

# DIGITAL ENGINEERING FOR HABWORLDS

Requirements Tracking, AI Applications, and  
Filesharing/Modeling Environment Discussion

H A B I T A B L E  
W  R L D S  
O B S E R V A T O R Y

**BACKGROUND**

# AGENDA

Today, talking about three areas of collaboration and/or new tools available to the team:

- Intro 5 mins
- Requirements tracking through two competing commercial tools 10 mins
- Applications for AI 10 mins
- File sharing & Mission Cloud Platform (with demo) 15 mins
- Questions Balance of allotted time

# BACKGROUND

New role within HWOTM: Digital Architect, meant to help the program set up and execute digital engineering ONLY as appropriate for mission success

- Reports directly to the Systems Engineering team

- First principles look at engineering, collaboration, & communication requirements

- Analysis of alternatives presented to the MSE and project team for decisions

Current Digital Architect: Jason Derleth, GSFC; Deputy: Erik Bailey, JPL

# HWO IS A MULTI-FACETED PARTNERSHIP

Large team across government, industry, and academia

Multiple decades of development

Complex observatory structure

HWO needs to address teaming and collaboration infrastructure directly, from the beginning, to ensure an environment that works for everyone, regardless of institution

Additional help from advanced design and the application of new tools could benefit the project in ways we cannot anticipate today

**Note no decisions on platforms or programs have been made; the discussion**

Two Requirements Tracking Tools for Habitable Worlds Observatory

Jason Derleth, Chief Technologist for PhysCOS/COR programs

# **REQUIREMENTS TRACKING WITH DOORS / JAMA CONNECT**

# HWOTM NEEDS & WANTS (DRAFT)

## Needs:

- Ability to track & link requirements
- Automated reports representing requirements from different orgs
- Easy access by different orgs

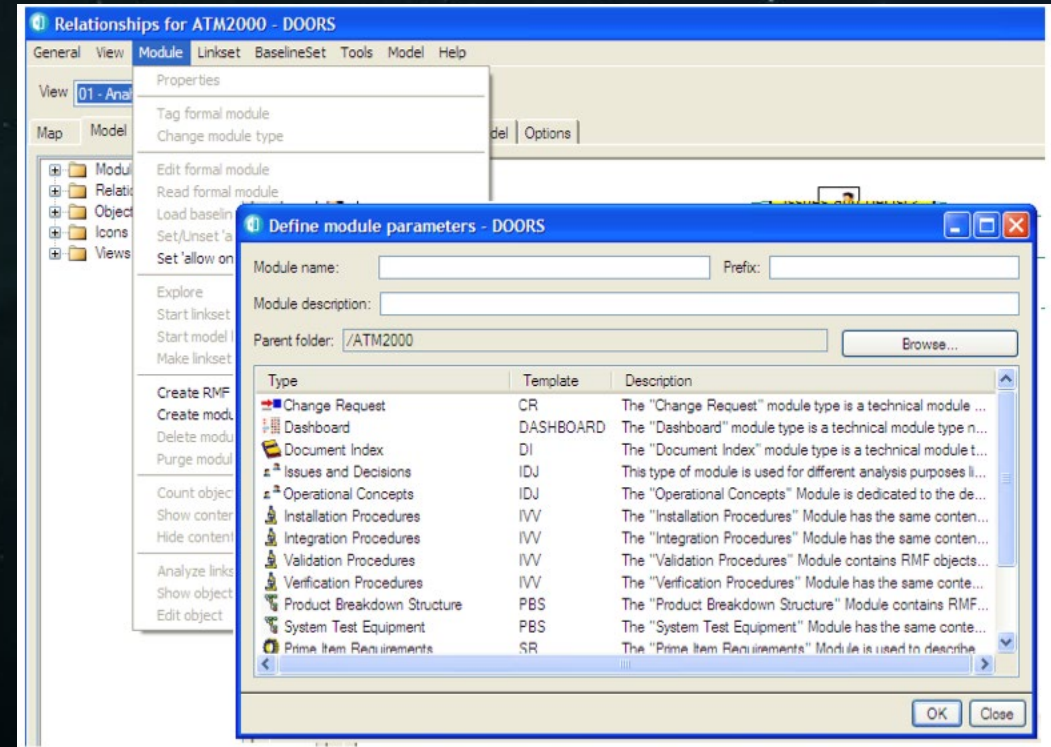
## Wants:

- Easy interface
- Inexpensive
- Ability to integrate with existing tools, processes
- “Ready to go” package – i.e., few mods needed
- Already familiar to systems engineering teams

# DOORS – PURPOSE AND FEATURES

IBM DOORS is a requirements management tool designed to capture, trace, analyze, and manage changes to requirements, particularly in complex and high-compliance environments. Supports the entire product development lifecycle, including traceability from requirements through testing. DOORS Next Generation is web-based and has more collaboration features.

- Offers structured requirements specification modules and multi-level traceability.
- Supports change and configuration mgmt, version control, impact analysis.
- Allows for reuse of engineering work by managing product versions and variants.

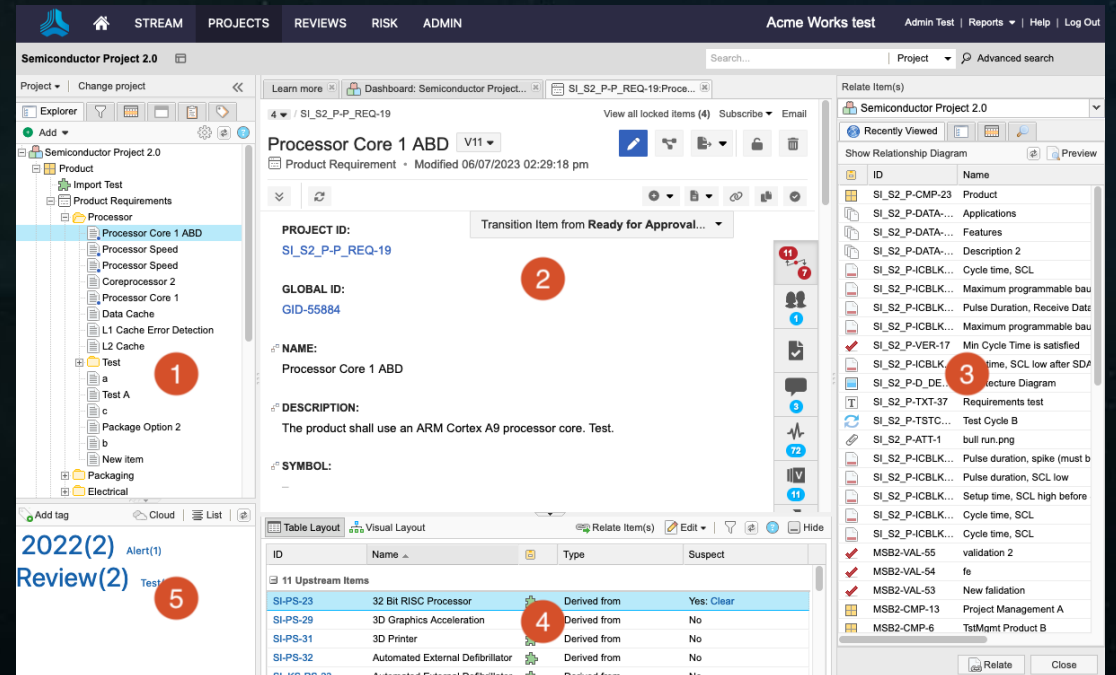


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# JAMA CONNECT – PURPOSE AND BENEFITS

Jama Connect is a modern requirements management platform that also supports risk management and testing. It is designed to facilitate collaboration among teams and stakeholders throughout the product lifecycle.

- Offers real-time traceability and collaboration, allowing teams to work with the latest data and reduce risks.
- Provides templates and predefined settings to streamline the requirements management process.
- Includes a built-in test management module, enhancing integration with testing processes.



<https://help2.jamasoftware.com/ah/en/get-started/exploring-the-jama-connect-workspace.html>

# DOORS DRAWBACKS

User interface outdated, complex

Lacks robust collaboration features

- May require additional staff to manage collaboration
- Might be addressed by using DOORS Next, a web-based version

High cost of ownership

JPL no longer uses

# JAMA CONNECT DRAWBACKS

## New User interface

- Some people complain of a steep learning curve

## Connectivity can be difficult to implement, manage, can be slow

- Managing login, servers, challenging to connect through NASA network

## Limited customization options

## Lack of defined paid plans reduces cost transparency

## Potential scalability issues (limitations on number of requirements that can be effectively managed in the database\*)

## GSFC has not used

- Will have significant startup costs, learning curve

\*Jama says that above a “typical usage” profile, some functions will experience performance issues;  
See [backup chart](#) for more information about this from Jama Connect

## RECOMMENDATION: COMMUNITY SHOULD DEBATE

Jama Connect has better collaboration; though not currently used at Goddard, the expected interactivity of the Systems team with the Coronagraph team requires a strong collaborative environment

The Jama Connect web-based system can likely be hosted on Luna

Main issues are slowdown impacts for large projects, cost, accessibility, and Systems team learning curve

DOORS Next improves collaboration options

DOORS itself can address issues, with customization, time, and cost

Both GSFC and JPL are familiar with DOORS

From a GSFC 700 Rep

# AI APPLICATIONS FOR HWOTM

Filesharing and Integrated Modeling Environment

Aaron Comis

# **INTRODUCTION TO THE LUNA ENVIRONMENT**



**BACKUP**

# JAMA "ABOVE TYPICAL USAGE" IMPACTS TABLE<sup>1</sup>

| #  | Function                   | Typical Usage Profile | Concurrent Users > Typical Usage | Item Volume > Typical Usage |
|----|----------------------------|-----------------------|----------------------------------|-----------------------------|
| 1  | View item in project       |                       |                                  |                             |
| 2  | Comment on item            |                       |                                  |                             |
| 3  | Create / edit item         |                       |                                  |                             |
| 4  | View Traceability          |                       |                                  |                             |
| 5  | Search for item(s)         |                       |                                  |                             |
| 6  | Batch Edit / Delete items  |                       |                                  |                             |
| 7  | Move item(s) in tree       |                       |                                  |                             |
| 8  | Participate in a Review    |                       |                                  |                             |
| 9  | Reuse Items                |                       |                                  |                             |
| 10 | Create Test Cycles & Runs  |                       |                                  |                             |
| 11 | Create baselines           |                       |                                  |                             |
| 12 | Export data to documents   |                       |                                  |                             |
| 13 | API scripts / integrations |                       |                                  |                             |
| 14 | Dashboards                 |                       |                                  |                             |

<sup>1</sup> Table from Preston Mitchell, JAMA Staff member

<https://community.jamasoftware.com/discussion/23293/jama-performance-in-enterprise-recommendations-for-system-administrators>