From Roadmaps to Reality: Advancing Systems Engineering With Innoslate

Meet Your Host

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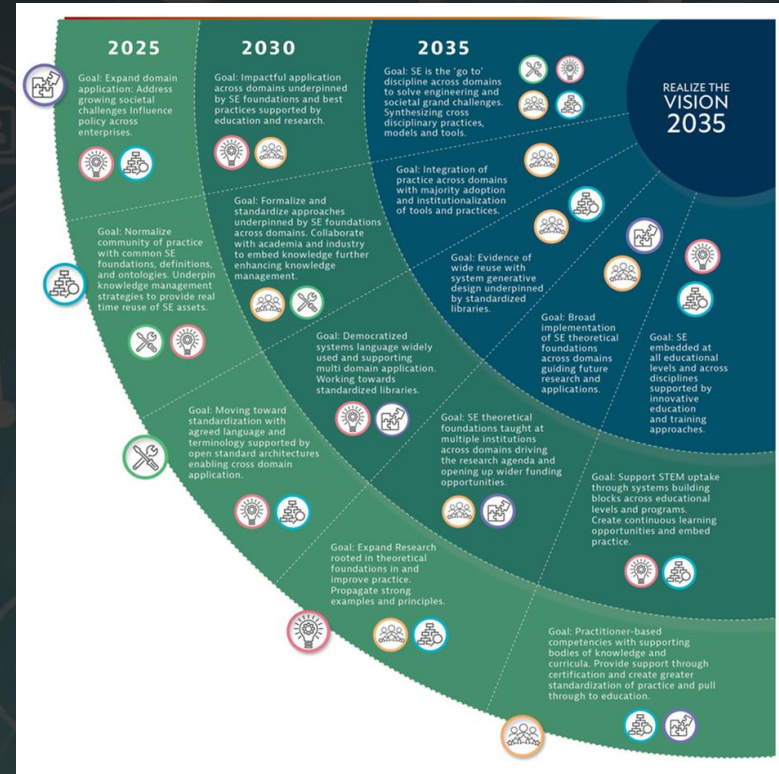- steven.dam@specinnovations.com
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Agenda

- Setting the Stage
- INCOSE Vision 2035 & SERC Roadmaps
- Meet Innoslate & Its Generative AI
- Live Demos
- Q&A

Setting the Stage

- Systems engineering is rapidly evolving
- Emerging technologies like AI and ontologies are often seen as "future"
- INCOSE and the Systems Engineering Research Center have been creating roadmaps of this possible future
- What if that future is already here?
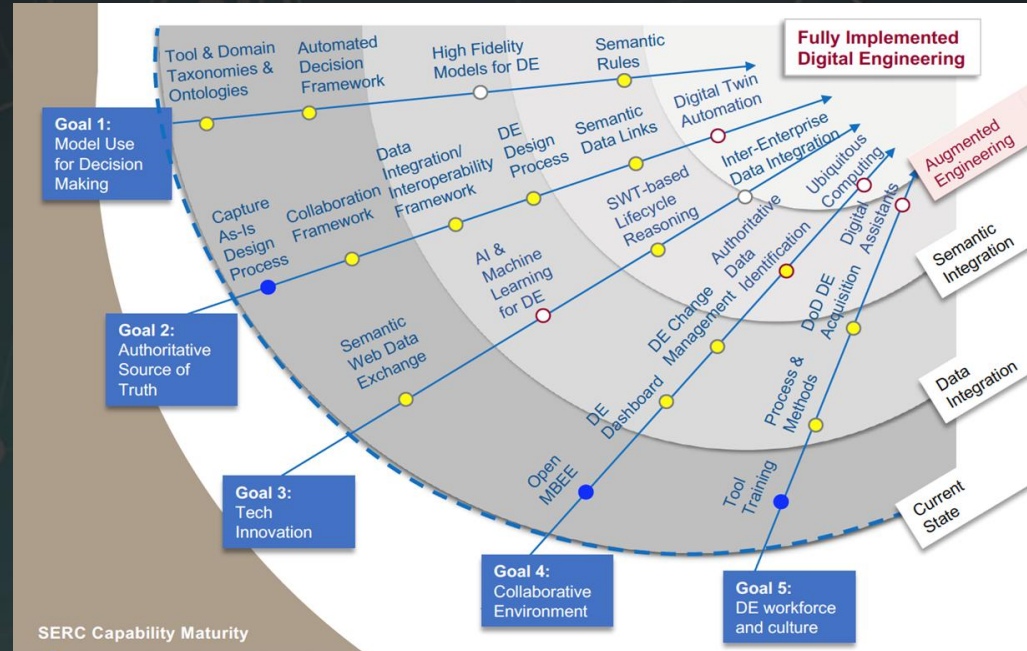
INCOSE Vision 2035 Roadmap

- *"The Systems Engineering Challenges need to be addressed in an integrated and holistic manner."*
- These goals are not mainly technology driven … they more focus on adoption and usage.
- The tools are mentioned, but only in terms of cross disciplinary and cross domain usage.

SERC Roadmap – Fully Implemented DE

- There are four SERC Research Roadmaps.
- The most relevant one to a discussion of tools is "Fully Implemented Digital Engineering."
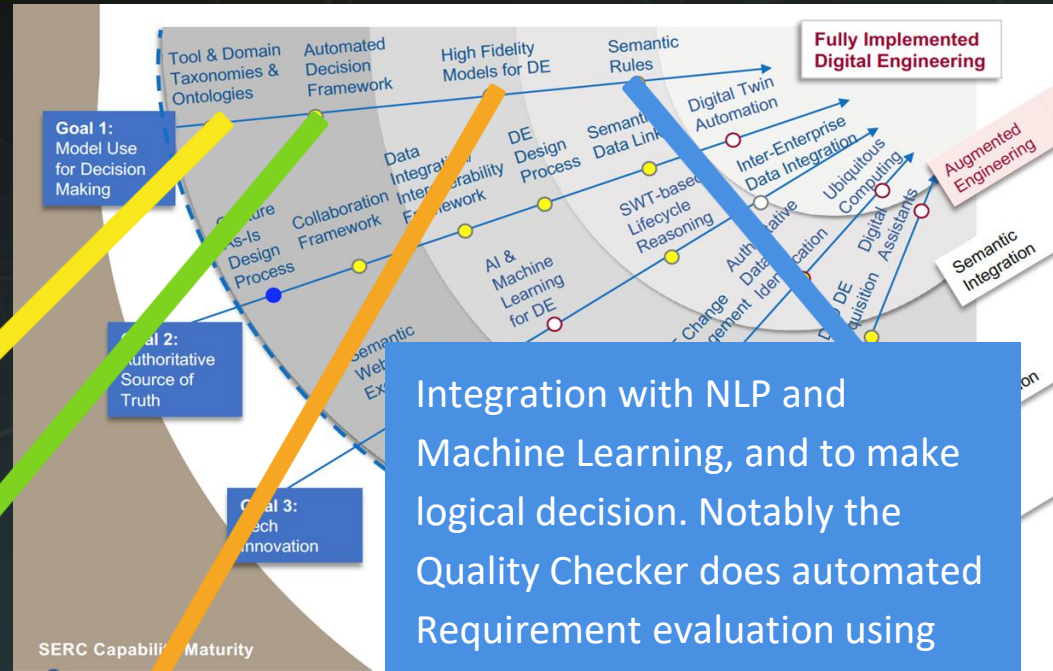- Let's look at each goal and discuss where Innoslate already supports that goal.

See https://sercuarc.org/research-roadmaps/

Goal 1: Model Use for Decision Making

Innoslate has Standard Ontology (LML) it follows, fully compatible to SysML, with available extensions to DoDAF, UAF, and more.

"Decision" Diagrams, Discrete Event and Monte Carlo Simulation. Analysis Tools such as Risk Matrix. Traceability Matrix, etc.

Integration with NLP and Machine Learning, and to make logical decision. Notably the Quality Checker does automated Requirement evaluation using INCOSE Ruleset and semantics.
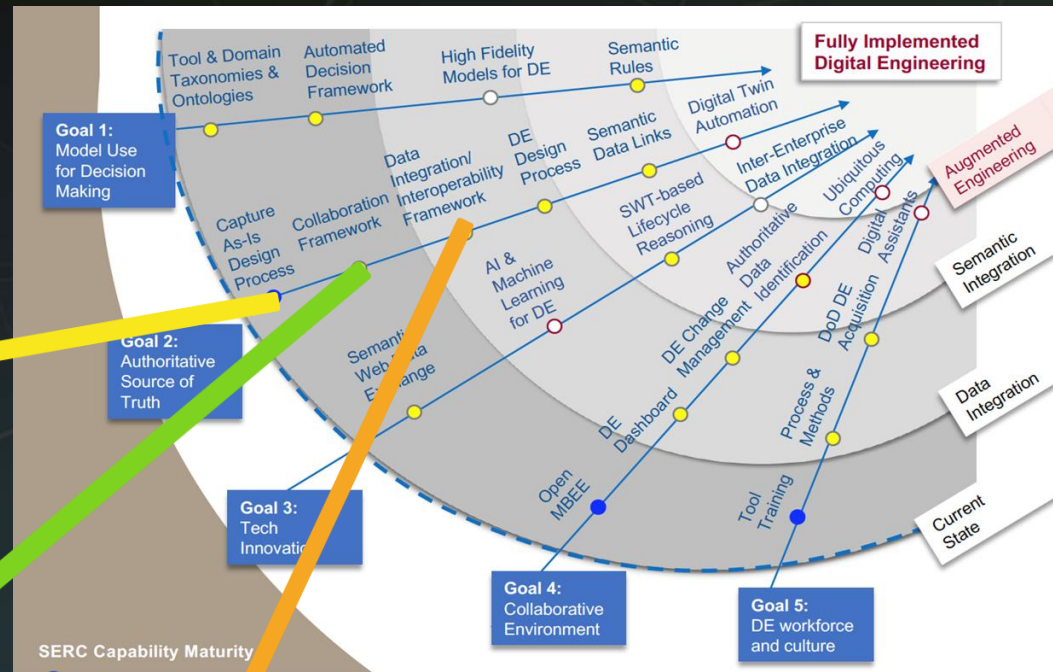
Create complex, high fidelity diagrams, supported by analysis and simulation. Different languages (SysML, UML) and frameworks with a fully expandable schema.

Goal 2: Authoritative Source of Truth

Innoslate supports full lifecycle implementation, allowing teams to create data, requirements, and design artifacts to model the "as-is" state with traceability.

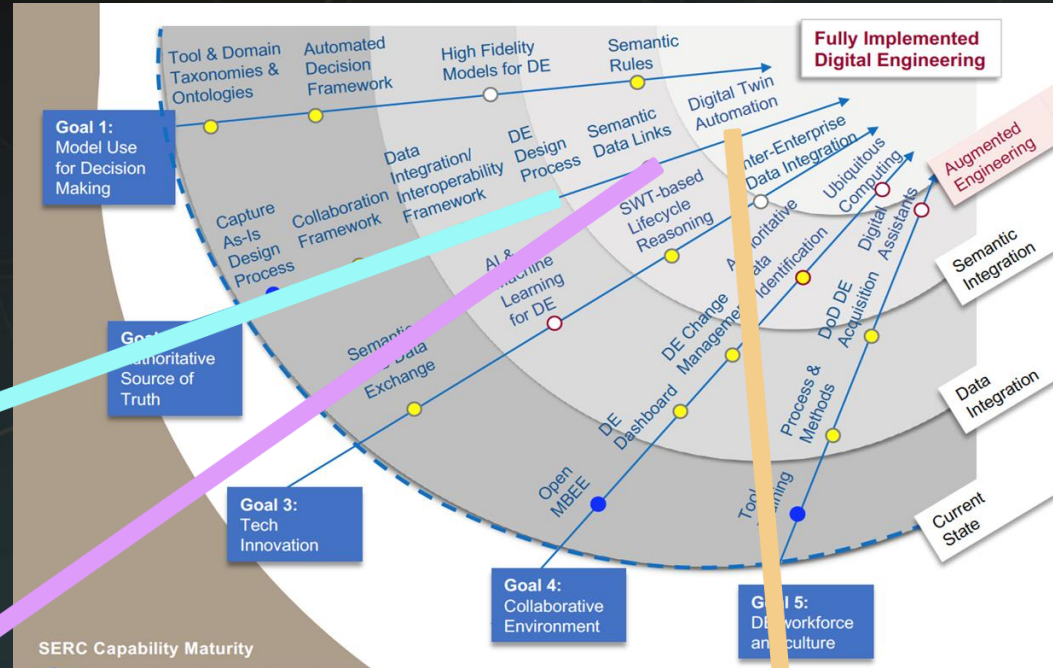Real-time, cloud-based collaboration with version control, chat, artifact sharing, change requests and tracking.

Import/Export for standard data formats: DOCX, CSV, XML, JSON, ReqIF and REST APIs. Link-based interoperability for integration with external systems.

Goal 2: Authoritative Source of Truth

Digital Engineering environment set to create data and digitize project artifacts to design using standard Digital Engineering principals.

Uses relationships to entity classes to maintain links between traced entities (e.g., requirements $\leftrightarrow$ functions $\leftrightarrow$ artifacts $\leftrightarrow$ others.
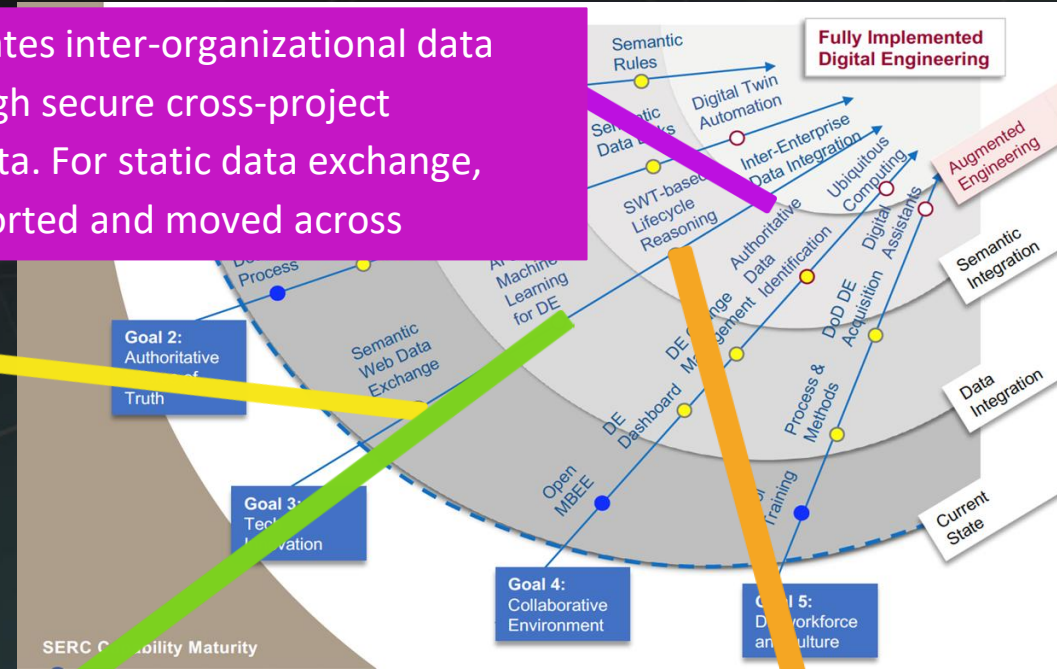
Dynamic, executable models to simulate system behavior in real-time. Integrated with live data sources and APIs, models function as digital twins.

Goal 3: Tech Innovation

Innoslate facilitates inter-organizational data exchange through secure cross-project exchange for data. For static data exchange, files can be exported and moved across platforms.

Supports data interoperability via standard data formats like JSON. It contains and facilitates data exchange within the tool using its database. Enterprise uses SQL/Postgres. Data is yours.
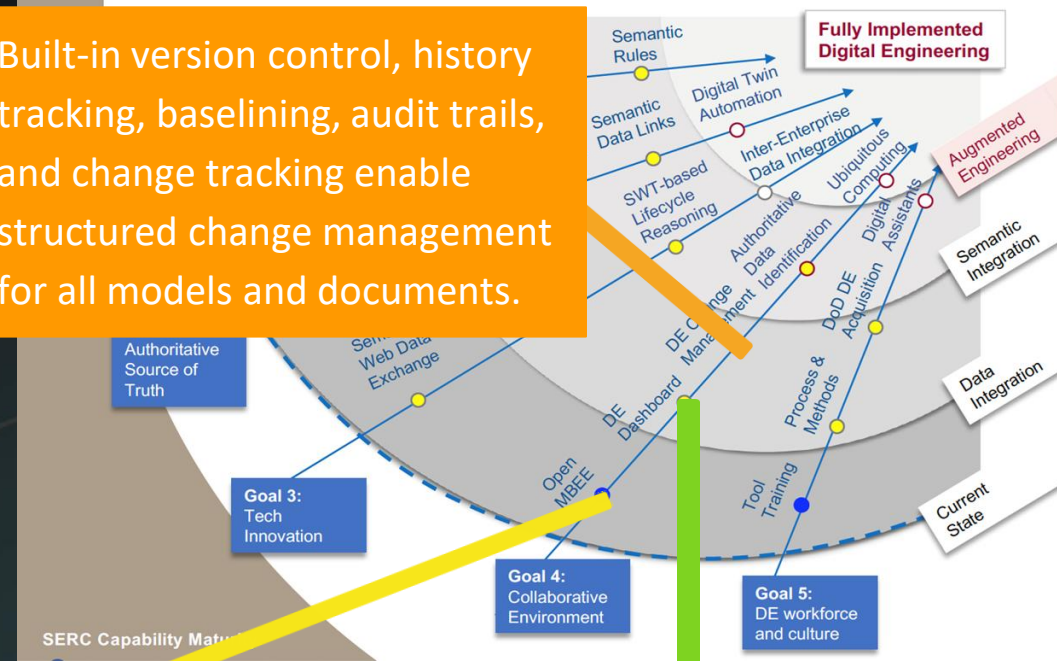
Innoslate has numerous capabilities such as Test Case AI, Risk AI, Summarize AI, Translate AI, AI Chat and Help Bots, while using NLP/ML for Quality Checker, Traceability Assist and more.

Functional Models can intake parameters such as Resources, I/Os, Time, and Cost to perform complex analysis for Cost, Schedule, and Performance, which applies to Smith-Watson-Topper.

Semantic Rules
Fully Implemented Digital Engineering
Digital Twin Automation
Semantic Data Buses
Inter-Enterprise Data Integration
Augmented Engineering
SWT-based Lifecycle Reasoning
Ubiquitous Computing
Authoritative Data
Digital Assistants
Semantic Integration
AI/Machine Learning for DE
DE Process
DoD DE Acquisition
Data Integration
Semantic Web Data Exchange
DE Change Management
Identification
Process & Methods
Goal 2: Authoritative Source of Truth
DE Dashboard
Open MBEE
DE Training
Current State
Goal 3: Tech Innovation
Goal 4: Collaborative Environment
Goal 5: DE Workforce and Culture
SERC Capability Maturity

INCOSE   SPEC INNOVATIONS

Goal 4: Collaborative Environment

Built-in version control, history tracking, baselining, audit trails, and change tracking enable structured change management for all models and documents.
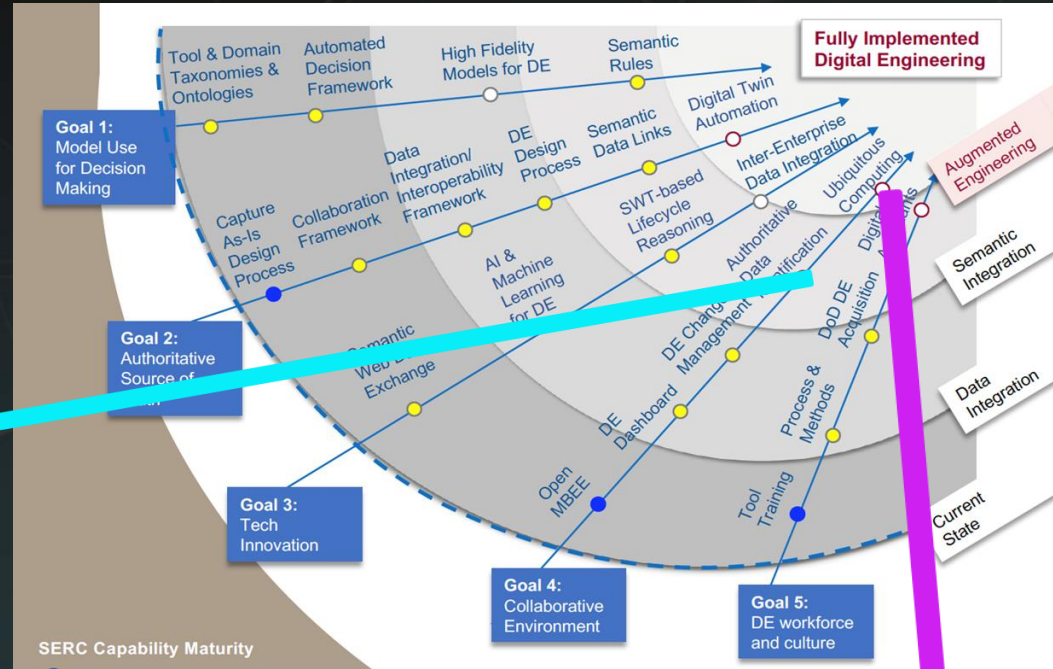

Innoslate serves as one of the only open, model-based environment that integrates requirements, behavior, and physical architectures in one tool. All-in-one.

Innoslate offers dashboard for views, complemented with a range of widget options to navigate and preview information effectively to stakeholders.

Goal 4: Collaborative Environment

Data elements are identified with unique ID and Global IDs that create distinction between data and data formats. Data can be exchanged and manipulated.

Built on a secure Java-based backend, with a front end developed in JavaScript and HTML. Constrained to prevent unauthorized manipulation for security.
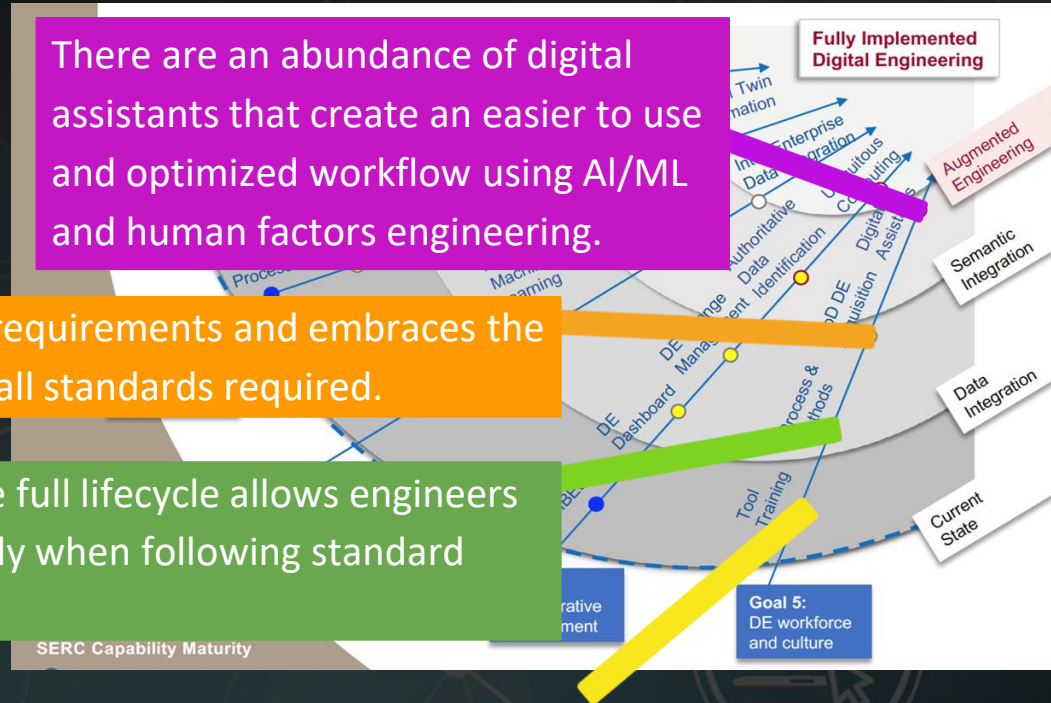
Goal 5: DE Workforce and Culture

There are an abundance of digital assistants that create an easier to use and optimized workflow using AI/ML and human factors engineering.

Innoslate is aligned with DoD DE requirements and embraces the requirements and eager to meet all standards required.

Innoslate's Capability to cover the full lifecycle allows engineers to cover the full process, especially when following standard methods such as the V-Model.

Innoslate offers extensive training resources including on-board training, tutorials, help center documentation, extra training programs, and live support.

Meet Innoslate

- Brief overview of Innoslate
- Key features that align with "future" capabilities:
    - Digital engineering support end-to-end
    - Ontology-based modeling
    - Generative AI assistants

Innoslate's Generative AI Features

- Test Case AI

- Risk AI

- Summarize AI

- Translate AI

- AI Image Generation in Rich Text Editor

- AI Image Generation for Entity Metadata Image

- Redactor Text Editing AI

- User Prompt AI

LIVE DEMOS

Send in questions using the Q&A feature.