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Nouveau nom d'AIP-PRIMECA
Systems Manufacturing Academics Resources Technologies



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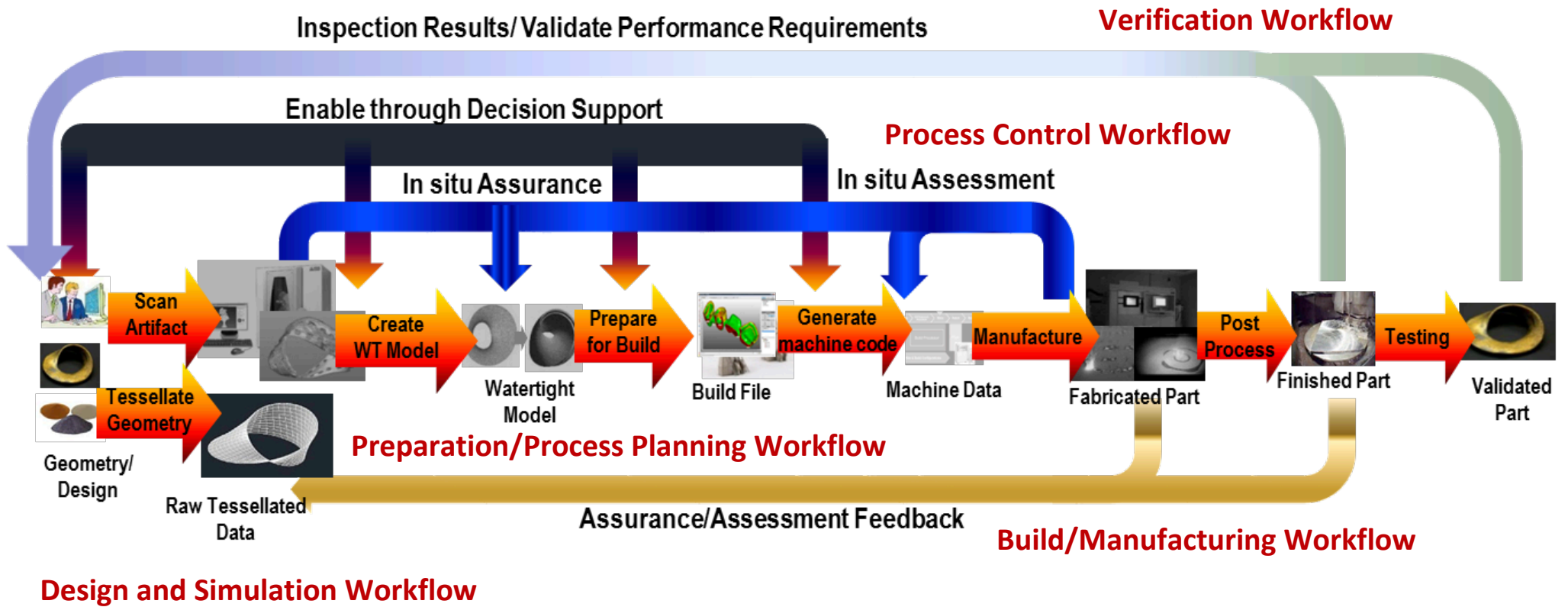
AFNeT Standards Days

Additive Manufacturing

Nabil Anwer, Paris-Saclay University

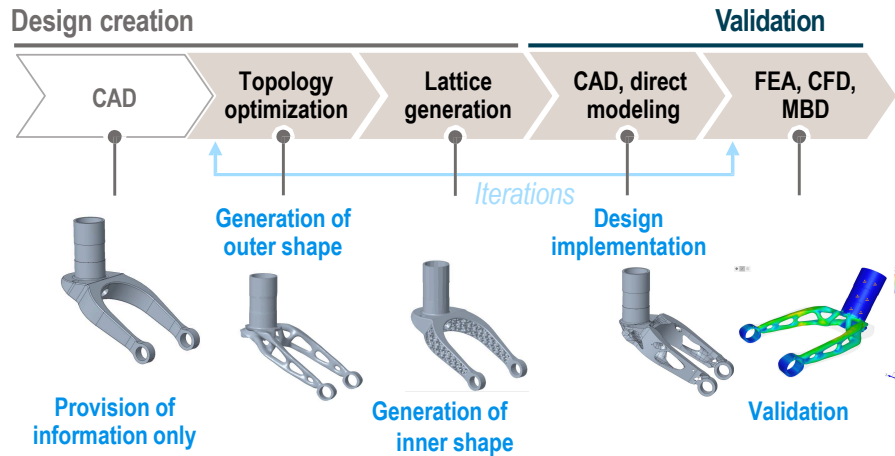
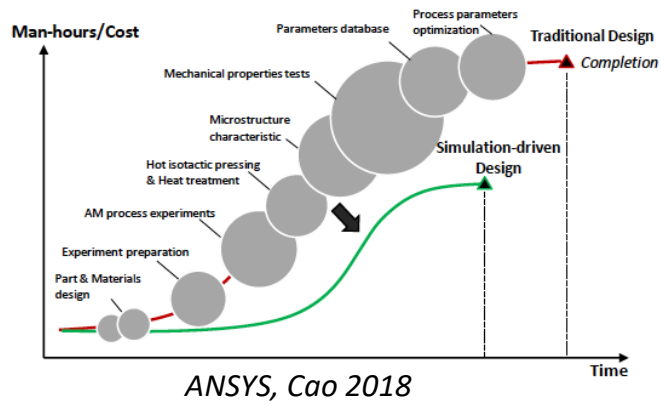
<http://standardsdays.afnet.fr> - AFNeT Standards Days 2020 : 6 & 7 October 2020

Additive Manufacturing : Process, Digital Thread and Workflow



Source: Kim, D. B., Witherell, P., Lipman, R., & Feng, S. C. (2015). Streamlining the additive manufacturing digital spectrum: A systems approach. Additive Manufacturing, 5, 20-30.

Simulation-Driven Design

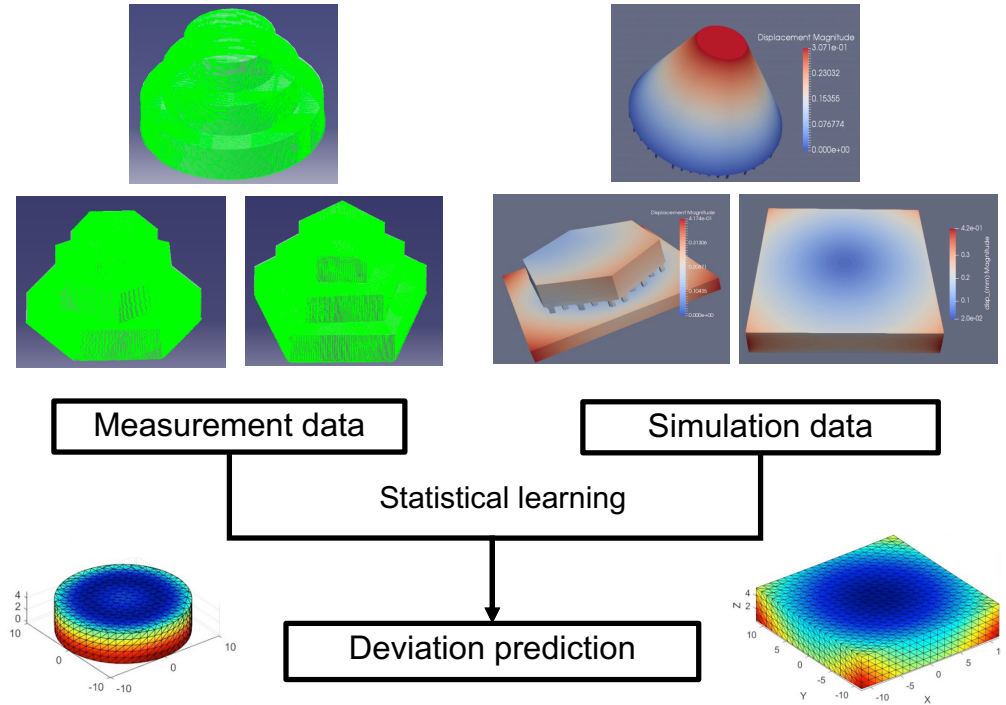


Source: Roland Berger

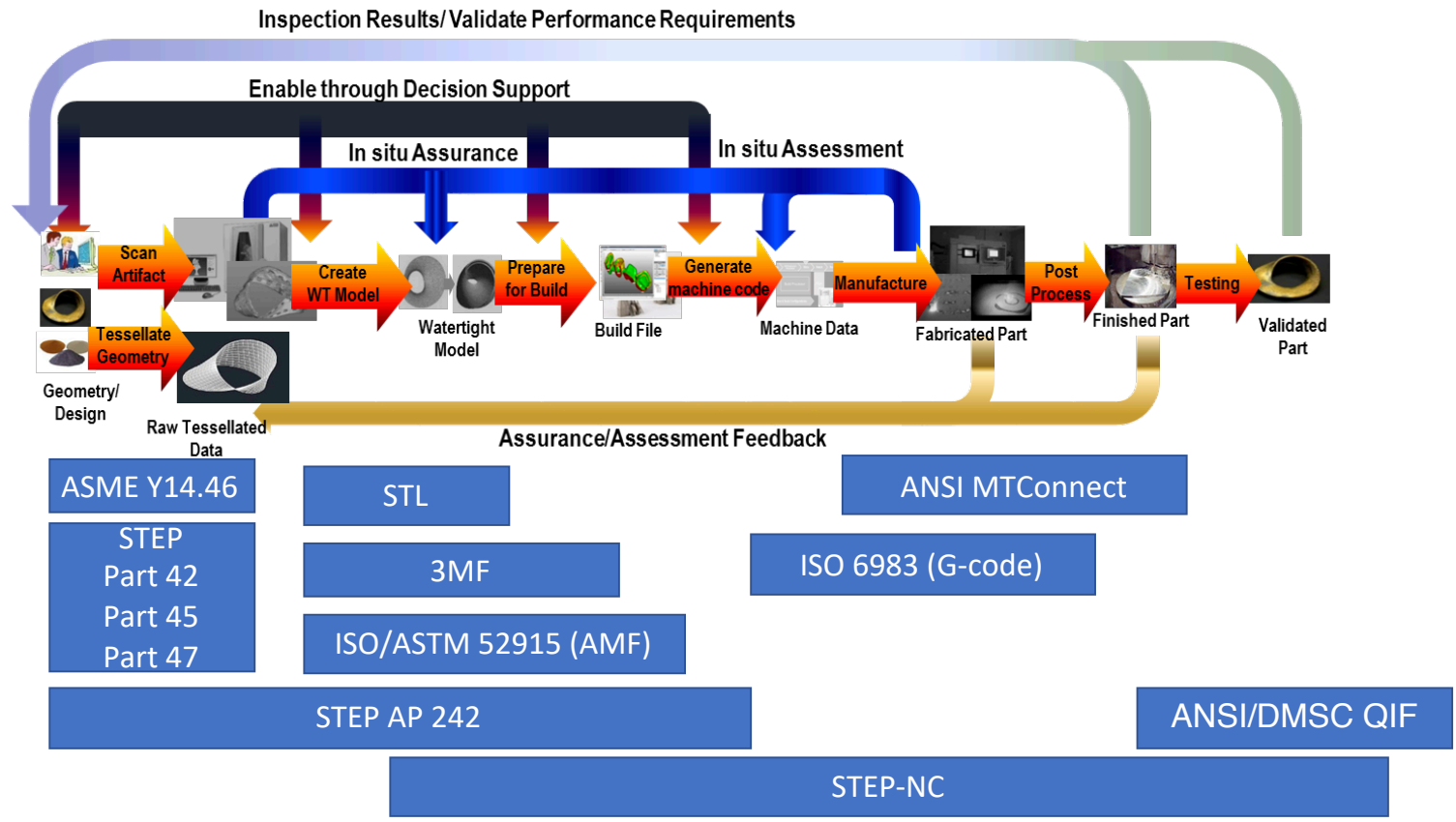
Source: Generating the Digital Thread for Backlogged Parts that Lack TDP, MBE Summit 2019

Source: Z.Zhu, Skin Model Shapes for Additive Manufacturing, Z. Zhu, PhD Thesis, 2019

Measurement/Simulation-Driven Quality Control



Additive Manufacturing: Formats and Standards Landscape

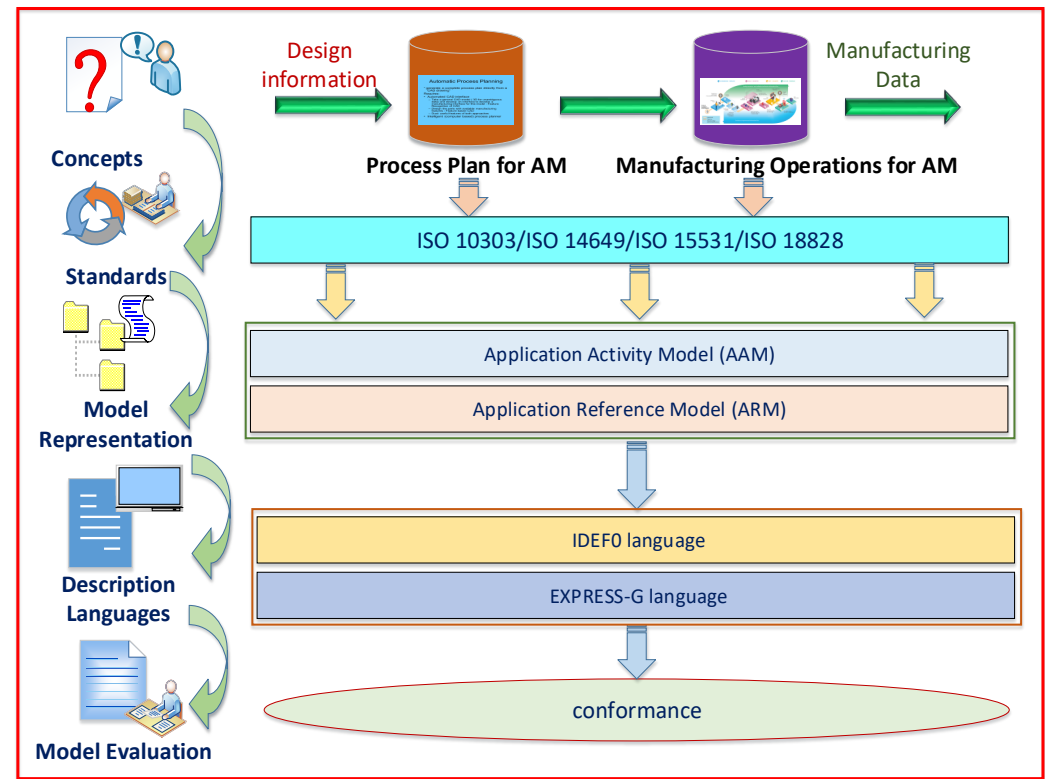
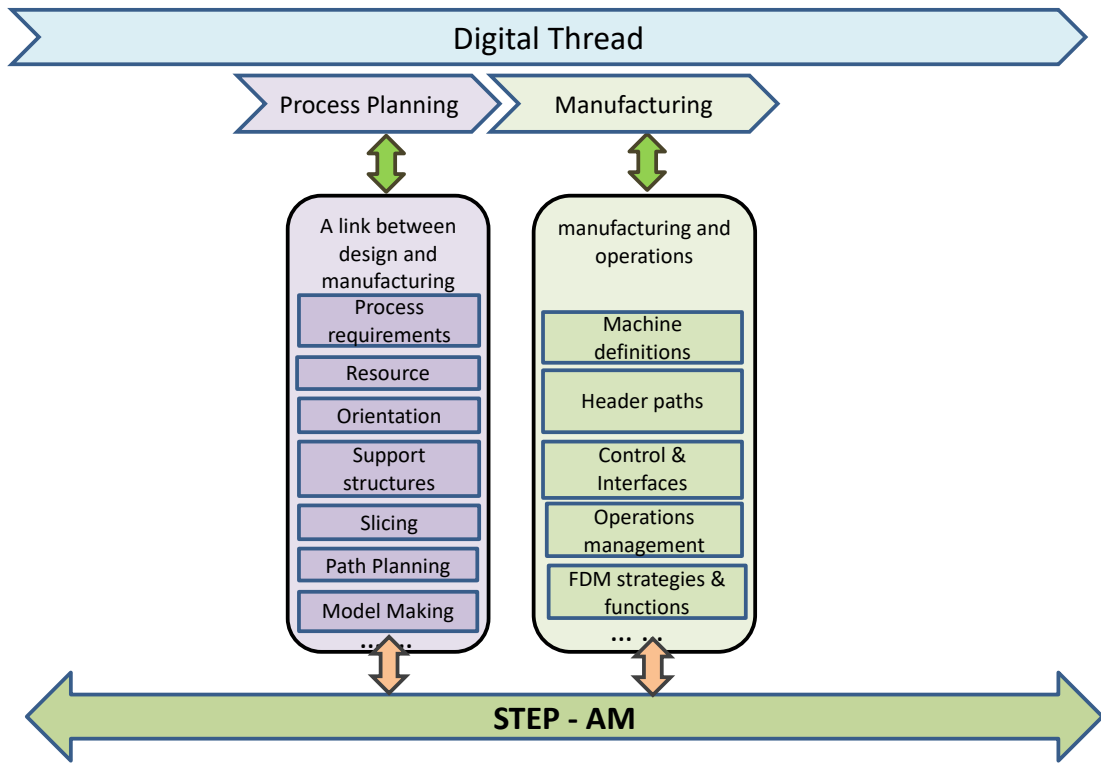


Many standardization efforts, but need more coordination

ISO TC 261 (Additive Manufacturing); ASTM Committee F42 (Additive Manufacturing Technologies); ISO TC184 / SC1 (Physical device control); ISO TC 184 / SC4 (Industrial data); ISO TC 213 (Geometrical Product Specifications and Verification); ASME Y14.46 (Product Definition for Additive Manufacturing); ASME B46 Project Team 53 (Surface Finish for Additive Manufacturing), ...

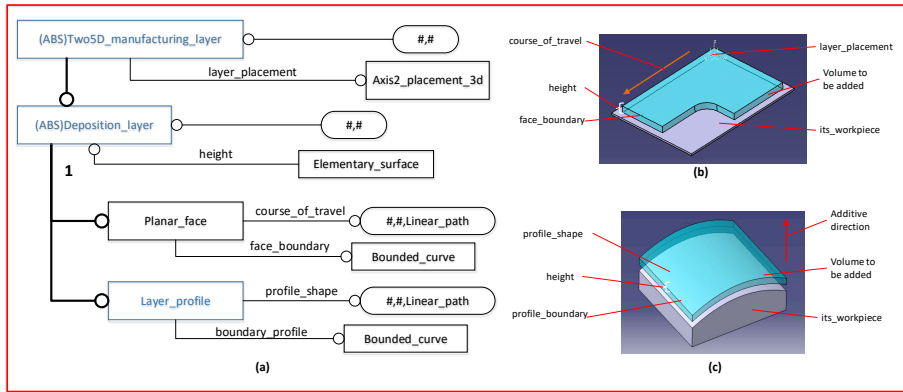
Research findings: STEP-AM (UTC / ENS Paris-Saclay)

- Towards a STEP-compliant data model for process information management in additive manufacturing: application to Fused Deposition Modelling (PhD thesis, Jinhua Xiao, 2019)

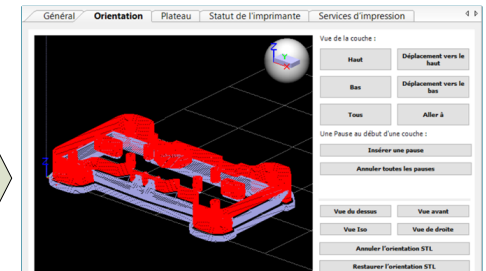


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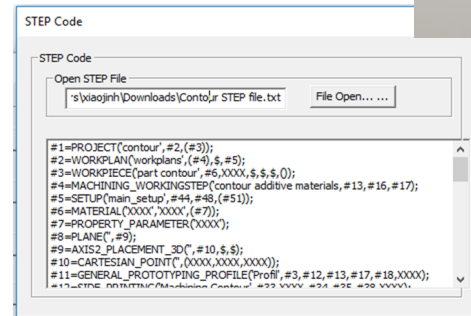
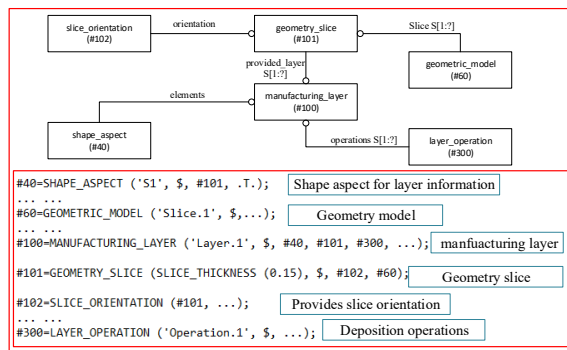
Initializing Print Part



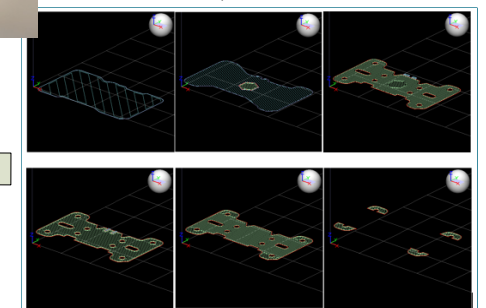
Build Orientation, Structure Support, and Slicing



Print Part

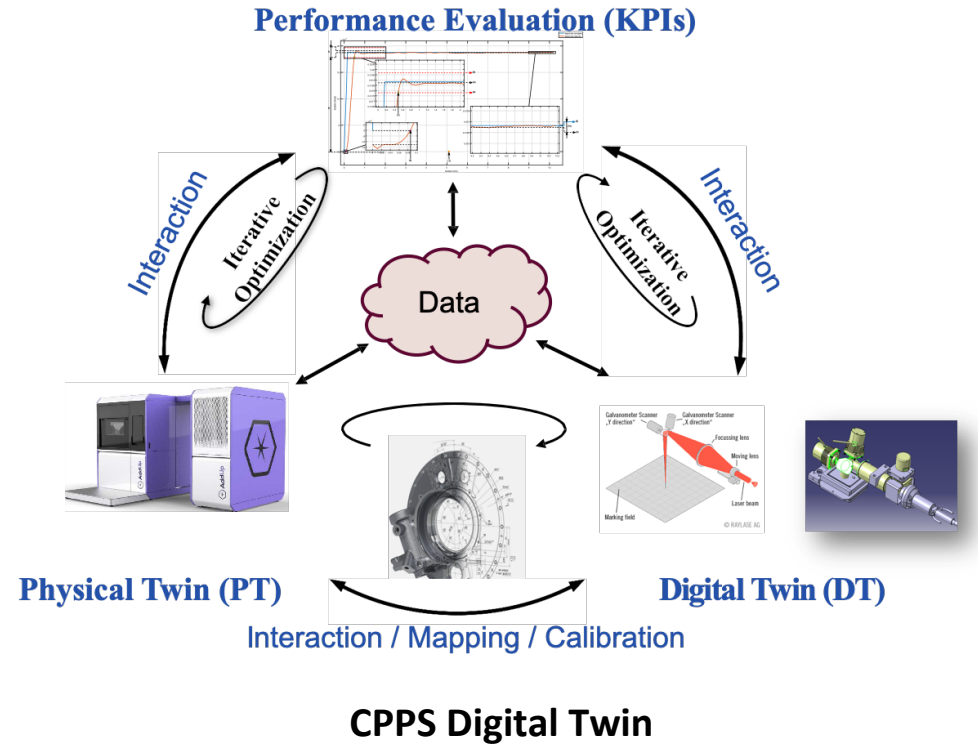
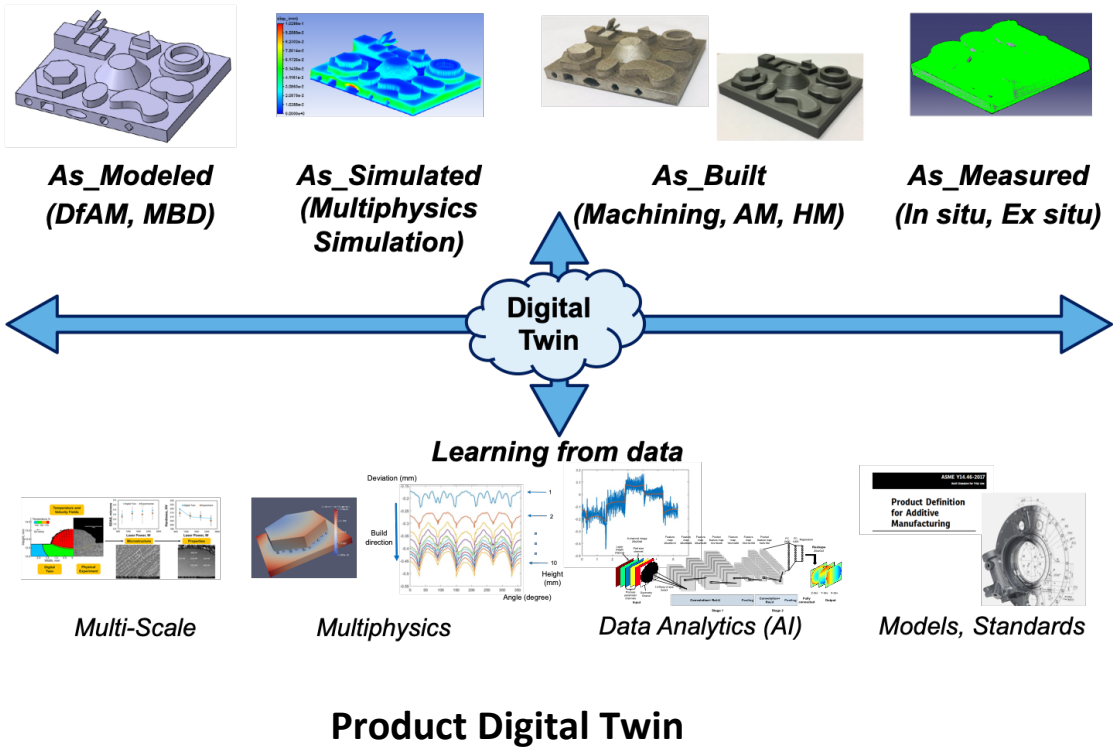


STEP Code for Print Layer



Each Layer Profile and Paths

Research Challenges: Digital Twin for AM (ENS Paris-Saclay)



Questions
&
Answers



6th and 7th October

<http://standardsdays.afnet.fr>