IHE & SysML/MBSE – Moving from Doc to Model Centric

considering

Unity Consulting’s MBSE 2021.03.25 Webinar Perspectives
IHE TF Development Process – 20+ Years On!

Consider:

✓ IHE’s TF Development process is rooted in life 20+ years ago (Document Centric)
✓ To support more complex heterogeneous SES MDI environments ...
  The IHE processes must align with state-of-the-art
  MedTech product development tools & processes
  supporting the Total Product Lifecycle
✓ Recognizing there is a tension between ...
  SysML / MBSE (OMG’s Systems Modeling Language &
  Model Based System Engineering)
  TDD / ATDD / BDD (Test / Acceptance Test / Behavior Driven
  Development – agile methods)
✓ Safety Critical / “regulatory submission ready” IHE solutions must include MBSE
MBSE @ Unity: Serendipitously Timely Webinar!

MBSE – Master Complex Development More Easily

25.03.2021
MBSE @ Unity: Complexity @ Autonomous Systems

The Need for Systems Engineering
Complexity of development is increasing exponentially

- Autonomous Care
- Guided Care
- Assisted Care
- Clinical Information Visualization
- Information Availability in IT-Systems
- Stand-alone Medical Devices

Stand-alone Devices

Automation

Data Analytics

Development processes improve linearly

Gap

Time

MedTech

JHU/APL MDIRA Objective

Reality for SDC/SDPi Ecosystems
To help MedTech developers adopt / implement / support IHE-based technologies...
TPL development costs must be directly impacted.
MBSE @ Unity: From Doc to Model-Based SE

Document-based vs. Model-based approach

IHE 20+ Year History ...

IHE Model-based Source of Truth!

Traditional systems engineering

Model-based systems engineering

Madni et al. 2019
“Requirements Interoperability” (incl. ReqIF) is a primary focus for Gemini SDC/SDPi+FHIR project today.
IHE TF Development Process – 20+ Years On!

Conclusions:
✓ MBSE / SysML hits at the core value propositions for the IHE MedTech community
✓ “Interoperable” MBSE / SysML is a “futures” proposition ... but we can start today
✓ Requirements Interoperability is a “safe” next step
✓ “Model Repositories” as IHE TF Artifacts represent a “single COMPUTABLE source of truth”
✓ MBSE can lower the cost-barrier-of-entry for the adoption / implementation of IHE-based solutions ... starting with the development costs at the earliest stages of design
✓ Unity: “The main function of SE is to facilitate communication!”

IHE TF Solutions are 100% about ... COMMUNICATION!

Challenge:
➢ MedTech Developers cannot / will not do the heavy lifting – research! – to get critical mass on Interoperable MBSE / SysML artifacts ... Catalytic project support necessary!