iBase-t
Aerospace & Defense Experts

MES/MRO & Digital Thread

Delivering Value for Navy & Coast Guard Shipbuilding & Repair

Compliance · Competitiveness · Cost Reduction · Schedule Performance

Fastest Growing Digital Manufacturing Platform in A&D

30+
Years MES/MRO Expertise

9/10
Top A&D Companies Use Solumina

160k
A&D Users in Production

62%
Growth in FY26

Solumina

The AI-native authority for shop floor execution in Aerospace & Defense.

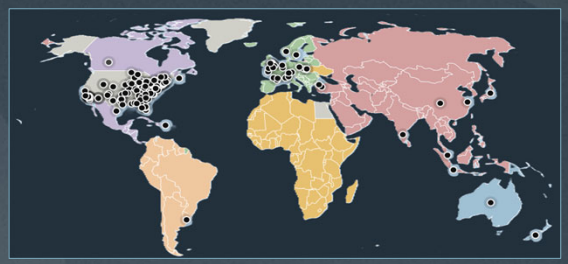
WHO WE ARE

HQ	Lake Forest, CA
Global Presence	US · EMEA · APAC
Founded	Complex A&D Programs
Trusted	1000+ Mission-critical Operations
Backed by	TA ASSOCIATES

OUTOMES FOR YOUR BUSINESS

- End-to-End Execution
- Operational Efficiency & Throughput
- Lower Cost of Quality
- Scalability & Standardization
- Risk Mitigation
- Deep Compliance & Traceability
- Workforce Productivity
- Business Growth Enablement
- Program Execution & Visibility
- Model-based Manufacturing

The only platform with a large language model (LLM) purpose-built to operate inside air-gapped, ITAR-compliant A&D environments.



Solumina Implementation Sites

What's the problem we solve?

- Eliminate or minimize loosely coupled systems used today on shop floor
- Enable single-source of truth on shop floor for manufacturing and quality data
- Deliver complete As-Built record

Agenda

01 **The Problem**
Why cutter repair costs and schedules are broken

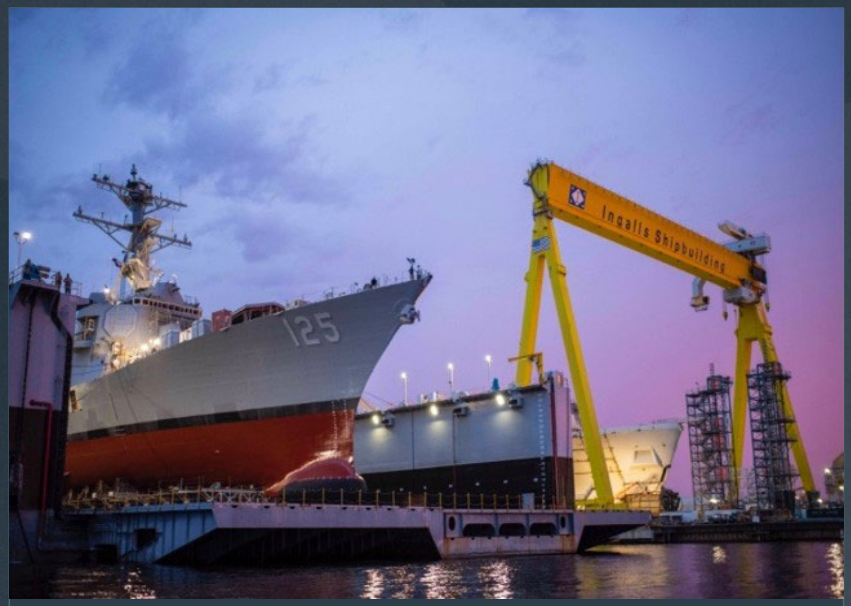
02 **The Navy Mandate**
MBE & digital thread requirements for shipbuilders

03 **What MES/MRO Delivers**
Labor efficiency, rework reduction, schedule discipline

04 **The Digital Thread Advantage**
Single source of truth across the repair lifecycle

05 **Business Case & ROI**
Quantified value and competitive positioning

06 **Call to Action**
Next steps for shipbuilders



Modern Execution & Digital Thread
for Ship Repair

01 | The Problem: Ship Repair Is Under Pressure

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$179M
Deferred Maintenance
FY2024 — 9× the FY2019 level

68–70%
of Repair Cost is Labor
Making labor efficiency the #1 cost lever

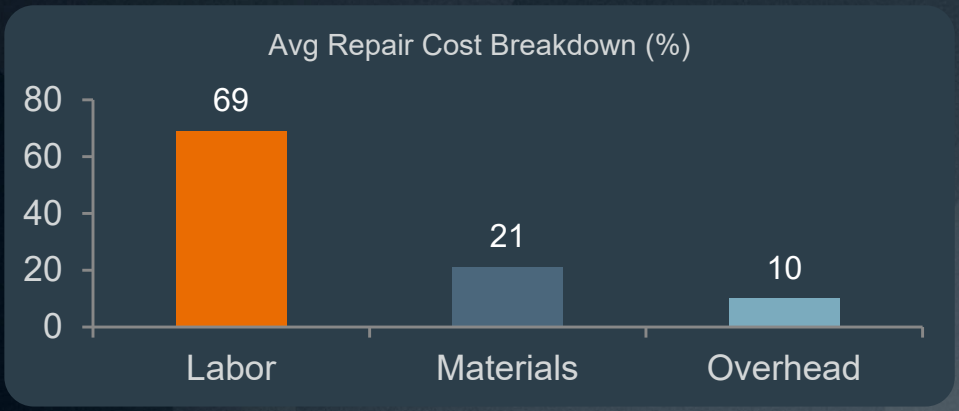
26%+
Schedule Overruns
Average DDG-51 overhauls exceeded planned duration

21%
Rise in Serious Issues
Cutter incidents FY2018→FY2023

Root Cause:

Outdated paper-based work packages, lack of as-maintained data, and disconnected systems drive rework, parts delays, and cascading schedule overruns — all of which hit labor cost hardest.

Sources: GAO-25-107222 (2025); CBO DDG-51 Analysis; USNI Proceedings (2024)



Why This Matters

- Navy & Coast Guard cannot absorb $179M+ in deferred work.
- Labor at 68–70% of cost means even small efficiency gains = major savings
- Schedule overruns cascade — each delay multiplies downstream cost
- Non-compliant yards risk losing contract eligibility

02 | The Navy Mandate: Model-Based Engineering Is Now Required

iBase-t

Policy & Contract Requirements

DoDI 5000.97

Digital Engineering policy — mandates model-based definition, digital twins, and digital thread for all major defense acquisition programs.

MIL-STD-31000A

Model-Based Definition standard — 3D annotated product data replaces traditional 2D drawings as the authoritative technical data package.

NAVSEA Requirements

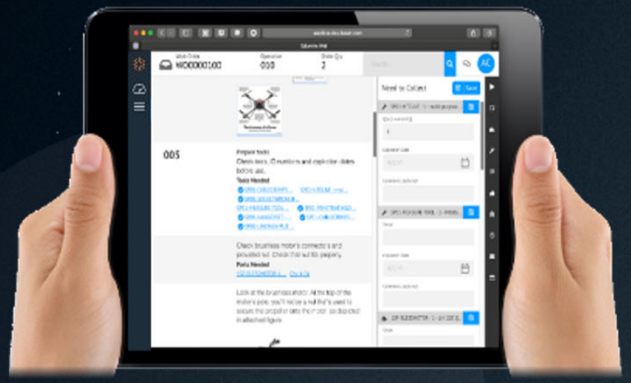
Ship repair work items increasingly reference digital product models and require electronic work package delivery.

MIB Program (2025)

Maritime Industrial Base Program engaged 60+ shipyards to assess digital capability gaps and infrastructure readiness.

What This Means for Shipbuilders

- Digital models are now the contractual deliverable — not paper drawings
- Work packages must be electronically traceable from design through repair
- Shipyards that cannot meet MBE requirements risk losing Navy & Coast Guard contracts
- Compliance is a floor — digital-native yards will win on cost and schedule performance
- Investment in MES and digital thread infrastructure is now a competitive necessity



What MES/MRO Delivers

on the Shop Floor, Deck Plate, Ship and Repair Yards

03 | What MES Delivers on the Shop Floor

iBaset

Labor Visibility & Control

68–70%

of repair cost is labor

Real-time labor capture against work orders. Immediate visibility into who is working on what, at what cost — enabling shift-by-shift course corrections before overruns compound.

Rework & Quality Reduction

15–20%

fewer quality & rework incidents

MES delivers real-time quality alerts and historical defect analysis. Problems are caught and fixed in hours, not discovered at completion.

Electronic Work Packages

Zero

paper-based handoffs

Paperless work instructions on mobile devices with digital sign-off and traceability. Eliminates lost paperwork, transcription errors, and manual re-entry.

Schedule Discipline

6.5 days

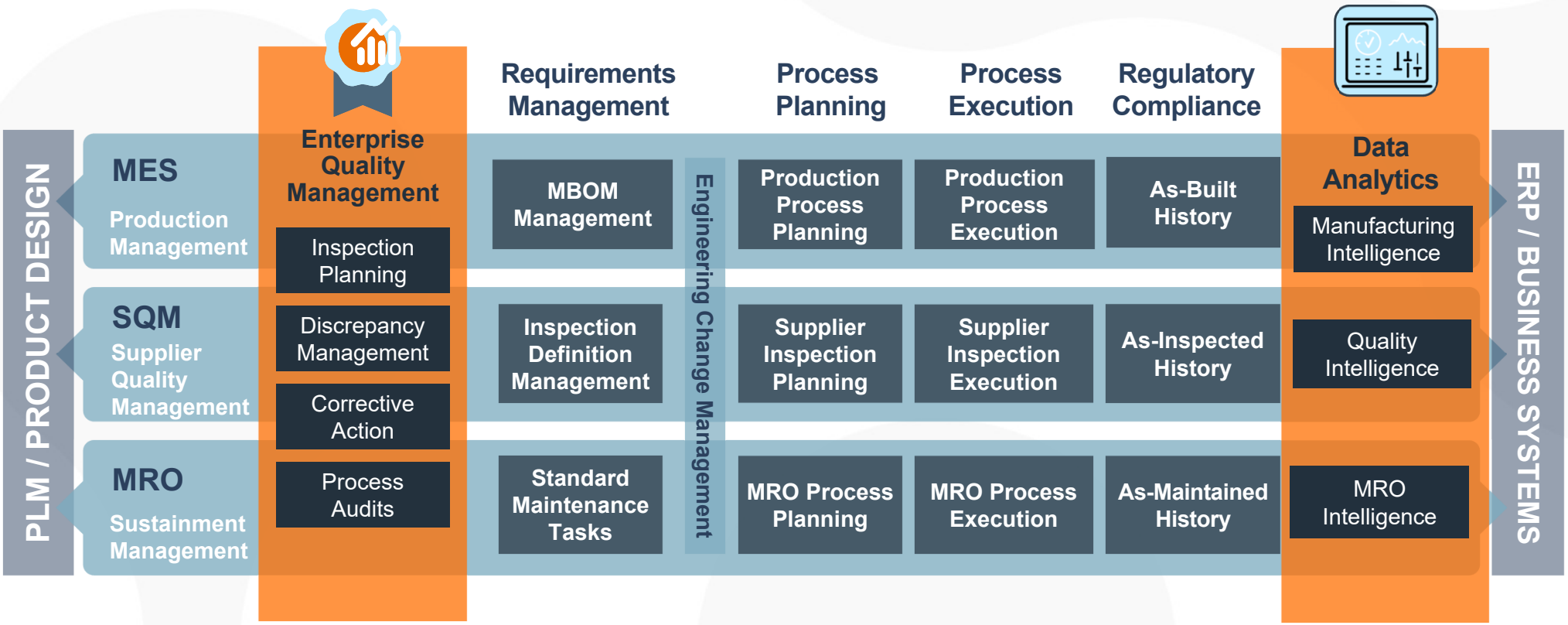
avg overrun vs 64-day availability

Resource scheduling balanced against personnel, materials, and equipment. MES connects maintenance windows with work order execution — maximizing throughput.

Solumina
Technology by iBase-t

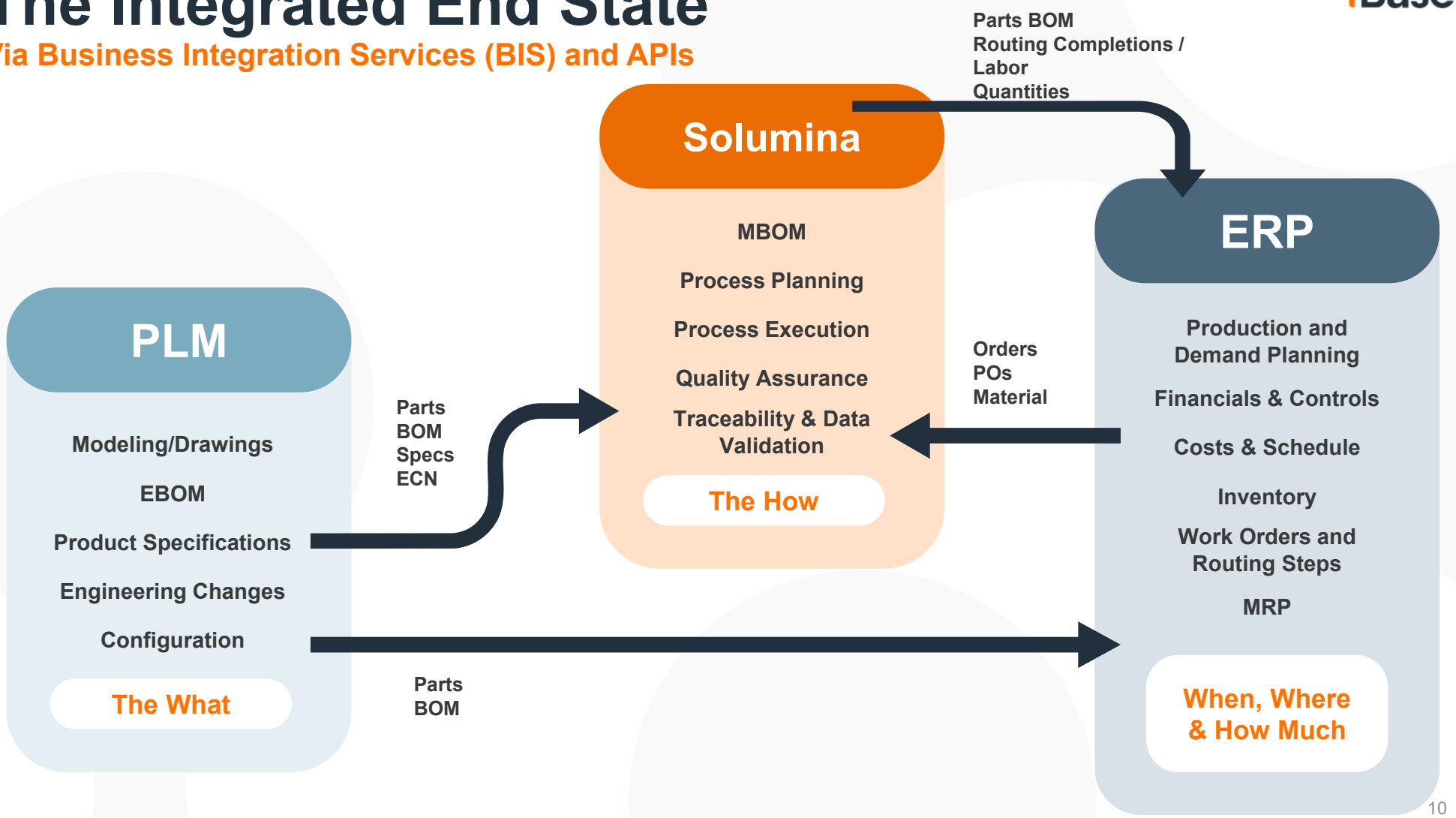
iBase-t

Manufacturing Operations Platform



The Integrated End State

Via Business Integration Services (BIS) and APIs



04 | The Digital Thread: Single Source of Truth

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Design | **Build** | **Deliver** | **Repair** | **Operate**

← Digital Thread flows bidirectionally across the entire lifecycle →

Authoritative As-Maintained Record

Every repair starts from verified, current ship configuration data — not outdated drawings. Eliminates discovery rework that causes growth work and overruns.

Work Packages from the Model

Repair work packages generated directly from the digital model, ensuring accuracy and reducing planning time. Changes propagate automatically across all documents.

Parts & Supply Integration

Material requirements tied to the model and work orders, enabling predictive parts ordering. Reduces cannibalization and the $179M deferred maintenance backlog.

Engineering Change Speed

Engineering changes that historically took months can now be executed in hours when the model is the single source of truth across engineering and the shop floor.

Compliance & Traceability

Every repair action, inspection, and sign-off captured digitally and linked to the work order and model. Audit-ready traceability for Navy and Coast Guard requirements.

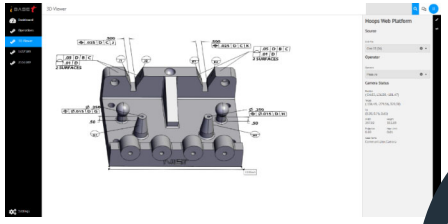
Compounding Availability Gains

The digital thread improves with each availability — as-maintained data fed back into the model makes each subsequent repair faster and less expensive.

Manufacturing Operations Management

iSeries - The Foundation of a Model-based Enterprise (MBE)

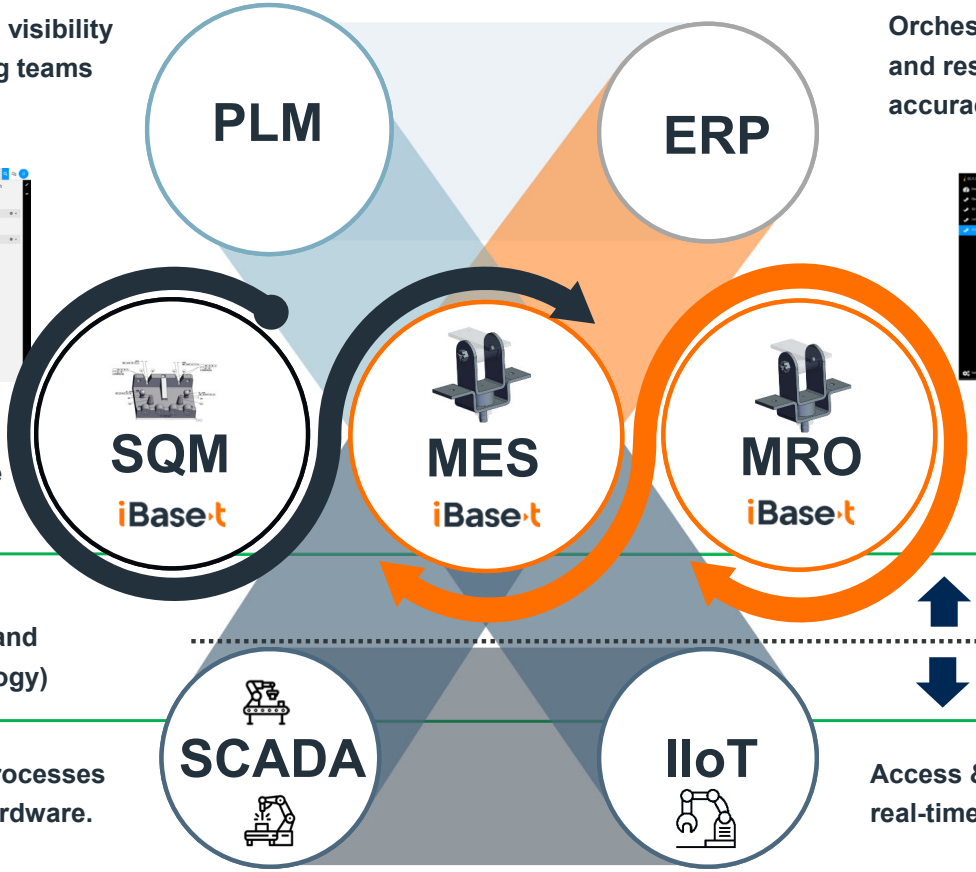
Accelerate product design and create visibility between engineering & manufacturing teams



Vet multi-faceted supplier network, controlling quality at the source while maintaining visibility

Orchestration and access to real-time costing and resourcing for better planning and accuracy of people, parts, and materials

Leverage “as built” data for quicker turnaround time in aftermarket maintenance



Control both equipment (operational technology) and data (information technology)

Information Technology

Operational Technology

Control machines and processes through software and hardware.

Access & manage device data feeds in real-time for faster production velocity

05 | Business Case & ROI

Revenue & Competitive Value

3–5%

Revenue savings redirectable to margin

with full digital thread implementation

$670K+

Per-availability savings potential

15% rework reduction on a $4.5M labor base

Months → Hours

Engineering change cycle time

reduction with model-based work package generation

Contract Access

Navy MBE compliance now a prerequisite

non-compliant yards face exclusion

Solumina AI

iBaset

One platform. Four ways to change how your work gets done.

The Four Modules

KNOW

Solumina Digital SME

A smart assistant that helps users find the right knowledge and walk through Solumina processes correctly — reducing errors and accelerating onboarding.

Knowledge retrieval · Step-by-step guidance · AI copilot

REASON

Solumina Intelligence

An AI-powered data analyst that watches shop-floor data, identifies trends, and surfaces interactive insights — on demand, in plain English.

Plain-English queries · Real-time + historical

SEE

Solumina PulseAI

An automated briefing that compiles key updates so leaders don't dig for them. Shop-floor status, work-center readiness, missing skills and certifications.

Executive dashboards · Drill-down detail

DIGITIZE

Solumina ScanAI

A bridge that turns paper-based knowledge — manuals, SOPs, engine binders — into structured digital data usable inside Solumina workflows.

Paper → structured data · Process plan creation

06 | Call to Action

What Shipbuilders Should Do Now

1

Assess Your Digital Readiness

Benchmark current MES and model-based engineering maturity against Navy DoDI 5000.97 and MIL-STD-31000A requirements. Identify the compliance gaps.

2

Prioritize Labor Data Capture

Deploy MES for work order execution, labor capture, and quality sign-off. Since labor is 68–70% of repair cost, this is the highest-ROI starting point.

3

Build Your Digital Thread Foundation

Establish the authoritative as-maintained product data environment. Link engineering, planning, and shop floor execution to a single data backbone.

4

Engage the Navy & CG Contracting Teams

Proactively demonstrate MBE compliance capability in upcoming bids. Shipyards that can show digital thread maturity will gain a decisive competitive advantage.

The Navy's model-based engineering mandate is not a future consideration — it is a present contract requirement.

Key Takeaways

The status quo is unsustainable

$179M deferred, 21% more serious incidents, 26%+ overruns. The Navy and Coast Guard cannot absorb these trends — and neither can the shipbuilders who sustain them.

Compliance is now mandatory

DoDI 5000.97 and MIL-STD-31000A make model-based engineering a contract requirement. Yards without MBE capability are at risk of exclusion from Navy and Coast Guard work.

MES targets the biggest cost lever

Labor is 68–70% of repair cost. MES-driven 15–20% rework reduction translates to $670K+ saved per availability — with improvements compounding across the fleet.

The digital thread compounds value over time

Each availability builds a richer as-maintained record. Work packages improve, parts arrive on time, engineering changes happen in hours — delivering 3–5% sustainable margin improvement.

Early movers win the contracts

Shipyards that invest now in MES and digital thread infrastructure will demonstrate compliance, win bids, and execute at lower cost — creating a durable competitive advantage.

The MOM Platform for Shipbuilding and Maintenance.

Compliance. Cost. Schedule. Competitiveness.

iBase-t gives Navy and Coast Guard shipbuilders the MES and digital thread infrastructure to meet today's MBE mandates, eliminate labor waste, and win the next generation of repair contracts.

68–70% of ship repair cost is labor | 15–20% rework reduction with MES | $670K+ saved per availability

Publi
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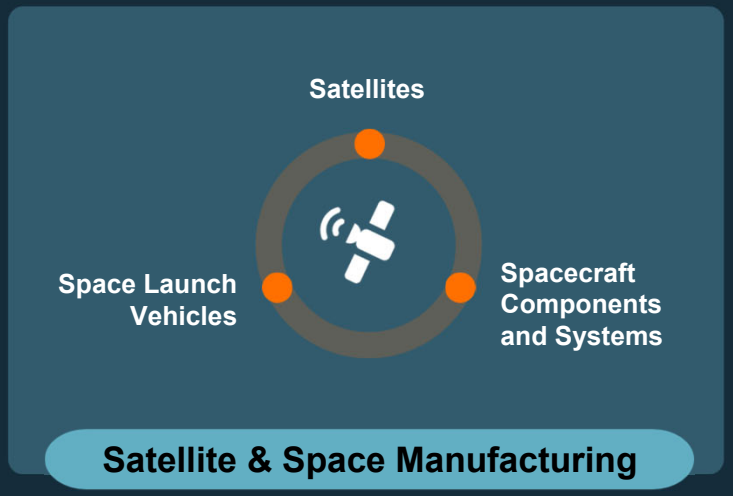
Solumina Aerospace and Defense Customers

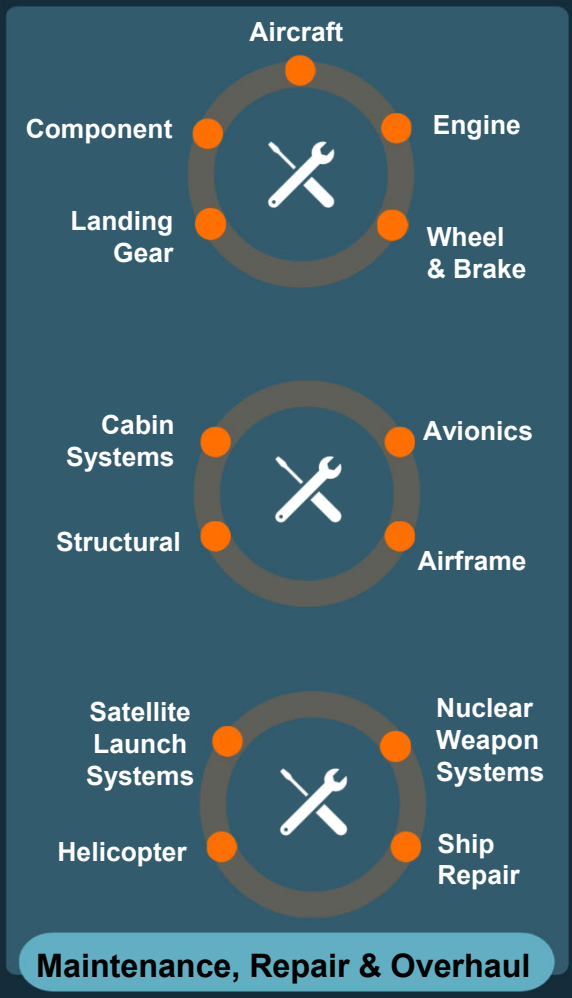
Q&A

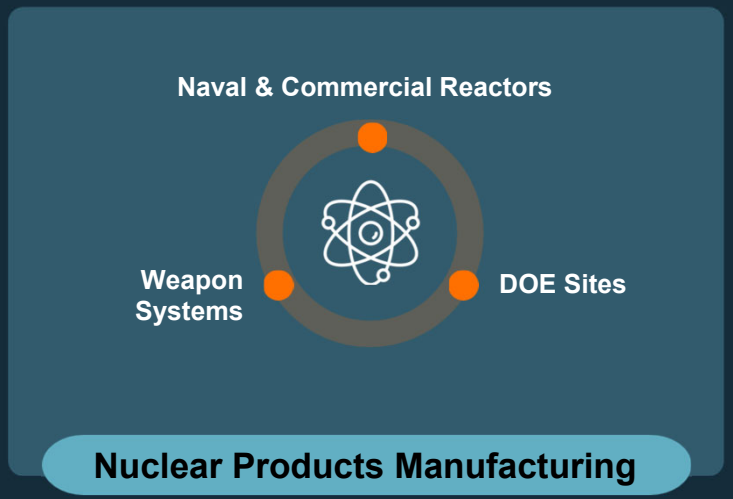
iBase-t

Thank You

Solumina - The Best Fit for Aerospace & Defense







2025 Gartner Report – Solumina only A&D Focused MES Provider

MES Vendor Coverage for Discrete Manufacturing

- < 5% of vendor's MES customers in industry
- 5% to 20% of vendor's MES customers in industry
- 20% to 50% of vendor's MES customers in industry
- > 50% of vendor's MES customers in industry
- Data not reported

	Aegis	Applied Materials	AVEVA	Critical Manufacturing	Dassault Systèmes	Emerson	GE Vernova	Honeywell	iBase-t	Infor	iTAC Software	Körber	MPDV	Oracle	Parsec	Rockwell FactoryTalk	Rockwell Plex	SAP	Sepasoft	Siemens	Tulip
Aerospace and defense																					
Automotive OEM																					
Electronics																					
General discrete																					
Life sciences (medical device)																					
Repetitive flow																					
Semiconductor																					
Other																					

Source: Gartner
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Gartner

World Class Partnership Ecosystem

iBase-t

TECHNOLOGY

Seamlessly integrate best-of breed applications (PLM/ERP/IIOT) to realize the digital thread

SYSTEM INTEGRATORS

Partner with consultative system integrators by outsourcing implementations and building reseller opportunities

CONSORTIUMS / ACADEMIC

Driving thought leadership and transformation through collaboration and education