



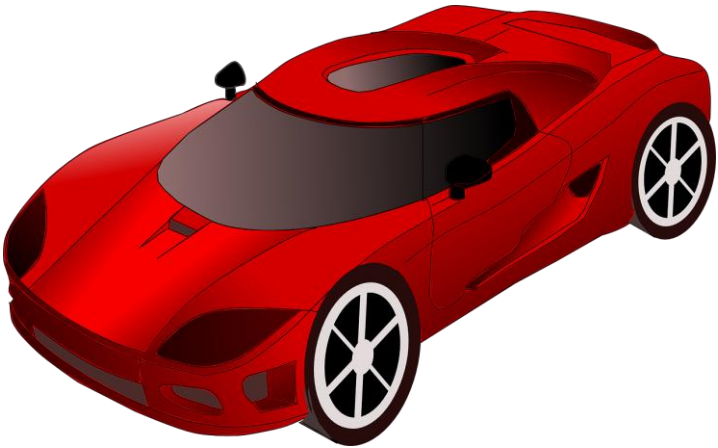
7 Practical Actions to Achieve your Simulation Goals

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Actions Based on Experience



Implementing Strategy in Industry

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How to Implement a Modelling & Simulation Strategy

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Unlock the Full Potential of Modelling and Simulation in your Organisation

How to Implement a Modelling & Simulation Strategy

The technological advances of recent years have led to a massive increase in product complexity. Businesses need to make sure they can engineer and deliver efficient and optimised products to not only lead but also remain competitive.

Maximising the opportunities and benefits gained from the latest digital engineering capabilities is critical. Adopting local optimum solutions is ineffective, so businesses must invest in a comprehensive and coordinated approach to achieve the global optimum and maximise the effectiveness of their digital engineering capability.

To achieve this, you need a Digital Engineering (Modelling and Simulation) Strategy that takes account of the tools and the processes, methods, models, data, organisation, and computing infrastructure.

This high-level training course focuses on modelling and simulation tools from a C-level perspective, identifying **business goals, product requirements and organisation needs** before introducing a framework that will become the foundation of your comprehensive Modelling and Simulation strategy.

Details		
Event Type	eLearning	
Member Price	€563.69 \$750.00 €657.04	
Non-member Price	€834.26 \$1110.00 €972.41	
Tutor:	Andy Richardson click to view profile	
Dates		
Start Date	End Date	Location
15 Jul 2025	12 Aug 2025	Online Book
Session Times		
Europe/London	15 Jul 2025 15:00 22 Jul 2025 15:00 29 Jul 2025 15:00 5 Aug 2025 15:00 12 Aug 2025 15:00	

Creating and Delivering eLearning

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Simulation Maturity Assessment

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Simulation Maturity Assessment Service

Do you have complete confidence that your modelling and simulation capability is as optimised, efficient, and effective as it can be?

The NAFEMS Simulation Maturity Assessment Service independently assesses every aspect of your Modelling and Simulation capability. Completely aligned with your product and business goals, our experts use an established framework to evaluate the strengths and weaknesses of your Modelling & Simulation capability against industry benchmarks.

A Simulation Maturity Assessment will give you:

- a unique insight into the level of maturity of each of the core elements of your capability compared with best practices
- the key areas your organisation should target and prioritise improvement action to achieve your goals
- actionable recommendations with honest and detailed options from industry experts.

Like every NAFEMS activity, the Simulation Maturity Assessment Service is entirely vendor- and code-independent, focussing on processes, capabilities, approaches, and KPIs.

Improve your modelling and simulation activities.

Contact us today to find out how we can work with you.

Conducting Maturity Assessment



Why use Simulation? Whats our Goal?

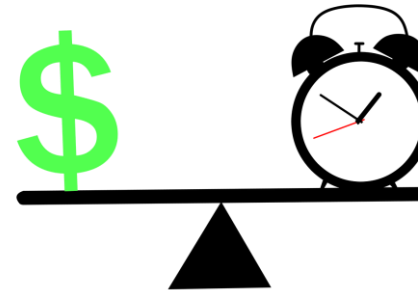
Deliver **more**, and **better**, products

Deliver products **faster**

Reduce **development costs**

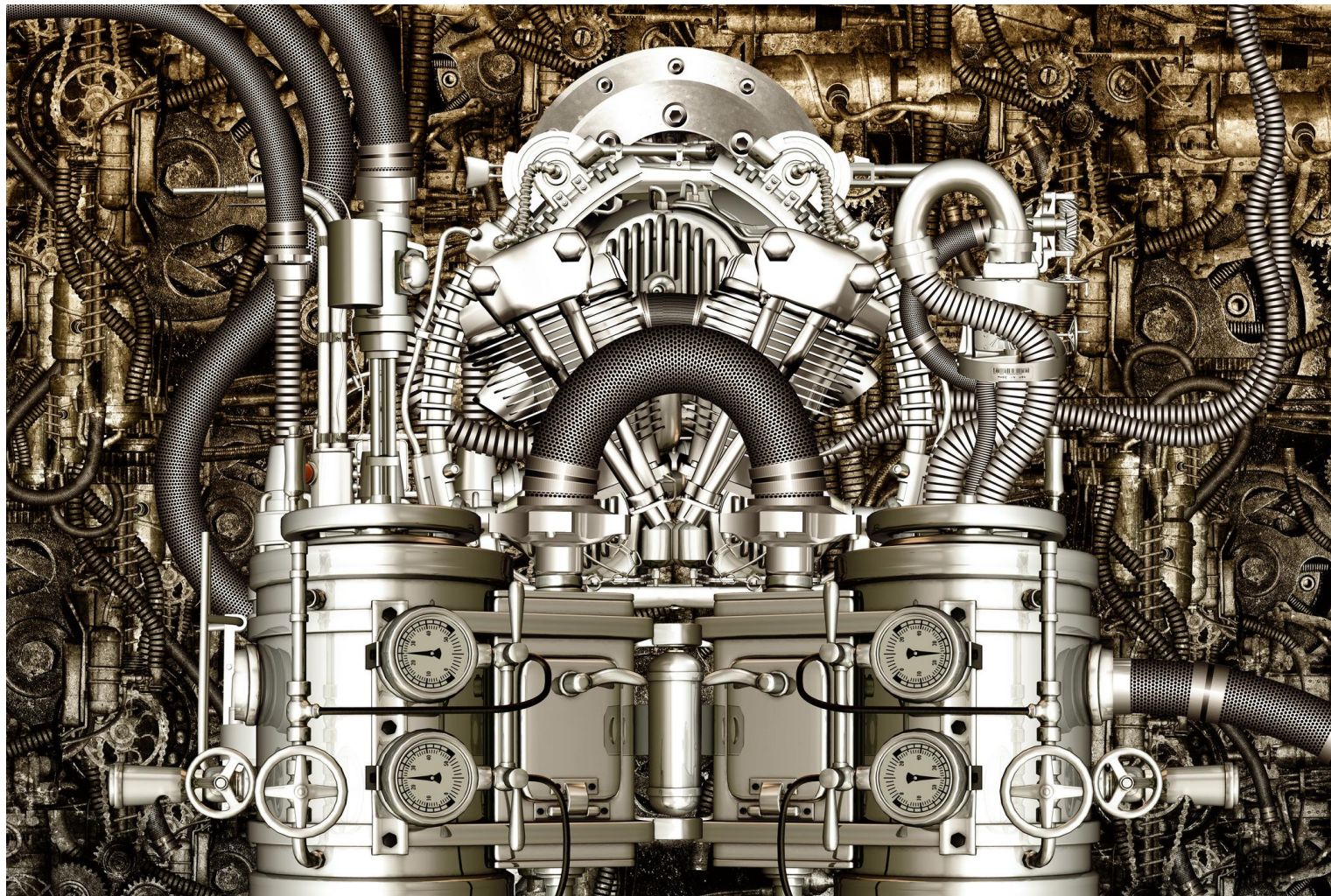
Reduce **product & operating cost**

Reduce **error states**:
Improve product **quality**





Simulation is a Complex Machine



Like a complex machine - Engineering Simulation depends on many components working together in harmony



What does it Take?

CORE COMPONENTS	DESCRIPTION
PROCESS	<i>Efficient</i> processes that define the simulation workflows and <i>aligned</i> to the overall development processes.
METHODS	<i>Capable</i> and <i>proven</i> methods to define how to model the specific physics required to deliver the product requirements.
TOOLS	<i>Capable</i> and <i>connected</i> tools to model the correct physics accurately.
MODELS	<i>Representative</i> and <i>accurate</i> models that reflect the latest design intent
DATA	<i>Appropriate</i> and <i>reliable</i> technical data to define material properties, technical specifications, modelling parameters, and use cases.
PEOPLE & ORGANISATION	<i>Skilled</i> and <i>experienced</i> team with product knowledge and experience of the tools and methods, <i>organised</i> effectively to maximise <i>collaboration</i> and efficiency.
COMPUTE INFRASTRUCTURE	<i>Sufficient</i> , <i>reliable</i> and <i>flexible</i> computing infrastructure and resources to execute the complex and large scale simulations.

The Core Components of Simulation – Each must work at the optimum and in harmony with the others

Action #1-Seek out your Simulation Stars



PEOPLE



Image by madsmith33 from Pixabay

Collaborative Organisation

- Understand ALL the physics; **“The Polymaths”**
- Get the job done; **“The Dependables”**
- Find better ways to do it; **“The Innovators”**
- Insist on rigour in the process; **“The Diligents”**
- Great at teaching others; **“The Coaches”**
- Go to - to solve any problem; **“The Oracles”**
- Bring Cake. Great rapport; **“The Influencers”**

Build a Strategy Team

Organise for Collaboration

It's a Team Effort – Build your Team - Organise to Maximise Collaboration



Action #2 – Check for Bottlenecks

PROCESS



Efficient Processes

Common Bottlenecks:

- Waiting for input (CAD / Data)
- Poor Quality input (CAD / Data)
- Waiting for people
- Significant manual processing
- Model defects
- Unexpected noise factors
- Waiting for compute resources
- Models too detailed
- Process overly complex

Check processes for bottlenecks. WHY happening? WHAT impact? HOW to fix it?



Action #3 – Check your Confidence

METHODS



Proven Methods

- Apply a consistent confidence metric
- Implement method verification
- Apply confidence metric
 - Existing methods
 - New methods
- Quote Confidence with simulation results
- Implement a method development process

Organisations have to trust simulation results. Implement a consistent confidence metric



Action #4 – Manage your data

DATA



Reliable Data

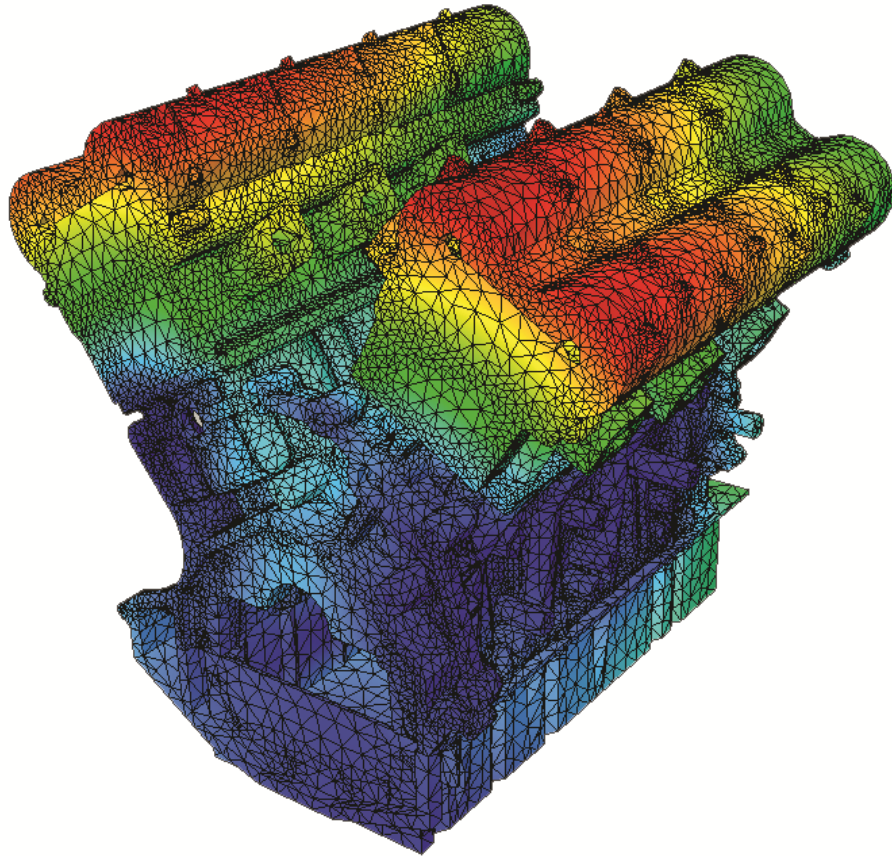
- Establish your data needs
- Identify data sources
- Clear ownership
- Implement data verification
- Use a data maturity metric
- Have a data storage strategy
- Build a data delivery plan
- Implement data management

Data is the most important input but most significant cause of in-efficiency and poor quality results. How good is yours?



Action #5 – Plan your Modelling

MODELS



Representative Models

- Identify model requirements
- Create a model specification
 - Physics / Use case
 - Fidelity / Features
- Review build process and tools
- Pay attention to assembly
- Agree resourcing strategy
- Review process efficiency
- Create a project plan

Models are important (*accuracy and quality*) and significant (*resource and time*). Have a specification. Have a Plan!



Action #6 – Use the Right Tools

TOOLS



Capable Tools

- Assess Requirements:
 - Physics
 - Functionality
- Review your Toolchains
 - Tool to Tool Connectivity
- Some useful Metrics
 - %Utilisation
 - Performance
 - Efficiency
 - Useability
 - Accuracy Reliability
 - Tool Duplication / Gaps

Do you have the right tools? Review tool landscape. Too many? Consider toolchains. Consider future requirements

Action #7 – Check Compute Performance



COMPUTE INFRASTRUCTURE

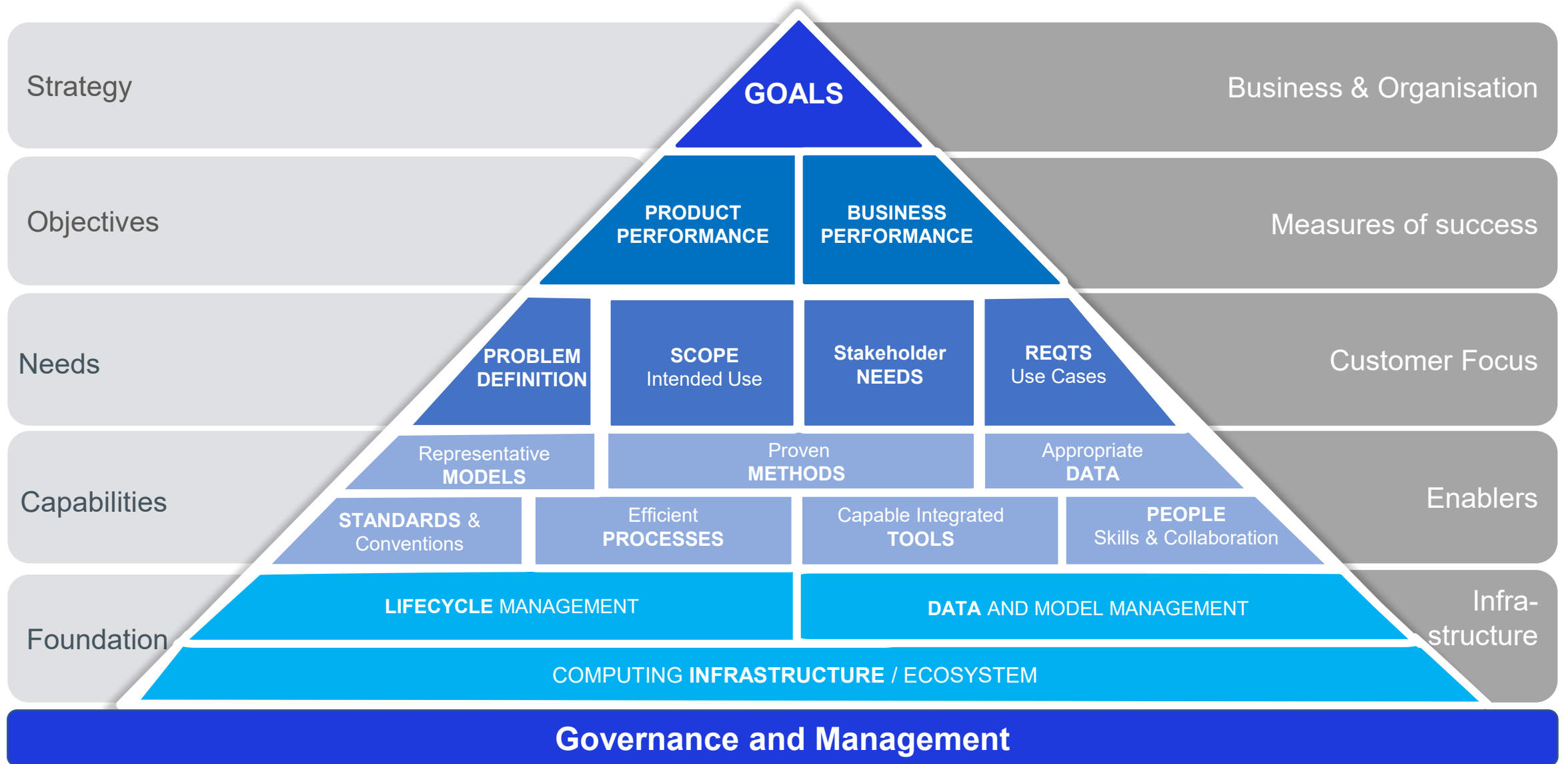


Performant Computing

- Establish a Compute Strategy
 - HPC (inhouse/cloud)
 - Memory/Storage/ Networks
 - Applications / Operating Software
 - Maintenance / Resilience
- Configured & Optimised for Simulation
- Key Performance Metrics
 - Demand / Capacity (Utilisation)
 - Job queue time / run times
 - Job failure rate

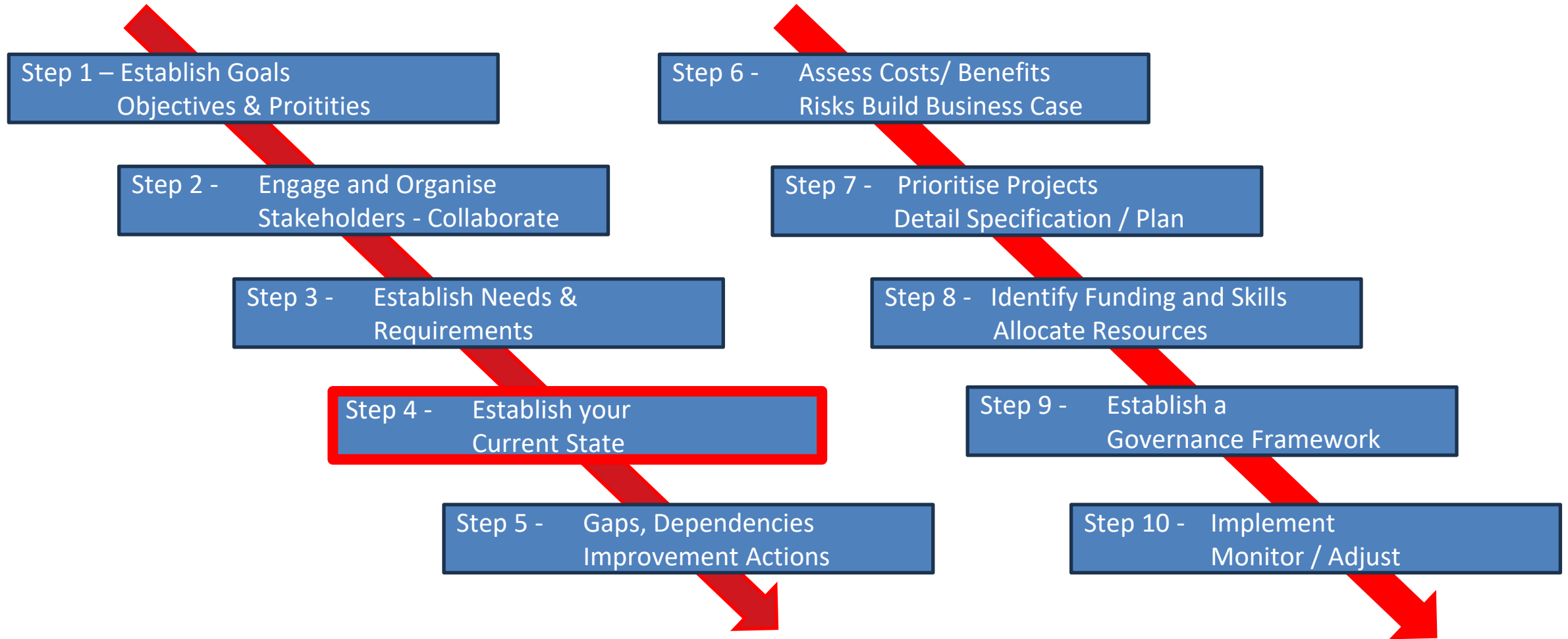
Computing is significant cost of simulation. Align, configure & optimise for simulation. Consider future needs and trends

Simulation Strategy





Building a Simulation Strategy



Key Steps in Building a Simulation Strategy

Using a Maturity Assessment Framework



CORE COMPONENTS	0	1	2	3	4
PROCESS	Insufficient Poor Confidence Limited Coverage (<25%)	Needs Reviewed Low Confidence Partial Coverage (25-50%)	Comprehensive Medium Confidence Good Coverage (50-75%)	Embedded High Confidence High Coverage (75-90%)	Systemic/Innovator Certification Level Full Coverage (90-100%)
METHODS	Ad-hoc No Plan No KPI	Partially Applied Actions Identified Improvement Started	Fully Applied Improvement Plan In progress - On track Established/Aligned	Fully Implemented KPI Monitored Actions Complete Goals Achieved	Maintained Continuously Improved Governed Futured
TOOLS					
MODELS					
DATA					
PEOPLE & ORGANISATION					
COMPUTE INFRASTRUCTURE					



Aspect	Maturity Level				
	0 Insufficient Ad-hoc	1 Low Confidence Partially Applied	2 Medium Confidence Improvement Plan	3 High Confidence Actions Complete	4 Certification Level Continuously Improved
Strategy				ASSESSMENT	
Process			ASSESSMENT		
Methods			ASSESSMENT	ASSESSMENT	
Tools			ASSESSMENT	ASSESSMENT	
Models			ASSESSMENT	ASSESSMENT	
Data		ASSESSMENT	ASSESSMENT	ASSESSMENT	
People and Organisation			ASSESSMENT	ASSESSMENT	
Computing Infrastructure			ASSESSMENT	ASSESSMENT	

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Example Framework: The Organisation Simulation Capability Maturity [OSCM] Metric

Using a Maturity Assessment Framework to highlight strengths, identify weaknesses & prioritise improvement action



And its critical to make AI work!



Engineering Simulation is a crucial **source** of reliable physics based input data
And an important **Verification** tool for AI generated designs

Having a Mature Engineering Simulation Capability is more important than ever



Thank you

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