



Dr. Jan Vermaak
RELAP5-3D Code Architect

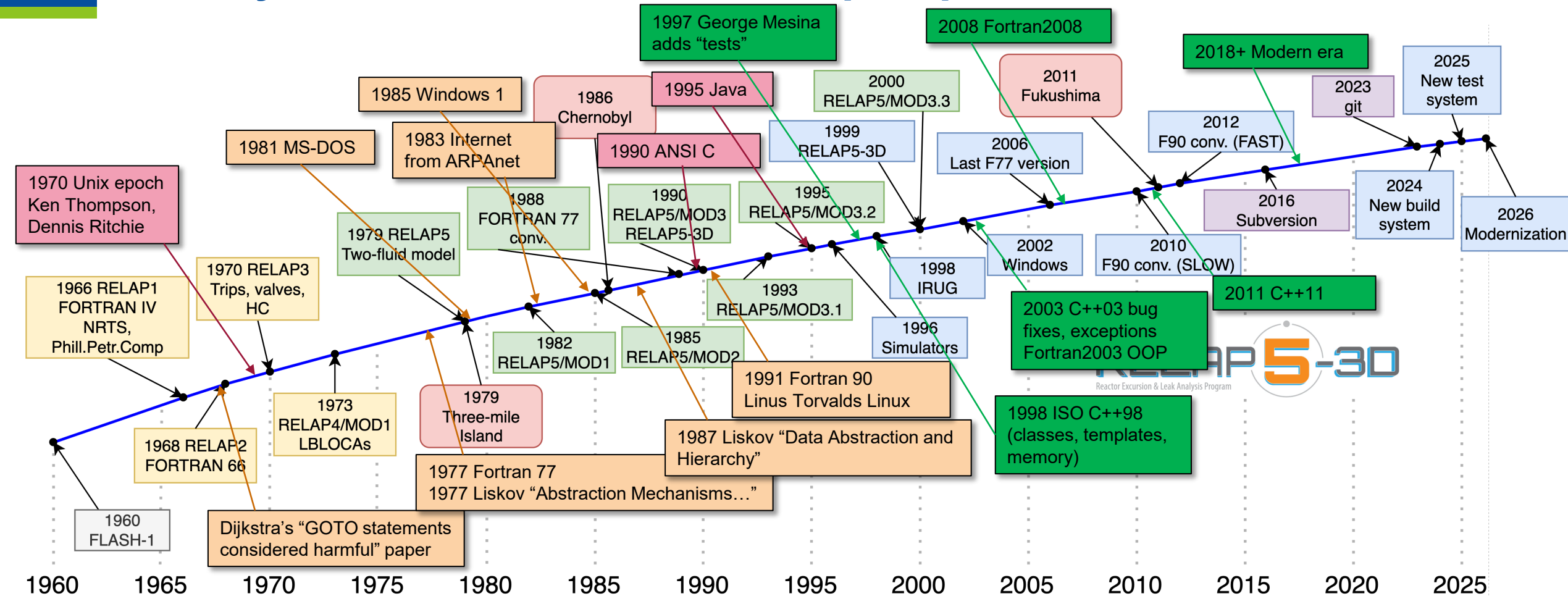
RELAP5-3D Modernization

INL/CON-26-92681

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History of RELAP5-3D from Dev. perspective



Complexity and Technical Debt

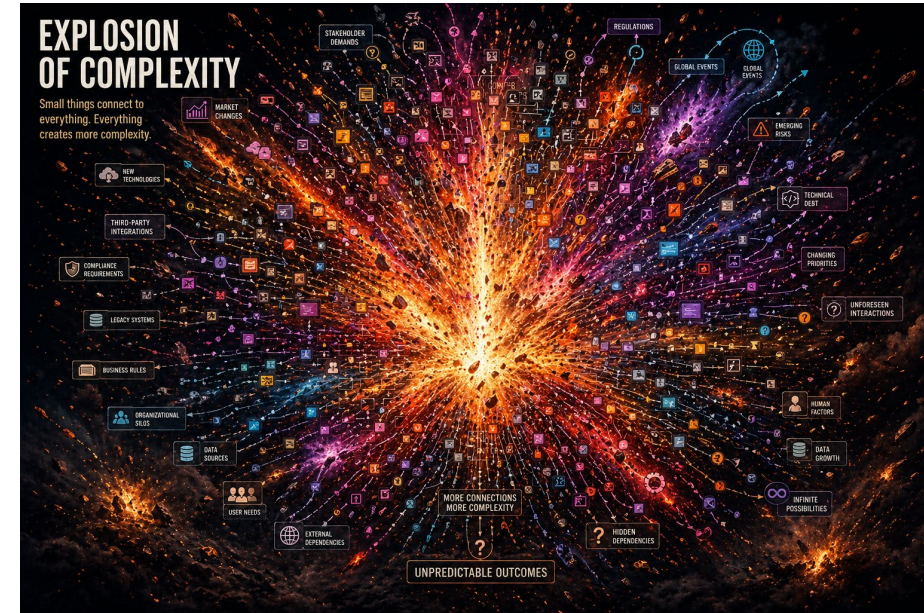
Capability expansion can be maximized if ...

- you need not care about comprehensibility
- you need not care about modifiability
- you need not care about extendibility
- you need not care about collaborators

A maintainable codebase[1] is:

- Easy to **understand**, **modify**+**extend**
- Allows for **collaboration**
- Has **low** software development costs
- Has few code smells

Technical Debt



[1] Tufano et al., “When and Why Your Code Starts to Smell Bad (and Whether the Smells Go Away)”, IEEE Transactions on Software Engineering, 2017

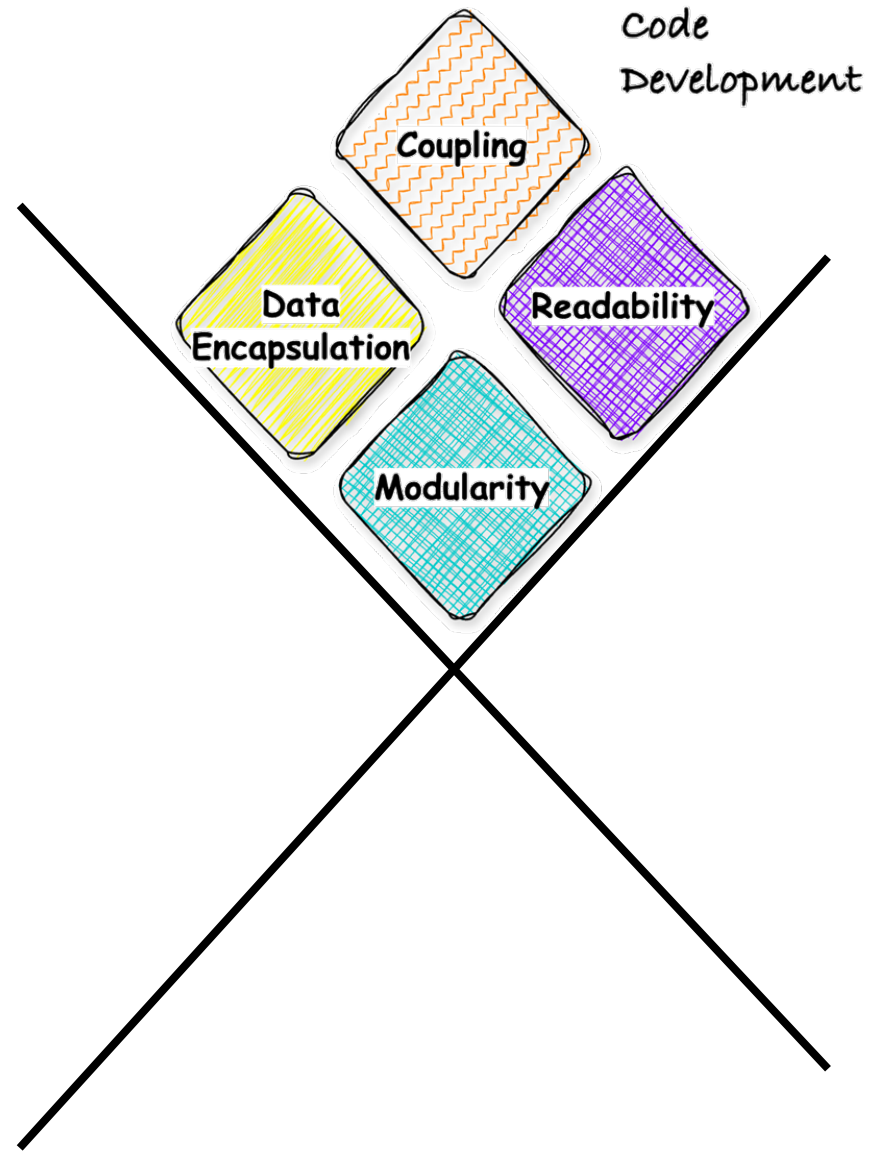
What correlates with complexity/technical-debt?

- Uncommunicative names
- Uncommunicative constructs
- Missing abstractions and Primitive Overuse (global variables)
- Deeply Nested Logic
- Low cohesion (many responsibilities)
- Conditional compilation
- Lack of Data Encapsulation

What causes technical debt?

1. Advances in programming
2. Priorities

Priorities





Questions

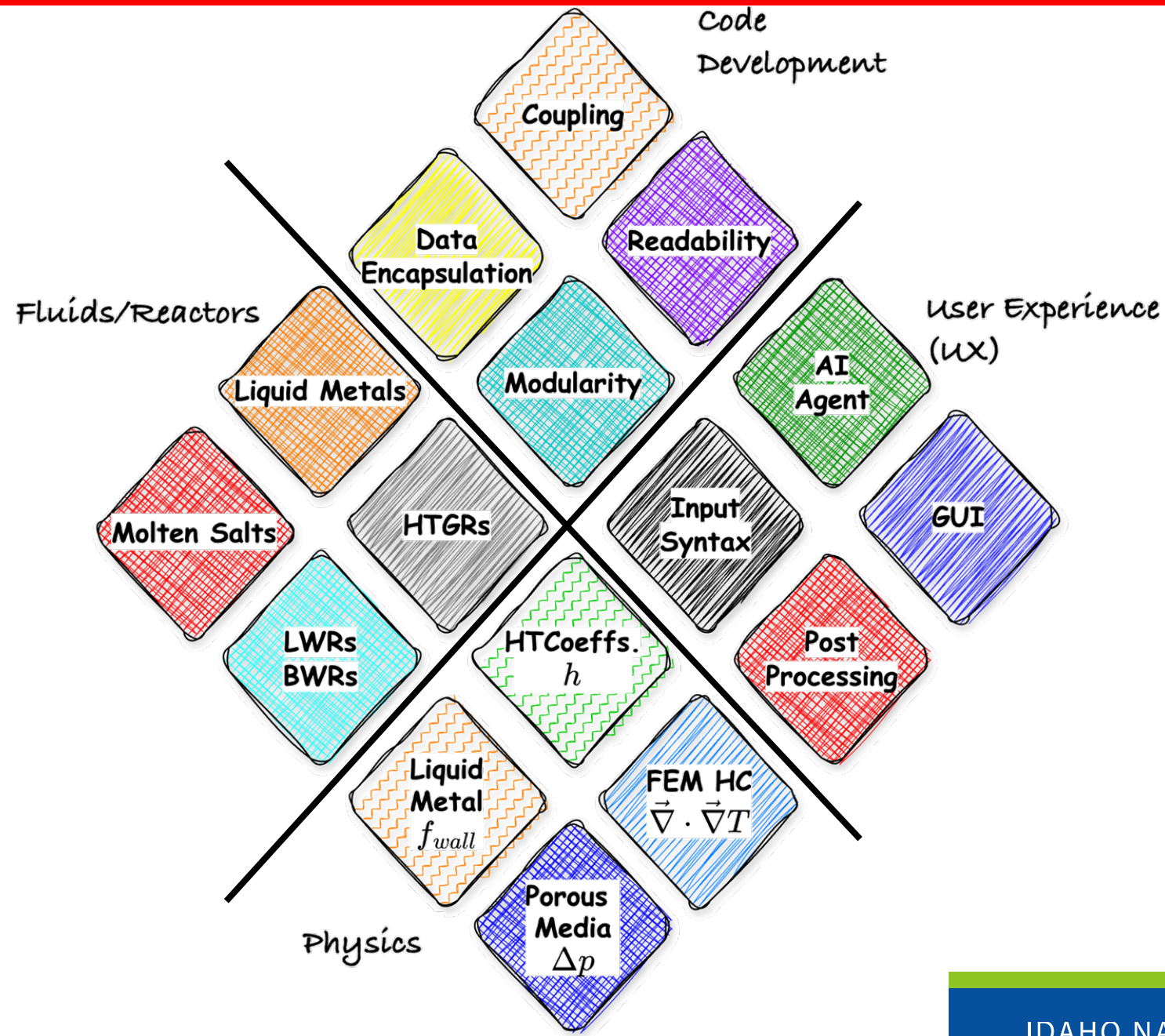


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Priorities



RELAP5-3D Team

RELAP5-3D Organization

