Connecting People to the Digital Thread™
for Business Transformation

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Considerations for a Cloud-based 3D Technical Data Package to Support Sustainment Within the DoD

DMC 2021 Advanced Manufacturing Enterprise Subpanel

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Maximize use of engineering data, information, and expertise; enhance performance and modernization across programs

Optimize strategic sourcing processes, improving supplier and sub-contractor efficiency and responsiveness

Engineering ——— Securely connect your people to the digital thread across the advanced manufacturing enterprise ——— **Supply Chain**

Manufacturing ——— ——— **Sustainment**

Optimize manufacturing operations to deliver more quality fielded products on time, at cost

Optimize field operations, MRO to sustain products; maximize readiness and lower operating and support costs

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Process is central to truly transformative innovation

"Without process, transformation is reduced to a series of incremental improvements — important and helpful, but not truly transformative."

Source: Harvard Business Review, May 2020

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Technology is an essential part of innovation

"Even the most impressive human minds will become less useful if they don't team up with technology"

Harvard Business Review, May 2020

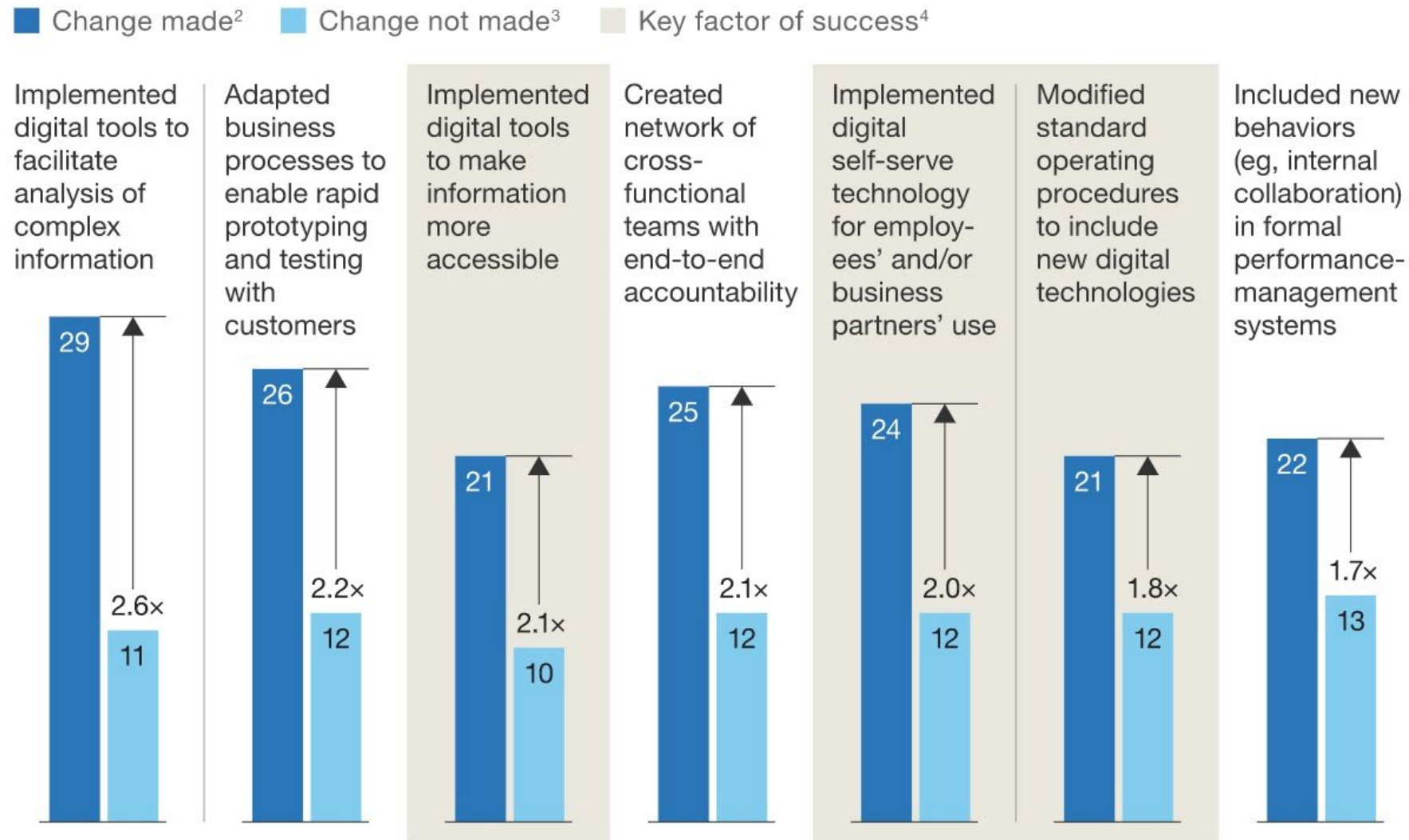# The ultimate goal: Empower people to be successful

NORTHROP GRUMMAN A-10

SIKORSKY CH-53K

"When your people are empowered to collaborate, learn new skills and succeed in a changing world, they can drive your organization's success no matter what challenges come next."

Source: EY, April 2019

Success is at the intersection of process, technology and people

Source: McKinsey & Company – Unlocking success in digital transformations, 2018

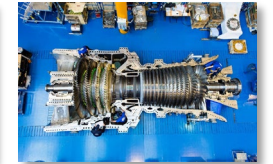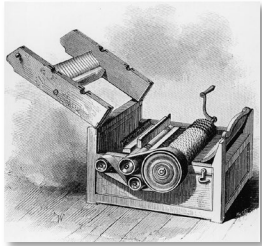# Manufacturing innovation has always been about speed

It has evolved to include quality

1st Revolution	2nd Revolution	3rd (Digital) Revolution	4th (Digital) Revolution

1700s	1800s	1900s	1960	1970	1980	1990	2000	2010	2020	2030

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MIL-STD-8   ASA >   ANSI >   ASME Y14   STEP   MIL-STD-31000

Paper Drawings

Electronic Drawings

3D CAD

Model-based
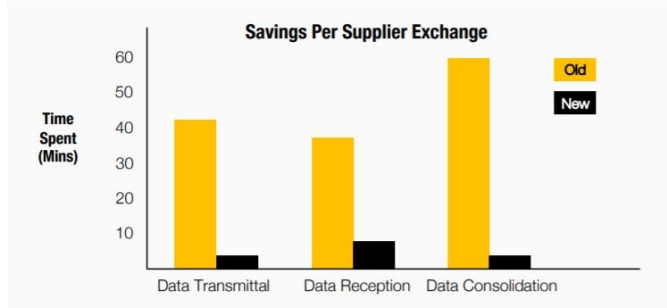
3D PDF

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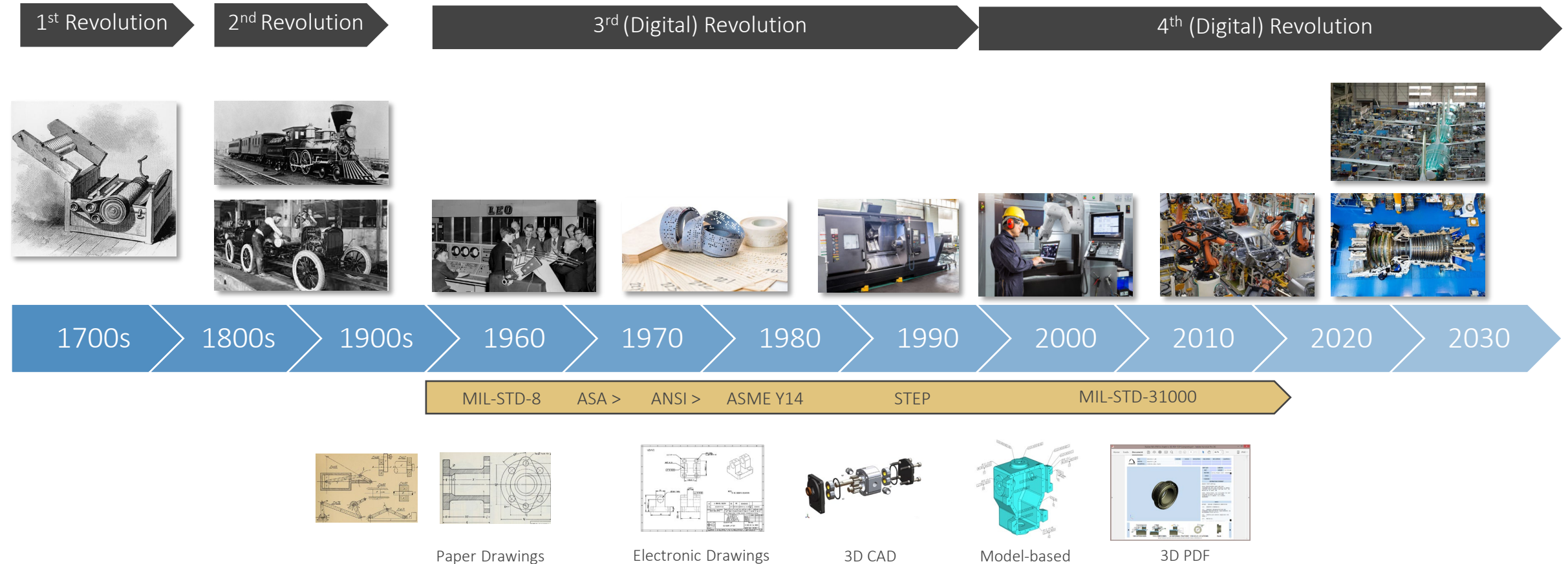
Complex technical data sharing powers innovation speed and quality

COST SAVINGS FROM TIME SAVINGS IN SUPPLIER COLLABORATION

There are also significant cost savings achievable with improved data exchange and handling times when collaborating with suppliers and/or contract manufacturers

Savings Per Supplier Exchange

Time Spent (Mins) — axis: 60, 50, 40, 30, 20, 10

Legend: Old / New

Categories: Data Transmittal, Data Reception, Data Consolidation

For this Anark customer, supplier interaction time was reduced by 90%, on average, by automating early supplier collaboration with 3D TDPs.

COST SAVINGS FROM MODEL-BASED DIGITAL WORK

Companies that leverage engineering data downstream with manufacturing, suppliers and field service see substantial returns. Scrap and rework are minimized. Production processes across the supply chain are streamlined. And everyone wins.

3D TDP Based Collaboration vs. 2D

Commodity	Annual Funding	Savings (%)	Savings ($)
Part Fabrication	$ 10,000K	30%	$ 3,000K
Assembly	$ 2,000K	10%	$ 200K
QA	$ 2,000K	10%	$ 200K
		Total Savings:	**$ 3,400K**

Model-Based Digital Work Instructions

Instructions	Units	Cost/Unit	Scrap	Scrap Cost
MBWI	261	$ 105K	0%	0
2D	261	$ 105K	15%	$ 4,095K
			Total Cost Avoidance:	**$ 4,095K**

How to Leverage Model-Based Engineering Data Across Your Supply Chain with Half the Cost (And None of the Fear)
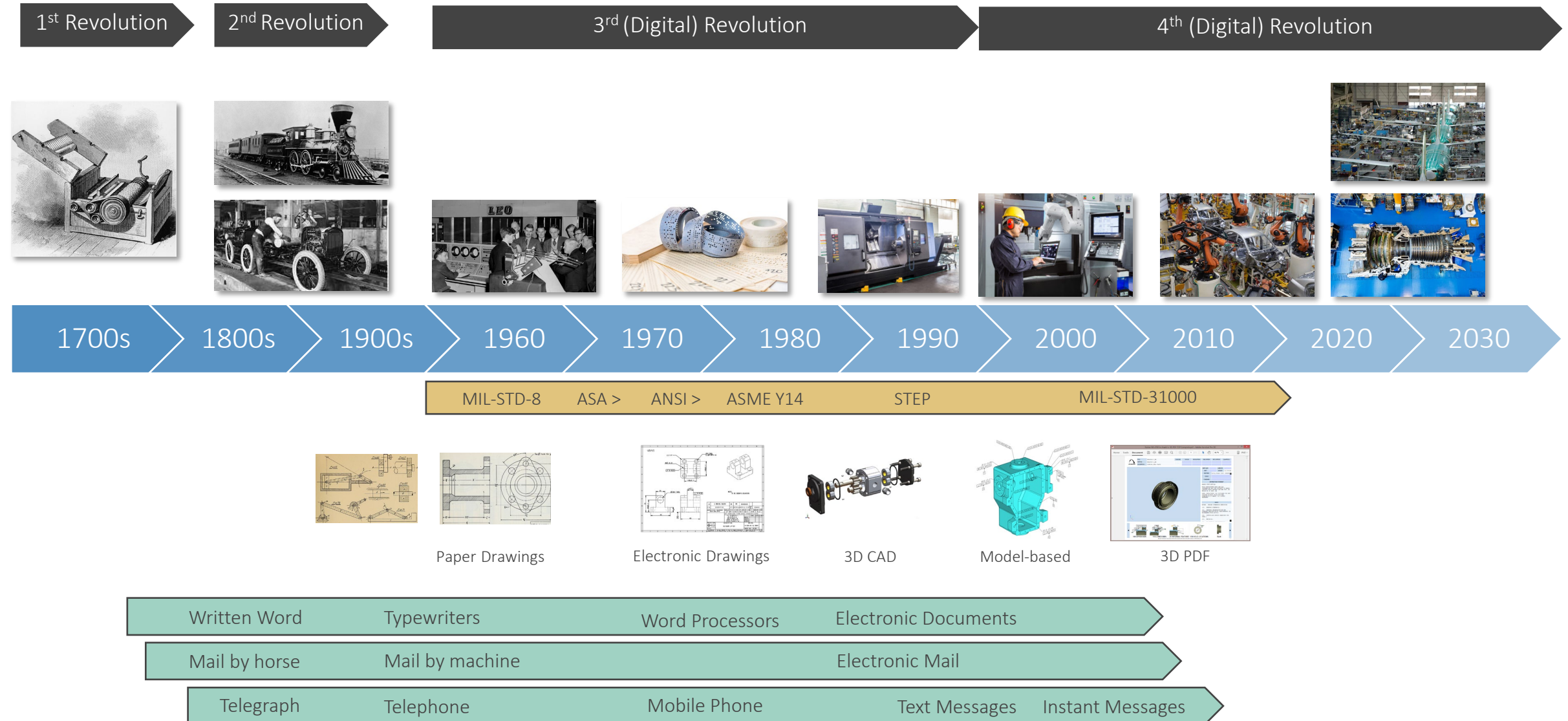
Inside:

- Who Will Be the Winners in Discrete Manufacturing?
- 5 Myths About Connecting Users to the Digital Thread
- Benefits IT Can Deliver Across the Enterprise
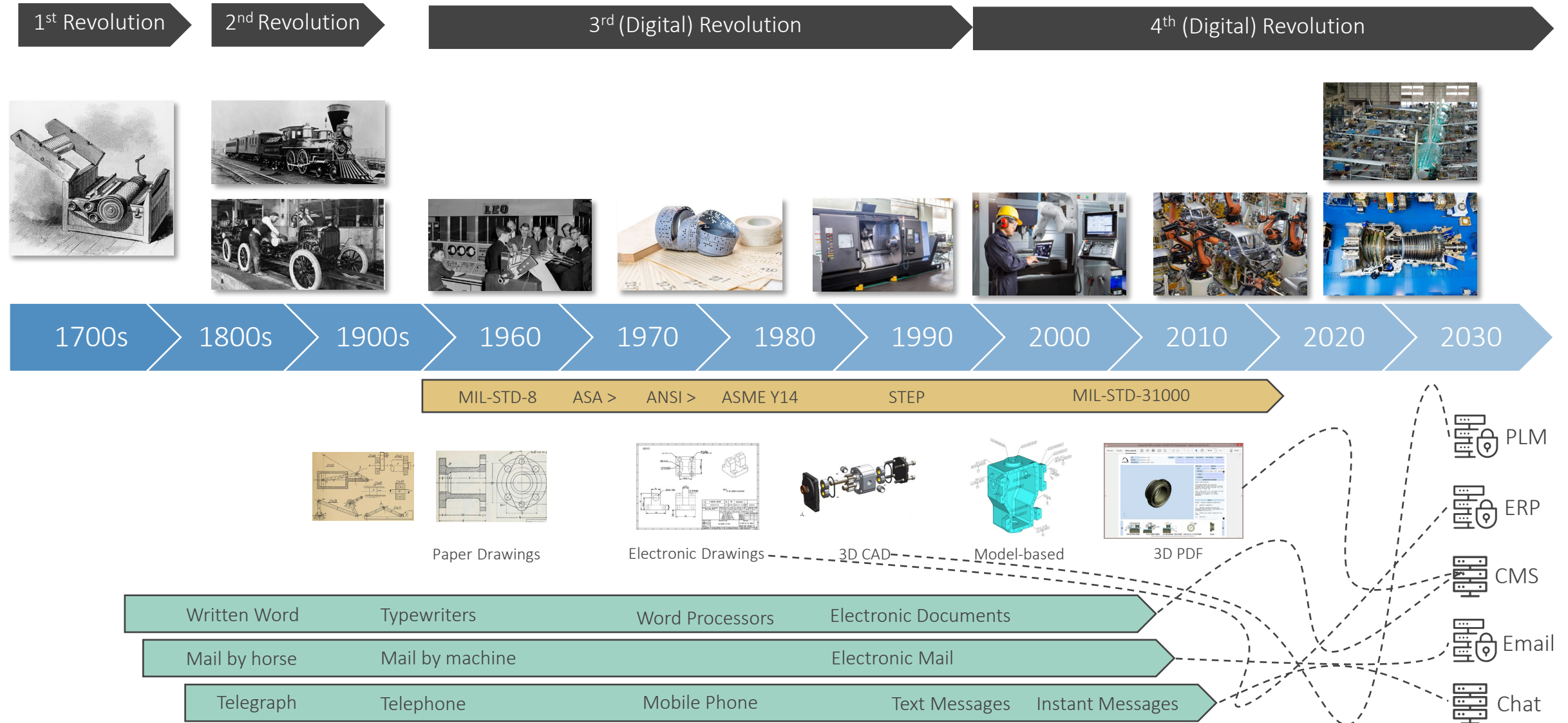- Finding Cost Reduction Opportunities from Hidden Costs

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Source: https://www.anark.com/solutions

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MIL-STD-8   ASA >   ANSI >   ASME Y14   STEP   MIL-STD-31000

Paper Drawings   Electronic Drawings   3D CAD   Model-based   3D PDF

Written Word	Typewriters	Word Processors	Electronic Documents

Mail by horse	Mail by machine	Electronic Mail

Telegraph	Telephone	Mobile Phone	Text Messages	Instant Messages

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PLM

ERP

CMS

Written Word	Typewriters	Word Processors	Electronic Documents

Mail by horse	Mail by machine	Electronic Mail

Telegraph	Telephone	Mobile Phone	Text Messages	Instant Messages

Email

Chat

A disconnected thread of information is the enemy of efficiency

CMS

PLM

ERP

Chat

Email

ANARK®

A disconnected thread of information is the enemy of efficiency

CMS

PLM

Email

Chat

ERP

Other

A disconnected thread of information is the enemy of efficiency

ERP

SCM

Other

PLM

CMS

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The next innovation: cloud-based technical data packages (TDPs)

REQ

Chat

PLM

Email

ERP

CMS   SCM

Cloud-based TDPs
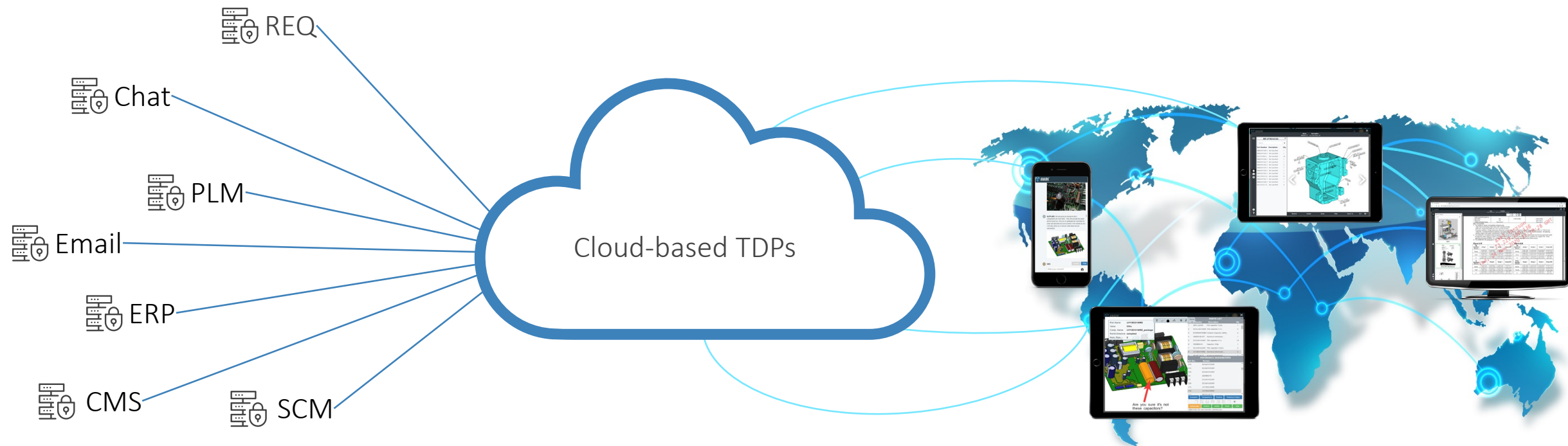
Manage Configuration Data	Publish File-less TDPs	Secure Global Collaboration
• Bills of Material • 3D/2D CAD • Components • Documents • Changes, Redlines	• Source intelligent tech data • TDP Templates • Apply security • Source system triggered publish • Changes, Redlines	• Secure file-less web content • Session-aware watermarking • Isolated activity feeds • Chat and mark up • Upload pictures/attachments

Trace Activity History

Improved information and data security is paramount

- No files to be shared, leaked

- Session-aware dynamic watermarking

- Automated redaction of information

- Time-limited access policies

- Monitor and Track Access

- Actively manage access

- Automate access revocation

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Human readable structured data minimizes errors
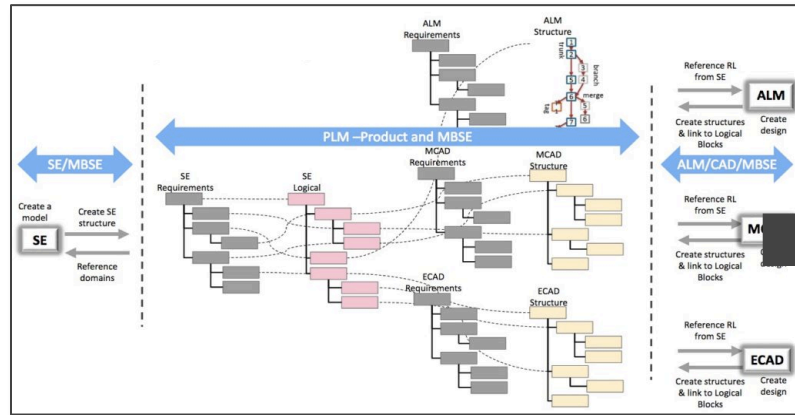
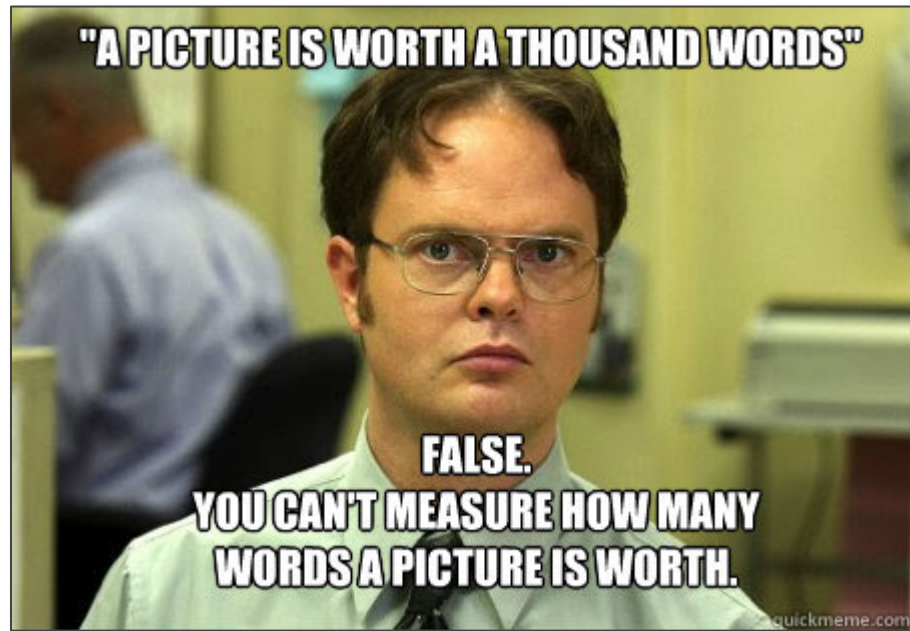
Structured BOM transformation data

G Code

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Modularity is imperative for long-term sustainment

- Standard Upgradable Templates

- Standard Upgradable Integrations

- Low-code (no code?)

- Automated content revisions

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Contextualized collaboration is key

Mobile First Access is Critical Going Forward

- Consistent, quality experience across devices

- Reduce adoption, and on-boarding times

- Remove device limitations

- Improve collaboration

- Speed up workflows

Keys to Digital Thread Value Through TDP Sharing and Collaboration

Transform Information Into Intelligence

Source content from multiple systems

Include product lifecycle and model-based information

Secure your IP with file-less content and DRM

Make real-time visual collaboration accessible and easy

Track collaboration history to drive continuous improvement

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GE Gas Power Case Study

From paper-based, doc-centric to a file-less web-based digital supply chain

40%

Reduction in Engineering Error Rate

Leading global manufacturers like GE Power and their supplier communities are under increasing pressure to drive greater efficiencies, improve product quality, and accelerate new product introduction (NPI) through modern, connected, digital processes and solutions.
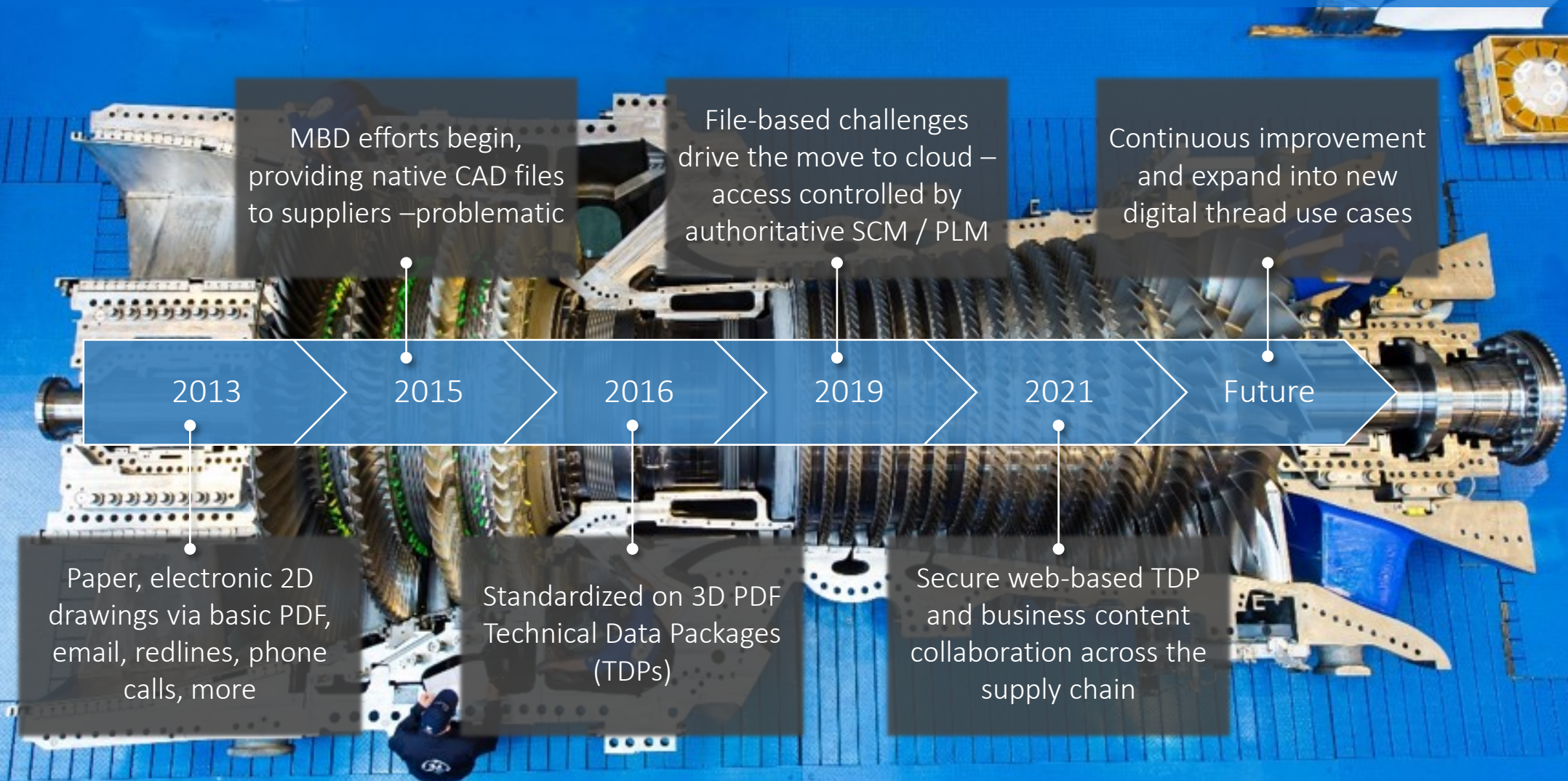
"With Anark our error rate has gone down from 5% to 3% which is much lower than it used to be."

-Kena Yokoyama, Engineering Manager for Product Definition, GE Gas Power

Learn more: www.anark.com/success/gepower

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GE Gas Power Case Study
From paper-based, doc-centric to a file-less web-based digital supply chain

MBD efforts begin, providing native CAD files to suppliers –problematic

File-based challenges drive the move to cloud – access controlled by authoritative SCM / PLM

Continuous improvement and expand into new digital thread use cases

2013   **2015**   **2016**   **2019**   **2021**   **Future**

Paper, electronic 2D drawings via basic PDF, email, redlines, phone calls, more

Standardized on 3D PDF Technical Data Packages (TDPs)

Secure web-based TDP and business content collaboration across the supply chain

Learn more: www.anark.com/success/gepower

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Supply Chain

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Anark Core transforms multisource documents and technical data into use-case-specific technical data packages (TDPs), offering secure managed access and visual collaboration from nearly any device, with modern digital workflows—yielding faster iterations, reduced material waste, and higher-quality products and services with substantial cost savings.

Learn more: https://www.anark.com/solutions/