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Real Intelligence, Artificial Expectations

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CEO

AI is the answer – What is the Question?

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The Question Needs Far more Time and Resources

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The Fine Physics Journey
20+ Years of Learning What Works

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- Engineer on significant projects – A380, Dyson, F1, Defence
- Direct experience: Dassault, Altair, ANSYS, Exa, Neural Concept
- Early AI adopter: Worked in surrogate modeling at the start of the wave
- Key learning: See both possibilities and importantly limitations
- Now: Curating next-gen tech independently for engineers

The Age of CFD & EM Solvers

Built for single-core CPUs and memory constraints that no longer exist

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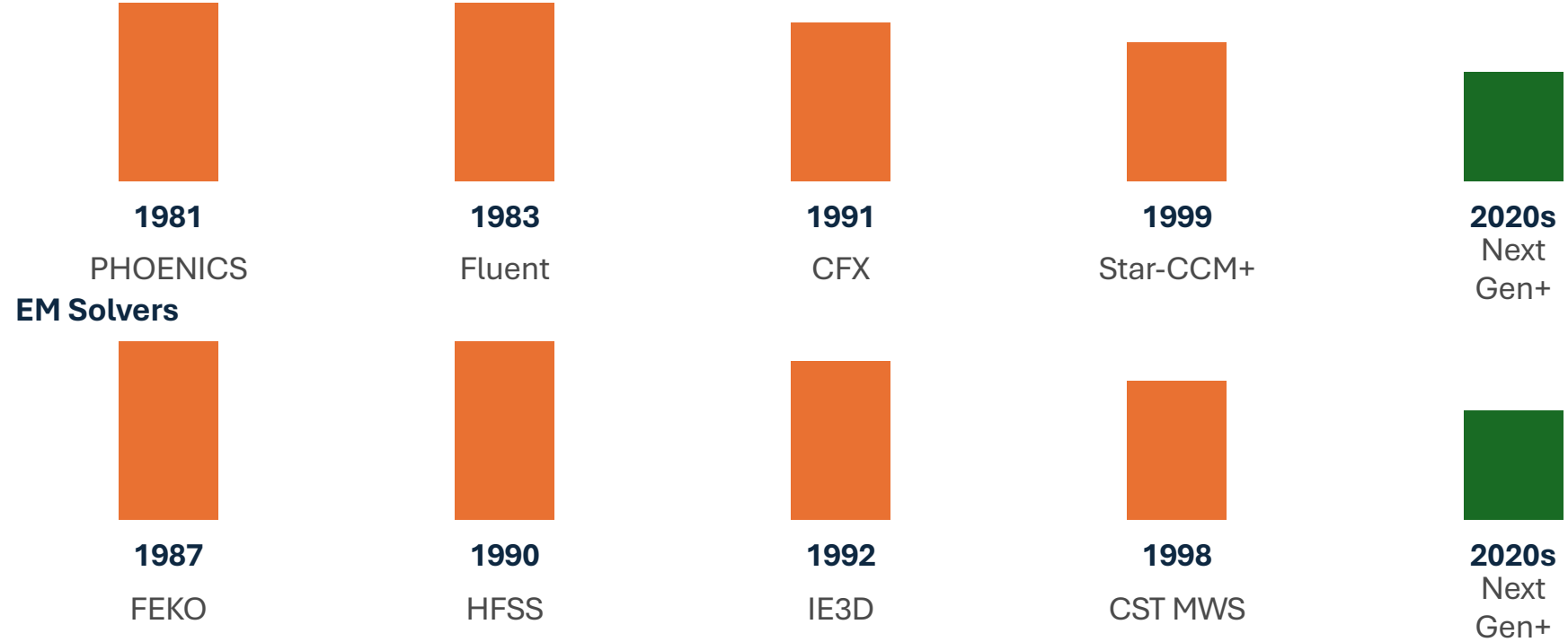
CFD Solvers



Not designed for GPU clusters, cloud scale, or modern parametric workflows

The AI Reality Check

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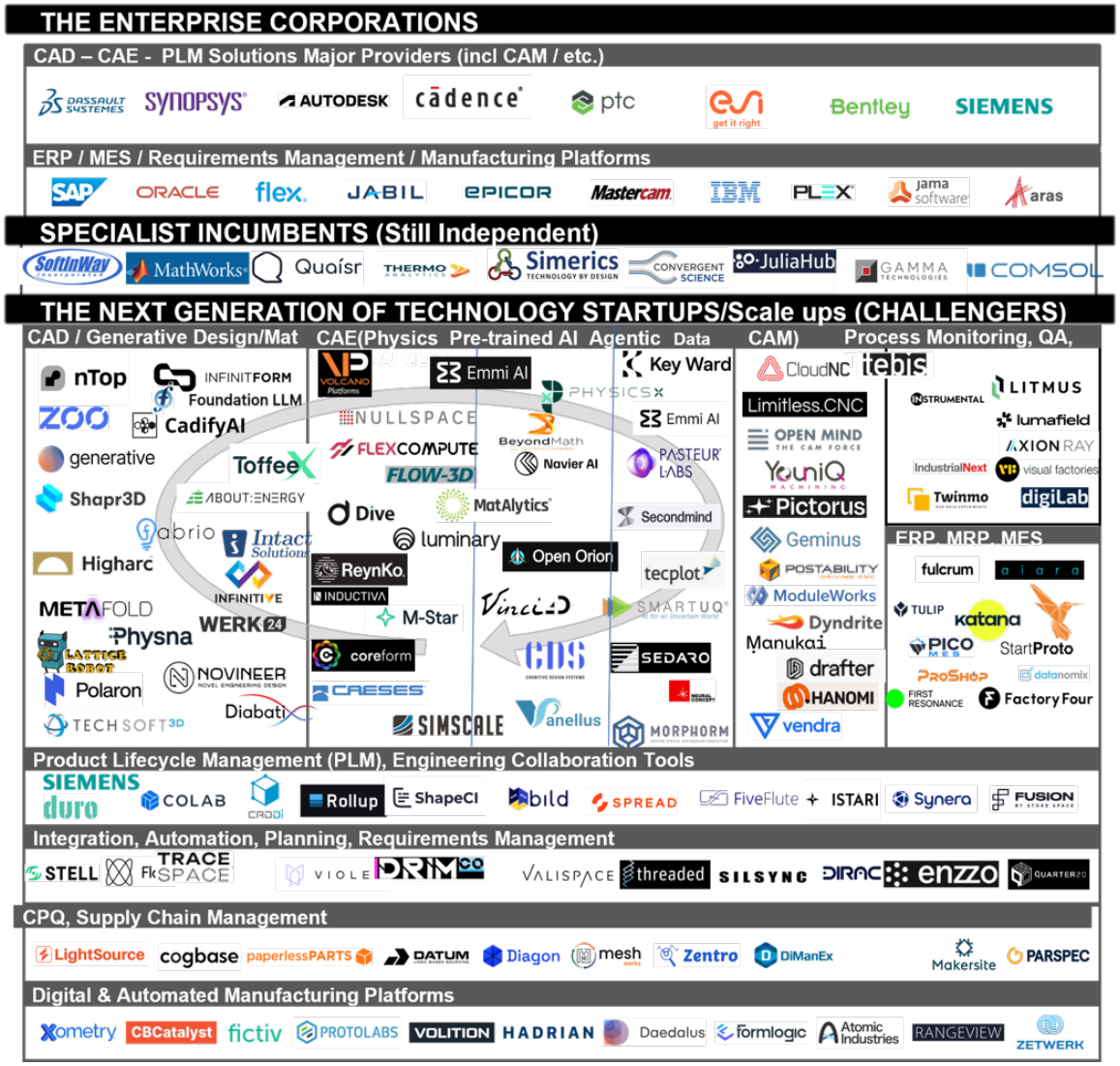
95%

Failure Rate of Physics-Free Deep Learning Models

The Promise: Neural networks would learn from data and eliminate physics-based simulation.

The Reality: Physics is unforgiving. Training data is expensive and incomplete. Generalization beyond training envelope is unreliable. These approaches fail because they lack proper engineering data management and physical grounding.

The Current Landscape – Why This Matters!



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AI is Seen as Necessity in Engineering

But, Pilots fail due to lack of domain understanding & Blackbox Tools

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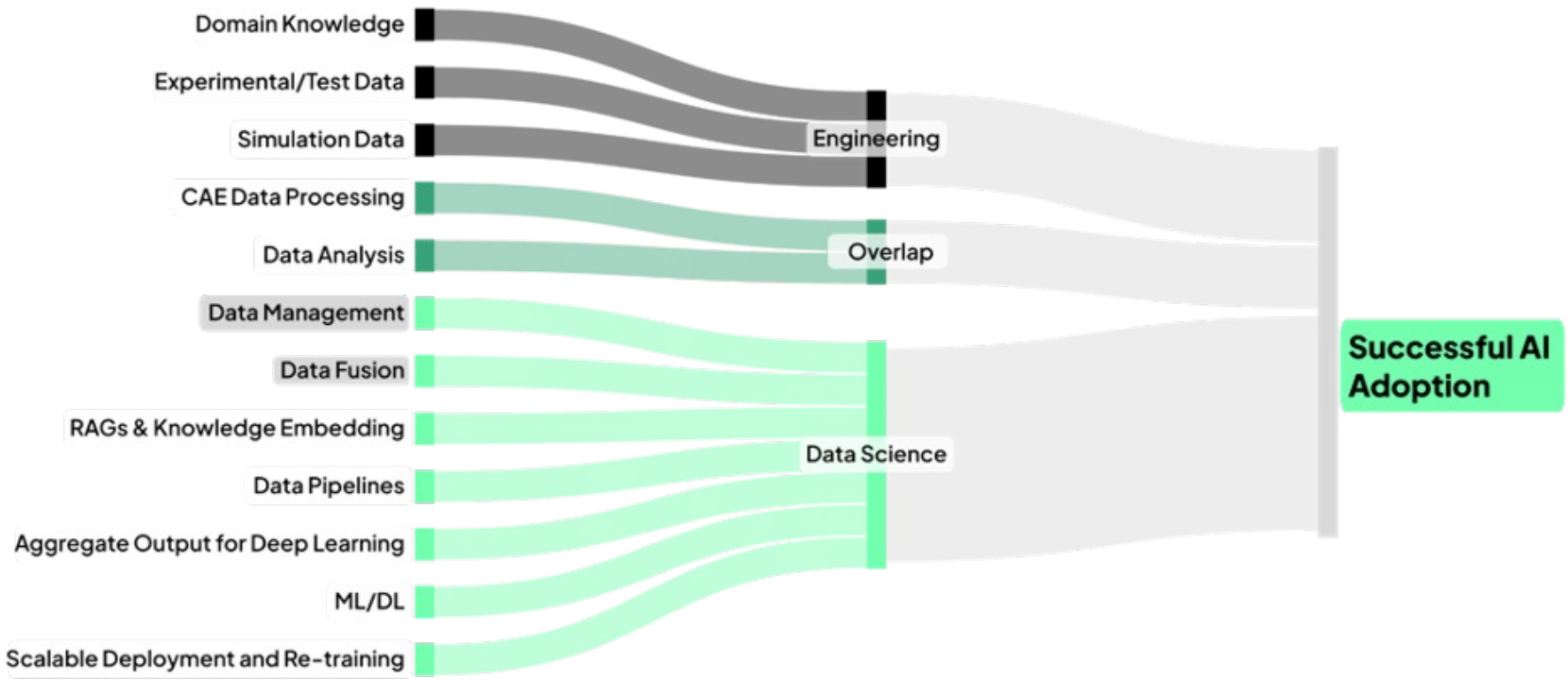
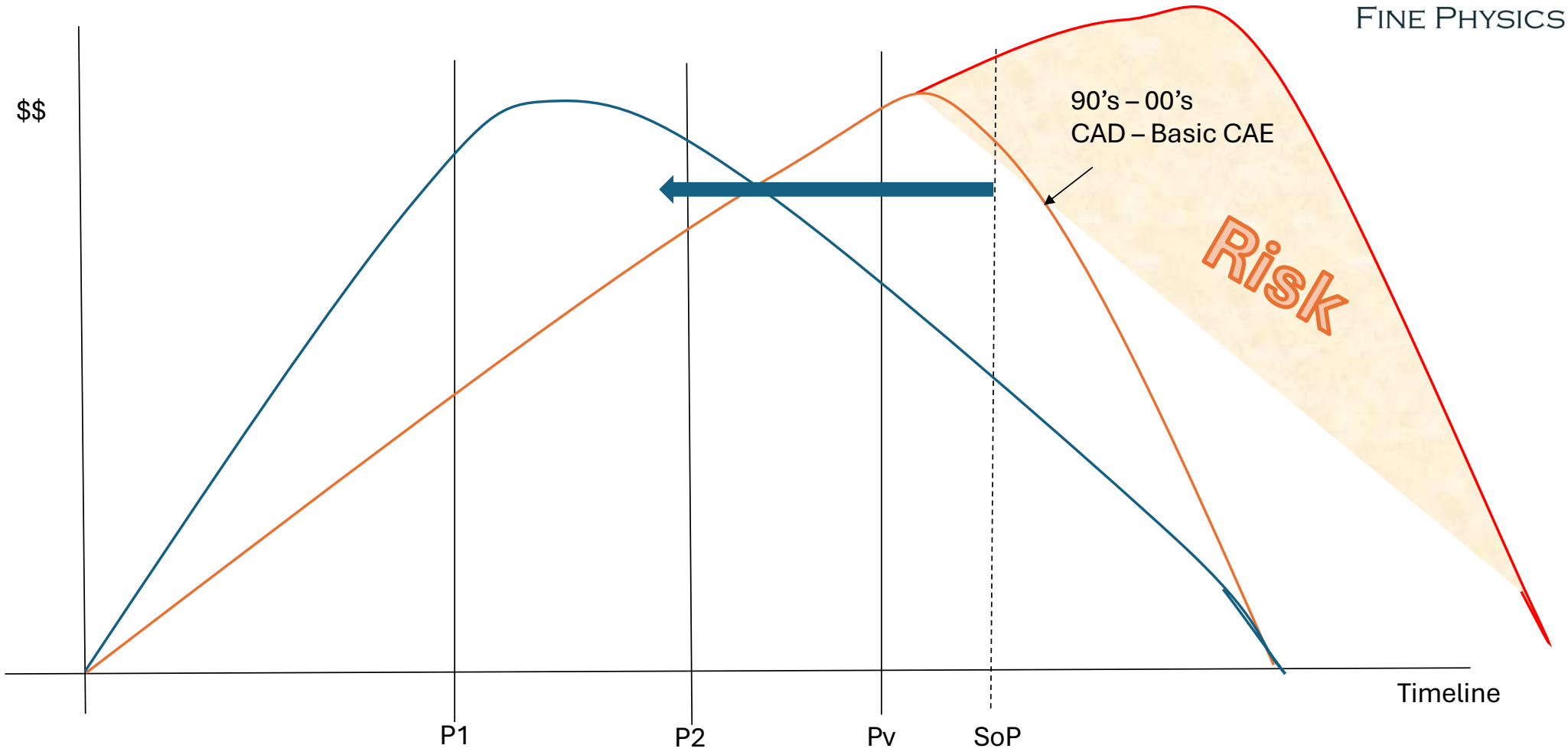
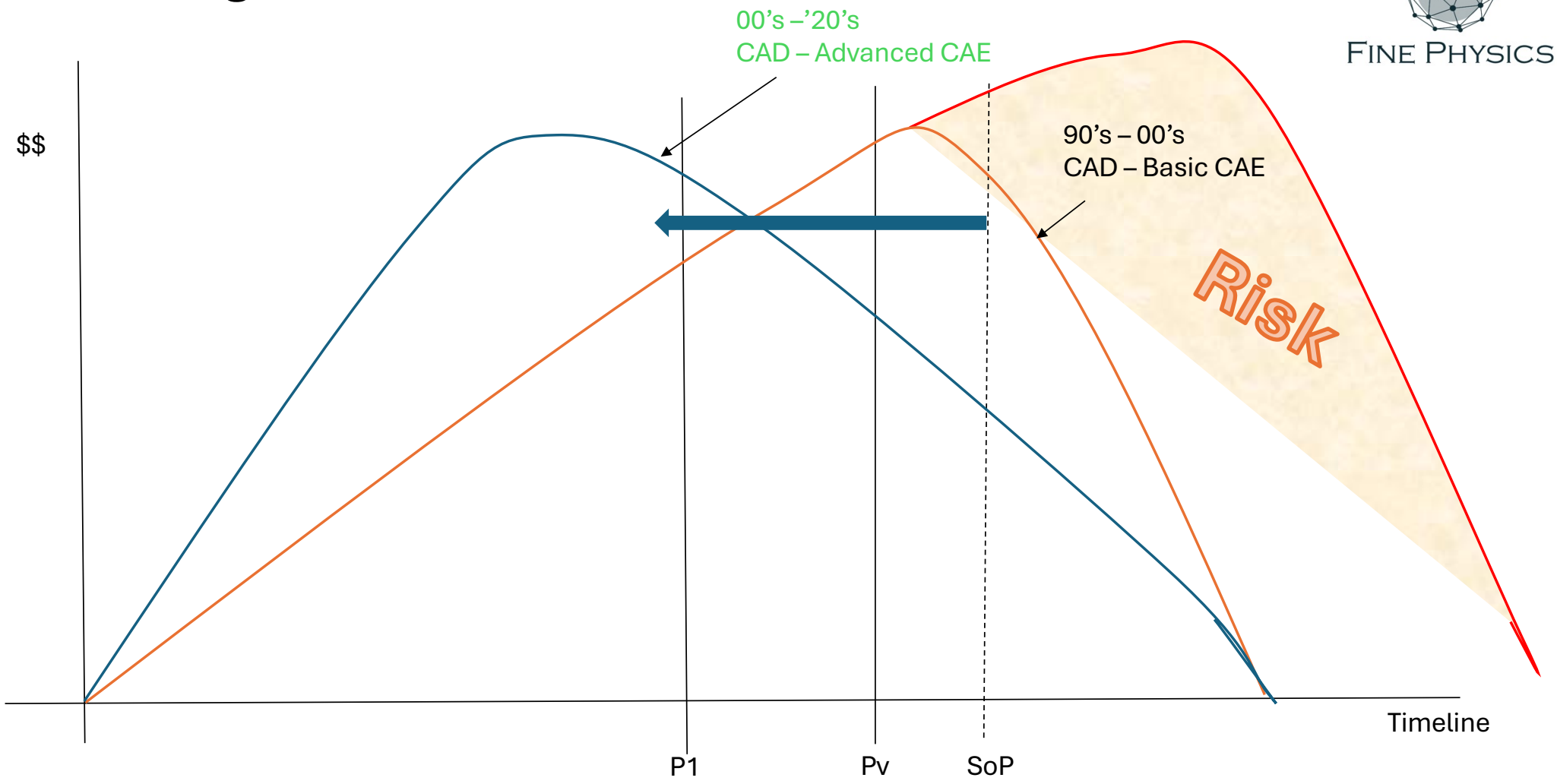


Risk Management Evolution



Risk Management Evolution



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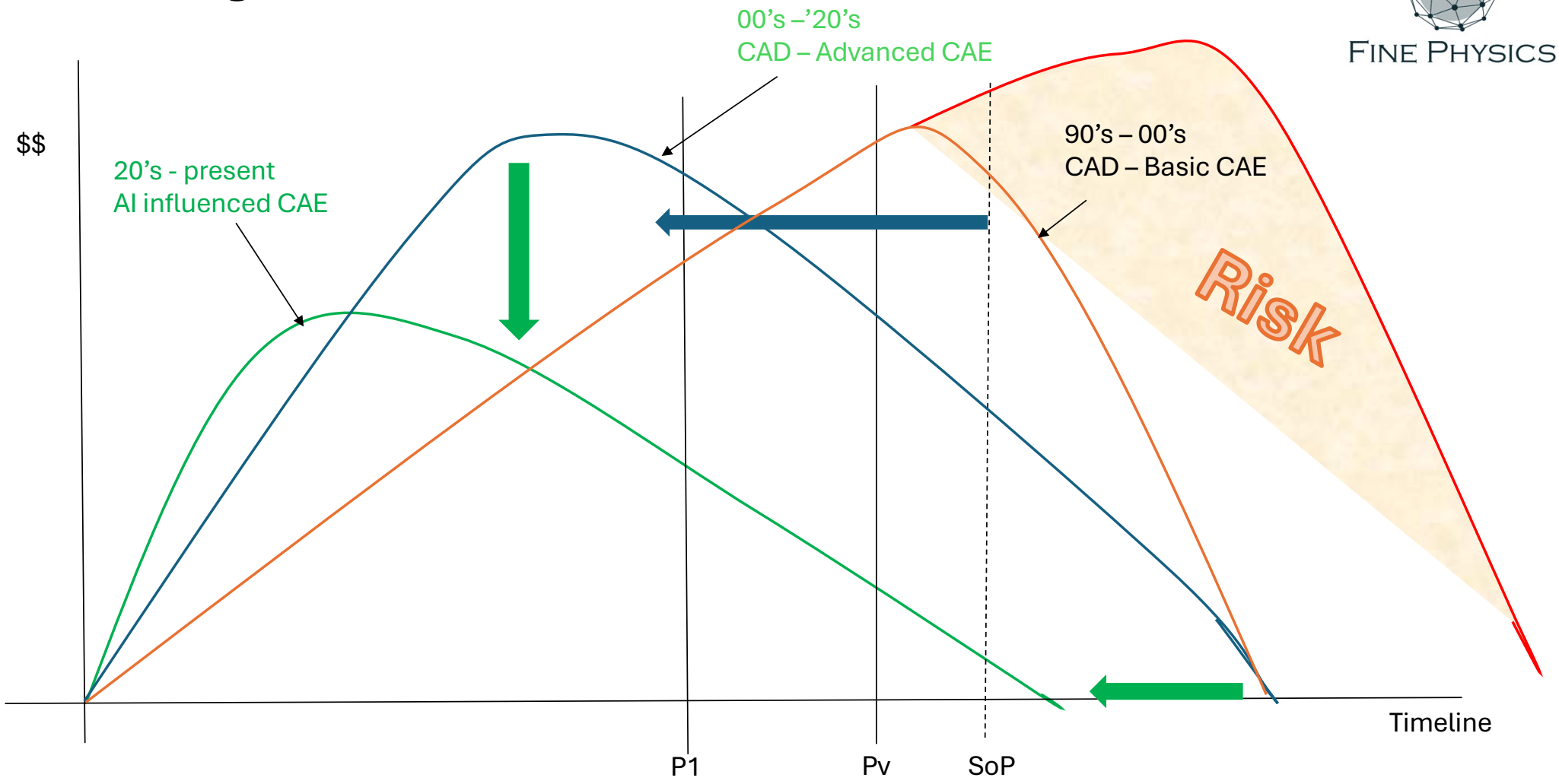
Risk Management Evolution



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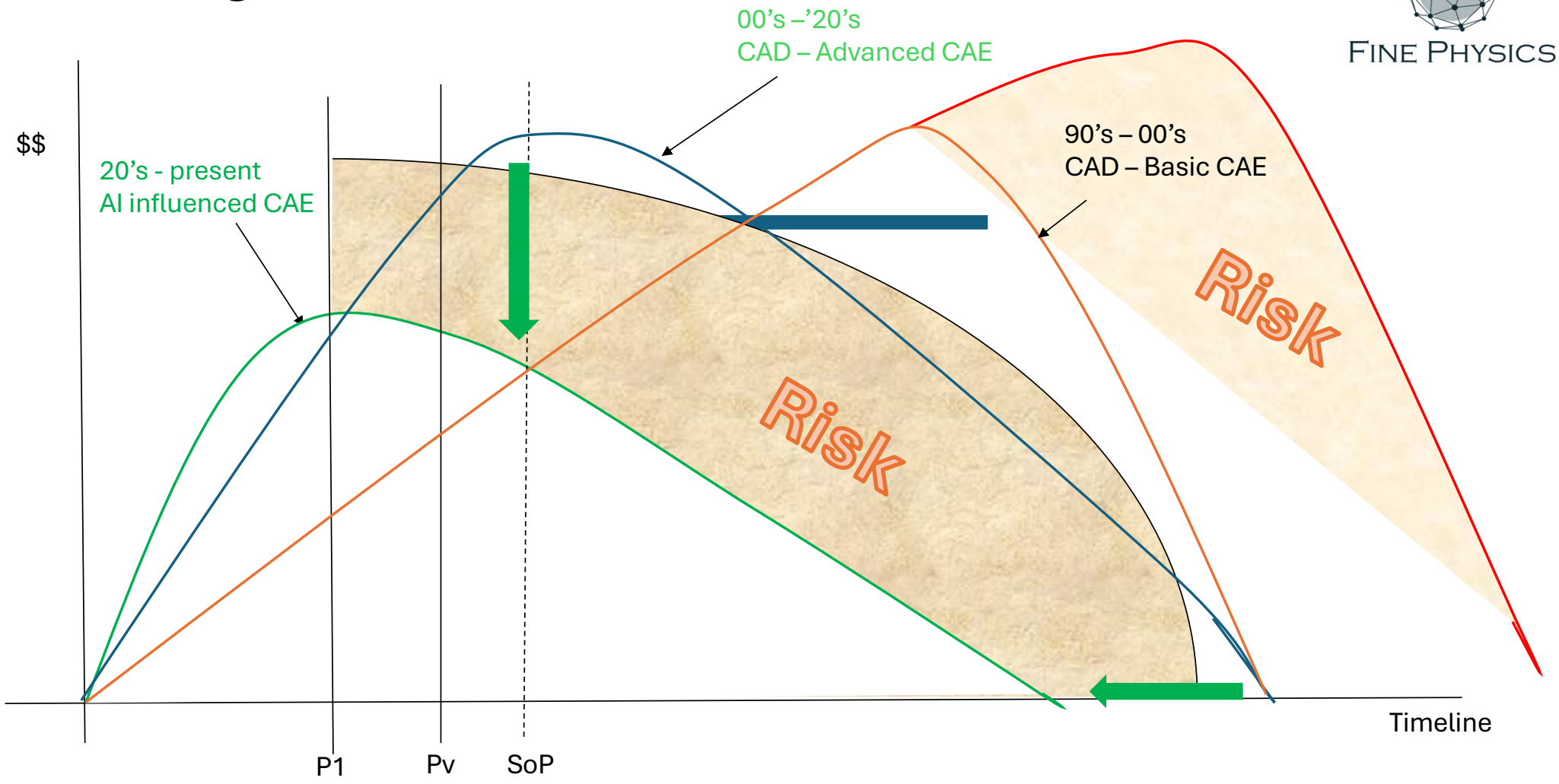
Risk Management Evolution



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AI for Engineering – Realizable Risk Mitigation
Where Companies Are now

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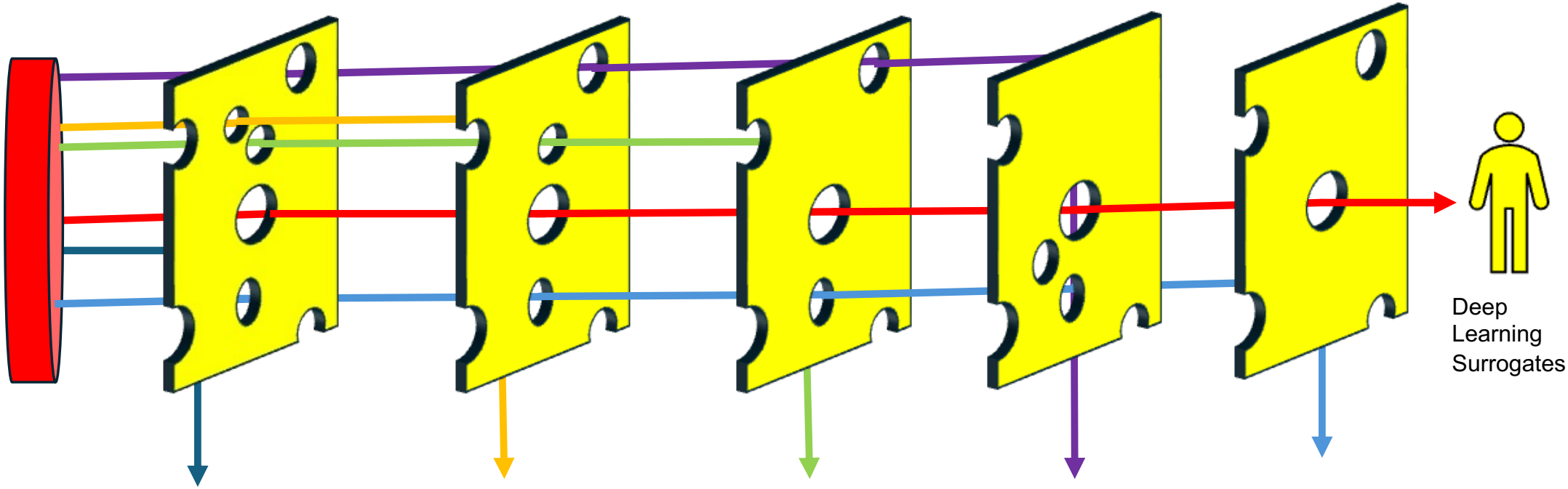

Application Value
Quicker than direct physics?
Saving vs status quo?
Limitations in knowledge?

Data Volume
Critical mass of samples?
Combine synthetic/test?
Parametric vs free surface?
Constant boundary conditions?

Data Quality
Is source reliable?
Are there outlier sets?
Is synthetic data high fidelity?

Data Uniformity
Can data be read together?
Are formats compatible?
Data acquisition comparable?

Will ML/RoM give good enough trends?
Select critical mass of data
Parametric data or free?
Reference app value for desired outcome (trends vs abs)

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Not revolution through replacement.
Evolution through engineering.

The future isn't physics-free ML. It's physics-first engineering with intelligent tooling.

Fine Physics curates the next generation.

Thank You

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