SPEC INNOVATIONS

DEVELOPERS OF INNOSLATE

TRANSITION GUIDE

DOORS to Innoslate

Introduction

The DOORS to Innoslate Transition Guide is a comprehensive resource, offering rationale and practical methods necessary for an organization using DOORS or DOORS Next Generation to transition to Innoslate.

What Is Innoslate?

Innoslate is a collaborative, cloud-native, model-based systems engineering tool that offers capabilities tailored for requirements analysis and management. Through its web interface, users can efficiently capture, organize, and manage requirements, establish traceability, and collaborate through comments and document sharing.

The tool's customizable schema allows for adaptation to specific organizational processes and terminology. Moreover, Innoslate offers essential functionalities like version control and change management, ensuring the meticulous tracking of requirements evolution over time.

Extending beyond requirements management, Innoslate efficiently supports various facets of the development lifecycle, encompassing modeling and simulation, verification and validation, and program management, thereby offering a comprehensive solution for engineering endeavors.

IBM's DOORS and DOORS Next Generation

IBM Engineering Requirements Management DOORS (DOORS) is a requirements management tool known for capturing, tracing, analyzing, and managing changes in requirements effectively for complex problems in a collaborative environment. DOORS provides customization options through the DOORS eXtension Language (DXL) and incorporates both configuration and change management for requirements. It facilitates linking requirements to various elements like design components, test plans, test cases, and other requirements, ensuring comprehensive traceability.

IBM Engineering Requirements Management DOORS Next Generation (DNG) is a web-based tool that is integrated into the IBM Engineering Lifecycle Management suite. Its web client extends beyond traditional requirements management, incorporating features like visual definition, task management, and planning.

DNG has a lightweight diagram editor and facilitates requirements definition through rich-text documents and visual representations, including business process diagrams, use-case diagrams, storyboards, and user interface sketches. The platform enables traceability links to various project elements, such as development plans, work items, test plans, test cases, designs, and models. The Jazz Team Server supports collaboration through interactive dashboards, reviews, and comments.

How Does Innoslate Compare to IBM's DOORS and DNG?

Innoslate, when compared to IBM's DOORS and DNG, stands out for its cloud-native architecture and comprehensive support for requirements analysis and management. Innoslate offers a more modern, user-friendly web interface for requirements and systems engineering endeavors.

While DNG extends beyond traditional requirements management with features like visual definition and task management, Innoslate offers a more holistic solution with features and capabilities to capture data across the lifecycle. Additionally, Innoslate provides efficient collaboration features and customizable schema making it a versatile solution for organizations seeking a comprehensive approach to requirements management and systems engineering.

"Innoslate has a much more intuitive interface for requirements entry, viewing, and management compared to IBM DOORS. Both tools are capable, but Innoslate's ease of use is superior to DOORS."

John Espinoza,
Sandia National Laboratory

Transition

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Why Transition?

There are a variety of reasons for users to transition from IBM's DOORS/DNG to Innoslate. Some of these reasons include wanting cloud-based collaborative access, a modern user interface, additional functionality, better security, continuous software improvements, and better interoperability. A program or organization may be experiencing poor adoption of DOORS/DNG due to the dislike of the interface or writing requirements in the tool or the high cost of the tool. In some cases, there may be an inevitable need to transition to increase productivity and user satisfaction of the tooling. The reasons for transition will be different for each organization, program, and person.
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Program and Organization Perspective

There are many factors that a program or organization needs to consider that will influence the decision to transition, including:

- **Organizational**
  - Organizational culture
  - The size of the team
  - Geographic distribution of team members
  - Skill sets of team members
- **Technical**
  - Complexity of projects/program
  - Duration of projects/program
  - Compliance and reporting requirements
  - Legacy tool's ability to meet current needs
  - Data consolidation (e.g., requirements and architecture in the same tool)
  - Data concordance (i.e., single source of truth reflected everywhere)
- **Financial**
  - Cost of the tool and maintenance
  - Cost of user training (i.e., simplicity of use)
  - Cost of transition
  - Potential cost of transition failure

While the choice depends on unique factors for a program or organization, Innoslate's lifecycle-oriented approach offers compelling advantages for cost-effective, integrated requirements management and model-based systems engineering.

Value

The value of transitioning from IBM's DOORS/DNG to Innoslate is about delivering a comprehensive and integrated experience for requirements management and more.

- **Centralized Cloud-Based Environment:** Innoslate's cloud infrastructure offers an all-in-one workspace that facilitates the centralized management of requirements, systems engineering, and project management tasks. This eliminates the need for different plug-ins, disparate tools, and disjointed workflows, improving efficiency and reducing project completion time.
- **Real-Time Collaboration and Accessibility:** With access from any location, at any time, teams can work together, regardless of geographical barriers.

- **Continuous Updates:** Innoslate's continuous software improvements are crucial in a rapidly evolving environment, and Innoslate's cloud-based nature allows for seamless updates without the need for user intervention. Users will have immediate access to the latest features and updates.
- **Cost-Effective Scalability:** The shift to Innoslate can be economically advantageous, as it offers a scalable solution that can hold thousands of requirements and grow with the program's or organization's needs.
- **Enhanced Data Management and Security:** Innoslate is a cloud and on-site solution. All cloud solutions are held in secure data centers, and on-site solutions can be placed on a company's internal network behind a firewall, ensuring the integrity and security of sensitive engineering data.
- **Help Center and Support:** Innoslate is committed to continually improving and providing support. Feedback can be submitted on the dashboard interface, the help center website is available 24/7 to help users with specific questions, and live support is provided during business hours by SPEC Innovations' support team.

The return on investment for Innoslate is greater than for IBM's DOORS/DNG because it's not just for requirements management, but includes a higher number of integrated features and a lower cost for equivalent functionality. These additional features and seamless updates to Innoslate provide more value compared to the cost of the tools.

Risks

Transitioning to a new platform like Innoslate introduces various risks that must be carefully evaluated against the potential benefits. At the same time, not transitioning also carries its own set of risks.

Risks of Transitioning:

- **Data Integrity:** Migrating large amounts of requirements carries the risk of data loss or changes. There's a chance that some requirements and their connections may not migrate as expected to the new environment due to a lack of compatible entity/attribute types.

- **Culture Change:** Programs and organizations may have well-established practices of modeling systems using IBM's DOORS/DNG. The culture change that will need to occur to implement Innoslate will be a challenge if there is opposition. People will range from being very open to being very closed off to the change. This will be a risk that should be handled case by case, but should be acknowledged and understood if the decision is made to transition to Innoslate.
- **Learning Curve:** Even though Innoslate's interface is much more intuitive and user-friendly than IBM's DOORS/DNG, it will take time to learn how to use the tool. The learning curve can be mitigated through proper training and access to resources.

Risks of Not Transitioning:

- **Loss of Competitive Edge:** Failing to transition to more advanced tools can leave an organization using outdated methodologies, potentially affecting its competitive edge and falling behind the power curve and competition.
- **Maintenance Overhead:** Older tools may require more effort to maintain, potentially causing compatibility issues with new systems or software.
- **Integration and Collaboration Setbacks:** Not transitioning may mean missing out on advanced collaboration features and integrations offered by new tools, which can improve user productivity and efficiency.
- **Security Risks:** New tools might have improved security features and receive regular updates to protect against the latest threats. By not transitioning, an organization may expose itself to increased cybersecurity risks.

Organizations must carefully assess and balance these risks against the potential benefits of transitioning to determine the best course of action.

When to Transition

Programs and organizations should ideally transition at a point that minimizes the risk and can maximize the benefits to them or when the potential future benefits outweigh current costs and risks. This will be different for every organization and program. The decision-makers will have to decide the best time and approach to initiating and executing the transition.

How to Transition

The following sections detail a proposed approach to performing the transition from DOORS/DNG to Innoslate.

Preparing to Transition

Transition preparations should establish a transition process that preserves data integrity and functionality. The following are recommendations to take into consideration when preparing and planning to transition:

- Establish training programs to train all necessary people on Innoslate.
- Form a migration team to coordinate and handle the strategy and planning for migrating all necessary existing requirements and data. The team should be composed of members with expertise in IBM's DOORS/DNG and Innoslate to ensure the integrity of the content being translated.
- Back up all of the data in IBM's DOORS/DNG in case the data needs to be reopened in IBM's DOORS/DNG at any point after the transition.
- Go through the requirements and data.
    - This will involve going through all of the data and identifying aspects such as how many modules there are, how many artifacts are in each module, whether there are any added attributes, whether there are any diagrams, etc.
    - Identify requirements and data that need to be migrated to Innoslate, and identify the old or unused ones that can be put into a repository to keep.
    - Clean up requirements and data to facilitate a cleaner migration. This may include removing any unnecessary data, ensuring standard naming and numbering conventions, etc.
    - Identify key data types that will need to be mapped to entities in Innoslate.
    - Determine any extensions that need to be made to the schema in Innoslate to capture all necessary data.
    - Define a data model in Innoslate that can capture the data from IBM's DOORS/DNG, similar to how it is stored there.

- Establish a Data Management Plan for the migration to outline how the requirements and data are handled during the migration to preserve the integrity and ensure the migration is completed without duplication or loss of information.
- Maintain and update documentation for the transition.

Migration

The migration of requirements and data will require exporting the data from IBM's DOORS/DNG, cleaning the data, and importing the data into Innoslate. Prior to importing the data into Innoslate, establish a mapping of IBM's DOORS/DNG element types and attributes to Innoslate (LML)'s entity classes and attributes. When necessary, extend LML to accommodate specific data in IBM's DOORS/DNG needed to maintain the integrity and functionality of the data. Once the files are exported, migrators must review the new entities and ensure the information is correct, accurate, and a good representation of the data from IBM's DOORS/DNG.

Though we aim for the migration between the tools to be as automated as possible, it still requires the migrator to map, move, and ensure the integrity of the data. Innoslate aids this process with its Import Analyzer, where various file types can be imported, and then the file data is automatically added as entities in Innoslate's database using a specified mapping.

After importing data into Innoslate, relationships can be established through additional imports or manual input, allowing the recreation of the data structure to mirror IBM's DOORS/DNG data model.

Approach

This section will summarize the approach and methodology to migrate the requirements and data from IBM's DOORS/DNG to Innoslate.

1. Review the requirements and data in either IBM's DOORS or IBM's DNG to understand the contents that need to be migrated.
2. IBM's DOORS and IBM's DNG differ in their export capabilities, so the following will be split into two sections: IBM's DOORS and IBM's DNG.

IBM's DOORS

Export the ReqIF files of the requirements migrating to Innoslate. The information for exporting ReqIF packages from DOORS can be found on the IBM website.

IBM's DNG

IBM's DNG has many different ways to create reports of the data in the tool. The following will go over a few of them.

- Export ReqIF files
  - For the ReqIF to process correctly when imported into Innoslate, it needs to be composed of Modules.
  - Defining and exporting ReqIF files can be accessed through the "Manage Component Properties" option on the project dashboard.
  - Create a new definition and add all modules that need to be exported.
  - Once the definition is created, use the options to export the ReqIF file.
- Export CSV files
  - Within a module, select each heading and requirement to be exported.
  - Use the in-line drop-down that each row has and select "Export X Artifacts...".
  - A pop-up will appear, and select "CSV" to download.
- Export DOCX files
  - Word (.docx) can be created as a report from within a selected module. Any attributes must be added to the view before the report is generated. Use the upper right drop-down to select "Create and Print Microsoft Word Document..."
  - A pop-up will appear to tailor the settings of the Word file. Have "Include attributes" selected to include all data from the view. Choose between "Module Layout" to have the data in a Table or Book format within the Word file.

The following will be split into three sections for importing the different data files into Innoslate.

ReqIF Files

- Exported ReqIF files are usually zipped into a .reqifz folder and must be extracted.
- Open Innoslate, navigate to the "Import Analyzer," and select the "ReqIF (.reqif)" tab.
- Follow the steps to import the ReqIF file. There is a tab to configure and customize the field mappings from the ReqIF to Innoslate's entity attributes.

CSV Files

- Open the downloaded .csv file.
- Delete the rows containing METADATA at the bottom and edit each of the columns to map to entity attributes in Innoslate.
- Save the file.
- Open Innoslate, navigate to the "Import Analyzer," and select the "Excel (.csv)" tab.

- Follow the steps to import the CSV file. There is a tab to configure and customize the field mappings from the CSV columns to Innoslate's entity attributes.

Word Files

- For Table:
  - The exported Word file will contain a table where each artifact that was in the exported module is a row in a table. Copy this table and paste it into a new Excel file.
  - Edit each of the columns to map to entity attributes in Innoslate.
  - Save the file as a .csv file format.
  - Open Innoslate, navigate to the "Import Analyzer," and select the "Excel (.csv)" tab.
  - Follow the steps to import the CSV file. There is a tab to configure and customize the field mappings from the CSV columns to Innoslate's entity attributes.
- For Book:
  - The exported Word file will contain additional information at the beginning of the document followed by a section of each artifact in the exported module. The main focus is importing the requirements so the additional information at the beginning can be deleted along with any headers and footers. Ensure that headings have the correct heading format applied. Apply the numbered list format to each of the requirement lines.
  - Save the file.
  - Open Innoslate, navigate to "Import Analyzer," and select the "Word (.docx)" tab.
  - Follow the steps to import the DOCX file. Select to import the entities as the Requirement entity class.

More detailed step-by-step guides are available for each of the above processes upon request.

V&V

Once the requirements and data migration are complete, migrators must verify that the implementation of the requirements and data in Innoslate replicates and emulates the requirements and data in IBM's DOORS/DNG.

Verify that the migration was performed correctly and that all data is correct and complete.

Objective: To compare the original and migrated data to ensure that the Innoslate data are consistent with the original data in IBM's DOORS/DNG and are complete.

Since the comparison is between data in two separate tools, it will be done manually by checking that the data are consistent and complete.

Validate that the migrated data preserves functionality and integrity.

Objective: To confirm that the migration was accurate and that the Innoslate data are true to the original data in IBM's DOORS/DNG in terms of functionality and design.

Use methods for comparison to validate the functionality of the migrated data with users.

These are examples of the V&V that should be done to ensure that the migrated data is as close to the original as possible while preserving the functionality and integrity of the data.

Impact of Transition

This section discusses the impact of transitioning from IBM's DOORS/DNG to Innoslate on an organization, its personnel, methodologies, and the industry, and how the technology can help shift the paradigm.

Transitioning will have a significant impact on the entire organization, including users, teams, and workflows. This shift will bring about a cultural change as systems engineers, project managers, and support staff adapt to new functionalities and methodologies. Systems engineers and requirements engineers will need to adjust their daily workflows to accommodate their practices to Innoslate's features. Project managers will need to reevaluate timelines and deliverables to account for the changes brought about by the transition. Support staff may face an increased volume of questions and inquiries as users navigate the new tool.

Transitioning will require a well-structured training and support

program. Comprehensive training modules tailored to address specific skill gaps and to familiarize users with Innoslate are critical. These modules should cater to various user roles and expertise levels. Ongoing support will also play a critical role in the success of the transition, providing users with the necessary resources and assistance as they acclimate to the new system.

The introduction to Innoslate may necessitate changes in the existing toolchain or digital ecosystem. Integrations with other software tools will need to be thoroughly assessed and potentially reconfigured to ensure seamless interoperability. Ensuring that Innoslate integrates well with other software is crucial for maintaining the overall functionality and efficiency of the requirements engineering and systems engineering processes.

Management must anticipate a learning curve that may initially reduce productivity and efficiency for engineers. The transition period will require careful monitoring and management to minimize disruptions. Project managers need to consider the impacts on cost, schedule, and performance for the organization, program, or project as engineers are working towards proficiency with Innoslate. The learning curve for engineers should be closely monitored, with defined milestones and measures of performance to track progress. As proficiency with Innoslate increases, productivity is expected to recover and potentially surpass previous levels due to the enhanced capabilities of the new system.