Vision:

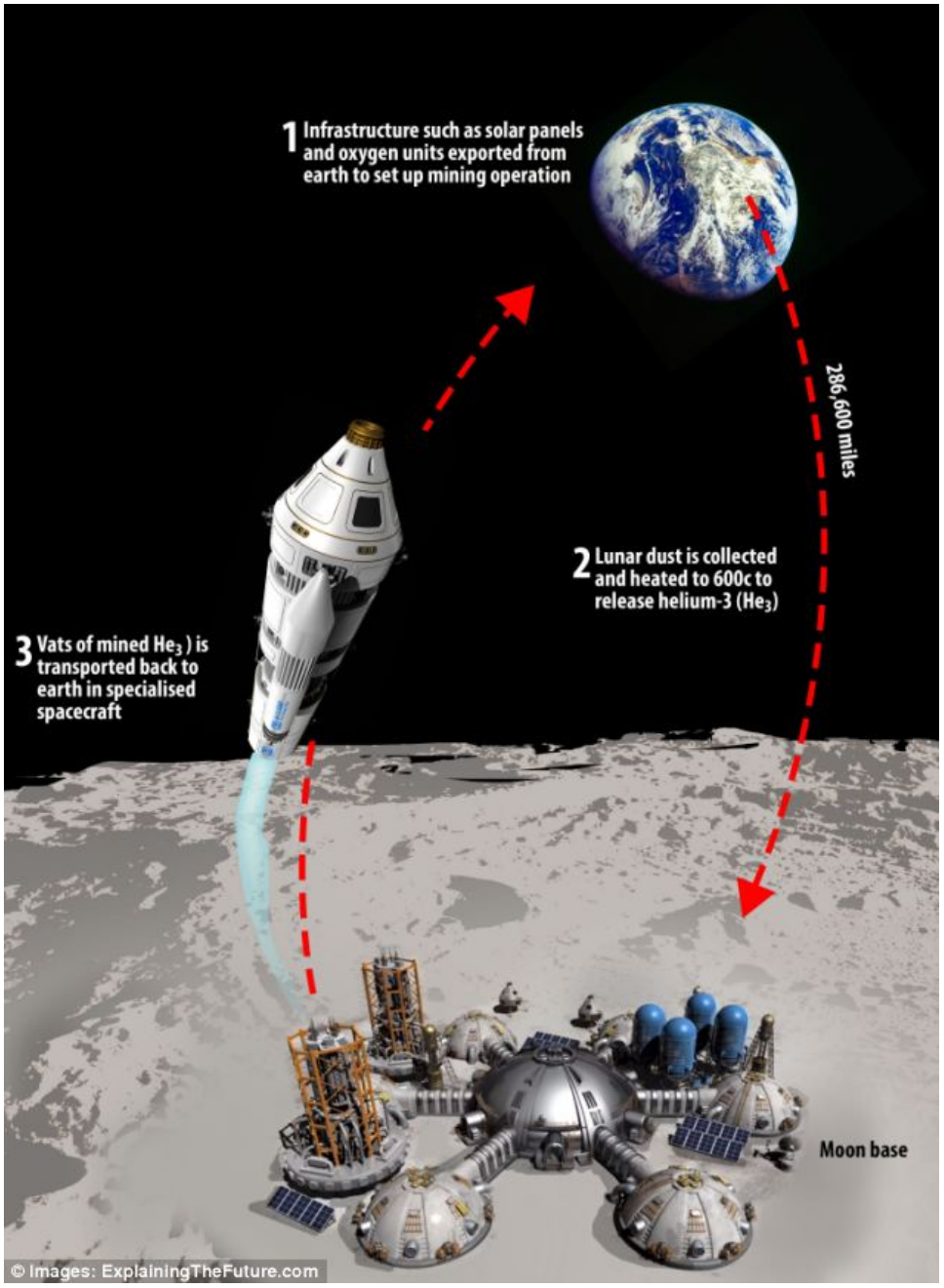
High Autonomy
Cyber-Physical Systems

→ need “virtual experimentation”

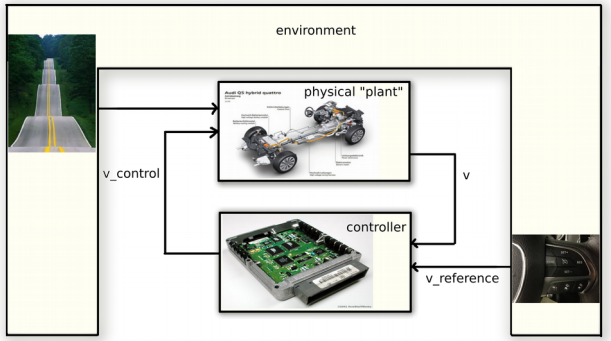
Autonomously:

- construct models
  for diagnosis, design, …

- experiment with models

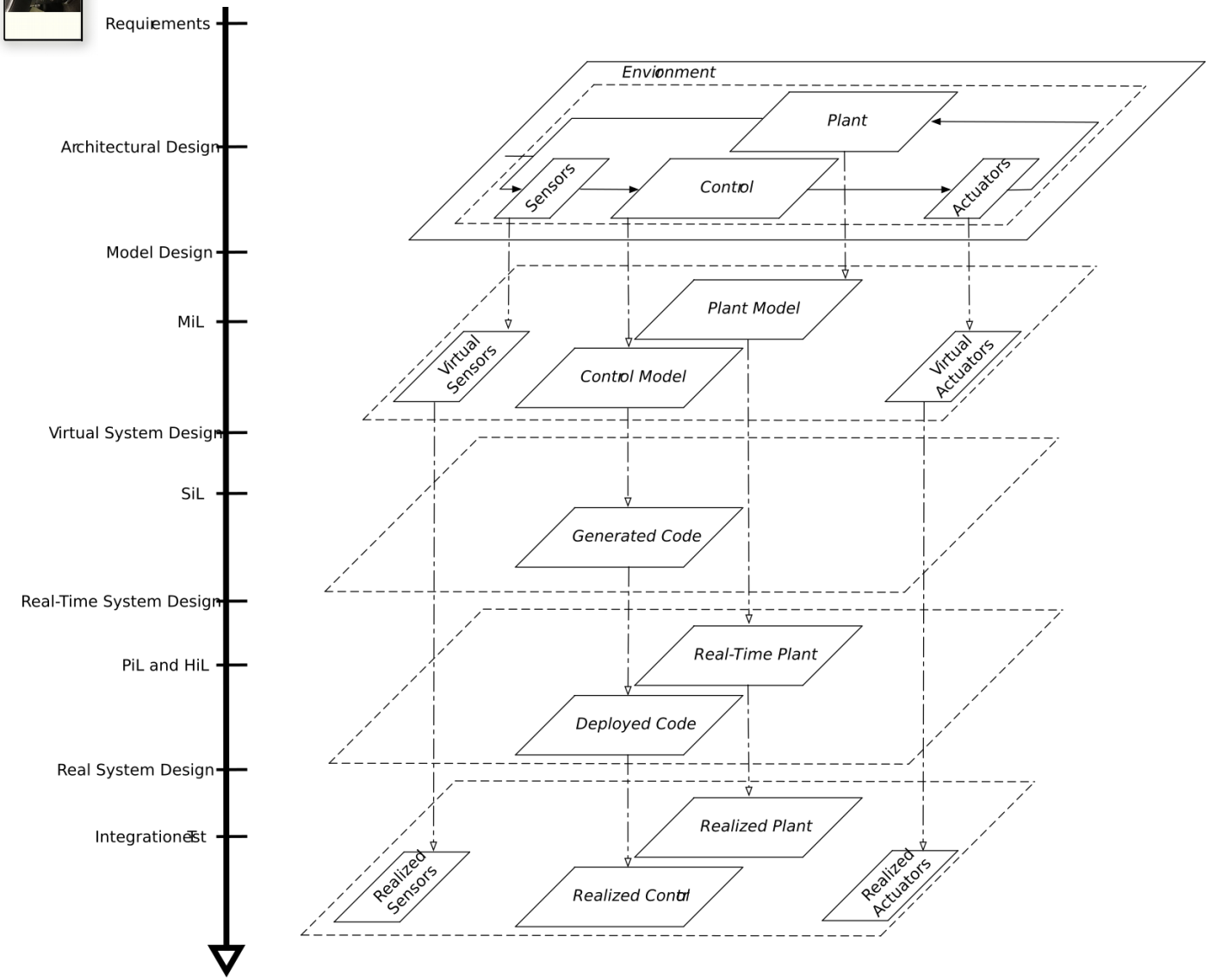


Hans Vangheluwe



Challenge for autonomous Design:

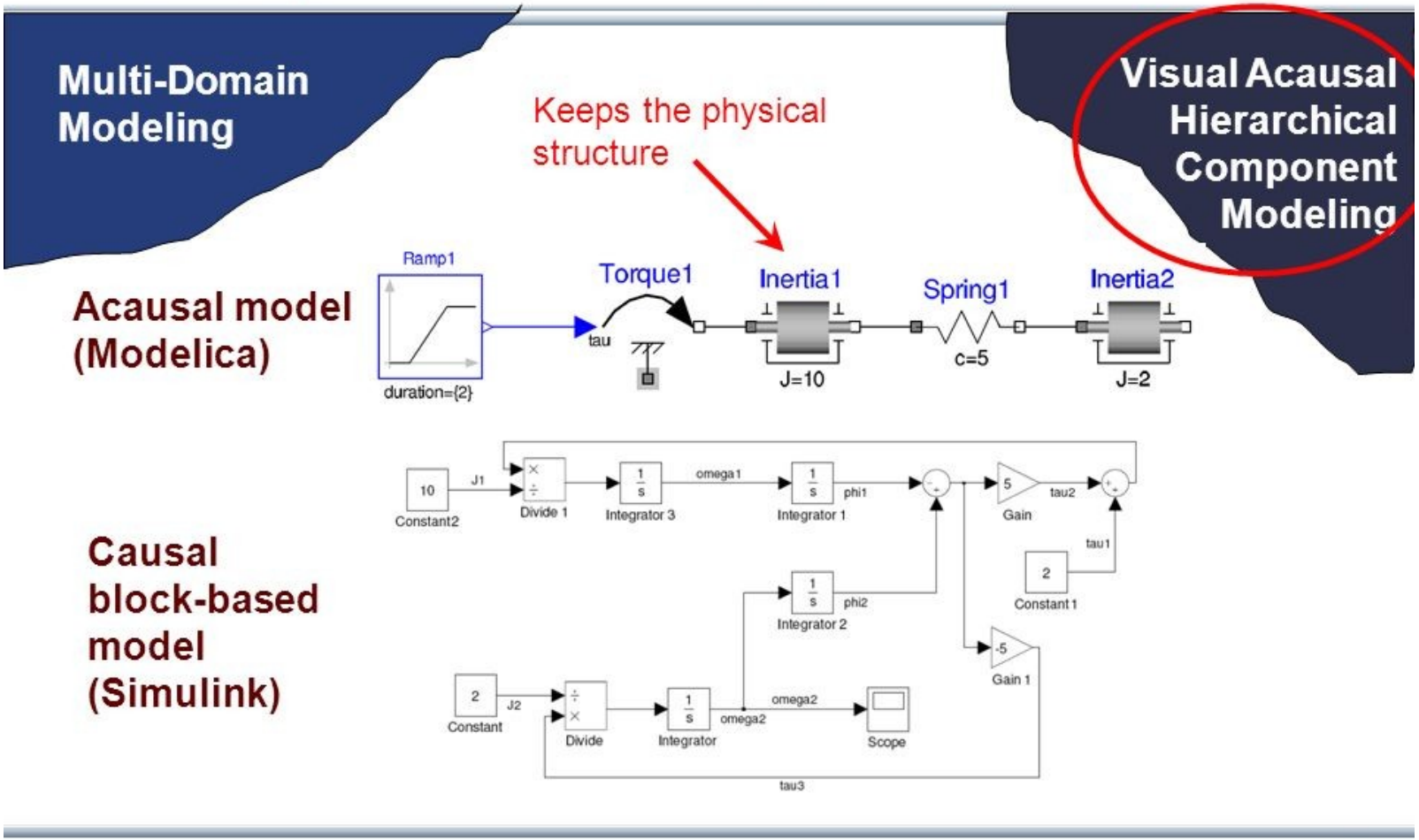
Virtual Experimentation at *Different Levels* of realization → co-simulation



Challenge for autonomous modelling&simulation of physical systems:

Combinatorial Explosion of different Causal Realizations →
need causality assignment *at run-time* → from model compilation to JIT?

What is Special about Modelica?



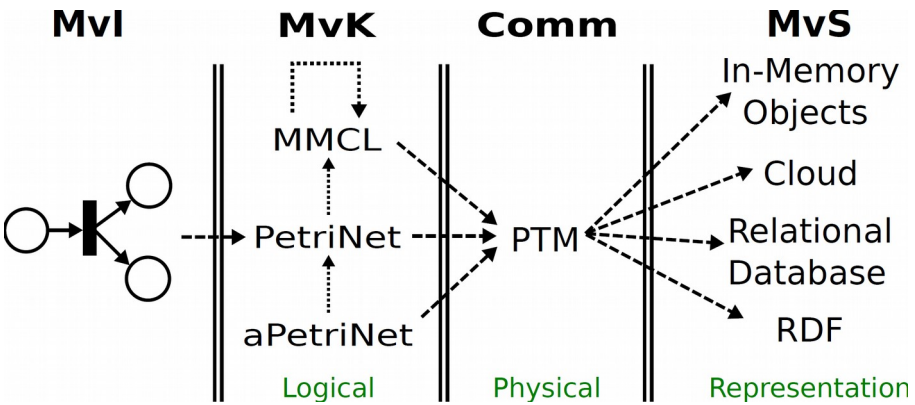
[slide from Peter Fritzson's Modelica tutorial]

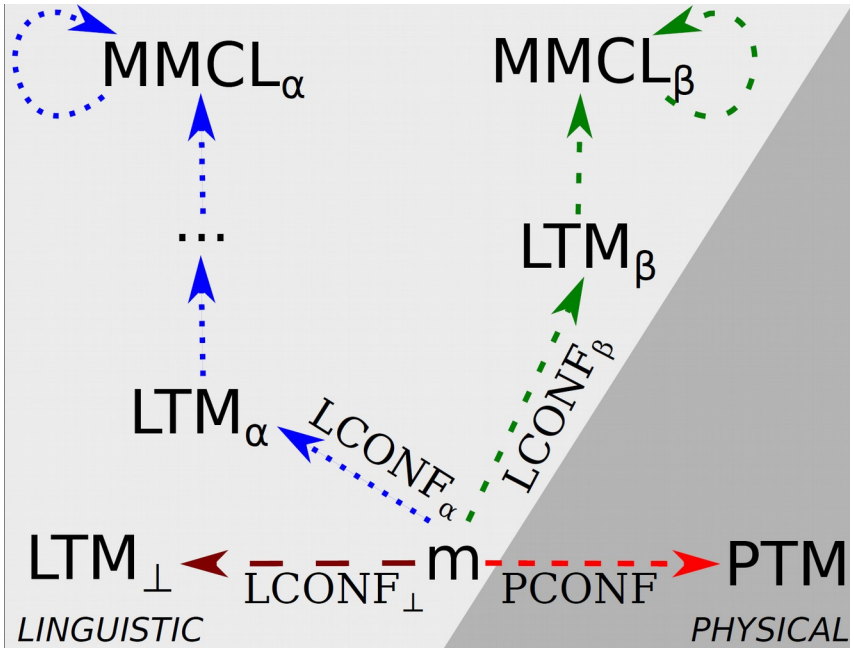
MODELICA

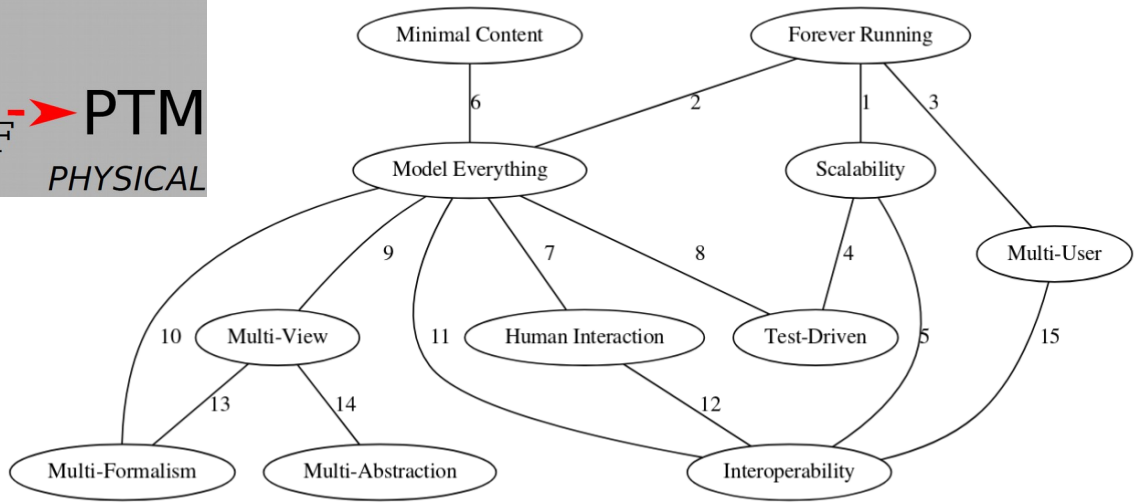
Solution? the **Modelverse**

A Multi-Paradigm Modelling system

in essence, a Modelling and Simulation "operating system"







Yentl Van Tendeloo and Hans Vangheluwe.
The Modelverse: a Tool for Multi-Paradigm Modelling and Simulation.
2017 Winter Simulation Conference.

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Bernhard Schätz's **Vision**

The Role of Models in Engineering of Cyber-Physical Systems – Challenges and Possibilities

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