intercax

DIGITAL THREAD CONFERENCE 2025

Sep 10-11, 2025, | Virtual (MS Teams)

Detailed Agenda

intercax

Day 1 – Sep 10, 2025 (Wed)

Detailed Agenda with Abstracts

10:00 – 10:30 US EDT | Day 1 – Sep 10, 2025

Welcome to the Digital Thread Conference 2025

- **Speaker**: **Manas Bajaj**, Chief Systems Officer, Intercax
- **Abstract**:

Welcome to the 2nd Annual Digital Thread Conference 2025! This welcome address will share details on the conference format, logistics, and agenda. We hope to make this event successful for everyone.

10:30 – 11:00 US EDT | Day 1 – Sep 10, 2025

Business Value of Digital Threads for Integrated Digital Engineering and Digital Twins

- **Speaker**: **Dirk Zwemer**, CEO, Intercax
- **Abstract**:

No matter how intriguing a new technology is, prospective adopters must usually persuade management of its business value. Dr. Dirk Zwemer, CEO of Intercax, will offer some potential approaches to making that case for digital threads.

Advancing an MBSE Method with SysML v2

- **Speakers**: **Sanford Friedenthal**, SysML v2 Lead (OMG), Owner (SAF Consulting)
- **Abstract**:

SysML v2 is the next generation systems modeling language that is intended to support the evolving practices of MBSE to deal with increasing system complexity and the need to more rapidly respond to change. SysML v2 significantly enhances precision, expressiveness, consistency, usability, interoperability, and extensibility, compared with SysML v1. It offers both textual and graphical representations that enhance system understanding. It provides a standard API with a set of services to help navigate, query, and update the model and enable interoperability across tools and models throughout the system lifecycle.

The object-oriented systems engineering method (OOSEM) leverages SysML v1 as a modeling language to provide an MBSE method to specify, architect, analyze, and verify systems. OOSEM applies a scenario-driven decomposition approach coupled with the principle of separation of concerns to develop the system model. This presentation provides an overview of how SysML v2 is being leveraged by OOSEM to provide more efficient modeling and improved traceability across the system model. This work is being done as part of a collaborative effort between the OMG Systems Modeling Community (SMC) and the INCOSE OOSEM Working Group.

Digital Engineering for Smart Knee Systems – From Silos to Digital Threads with SysML v2

- **Speakers**: **Kristina Carroll**, Director of Product Development, Studio SE
  Rose Yntema, Lead Digital Thread Applications Engineer, Intercax
  Kenneth Naylor, Digital Thread Applications Engineer, Intercax



- **Abstract**:

A Smart Knee System is a digitally enhanced orthopedic solution designed to improve knee joint performance for replacement surgery, rehabilitation, and continuous patient monitoring. Equipped with embedded sensors and connectivity, the Smart Knee continuously collects data on load distribution, alignment, wear, and movement — providing valuable feedback for patients, surgeons, and care teams. As a modern cyber-physical system-of-systems, it combines hardware, software, data, communication, and mobile applications that must be developed and managed with integrated digital engineering best practices.

This presentation demonstrates a practical example of digital engineering of Smart Knee systems where silos of engineering disciplines and models are connected by a live digital thread in the Syndeia platform resulting in accelerated development, integrated analyses, hardware-software integration, increased adaptability to changes, and reduced risk of project rework. Dashboards and Pipelines enabled by digital threads support live project tracking and workflow automation.

Continued on next page…

This presentation will showcase both SysML v1 and SysML v2 models of Smart Knee system architecture, connected with models and data in other disciplines, such as hardware design (CAD/PLM), software modules (ALM), project management, requirements, simulations, and risk management — all configuration-managed in distributed enterprise repositories.

SysML v2 brings harmonized semantics for modeling system structure, behavior, and requirements; stronger consistency; and a standard API for supporting digital threads. The SysML v2 variant of the Smart Knee digital thread will leverage the SysML v2 API integration in the Syndeia platform. By demonstrating both SysML v1 and SysML v2 approaches, participants will gain insight into the tangible benefits of upgrading digital engineering practices as modeling languages and tools mature.

By the end of this presentation, the audience would have learned about:

Smart Knee system architecture model in SysML v1 and SysML v2, the advantage of transitioning to SysML v2 for improved consistency, traceability, and cross-domain collaboration with system architecture.
Live digital threads connecting Smart Knee system architecture (SysML v1 and v2 models) with hardware, software, analyses, requirements, projects, and other models and data.

intercax

Day 1 – Sep 10, 2025 (Wed)

Lunch Break : 12:45 – 13:15 US EDT

Application of Model-based Approaches for Earth Observation Missions


- **Speaker**: **Christopher Delp**, Group Supervisor, Systems Solutions Engineering Group, NASA JPL
  Fatma Karagoz, Systems Engineer**,** NASA Jet Propulsion Laboratory (NASA JPL)

- **Abstract**:

As Earth-observation missions increase in complexity, managing risk and coordination become more complex, particularly for international teams. Traditional paper-based systems can cause delays and design inconsistencies, increasing the risk of discovering issues late in the process when any required changes would be more difficult, which could also be more expensive. Presentation reviews the key technologies, challenges, and benefits associated with adopting model-based approaches, with specific insights from the SBG-TIR project, and encourages wider adoption of models for managing the growing complexity of Earth-observation missions. This approach enhances confidence in requirements development and enables early detection of potential design risks through scenario-based analyses and simulations. By applying a model-based analysis framework, the team maintained a clear link between system requirements, design elements, and validation processes, thereby mitigating risks and improving project efficiency.

Establishing and Maintaining Digital Threads in Support of Digital Engineering Strategies

- **Speakers**: **Greg Opas**, Principal Systems Engineer**,** Oceaneering

- **Abstract**:

In response to the DoD Digital Engineering Strategy, and more recently to contractual requirements that have become typical in years since its release in 2018, Oceaneering Technology has undertaken a holistic approach to refinement and execution of a Digital Engineering Strategy in support of ongoing and future work in the government sector. Internally referred to as the Digital Engineering Execution Plan (DEEP), this strategy centers around the utilization of Syndeia as a central capability to the establishment and maintenance of Digital Threads. As a system integrator, in accordance with the further guidance implied within DoDI 5000.97, an extraction of Digital Threads are frequently being required to be packaged and delivered as part of a Digital Twin, along with a certified integrated system of systems comprised of deployable hardware, software, and support equipment.

Our presentation will focus on the establishment and maintenance of Digital Threads that trace from customer supplied and regulatory requirements and core attributes, defined and related to architectural elements as SysML content in Cameo, and subsequently defined by 3D geometry in SolidWorks models, calculable system schematics within Automation Studio, and textual graphic content within dynamic Confluence pages capturing design evolution and history.

Continued on next page...

14:00 – 14:45 US EDT | Day 1 – Sep 10, 2025

Significant emphasis will be made on the establishment and maintenance of relationships between JIRA epics, tasks, and subtasks defining test events, procedures, instructions, results, and reporting. These relationships are intended to close the loop between definition and design to validated requirements, and verification that any/all requirements are demonstrably satisfied by the system as delivered and eventually maintained throughout it's lifecycle.

intercax

Day 1 – Sep 10, 2025 (Wed)

Virtual Coffee Break: 15:30 – 15:45 US EDT

Custom Project Dashboards and Metrics powered by Digital Threads

- **Speaker**: **Dirk Zwemer**, CEO, Intercax
  Gregory Seeds, Senior Product Development Engineer, Intercax

- **Abstract**:

Digital thread technology enables project managers to obtain a holistic, near-real time view of project cost, schedule and risk, but the challenge is extracting actionable information from an enormous data set. The presenters will demonstrate how critical project metrics can be readily generated and reported using the Syndeia REST API via Jupyter notebook scripts, digital pipelines and custom dashboards.

Blazing fast Syndeia - From 0 to Live Digital Thread Dashboards in 30 mins

- **Speakers: Team Intercax**
- **Abstract:**

Syndeia is designed for scale and speed. Watch Team Intercax start a new project and generate digital threads rapidly, connecting models and data distributed across repositories – system architecture, requirements, hardware and manufacturing, software, verification, simulation, and others. In under 30 mins, you will see digital threading, live dashboards, seamless graph navigation and queries across your data repositories, baselining and configuration management of digital threads, and reports for decision makers. The goal of this presentation is to demonstrate how quickly users can start building digital threads from their existing model/data repositories, and take advantage of digital thread analytics and reports for tracking program/project cost, risk, and schedule.

Closing Day 1 - Summary of Day 1 and Agenda for Day 2

- **Speaker**: **Lonnie VanZandt**, Principal Solutions Architect, Intercax
- **Abstract**:

The closing presentation for Day 1 will provide a summary of all the presentations on Day 1 and a quick look at the agenda for Day 2.

intercax

Day 2 – Sep 11, 2025 (Thu)

Detailed Agenda with Abstracts

10:00 – 10:15 US EDT | Day 2 – Sep 11, 2025

DTC25

Welcome to Day 2 of Digital Thread Conference 2025

- **Speaker**: **Lonnie VanZandt**, Principal Solutions Architect, Intercax
- **Abstract**:

Welcome to Day 2 of Digital Thread Conference 2025. This welcome address will share highlights from Day 1 and details about the Day 2 agenda and address any questions from the audience.

So, you have a Digital Thread. Now what?

- **Speaker**: **Chris Schreiber,** Chief Engineer, Information Technology & Digital Enablement (IT&DE), Lockheed Martin Space
- **Abstract**:

Digital Thread technologies play a critical role in many industries enabling enterprises' ability to better design complex systems more quickly, with higher quality. This presentation will cover Lockheed Martin Space's approach to Digital Thread, its motivations and new challenges from experience leveraging Digital Thread technology to enable its enterprise. Of particular focus, it will cover what Digital Thread means to LM Space, new capabilities it enables, new roles and considerations for adopting enterprises, and challenges that need to be met to fully realize the potential of its vision.

The LM Space Model Based Enterprise Team is working to deliver a collaborative engineering ecosystem & infrastructure to provide seamless data flow throughout the lifecycle and to cultivate a culture of transformation – focused on user experience and business value.

LM Space is leveraging Syndeia for enabling digital threads in their integrated digital engineering infrastructure. The presentation will share the value of Syndeia's digital thread capabilities and integration APIs for scalable and end-to-end digital engineering.

NASA's Digital Engineering Strategy

- **Speakers**: **Terry Hill**, Digital Engineering Program Manager, Office of Chief Engineer (NASA HQ), NASA

- **Abstract**:

To enable the National Aeronautics and Space Administration (NASA) to take on larger, more complex science and exploration missions and continue to effectively engage and collaborate with domestic industry and international partners, the Agency must undertake a transformation to modern integrated Digital Engineering (DE) including Model-based Systems Engineering (MBSE). This presentation briefly covers NASA's journey in understanding what Digital Engineering transformation means for the Agency, the benefits of this transformation, and NASA's Digital Engineering strategy with new ways of integrating, managing, sharing and leveraging information to realize the benefits and capabilities.

Wiring the future: Digital Threads for complex aerospace and defense systems

- **Speakers: Janna Kamenetsky**, Director, Digital Engineering / MBE Pillar, Raytheon Intelligence & Space RTX
  Manas Bajaj, Chief Systems Officer, Intercax

- **Abstract**:

Today's complex systems cannot be built in silos. If software drifts from hardware, or they are both disconnected from system architecture, requirements, and verification, or test data never reaches sustainment, we risk cost overruns, delays, and mission failure.

At RTX, we leverage integrated digital engineering and digital threads to transform this chaos into coherence, integrating models, tools, and data across disciplines and lifecycles. Digital threads are critical to maintaining consistency, traceability, and agility across the lifecycle. DoD Instruction 5000.97 mandates the use of digital threads and digital twins to drive data-informed decisions across the lifecycle of defense systems.

In this presentation, we will demonstrate key use cases for integrated digital engineering using a representative system-of-system challenge problem with a mix of engineering tools to demonstrate a vendor-neutral and enterprise-scale digital thread approach.

Continued on next page...

The presentation will leverage the Syndeia digital thread platform for demonstrating digital thread generation (connecting models across tools), navigation and visualization, change impact analysis, dashboards with project metrics, digital thread configuration management, and automation of workflows. Representative tools will include but not limited to: Cameo and Teamwork Cloud (SysML-based system architecture), Windchill/Creo (PLM/CAD), Jira and Confluence (Project tracking), TestRail (Verification), DOORS NG (Requirements), and GitLab (Software/ALM).

During this presentation, the audience will learn about:

1. Converting disconnected models and tools into a live, navigable digital thread that evolves with your system.
2. Digital engineering use cases, from change impact analyses and configuration management to live project dashboards, that can be realized with digital threads.
3. Examples of scaling and automating digital engineering workflows with pipelines.
4. Implementing a vendor-neutral digital thread architecture that connects engineering data across disciplines, tools, and lifecycle stages—aligned with DoDI 5000.97.

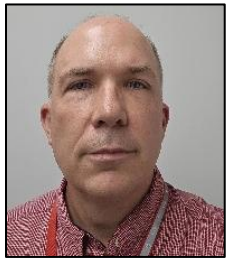
- **Keywords:** Digital Engineering, Digital Thread, DoDI 5000.97, Systems, Hardware, Software, Verification, Dashboards, Metrics, Integration, MBSE/MBE, APIs, Scalability.

intercax

Day 2 – Sep 11, 2025 (Thu)

Lunch Break : 12:30 – 13:00 US EDT

Unifying Systems, Design, Simulation, and Verification with Digital Threads



- **Speaker**: **Jeffery Fischer**, Systems Engineering Manager, Leonardo DRS
  Lonnie VanZandt, Principal Solutions Architect, Intercax

- **Abstract**:

Engineering mission-critical hardware and software systems requires seamless coordination across disciplines—systems modeling, hardware design (MCAD/ECAD), Engineering and Manufacturing BOM (PLM), simulation, and verification. Yet these domains often operate in silos, using a mix of commercial and custom tools. A live, vendor-neutral digital thread is essential to connect these disciplines and accelerate development, automate workflows, as well identify and resolve hotspots for project cost, risk, and schedule.

Leonardo DRS is building cutting-edge next-generation systems and payloads with complex hardware and software that require integrated digital engineering with live digital threads replacing point-to-point custom integrations and workflows. Leonardo DRS is leveraging Syndeia to serve vendor-neutral enterprise-scale digital threads as an operational backbone uniting models, data, and decisions across the lifecycle.

Continued next page...

This presentation leverages Syndeia as a digital thread platform to coordinate model transforms and to manage a live digital thread between systems architecture (SysML/Cameo), mechanical design (Creo, Windchill), simulations (Simulink), project management (Jira), and home-grown analyses (Excel as a representative). We will demonstrate how models in one tool can be used to generate models in other tools and generate digital threads, tracking and synchronization of changes using the digital thread, and live navigation and visualization of digital thread graphs. The presentation will also showcase workflow automation using Syndeia pipelines to schedule tasks and generate reports, and live dashboards to track projects metrics for all stakeholders.

- **Keywords:**

Digital Thread, Systems, Hardware, Software, Mechanical, Electrical, Simulation, Verification, Dashboards

13:45 – 15:00 US EDT | Day 2 – Sep 11, 2025

Industry Panel Discussion "Digital Engineering - Drivers, Opportunities, Challenges, Infrastructure, and AI"

- **Speakers**: **Terry Hill**, DE Program Manager, Office of Chief Engineer, NASA
  Casey Medina, President, Studio SE
  Greg Opas, Principal Systems Engineer**,** Oceaneering
  Aaron Comis, Senior Digital Transformation Architect, Aero Corp




- **Abstract**:

This panel will include industry leaders sharing a 360-degree perspective on digital engineering in their respective organizations and industry verticals. Example topics include:

- Business Drivers for Digital Engineering
- State of adoption of Digital Engineering
- Biggest opportunities for Digital Engineering
- Technical capabilities that will be game changers and tipping points
- IT Infrastructure - Is it ready to scale Digital Engineering?
- Workforce - Is it trained to harness Digital Engineering?
- AI - How is your organization leveraging AI to accelerate Digital Engineering?

intercax

Day 2 – Sep 11, 2025 (Thu)

Virtual Coffee Break: 15:00 – 15:15 US EDT

Syndeia Roadmap - Models, Threads, Intelligence, and Dashboards

- **Speakers**: **Manas Bajaj**, Chief Systems Officer, Intercax
- **Abstract**:

Syndeia has made significant progress since its initial release in 2014. That's right, it's been 11 years of continuous innovation. In this presentation, we will discuss our vision for Syndeia, with a focus on the Syndeia roadmap and important capabilities planned for future releases. Additionally, we will share recent trends in digital engineering and insights gained from user adoption.

16:30 – 17:00 US EDT | Day 2 – Sep 11, 2025

Attendees Q&A + Closing the Digital Thread Conference

- **Speakers**: **Lonnie VanZandt,** Principal Solutions Architect
  Manas Bajaj, Chief Systems Officer, Intercax

- **Abstract**:

Goodbyes are never easy. The closing presentation for the Digital Thread Conference 2025 will provide a summary of Day 2 presentations and address any open questions from the audience. We will also share plans on strengthening the engagement with the Syndeia user community.

For questions

Contact us at dtc25@intercax.com or info@intercax.com