NOVEMBER 2022

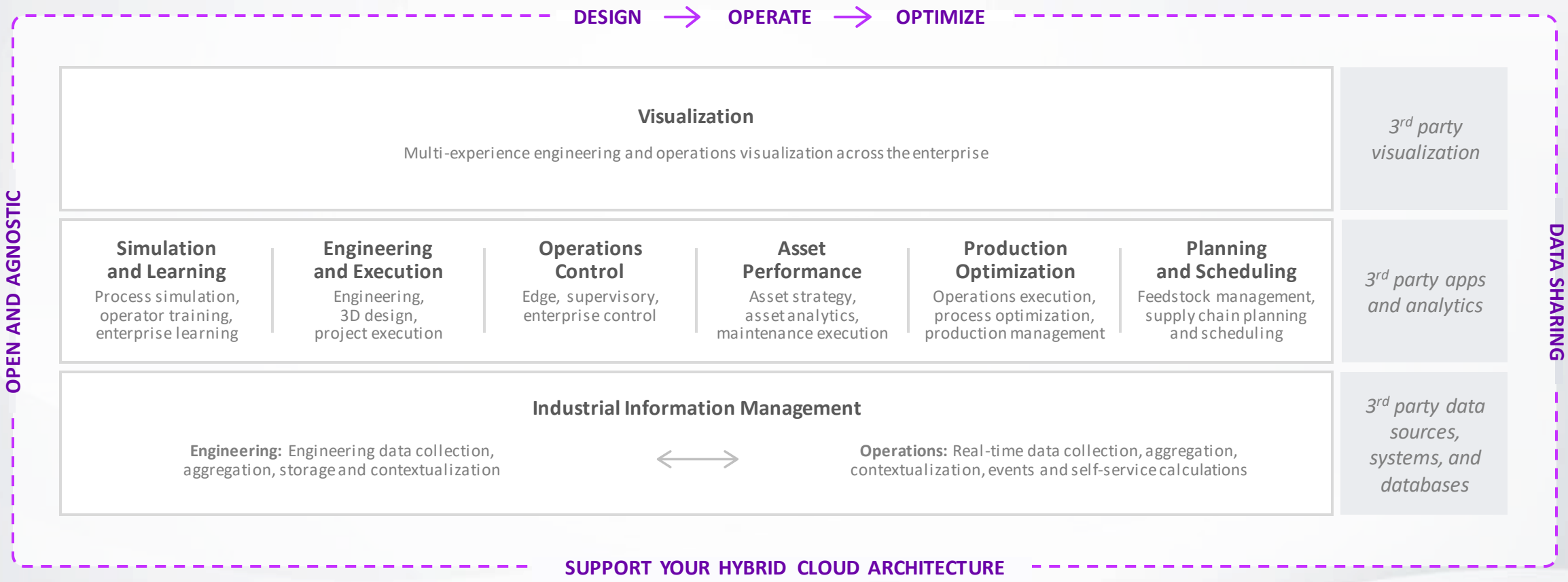
Digital Strategies for Lifecycle Management

Rick Standish – Vice President, Engineering Information Management, AVEVA

Malcolm Panthaki, Vice President, Analysis Solutions, Aras

Delivering a complete digital thread, purpose-built for industry

Accelerate time to value with flexible, scalable, and trusted industrial hybrid SaaS solutions



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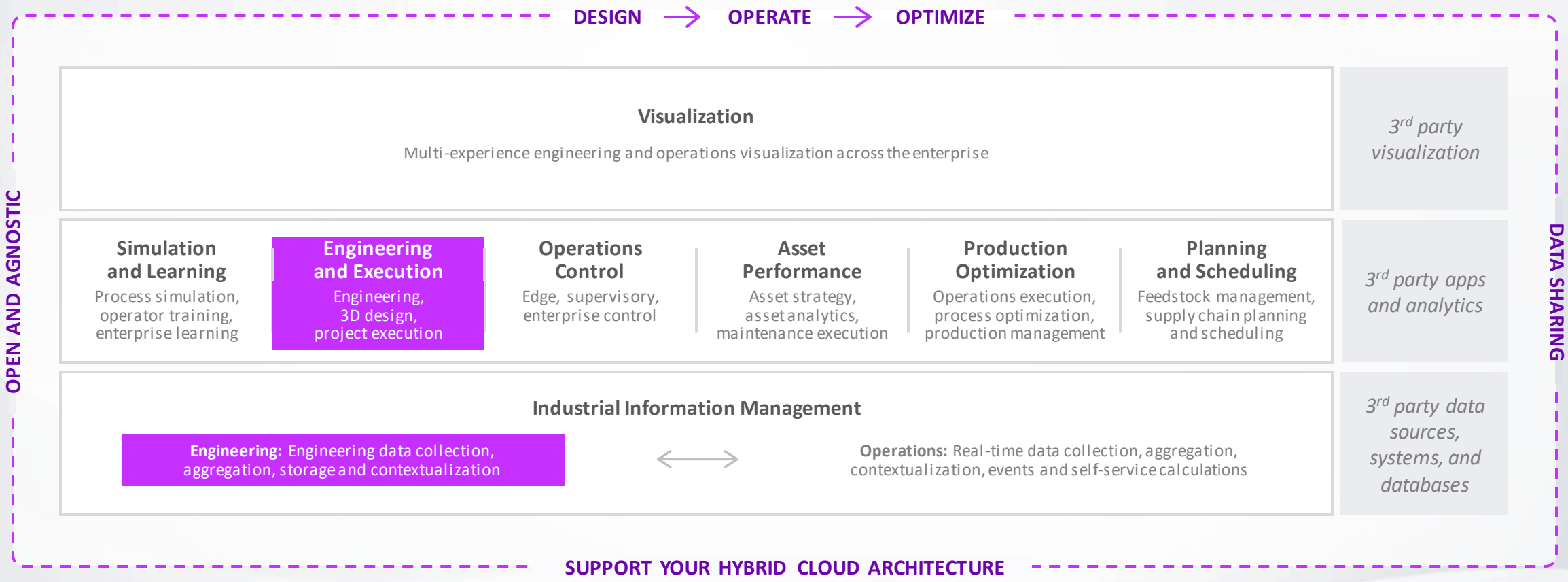

A Unique Cloud Solution

Addressing the broadest challenges in engineering

Functional Need

- FEED (Engineer)
- Detailed Design (Design)
- Execution Support (Build)
- Digital Delivery (Manage & Contextualize)

Functional Benefits of the solution

Engineer
Data centric collaborative engineering platform

Build
Reduce wastage and accelerate construction

Engineering / E&I & P&IDs

ERM

3D Model

Asset Lifecycle Management

Design
Increase productivity with rich 3D visualization

Manage
Whole asset configuration and change management

Contextualization
Access to a Unified Digital Twin

Functional Goals

1. Transparent, Readily Available, Trusted Data
2. Application Integration and Accessibility
3. Mature FEED
4. Elimination of Engineering Errors
5. High Engineering Efficiency & Quality
6. Creation of a Digital Asset for Handover
7. Process Selection / Sustainability First
8. Process Validation as Design Matures

Business Goals

- Streamlined Collaboration
- Lower Costs
- Increased Margin
- Deliver On Time
- Project Risk Mitigation

Financial Goals

On-time, on-budget with seamless handover for maximum Return on Investment

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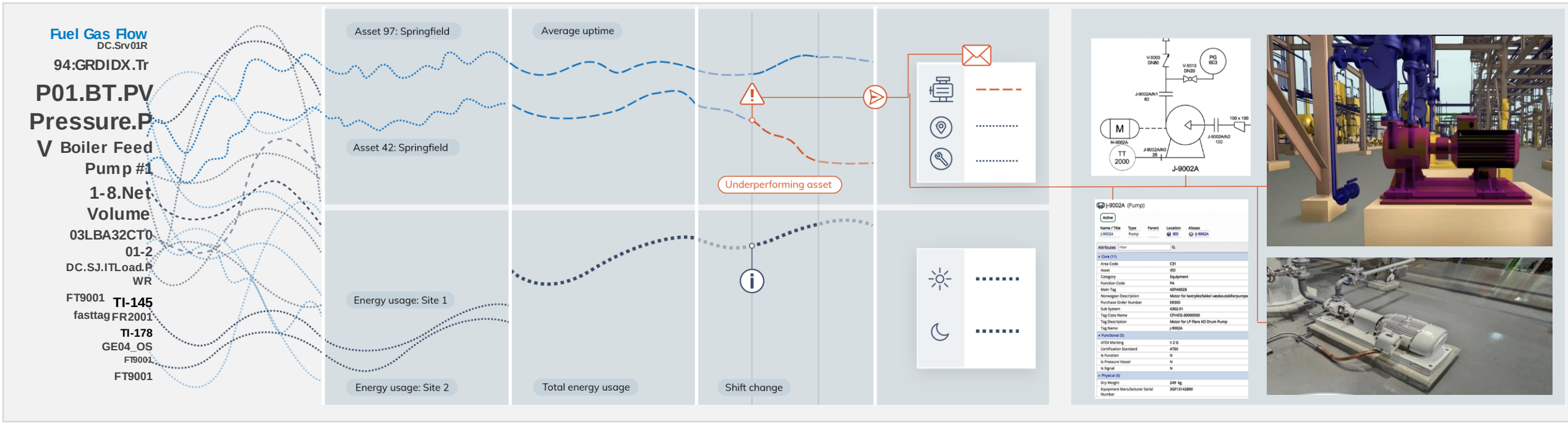
Scaling the Digital Thread

Individual Services Combined to form the Digital Thread



Streams | Asset Context | Analytics | Notifications | Lifecycle | Spatial Context

Use case by Connect Endpoints

Platform Services

Data Streams (Subscription per Active Stream)	Data Enrichment (Subscription per Active Stream)	Visualization (3D, Laser) (Subscription / Max. MAU)	Reference Content (Subscription per Active Stream)

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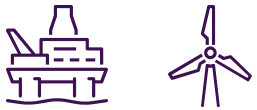
Lifecycle Requirements for the Engineering Digital Twin



EPC Capital Projects

"A Digital Platform that enables Modular Design & Re-use, integrates Engineering with Procurement, Project Controls, Construction, Fabrication and Commissioning and minimizes interfaces and improves collaboration"

Owner Operators

"A data centric approach to managing Asset Information (engineering, operations, and manufacturer data) to enable digital transformation. We require trusted asset data from engineering design tools, OEM, M&R, and DMS"

Highly Regulated Industries

"Delivering a digital twin that enables the use of systems engineering principles to manage requirements and configuration management; from conceptual design through the entire lifecycle to decommissioning."

Marine

"A consistent backbone for asset data; traceability between requirements, CAD, equipment, BOM, demands, sourcing, cost management and planning; engineering change management; sister ship configuration management; process automation and support through workflows; ability to efficiently collaborate with international partners"

New Strategic Asset Lifecycle Partnership

AVEVA-ARAS
Core Capabilities Roadmap and Primary Use Cases

Core Capabilities Roadmap

- Deliverable Management
- Unified Engineering Integration
- Requirements and Configuration Management
- Project Progress & Supplier Exchange Collaboration
- eBoM/mBoM Management / ERM Integration
- On-Premises and SaaS Variants

Primary use cases

- Engineering system of record for the Digital Twin
- Requirements and configuration management for regulated industries
- Product lifecycle management for highly complex ETO products
- Brownfield Operational Change Management for Oil & Gas / Power
- Productized Deliverable Management for Unified Engineering

The Digital Twin : Information mastery across the asset lifecycle

A unified data platform for better and faster decision-making combining both the engineering and operational data segments of industrial information.

Data Aggregation

Aggregate and align information from multiple sources to create a single source of truth for a given piece of data

Data in Context

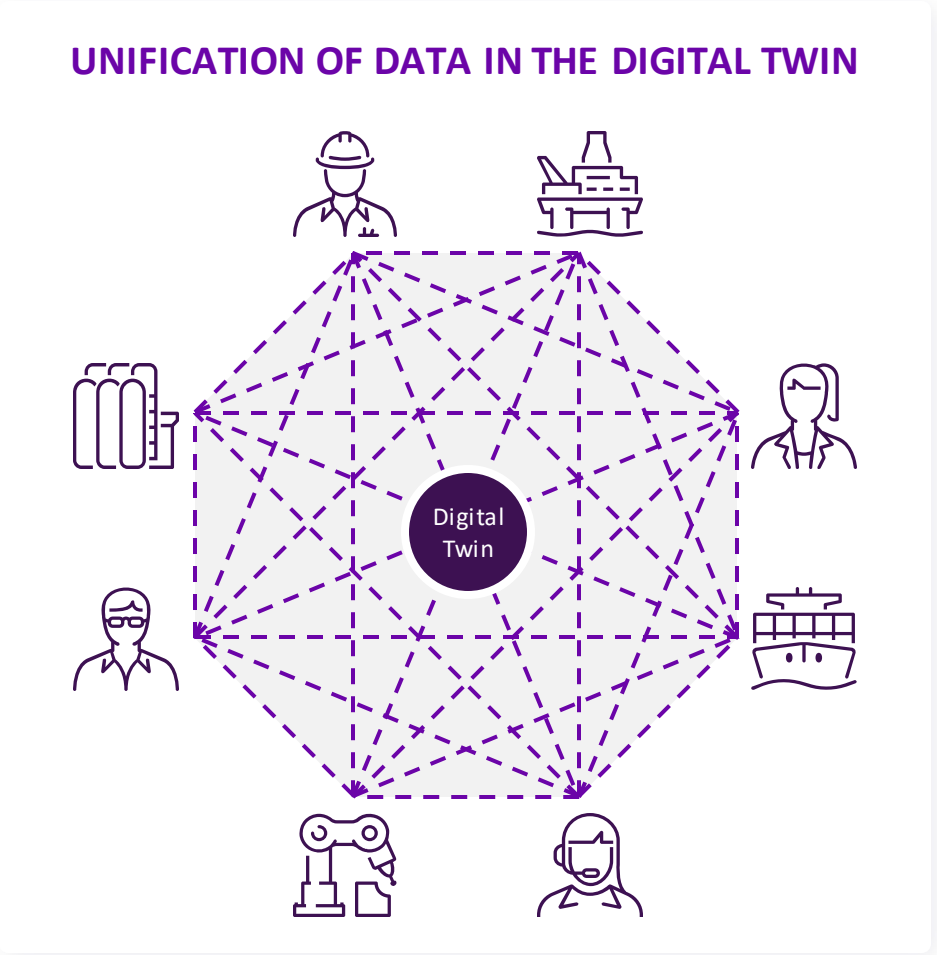
1D/2D/3D contextual enrichment of information to improve the quality and speed of decisions

Data Management

Configuration, change management, approval and baselining of engineering data and requirements.

Data Sharing

Democratize access to information for internal and external stakeholders (OEMs, Partners, etc.)



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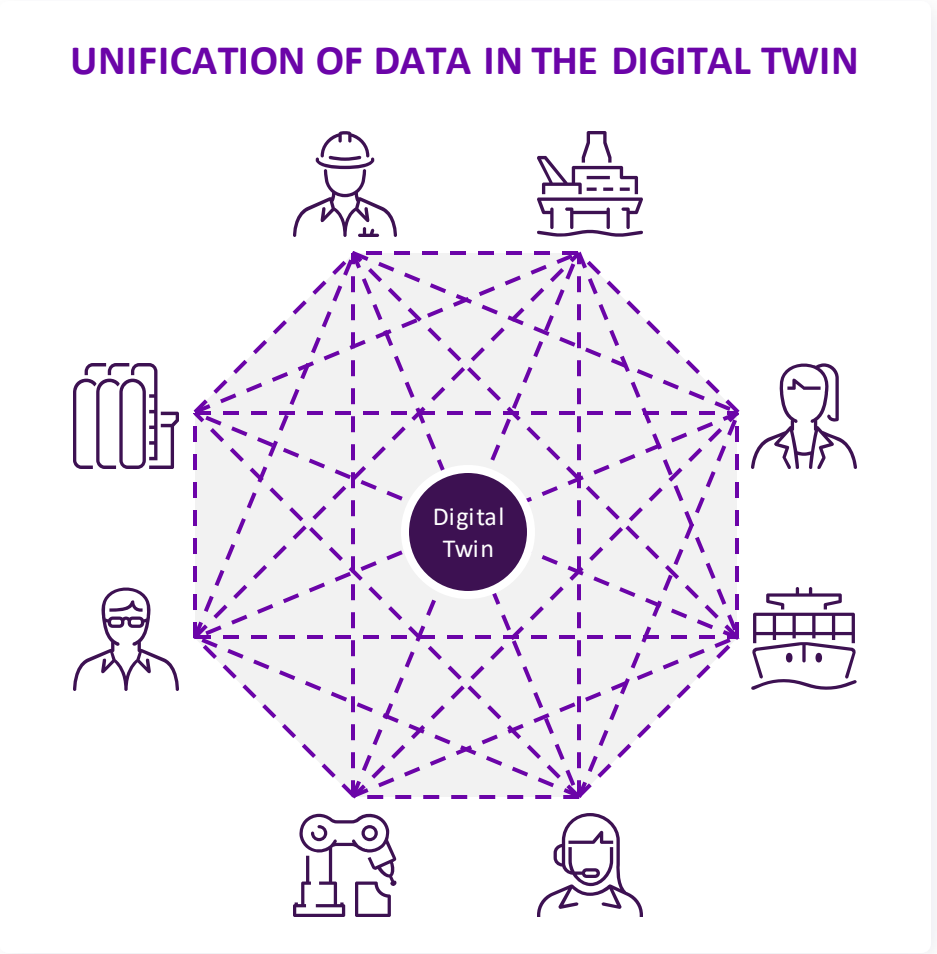

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System of Record for the Engineering Digital Twin

Joint Value Proposition

Engineering system of record for the AVEVA Digital Twin

Change and workflow management for Engineering data

Data compliance and quality verification for Engineering Handover

Requirements and configuration management for regulated industries (e.g. Nuclear)

Sister ship and serial management for the marine industries

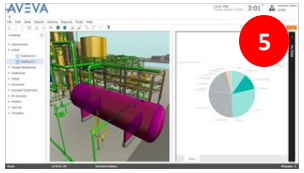
Product lifecycle management for highly complex ETO products

Visualization and community sharing of verified data for the extended supply chain

Efficient Process and Plant Design – Compliance – CAPEX Optimization

Efficient and Sustainable Operations

AVEVA Insight

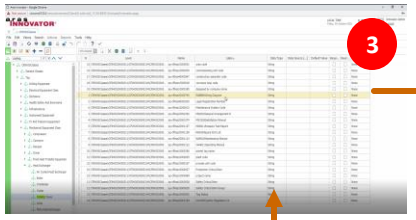


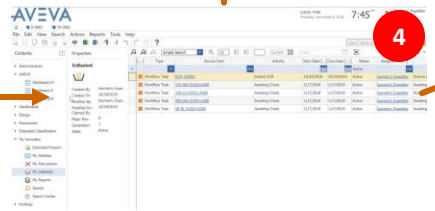
Data Aggregation Platform
AIM / AVEVA Data Hub

Community Applications

Customer Applications

Lifecycle Management





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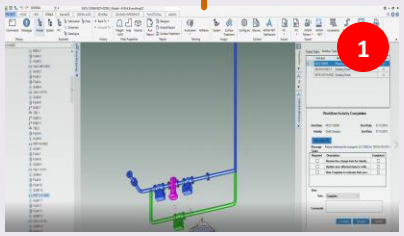
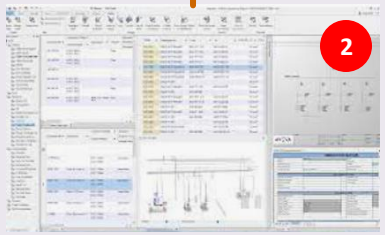
Process and Plant Design

AVEVA Unified Engineering





Build & Commission

Process and Plant Operations

Maintain & Service Plant

Power Ops Management

Maintain & Service Power

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1. AVEVA E3D publishes deliverables to Lifecycle
2. AVEVA Engineering publishes registers to Lifecycle
3. Deliverables registered, versioned & baselined
4. Approval workflows executed and deliverables baselined & attached to configuration / requirements
5. Deliverables made available for visualisation via data hub
6. Deliverables referenced in project execution processes
7. Deliverables referenced in ops & maintenance processes

AVEVA

Demonstration

AVEVA

INSERT NEW Partnership Demonstrator When Available – November 9th (10 Mins)

Delivering New Opportunities for Asset Lifecyle Management

The

Partnership

Aras' Purpose, Vision, and Mission

PURPOSE

Enable our customers to create safe and innovative products that play an **essential** role in our lives

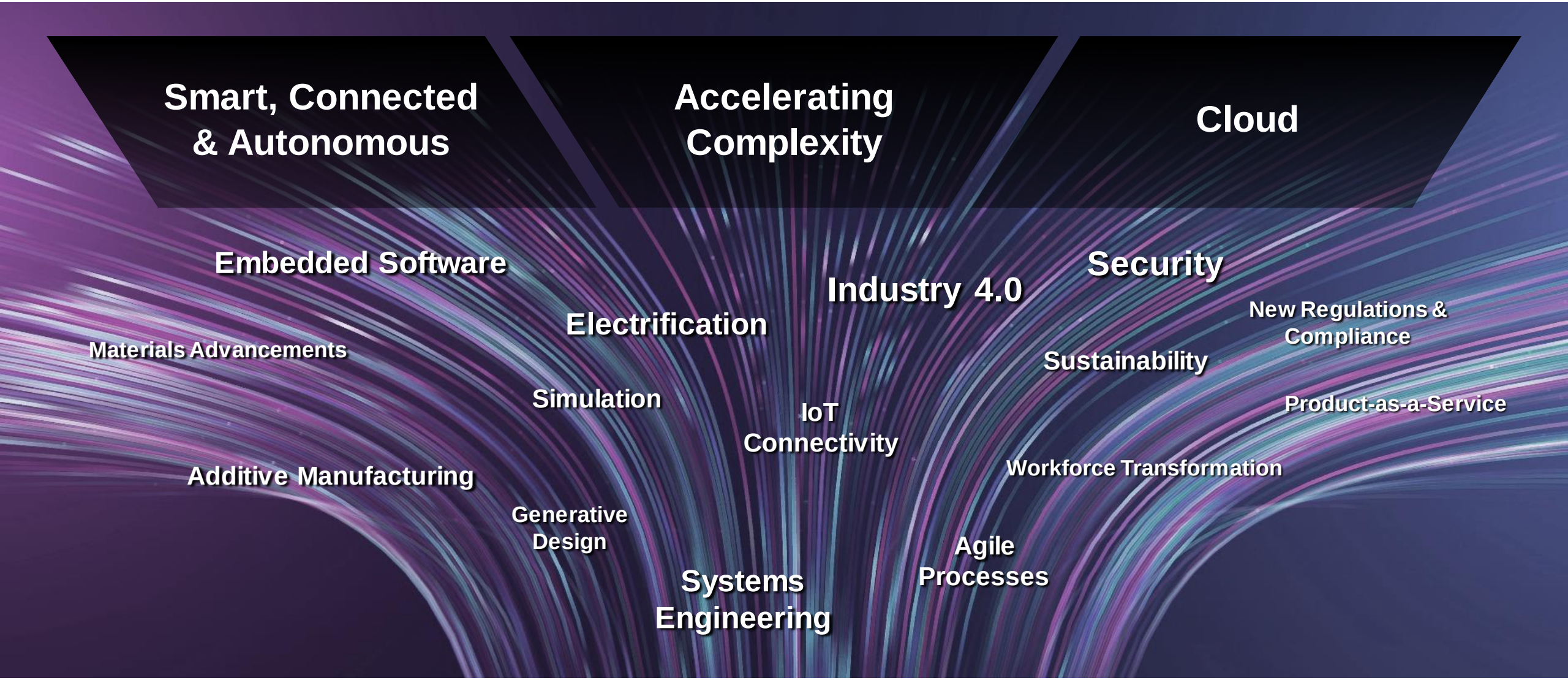
VISION

Transform the way the world makes products

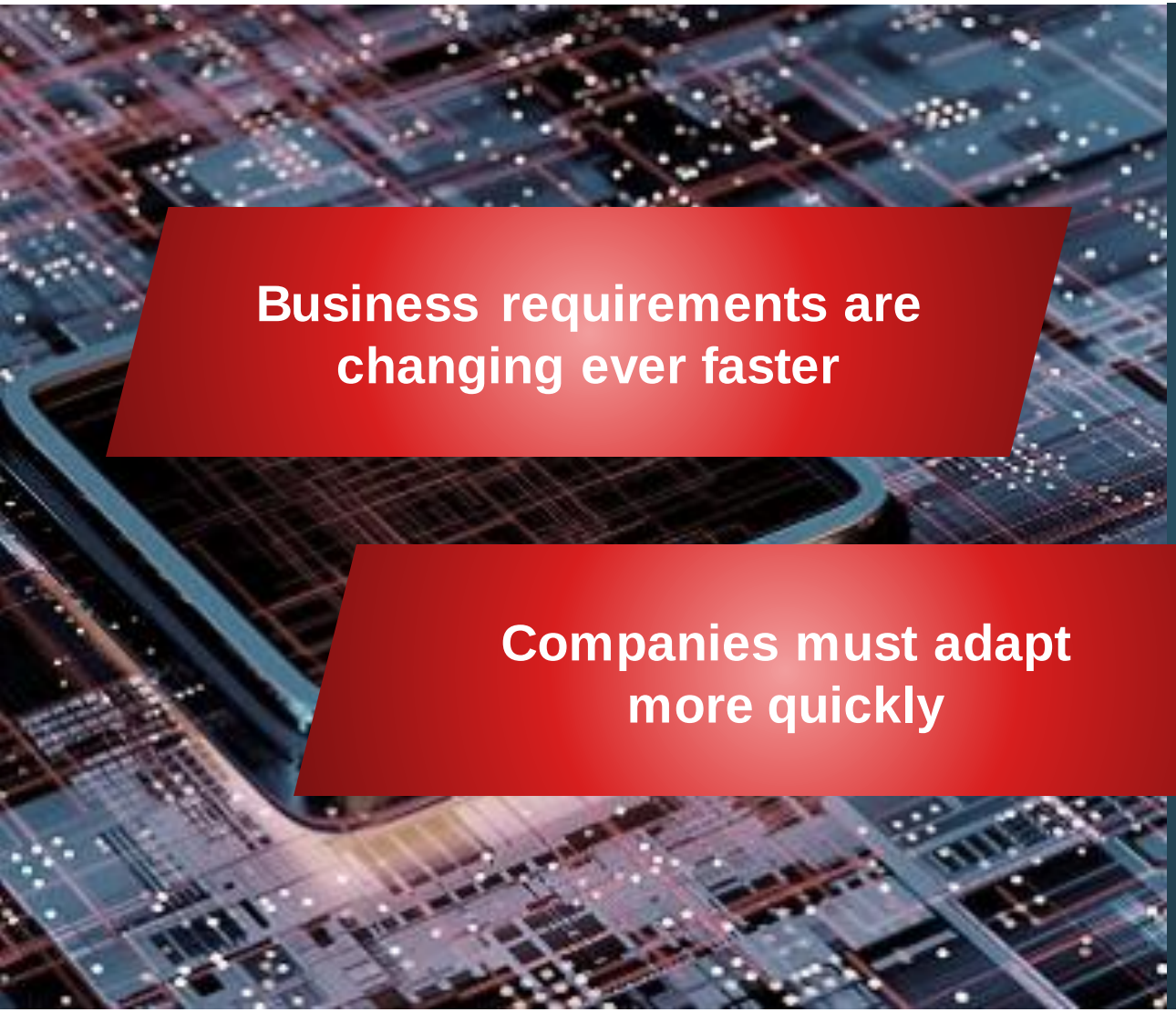
MISSION

Reinvent software for engineering and manufacturing to empower our customers with the **flexibility** to overcome tomorrow's challenges

Megatrends Speeding Up Change and Disruption



Rapid Transformation *and* Unforeseen Events



Business requirements are changing ever faster

Companies must adapt more quickly

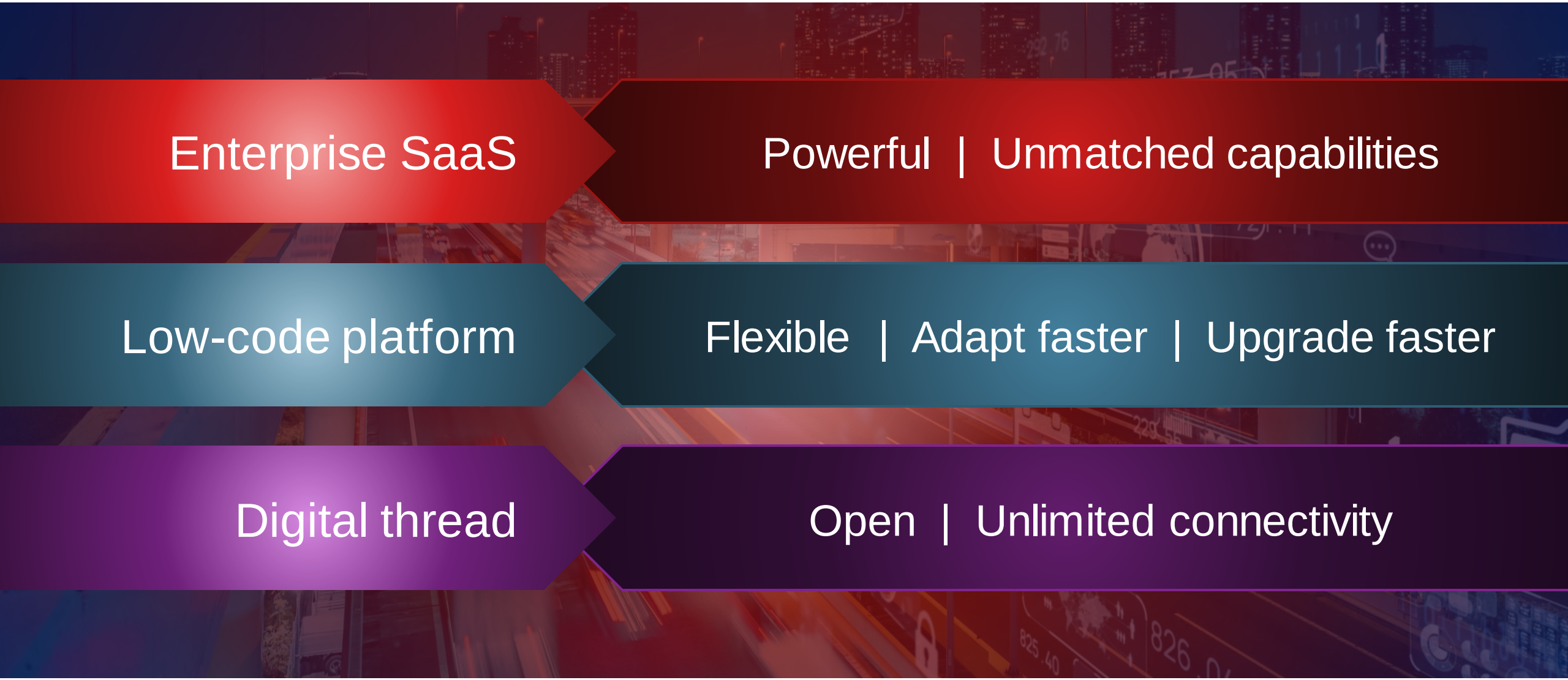
"What we are seeing is a great acceleration of trends that existed before the crisis.

Sven Smit
Senior Partner and Chairman & Director,
McKinsey Global Institute, *"The Great Acceleration"*

McKinsey & Company

Global Manufacturers Struggling to Adapt

Our Disruptive Advantages



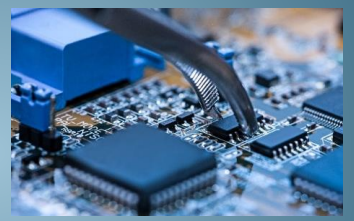
Fastest Growing in Our Category

Global Enterprises Use Aras to Design, Build, and Operate Complex Products

AEROSPACE

AUTOMOTIVE

DEFENSE



HIGH-TECH ELECTRONICS

INDUSTRIAL

MEDICAL DEVICES

GE, Honda, Microsoft, Audi, Airbus, Huntington Ingalls Industries, Leonardo, Andersen Windows & Doors, Carestream, SICK Sensor Intelligence., Nidec, Kubota, BAE Systems, Bombardier, Cubic, NXP, Saab, Hitachi, Rheem, Dräger, Lear, Sandia National Laboratories, Littelfuse, muRata, Freudenberg, Volkswagen, Kawasaki Powering your potential, Northrop Grumman, Biotronik, U.S. Air Force, Fujifilm, Delta Flight Products, Mayo Clinic, Insitu A Boeing Company, Denso, Renesas, ottobock., Edwards, Magna, Mitsubishi Heavy Industries, Lord, Motorola Solutions

Aras Empowers Customers to Adapt with Agility

"The future with Aras is glowing and growing, with new capabilities being introduced, capabilities that can actually impact our company and impact the bottom line. I see the future as being very bright."

Rick Bosch
Insitu | A Boeing Company

BOEING

"The ability for us to take a full system and do an upgrade which is fully regression tested and deployed within three months is something we have not had the ability to do previously at Microsoft. This is a testament to the platform that Aras has built."

Boris Cononetz, Jr.
Microsoft

Microsoft

"The possibilities for streamlining both technical and business processes are almost endless with Aras, and the fact that the upgrades are included in the Aras subscription and performed by Aras is a significant benefit to us into the future."

Yutaro Mishima
Kawasaki Heavy Industries

Kawasaki

Digital Transformation Platform

Low-Code Platform

Enterprise SaaS

Digital Thread

RE	SA	PM	SM	VM	PE	CE	TD	MPP	QMS	DTC
Requirements Engineering	Systems Architecture	Program Management	Simulation Management	Variant Management	Product Engineering	Component Engineering	Technical Documentation	Manufacturing Process Planning	Quality Management System	Digital Twin Core

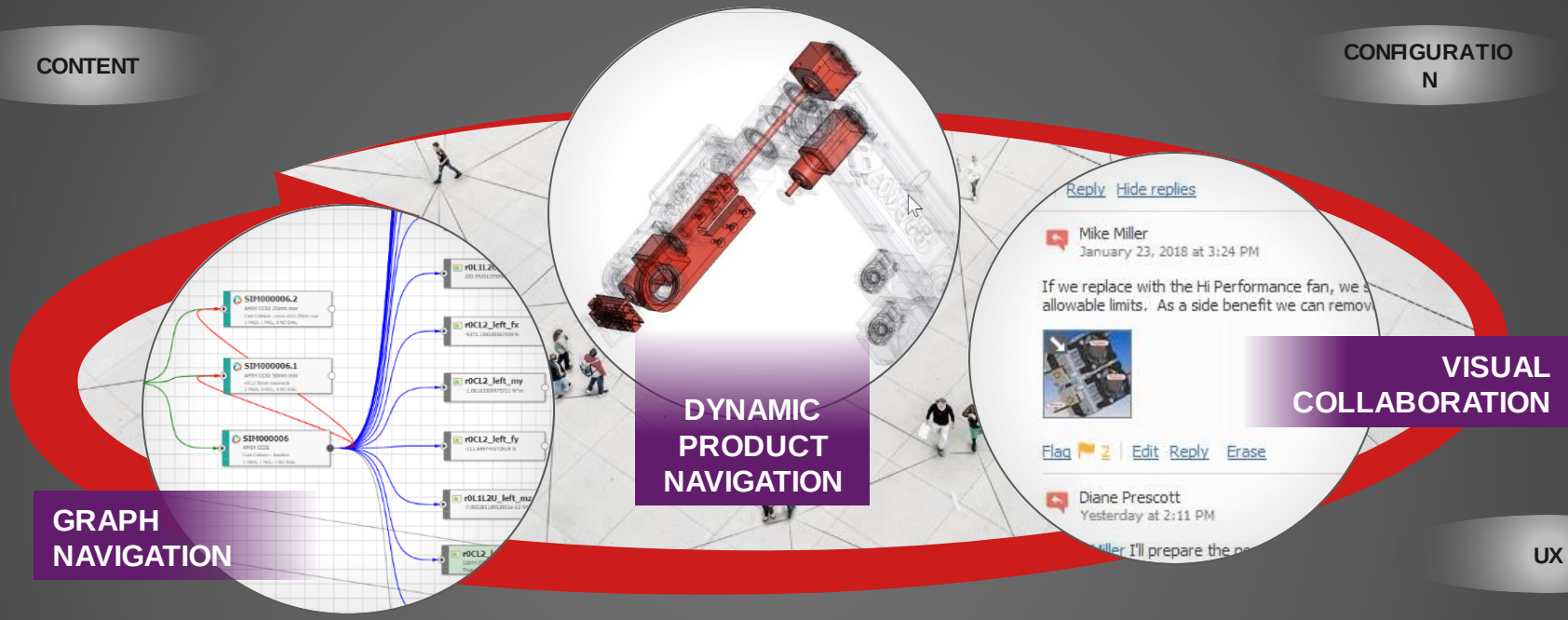
INDUSTRIAL LOW-CODE MODELING ENGINE

PLATFORM SERVICES

REPOSITORY

Platform services support Rapid Application Development

SEARCH
CONTENT
CONFIGURATION
FEDERATION
PROCESS
VISUALIZATION
ACCESS
PUBLISHING
COLLABORATION
CALCULATION
SCHEDULING
UX



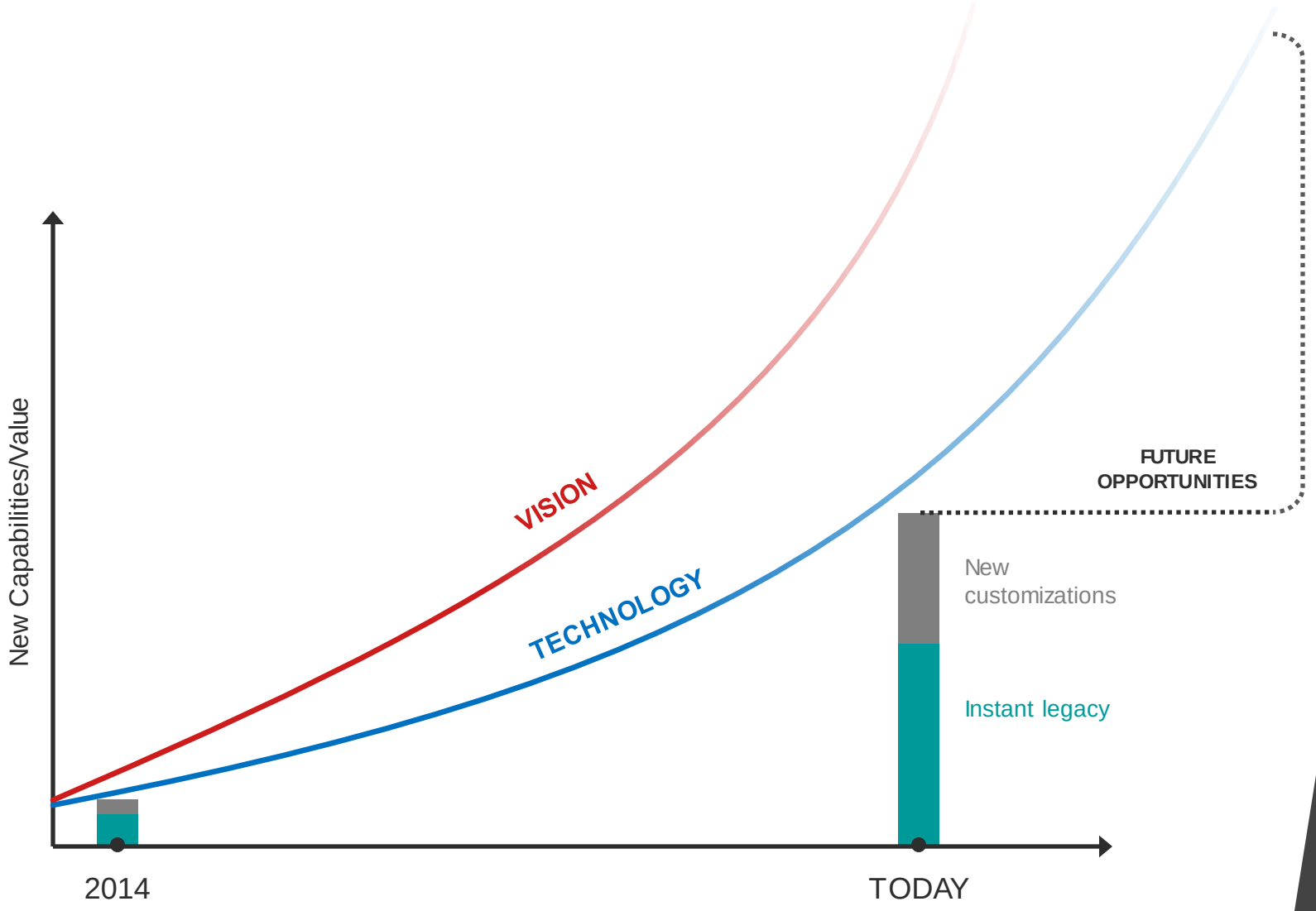
RE Requirements Engineering
SA Systems Architecture
PM Program Management
SM Simulation Management
VM Variant Management
PE Product Engineering
CE Component Engineering
TD Technical Documentation
MPP Manufacturing Process Planning
QMS Quality Management System
DTC Digital Twin Core

INDUSTRIAL LOW-CODE MODELING ENGINE

PLATFORM SERVICES

REPOSITORY

Are you keeping pace with change?



PLM Upgrade Comparison

	Siemens	Dassault Systèmes	PTC	Aras
Years between	12.4	8.8	8.3	1.5
Months to complete	14	13	11	3
Average cost	$1.2M	$987k	$723k	$46k

CIMdata Study

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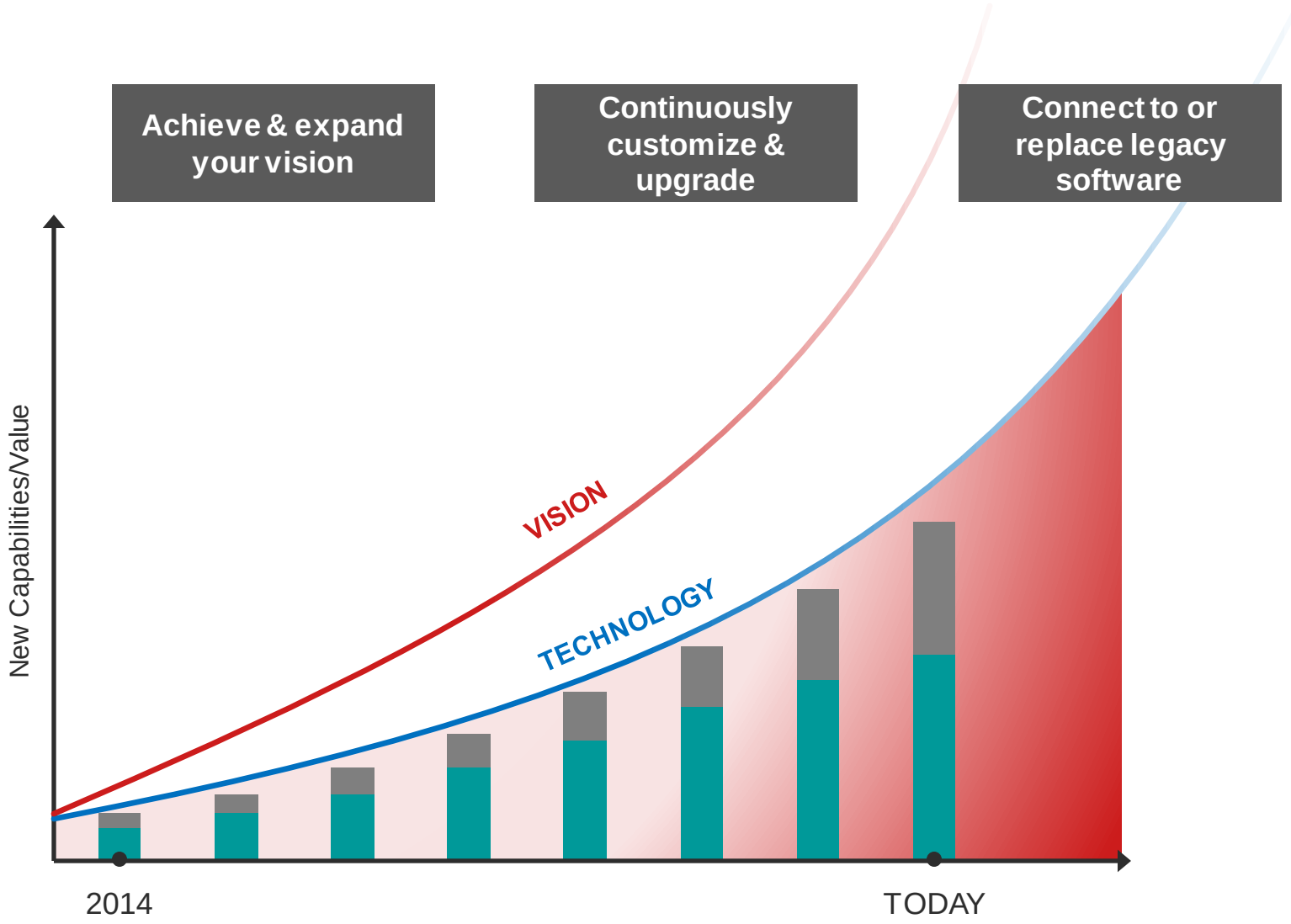
Achieve sustainable digital transformation



aras INNOVATOR

- OPEN
- FLEXIBLE
- SCALABLE
- UPGRADEABLE

"Aras offers the best combination of customizability along with fast, easy and low-cost upgrades compared with competing PLM providers."

- CIMdata, 2021

aras

Context for building, sustaining, and using Industrial Digital Twins

Digital Twin Configuration

Digital Twin Core
Exact digital representation of a physical asset

As-designed / As-built / As-maintained Asset configuration

Necessary context for analytics, visualization, and simulation

Additional Aras capabilities for Digital Twins:
- 3D Visualization (Dynamic Product Navigation)
- Visual Collaboration
- Graph Navigation
- Simulation Management

aras INNOVATOR

Industrial Digital Twin

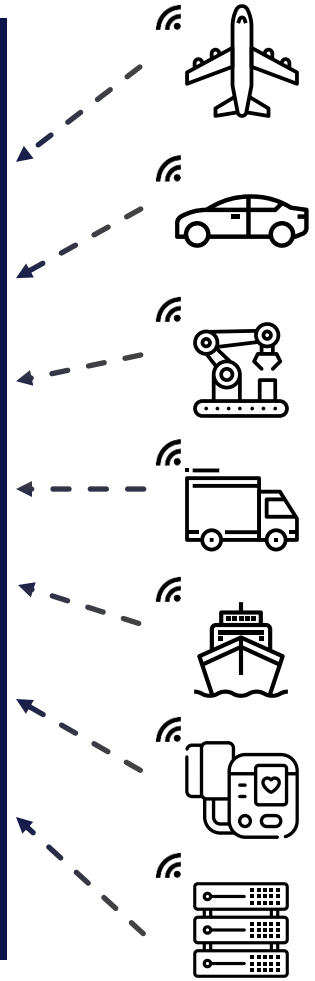
Digital Twin
Exact digital representation of a physical asset

As-Designed / As-Engineered / As-Operated / As-Maintained

Enterprise-wide visibility and real time decision support

Additional AVEVA capabilities for Digital Twins:
- Whole Asset Multi Experience Visualization
- Engineering Data Aggregation
- Operations Information management
- Process Simulation & Optimization

AVEVA Connect

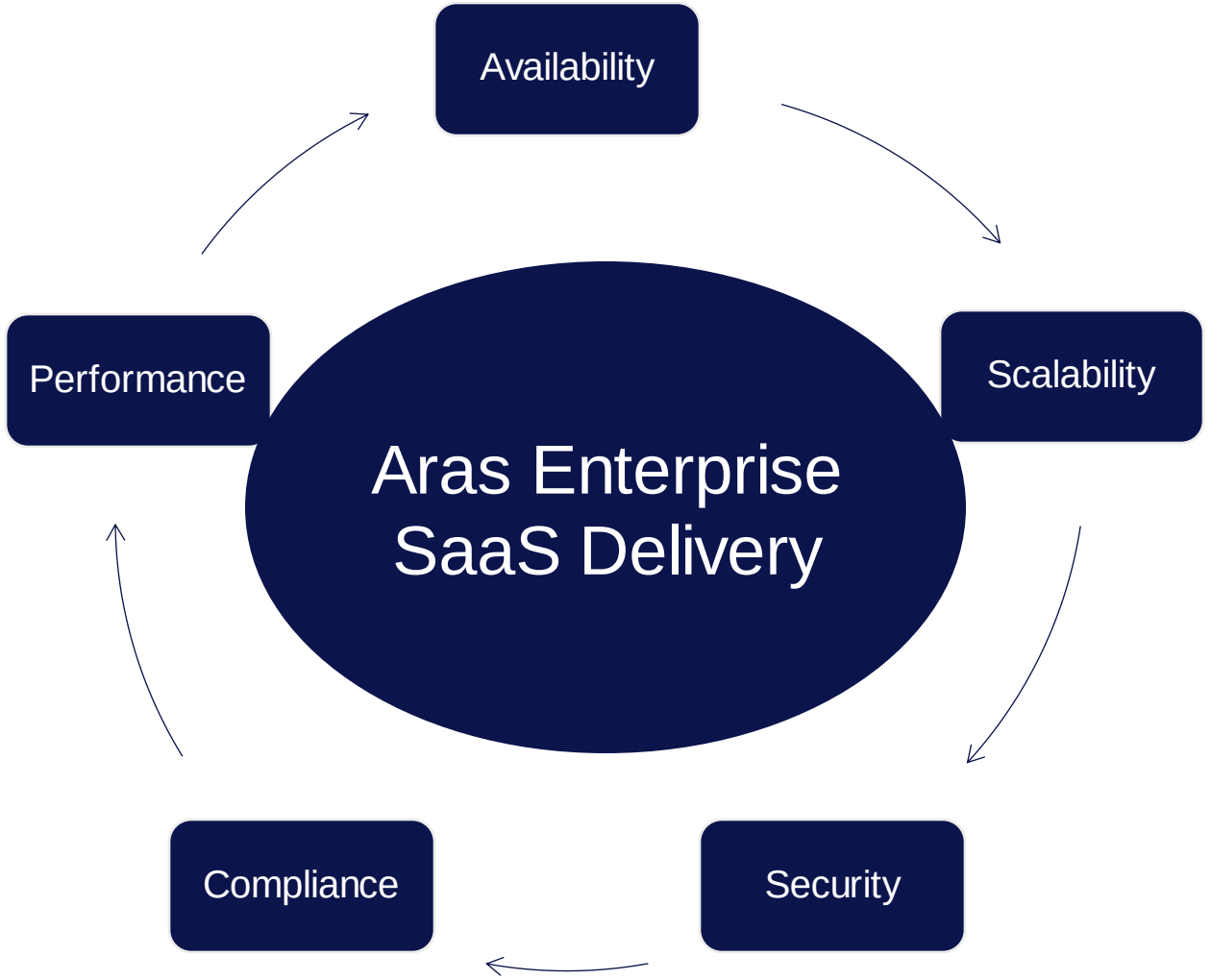


More capable than any other SaaS offering for PLM

Only Aras Enterprise SaaS provides a fully capable, business-ready SaaS PLM environment with complete Systems Engineering and Digital Thread functionality ready to transform your organization, all available in a single offering.

Aras Enterprise SaaS is the only SaaS offering for PLM to support unlimited customizations and the capabilities to create unique solutions with no limits to complexity. This is managed via an integrated DevOps toolset to streamline the delivery process.

Unlike other SaaS offerings that force upgrades, Aras Enterprise SaaS allows you to adopt new capabilities at your own pace, with all customizations guaranteed to work with new versions. This eliminates compliance issues, risks, and associated liabilities of systematic updates.



NuScale Power / SMR Nuclear Technology provides a safe, simple, small, economical, scalable nuclear power generation designed to meet today's energy demands.

- **Challenges:**
  - Designs must still satisfy the same requirements of traditional plants
  - Design requirements come in many forms and changes come at various times
  - Legacy plants have struggled largely because information is document based
  - While NuScale's SMR design is much simpler, they must still meet the same requirements for safety, regulations, and quality as those of a traditional nuclear plant.
  - Simpler doesn't mean fewer requirements
  - Looking for a "one stop shop" for requirements

NUSCALE™
Power for all humankind

- **Solution:**
  - With Aras Innovator, NuScale took a simpler approach to PLM
  - Configuration and customization replace out-of-the-box systems and provide long term value
  - Use Aras Innovator for configuration management from design and concept through decommissioning
  - Manage all variants in one place
  - Need the ability to trace those requirements down to the part level at any given time

- **Why Aras?**
  - Unique architecture adapts to meet changing business needs
  - Replace disruptions with regular upgrades that include customized functionality
  - Lifecycle traceability via digital thread and digital twin functionality
  - Scalable platform, regular upgrades including customized functionality
  - Open connectivity; tool agnostic

This EPC is a leading engineering and technology company that selected Aras Innovator to advance its energy transition strategy

Solution

- Deploy Aras Innovator to support digital-by-design approach
- Full project lifecycle traceability and optimization

Why Aras?

- Standardized data flows and seamless collaboration between disciplines
- Easy access to past project information to increase engineering re-use
- Ease of data integration for actionable reporting
- Supports creation of a digital twin backbone

Benefits:

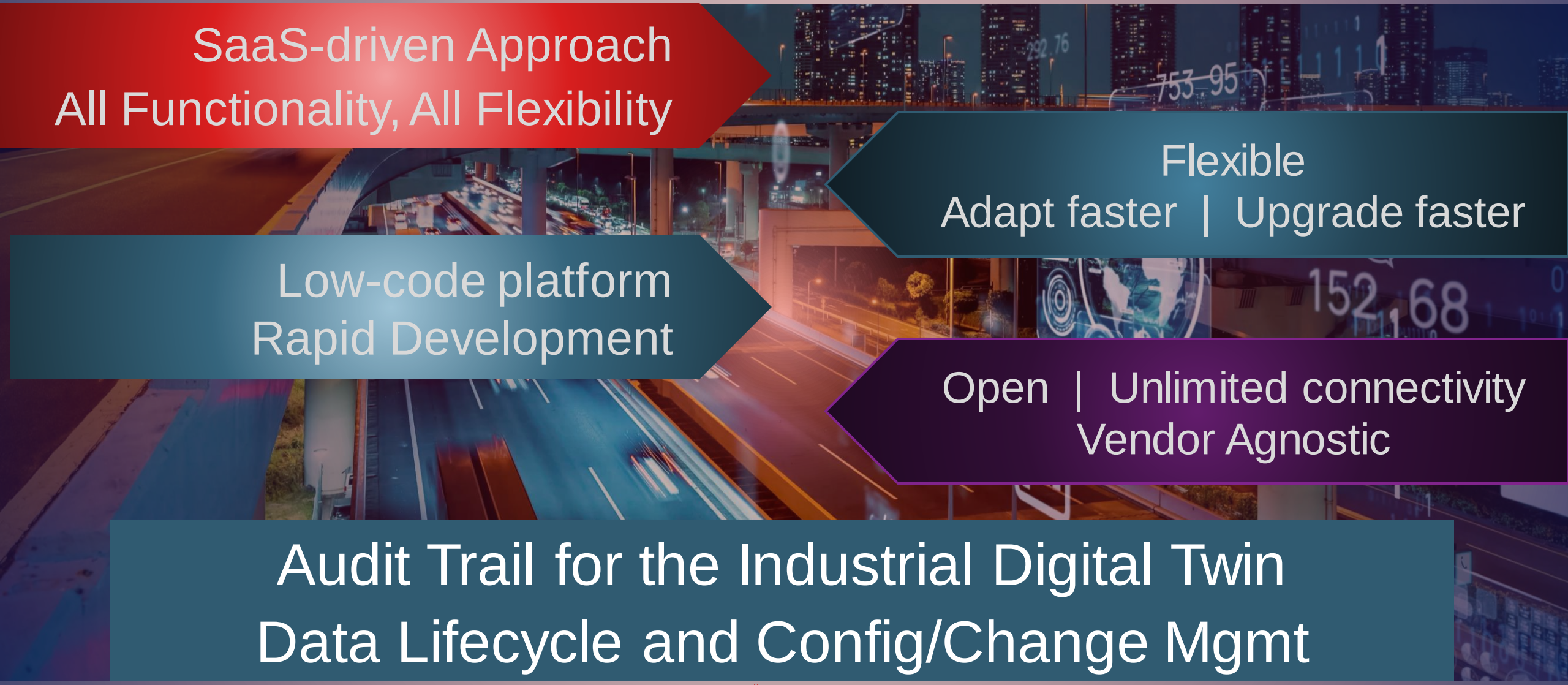
- Support faster delivery of new energy projects
- Decrease Investment Risk
- Increase efficiency and reduction of cycle times
- Create foundation for enhanced digital services offers following plant handover

"Digitalization is one of our key enablers to drive operational competitiveness and support our energy transition targets. This partnership with Aras demonstrates our leading position in the industry's digital transformation and our commitment to adopting a digital-by-design approach to develop and scale up new energy solutions. Our clients are very receptive about our data-centric approach, as it aligns with their vision of collaborative project execution"

Leading EPC Company

Also, an AVEVA customer

Here's Why AVEVA Chose Aras…



SaaS-driven Approach
All Functionality, All Flexibility

Flexible
Adapt faster | Upgrade faster

Low-code platform
Rapid Development

Open | Unlimited connectivity
Vendor Agnostic

Audit Trail for the Industrial Digital Twin
Data Lifecycle and Config/Change Mgmt

Malcolm Panthaki

VP of Analysis Solutions

Aras
mpanthaki@aras.com

Rick Standish

VP Engineering Information Management

AVEVA
rick.standish@aveva.com

Questions?

Please wait for the microphone.

State your name and company.

Please remember to…

Navigate to this session in the mobile app to complete the survey.

Thank you!

AVEVA

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@avevagroup

ABOUT AVEVA

AVEVA is a global leader in industrial software, sparking ingenuity to drive responsible use of the world's resources. The company's secure industrial cloud platform and applications enable businesses to harness the power of their information and improve collaboration with customers, suppliers and partners.

Over 20,000 enterprises in over 100 countries rely on AVEVA to help them deliver life's essentials: safe and reliable energy, food, medicines, infrastructure and more. By connecting people with trusted information and AI-enriched insights, AVEVA enables teams to engineer efficiently and optimize operations, driving growth and sustainability.

Named as one of the world's most innovative companies, AVEVA supports customers with open solutions and the expertise of more than 6,400 employees, 5,000 partners and 5,700 certified developers. With operations around the globe, we are headquartered in Cambridge, UK and listed on the London Stock Exchange's FTSE 100.

Learn more at www.aveva.com

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