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Digital Twins – Are they worth it?

Jeremy Hall, P.E., PMP, MBA

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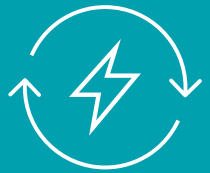
AVEVA

**“We know what information is required to
get an asset ready for
operations and to maintain through its life –
Wood know the ‘how’, the ‘when’ and the ‘why’,
not just the ‘what’...”**

Areas of expertise:



**Sustainable
Infrastructure**



**Energy
Transition**



**Digital
& Technology**

World leading consulting, engineering and construction company across energy and the built environment.

160+

year history

45,000

people

60+

countries

400

offices

~\$10bn

annual revenue

ENR #1

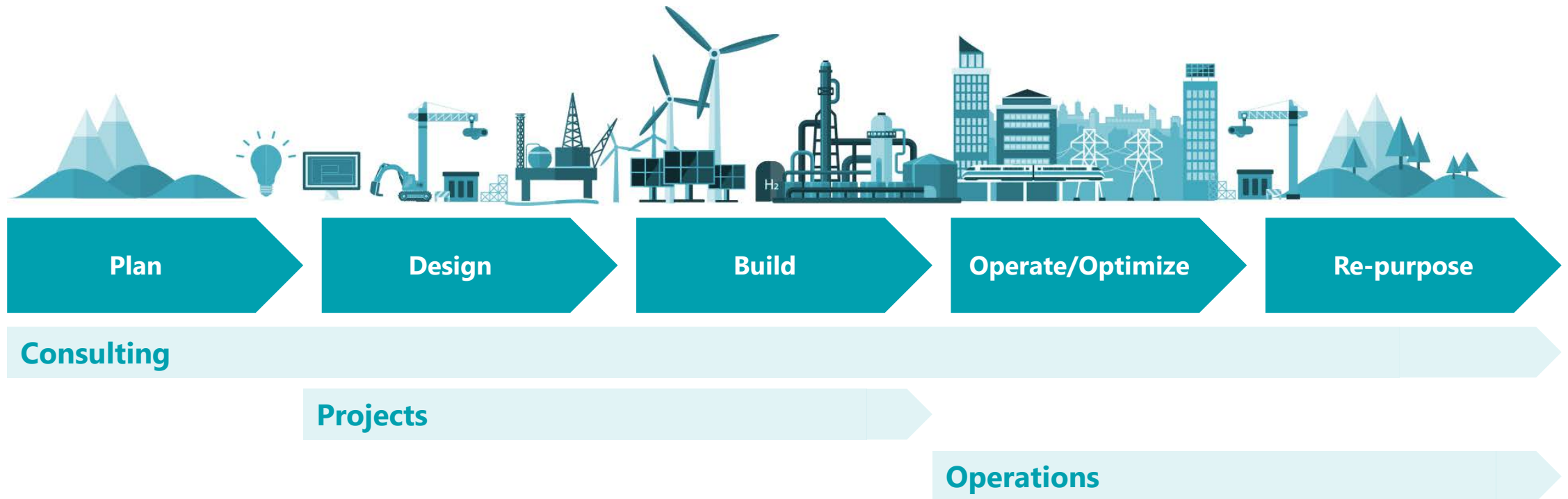
International Design Firm

Connected by our shared values of **care**, **commitment** and **courage**

wood. | **AVEVA**

Wood delivers a lifecycle proposition

Wood's business follows a **lifecycle of solutions** leveraging our expertise in designing, planning and optimizing any facility, asset or infrastructure through to our rich experience in building, operating and re-purposing.



Digital twin – full asset lifecycle

Unlock an asset's data to improve decision making to improve productivity & lower lifecycle costs.



Capital projects



Operating assets



Lifecycle info mgmt



Digital Capture

Core competencies



Domain knowledge



Technology expertise



Information management



Systems integration

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Capital Projects

Right-to-left Thinking

Our advisory, strategy and implementation offerings:



Capital projects

Objectives, baselines
& targets

1

Identify, quantify
& prioritise

2

People, processes,
technology – and data

3

Strategic Partner

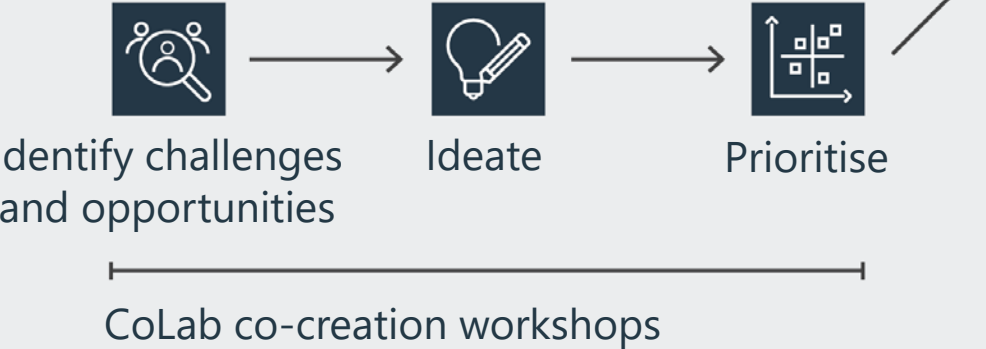
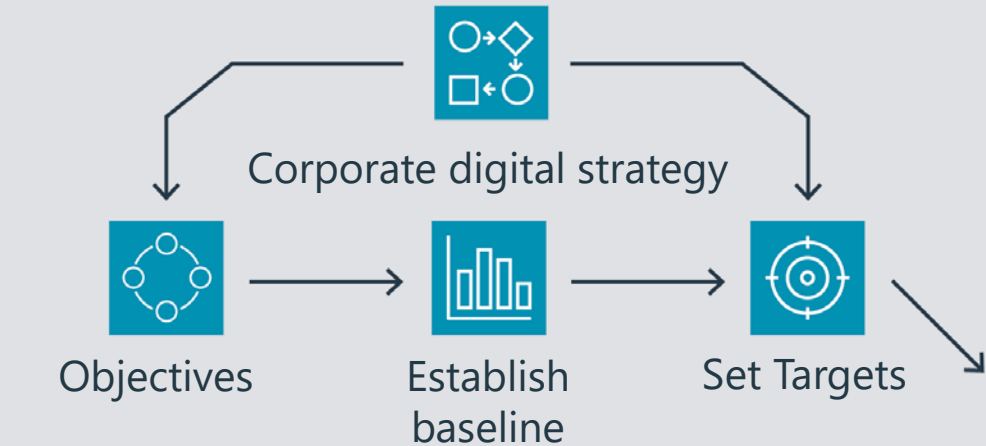
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Strategic Partner

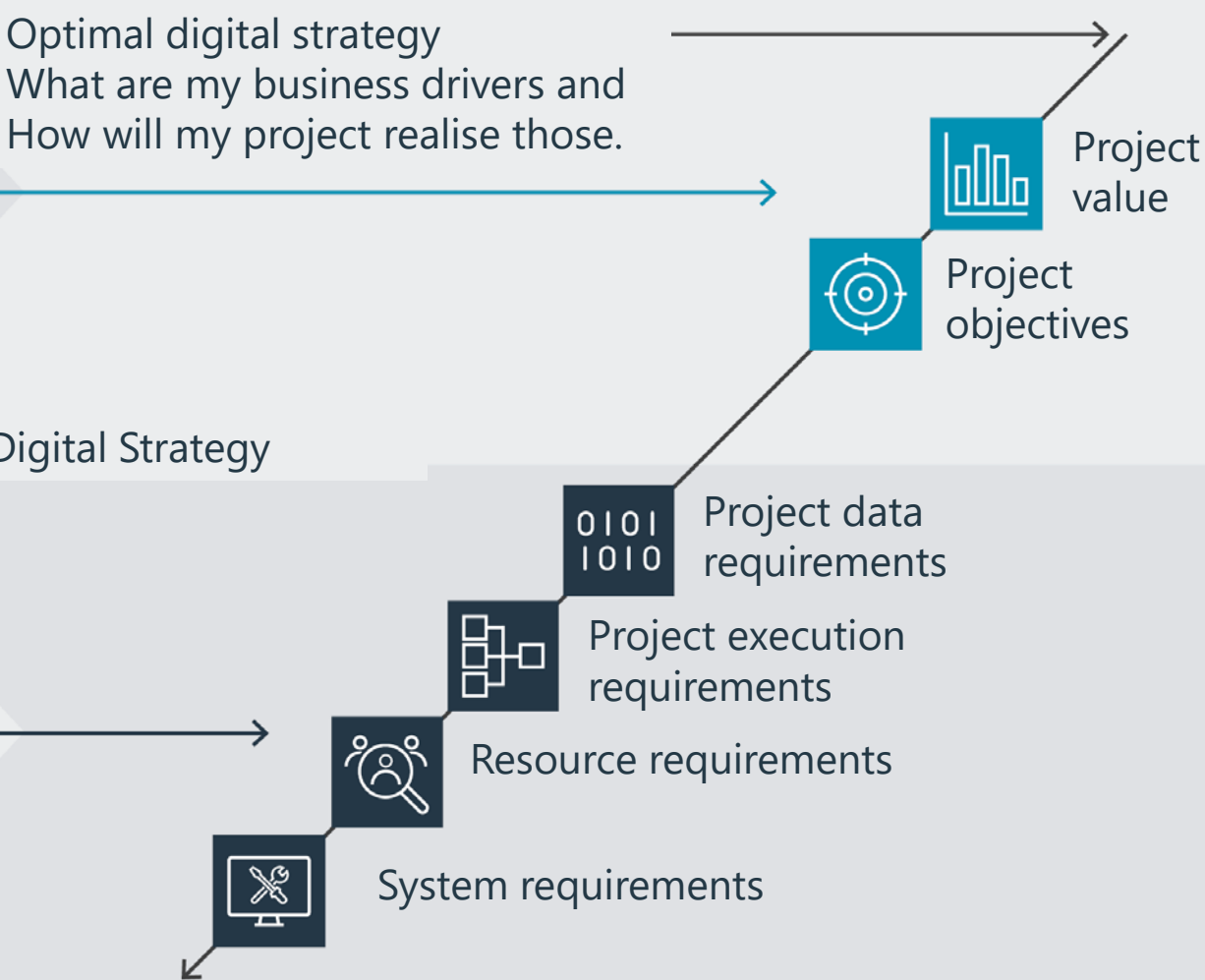
Digital strategy

Right to left thinking, combine clients' goals with future-focussed impact & value.

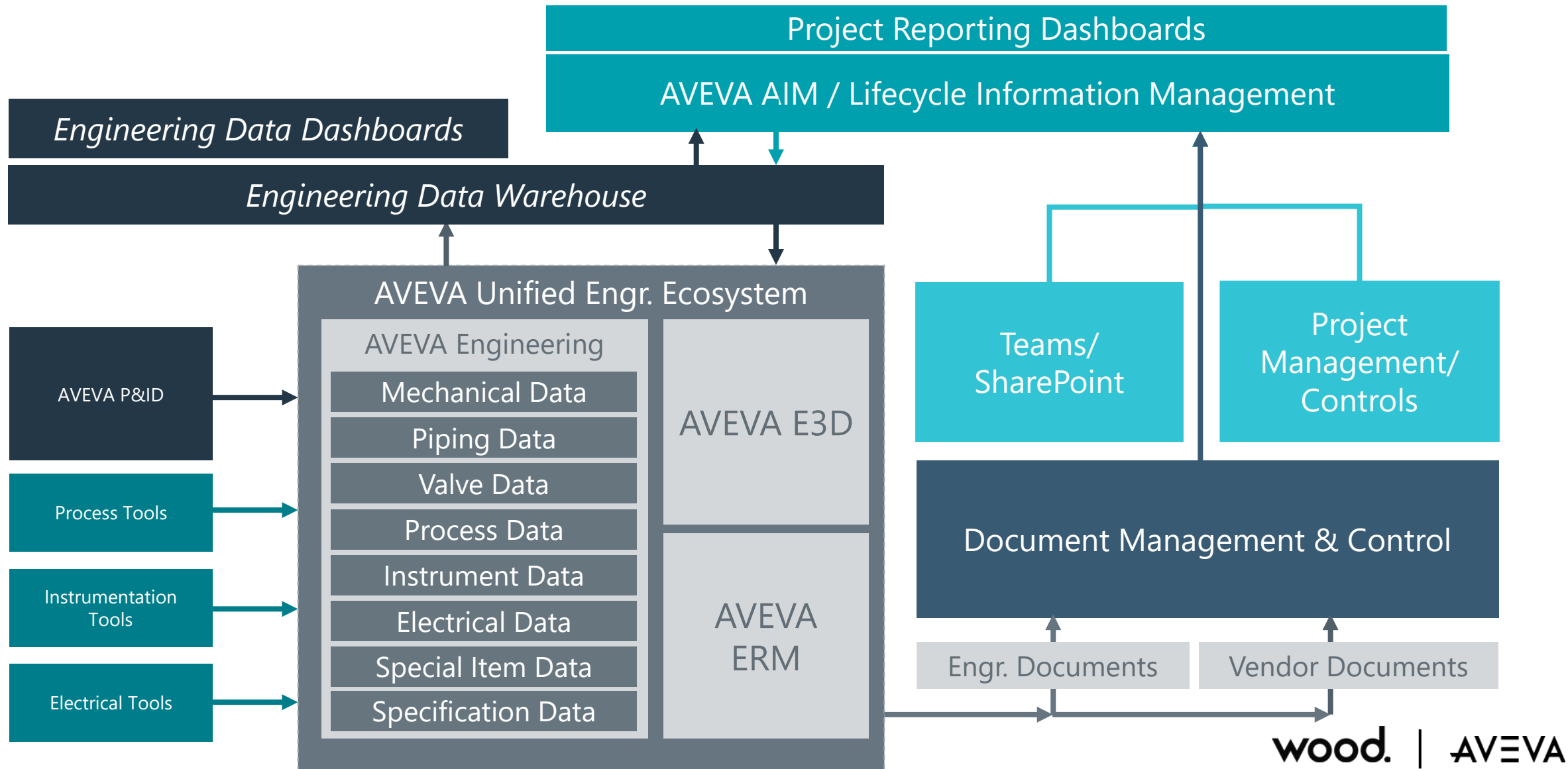
Planning phase



Implementation phase



Capital Projects - Integrated System Map



Digital twin for capital projects

Balance CAPEX & OPEX according to clients' needs.



Improved strategy means improved efficiency

5% Up to 5% shorter info. search time	15% 15% reduction of MTBF for equipment
70% Up to 70% improvement in asset reliability	35% 35% reduction of manual input

Operating Assets

Stay Competitive

Our advisory, strategy and implementation offerings:



Operating Assets

Objectives, baselines
& targets

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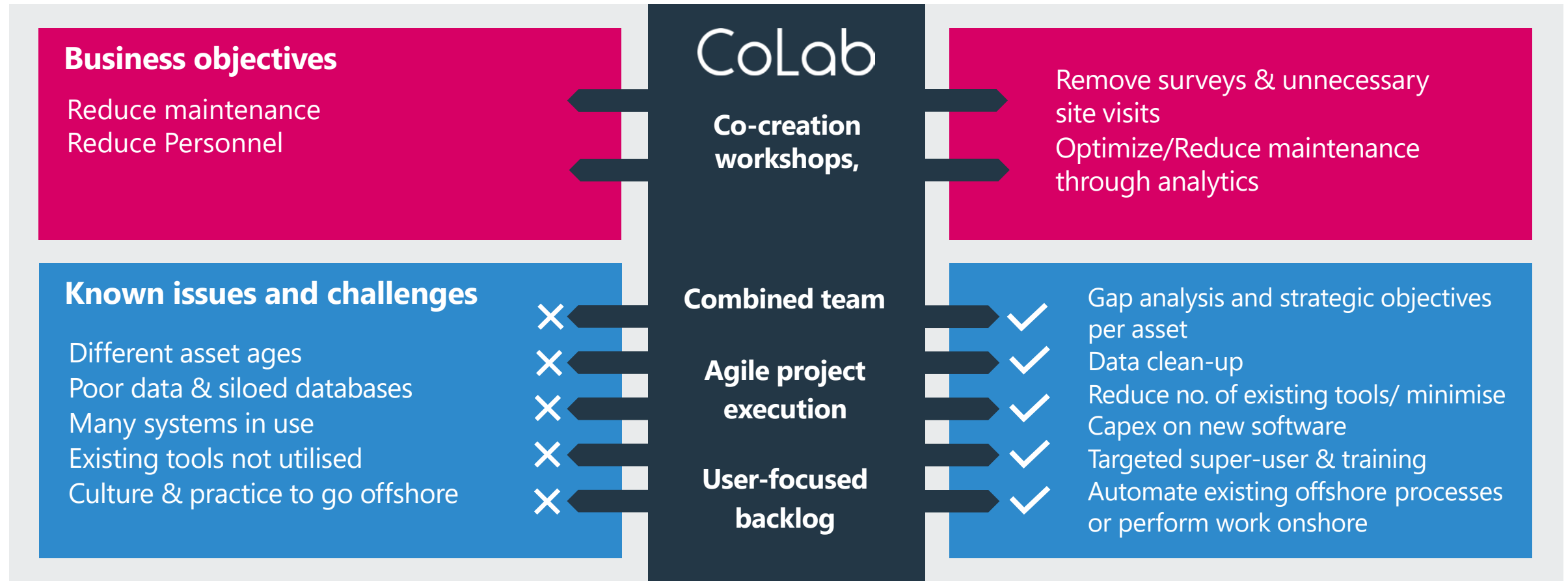
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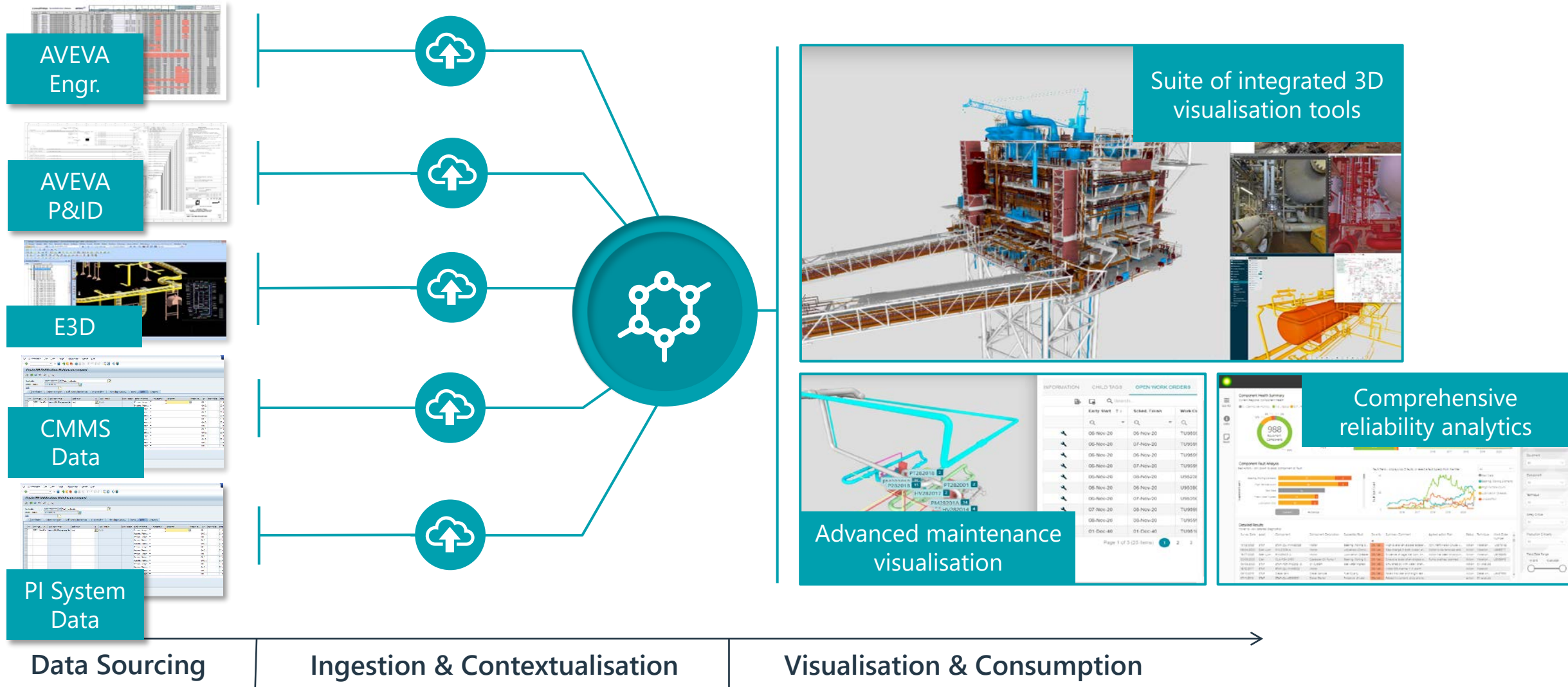
Strategic Partner

Operating Assets: Case study offshore digital twin

Limited ops budgets with reluctance means must prove value early before scaling out.



Operating Assets – Case Study Data workflow



Case study: Offshore digital twin value delivery

Flexible approach to solve variety of operation issues, including maintenance resourcing.

Problem

Client resource shortage for maintenance plan created a maintenance backlog.

Solution

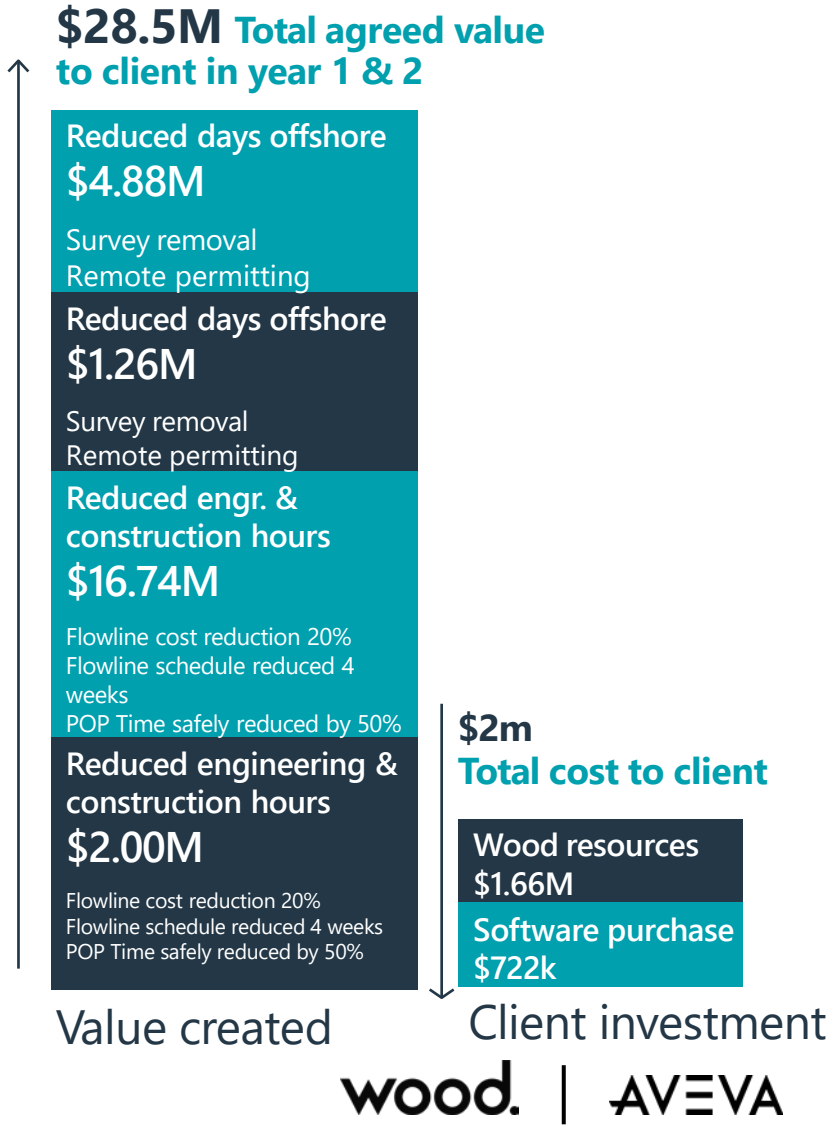
Reduce offshore mobilisation

- Eliminate all unnecessary mobilisation
- Move planners onshore
- Minimise need for offshore surveys

Fix maintenance backlog

- Perform backlog analytics
- Deliver new maintenance strategy
- Create the Reliability Compass to use performance data

Direct Savings
In-direct value



Digital capture

Designed to mould around clients' needs:

1



Strategise

In-depth consultation to determine needs & requirements, identify challenges & set targets.

2



Mobilise

Leverage domain expertise to choose best-fit service & technology provider and coordinate digital capture delivery.

3



Realise

Validating info. collected & integrating into a consolidated output aligned with standards.

Digital Capture - Value delivery

Digital capture provides a spatial, intelligent document & asset data integrated model.

Improving:

- Engineering productivity & accuracy
- Construction & commissioning delivery
- Operations & maintenance execution

10x

cheaper
document
digitisation
using A.I. over
conventional
methods

50%

faster access
to trusted
information

Lifecycle Information Management

Flexible Framework



Lifecycle Info. Mgmt. - Value delivery

LIM gives you a stable information foundation for the full asset lifecycle. Eliminates the reinterpretation & translation of data between systems.

- Standardisation & Efficiency
- Elements of certain data delivery scopes reduced by up to 50%.
- Reduce time looking for data results in overall 5% efficiency improvement.

Avoiding 1 day of delay to start-up production on a typical asset can be worth:

\$5m

for an oil asset
(based on 60k bpd)

\$150k

for a wind farm
(based on 150MW capacity)

\$8m

for an iron ore mine
(based on 20mt per year)

Outline of recurring challenges

Digital & tech. potential for clients is growing all the time. It can't solve every challenge, but expertise can help to overcome the common ones, & add value where it counts the most.



Reliance on outdated methods



Fragmented information sources



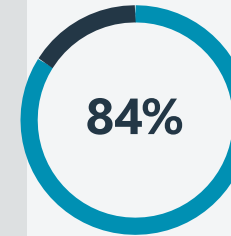
Lack of technology-enhanced processing



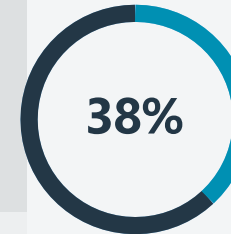
Organisational resistance to change



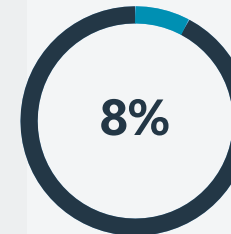
Legacy business models and corporate reluctance



84% of companies fail at digital transformation



Knowledge workers spend up to 38% of time looking for info.



8% current business models will remain economically viable



Jeremy Hall P.E., PMP, MBA


Senior Manager – Project Delivery


Wood

jeremy.hall@woodplc.com

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ABOUT AVEVA

AVEVA is a global leader in industrial software, driving digital transformation and sustainability. By connecting the power of information and artificial intelligence with human insight, AVEVA enables teams to use their data to unlock new value. We call this Performance Intelligence. AVEVA's comprehensive portfolio enables more than 20,000 industrial enterprises to engineer smarter, operate better and drive sustainable efficiency. AVEVA supports customers through a trusted ecosystem that includes 5,500 partners and 5,700 certified developers around the world. The company is headquartered in Cambridge, UK, with over 6,500 employees and 90 offices in over 40 countries.

Learn more at www.aveva.com