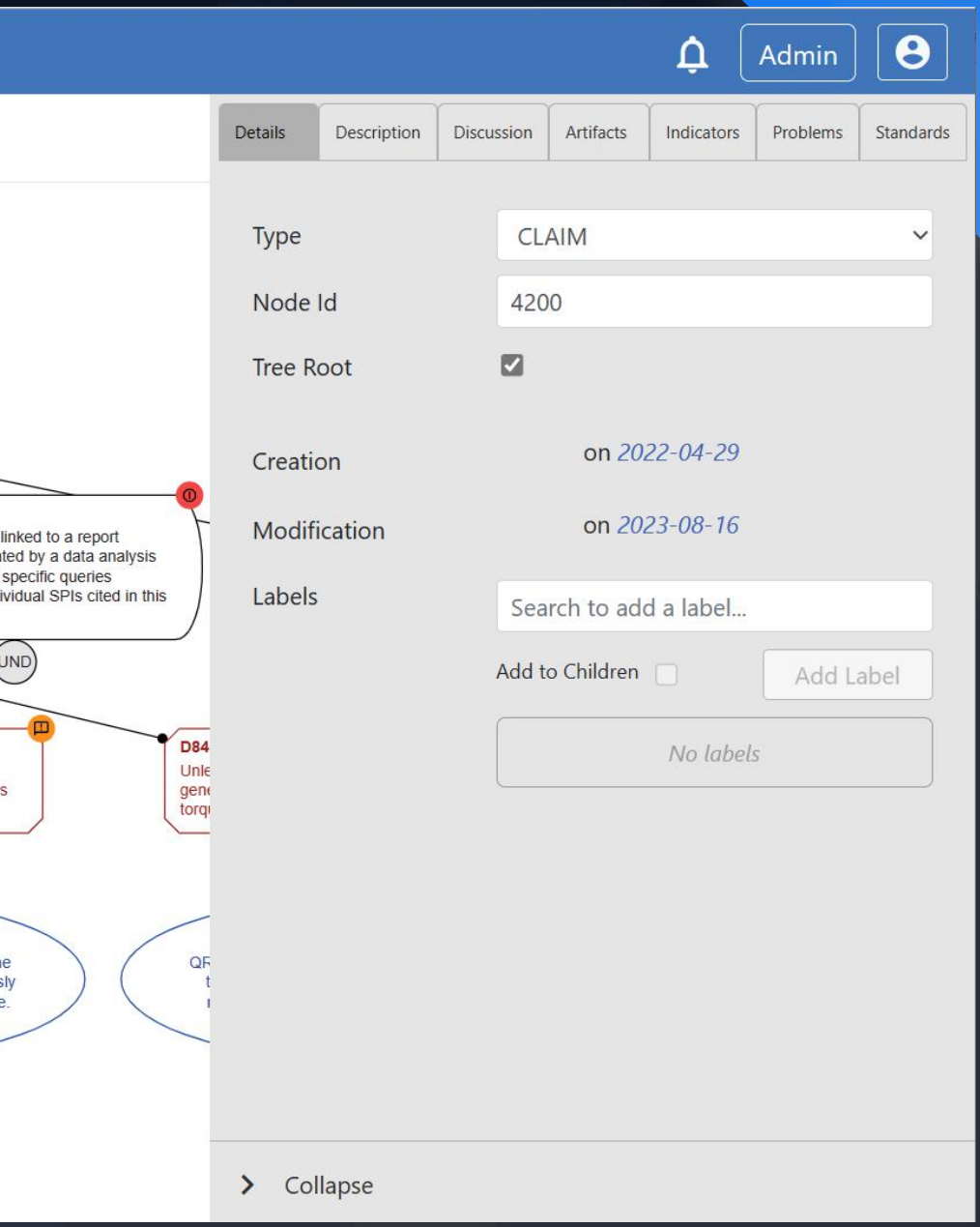


ARGUMENT FILTERING

Filter an argument to show information that matches specific criteria. Filtering helps manage product line assurance cases or can be used to tailor presentation of the argument to stakeholders interested in specific topics.

Socrates is not just a drawing tool





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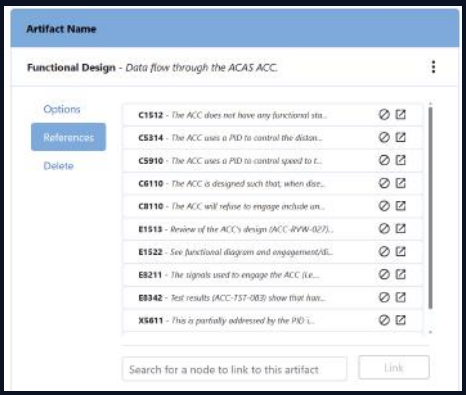
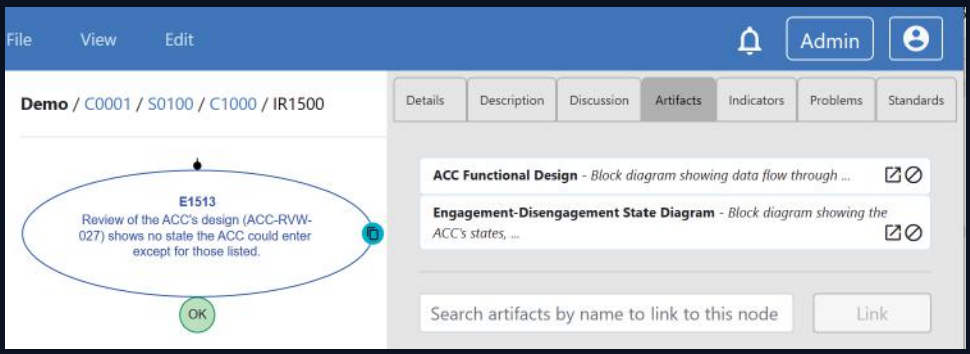
LINK AND MANAGE EVIDENCE.

Create artifacts to represent the evidence that supports your argument. Quickly make bidirectional links between artifacts and nodes to connect the evidence to the argument. Visualize the evidence in the context of the argument and open it in your web browser.

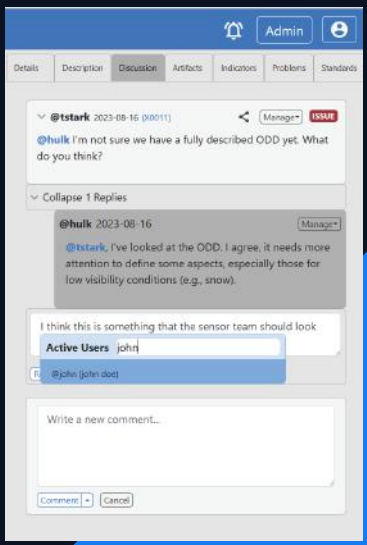




DISCUSS WITH YOUR TEAM.

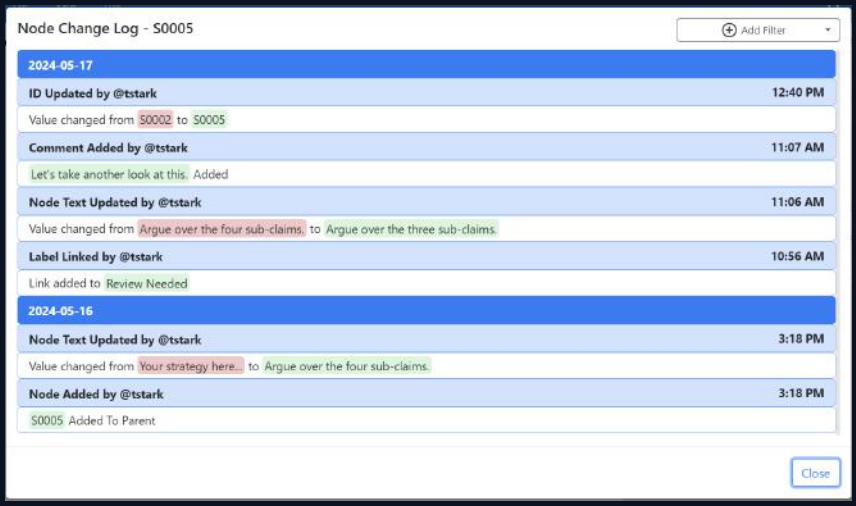
Participate in team discussions by creating new comments or replying to an existing one. Notifications and comment mentions keep the discussion flowing.

You can designate important comments as “issues” and track them with the built-in issue tracker.



ARGUMENT HISTORY

Tracks every change to the argument that your team makes. Socrates lets you view a history of changes using the “change log” and rollback to previous point in time. Tag specific versions of the argument that represent key milestones during development.



SKETCHPAD

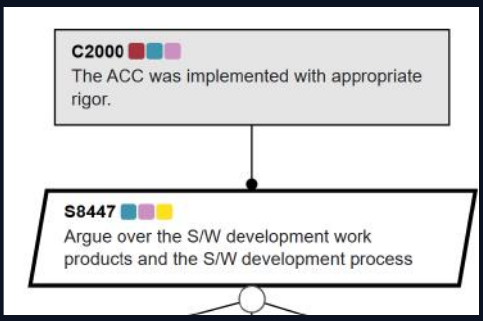
Use the Sketchpad to capture ideas quickly without committing them to your main argument. Then, re-use those ideas later by easily transferring content between your sketchpad and the main argument.

FIX ERRORS AS YOU GO.

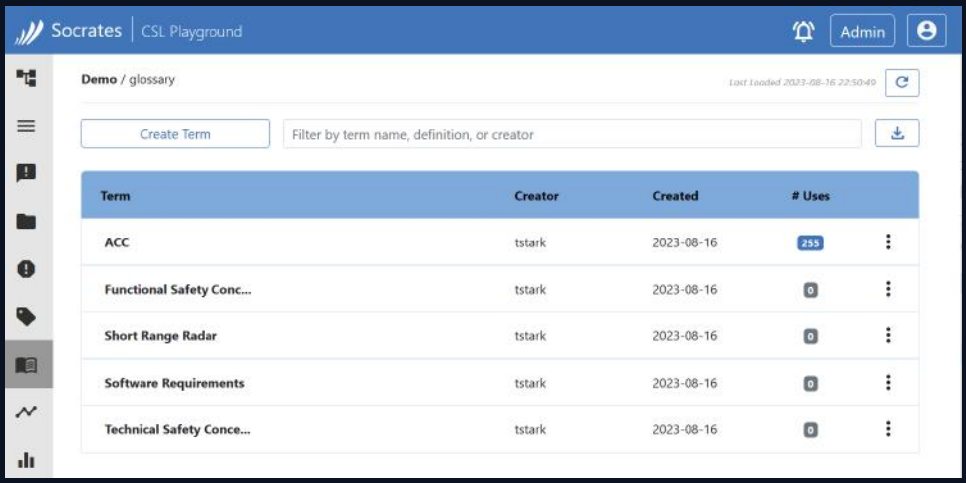
Assurance is challenging, and we all make mistakes, especially when it comes to the finer points of GSN or EA notation. To help avoid these errors, the Socrates static argument analyzer checks every change to your argument and displays errors and warnings so you can fix them right away.

ORGANIZE YOUR ARGUMENT.

Use customizable labels to keep your argument and your team organized. Use labels to organize reviews and approvals, indicate problem areas, or differentiate between separate categories of information in the argument. Link labels to nodes and visualize them overlaid on top of the argument.



MANAGE TERMINOLOGY.

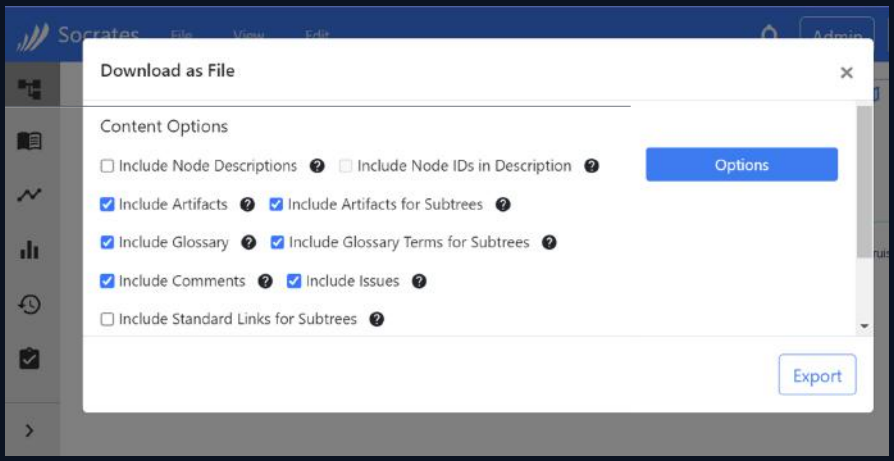


Use the Socrates glossary to manage the project specific terms and acronyms that accompany modern systems. This feature enables you to standardize terminology across your team. You can define terms in the glossary and then embed them in the text of the argument. Terms are highlighted in the argument; click to reveal their definition.

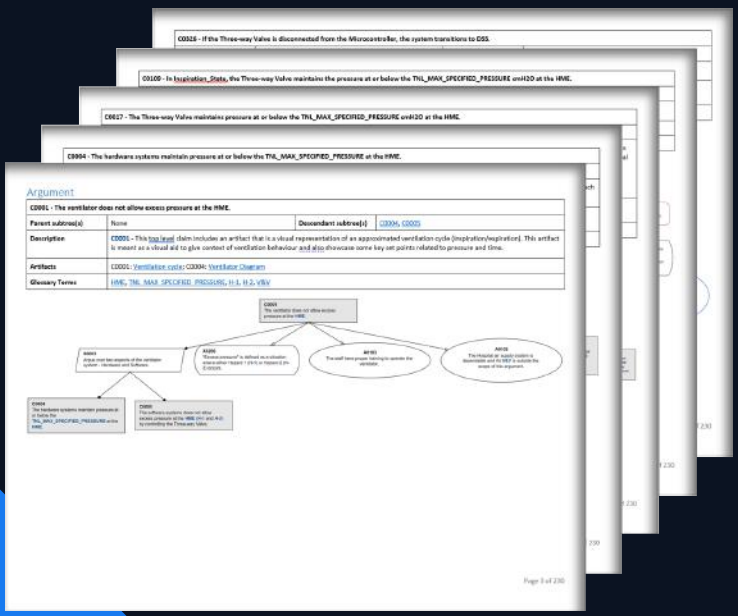
FLEXIBLE HOSTING.

Socrates can be deployed in a range of IT ecosystems to meet the needs of your organization. A common strategy is to deploy Socrates on your organization's existing infrastructure so that you remain in control of your data at all times. Other hosting options are available. Please contact us for details.

REPORT GENERATION



Generate a range of reports with graphics, text, and related data from the assurance case. Export a complete report in a Microsoft Word compatible format (.docx), including rendered images of the argument, linked artifacts, glossary terms, and your team's comments. Export other data in Microsoft Excel compatible format (.csv) using the high-customizable data export function.



ABOUT CRITICAL SYSTEMS LABS.

Socrates is a commercial software tool developed by Critical Systems Labs Inc. (CSL), a firm based in Vancouver, Canada, that specializes in assurance for high-risk systems across a range of industries, including automotive, aerospace, defense, rail, marine, health information system, medical, energy, nuclear power, and robotics. In addition to Socrates, CSL provides professional services related to assurance case preparation, hazard and risk analyses, system verification and validation, formal methods, standards and regulatory compliance, and training. Our team of experts combines diverse knowledge, experience, and a collaborative mindset to tackle complex problems at the forefront of advanced technology.

At CSL, we use Socrates every day to add value to client projects. We also maintain an active software development team that is continually improving Socrates and responding to our clients' needs. Our experience and active use of Socrates in preparing and maintaining assurance cases informs development, making Socrates an industry-leading solution for assurance case management.

Critical Systems Labs

www.criticalsystemslabs.com

A Better Way to Build Assurance Cases

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