Intelligent Information Management

Empowering a Connected & Collaborative Model Based Enterprise

Connecting the Digital Thread™

GLOBAL PRODUCT DATA
INTEROPERABILITY
SUMMIT
2019

Anark Corporation

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Presentation Overview

- **Overview key concepts, benefits & industry trends such as Intelligent Information Management (IIM), Industry 4.0, Digital Thread, and Model-Based Enterprise (MBE)**

- **Drivers, opportunities and obstacles to achieve modern Digital Enterprise**

- **Role and impact of legacy data, systems, processes, as well as impact of mergers and mixed data environments.**

- **Intelligently managing critical engineering, manufacturing and operational data to enable smart, connected, information-rich data exchange and collaboration along the Digital Thread**

- **Digital Thread and Model-Based Enterprise Examples & Success Stories**
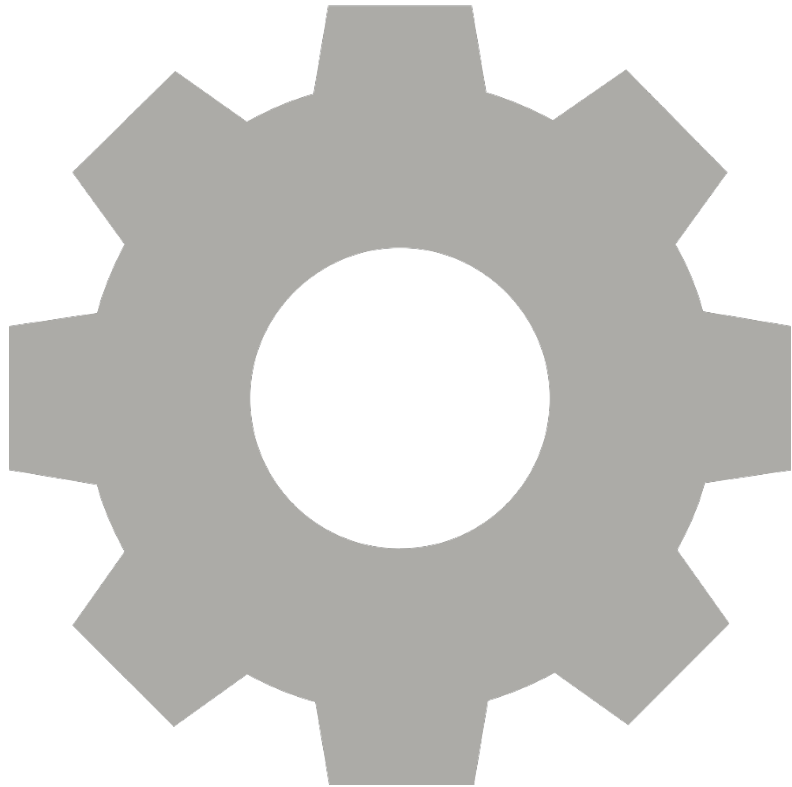
Anark Company Overview

Anark Corporation

Leading provider of technical content management software and solutions, with activity-based visual collaboration and connected digital workflows.

Empowering the Digital Thread and MBE revolution within Aerospace & Defense, Energy, High Tech, Automotive, Transportation, Marine, and Medical Equipment sectors.

Growing company with worldwide network of technology and integration partners.

Anark Corporation HQ in Boulder, Colorado, with offices in the Washington DC, Detroit, Chicago, San Francisco, and Bangalore.

Digitalizing the Extended Enterprise

Supply Chain

Anark Core allows OEMs to provide time-limited access to technical data packages (TDP) to suppliers for RFx processes, with activities-based collaboration to facilitate supplier integration.

Manufacturing

Anark Core provides access to rev-controlled technical data packages (TDP) and digital work instructions (DWI) on the factory floor, together with activities-based collaboration for operational problem solving.

Field Service

Anark Core provides mobile-friendly, on-and-off-line access to rev-controlled technical content to field technicians, together with activities-based collaboration for problem solving in the field.
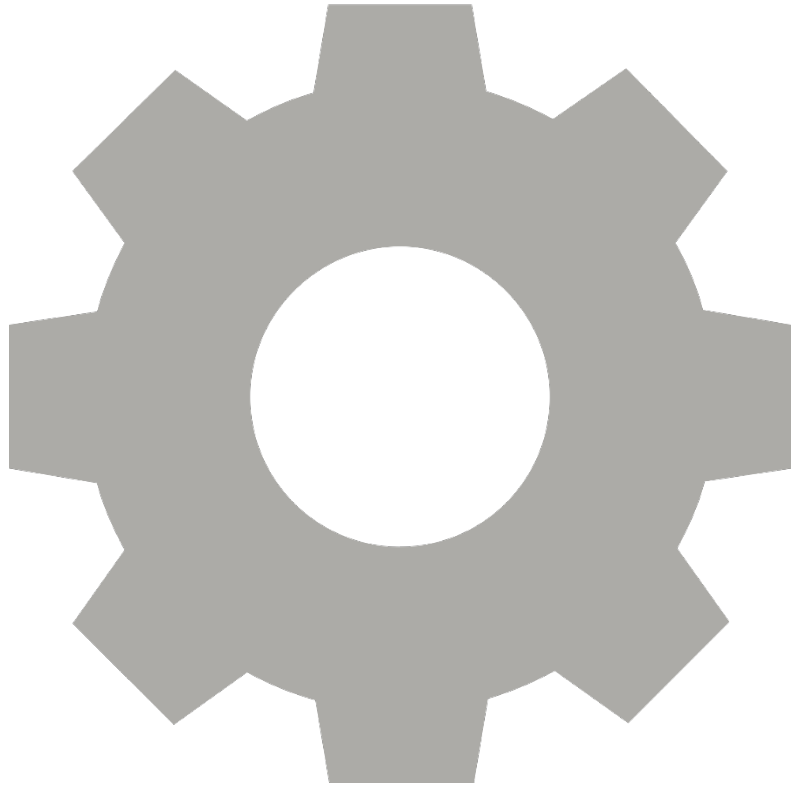
Digital Transformation Trends

Digital Disruption

Harvard Business Review

"Research shows that since 2000, 52 percent of companies in the Fortune 500 have either gone bankrupt, been acquired, or ceased to exist as a result of digital disruption. The collision of the physical and digital worlds has affected every dimension of society, commerce, enterprises, and individuals…"

"…digital transformation is the result of enterprises seeking to adapt to the storm of new technology affecting markets and customers. Effective internal systems, processes, and value chains will always be essential, but enterprises will increasingly need to harness the skills, capabilities, and passions of the external market. Digital transformation forces wholesale change to the foundations of an enterprise — from its operating model to its infrastructure, what it sells, and to whom and how.

"We won't experience 100 years of progress in the 21st century — it will be more like 20,000 years of progress (at today's rate)."
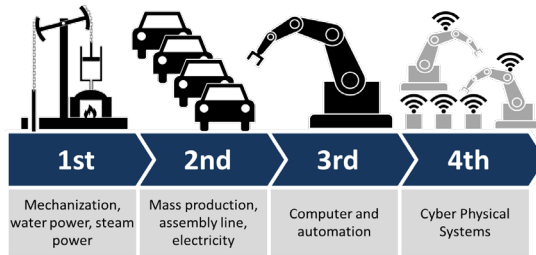
— *Ray Kurzweil*

@dadovanpeteghem

Smart, Connected, Collaborative

Intelligent Information Management (IIM) defines all the strategies, methods, and tools utilized to capture, create, store, secure, analyze, deliver, and automate data. IIM is all about Data AND Content, not Data OR Content. - *AIIM*

1st	2nd	3rd	4th
Mechanization, water power, steam power	Mass production, assembly line, electricity	Computer and automation	Cyber Physical Systems

Industry 4.0 fosters what has been called a "smart factory". Over the Internet of Things, cyber-physical systems communicate and cooperate with each other and with humans in real-time both internally and across organizational services offered and used by participants of the value chain. **-** *Industrie 4.0 Working Group*

The Digital Thread refers to the communication framework that allows a connected data flow and integrated view of the asset's data throughout its lifecycle across traditionally siloed functional perspectives. - *Industry Week*
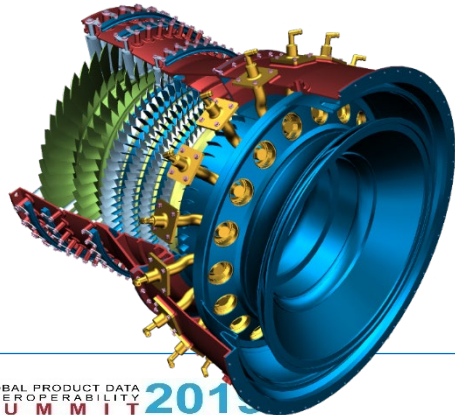
Model-Based Enterprise (MBE) is a fully integrated and collaborative environment founded on 3D product definition detailed and shared across the enterprise; to enable rapid, seamless, and affordable deployment of products from concept to disposal. **-** *DMDII*

Rapid Growth, High Value – MBE, Industry 4.0 & Digital Transformation Markets
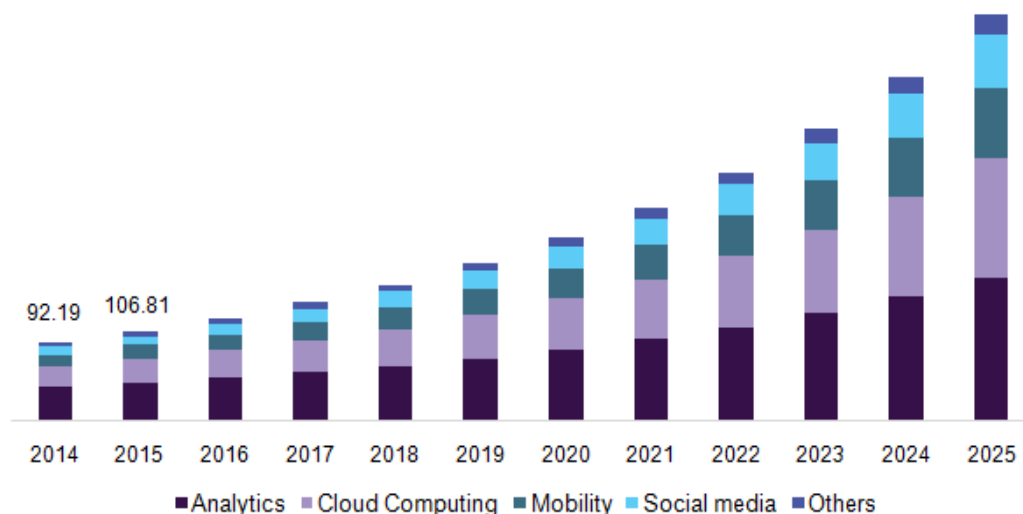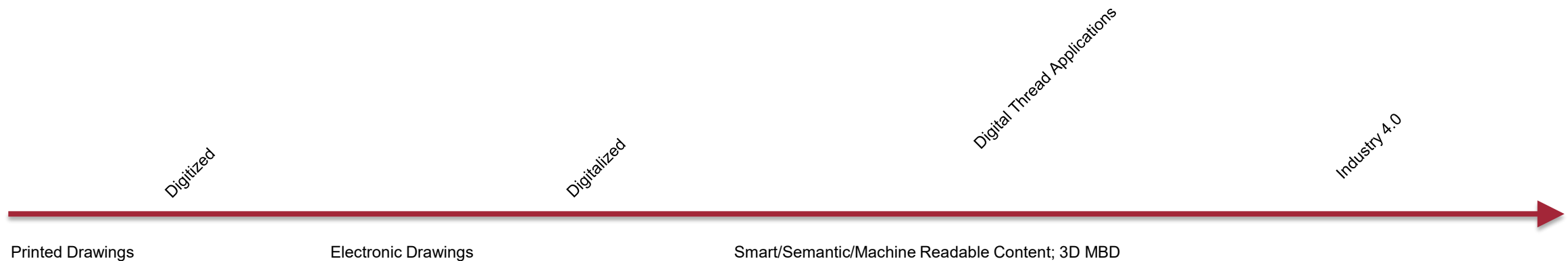
- **Global *Digital Transformation market*** expected to reach ***USD 798.44 billion by 2025*** - *Grand View Research*

- ***Industry 4.0 market*** is expected to exceed ***USD 214 billion by 2023*** according to "Industry 4.0 Market & Technologies 2018-2023" - *Markets and Research Report*

- ***Model Based Enterprise market*** expected to reach ***USD 21 billion by 2023*** – *Markets and Markets Report*

- OEMs under pressure to improve quality, minimize waste, comply with regulations, and more rapidly satisfy customer demand.

- Digital Transformation strategies are built upon smart, connected Digital Thread/Twin, IOT, AI, AR, additive mfg, and Model-Based Enterprise (MBE) processes and solutions.

- Cloud, big data, mobile, and IOT empower smart, connected digital processes for efficient, information-rich data sharing and collaboration throughout the enterprise and supply chain, and into the field.
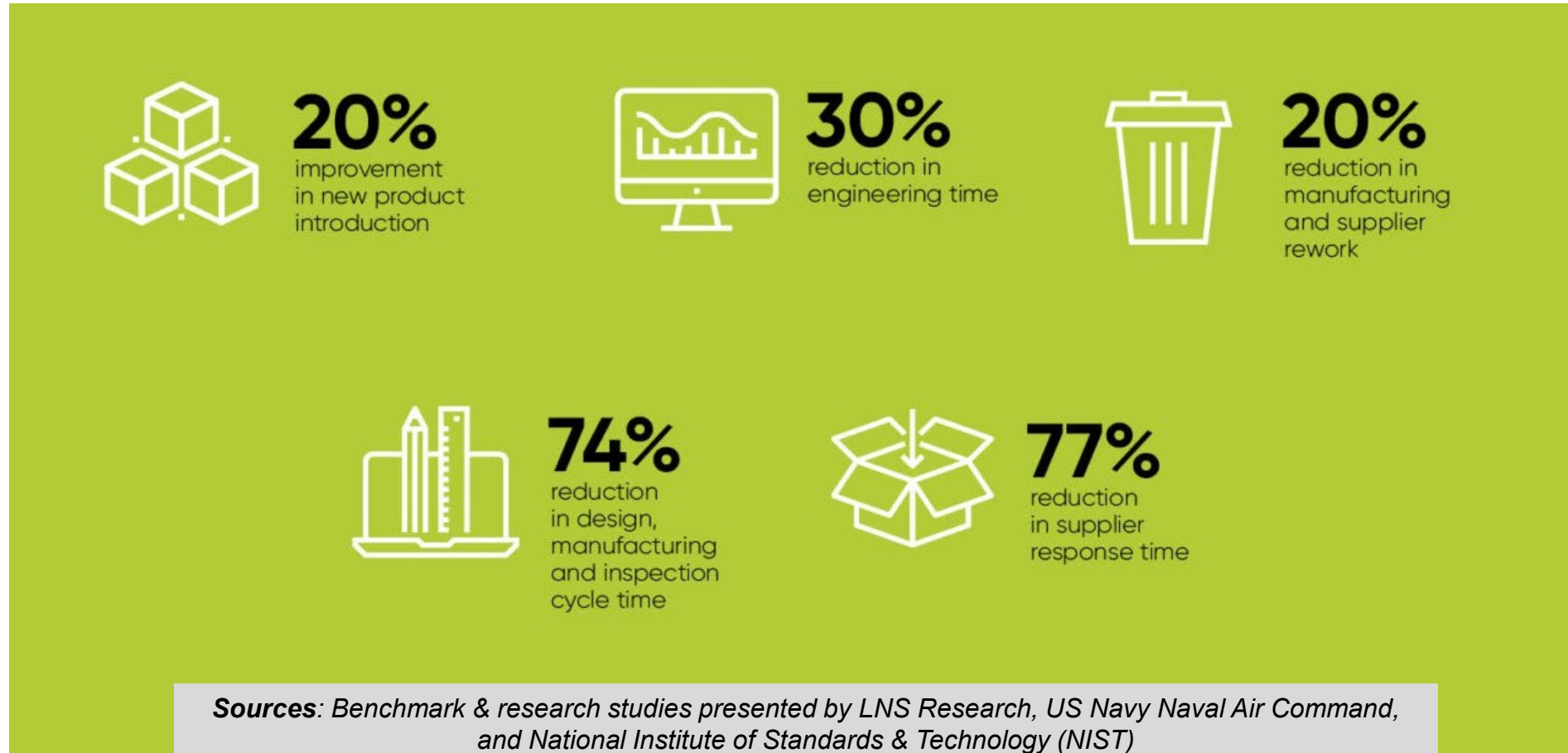
Digitization vs. Digitalization

- **Digitization: "the process of converting information into a digital format"**

- **Digitalization: "the use of digital technologies [and content] to…provide new revenue and value-producing opportunities; it is the process of moving to a digital business"**

Digitized

Digitalized

Digital Thread Applications

Industry 4.0

Printed Drawings   Electronic Drawings   Smart/Semantic/Machine Readable Content; 3D MBD

Digital Thread & MBE Performance Benefits

20% improvement in new product introduction

30% reduction in engineering time

20% reduction in manufacturing and supplier rework

74% reduction in design, manufacturing and inspection cycle time

77% reduction in supplier response time

Sources: Benchmark & research studies presented by LNS Research, US Navy Naval Air Command, and National Institute of Standards & Technology (NIST)

Successful Digitalization is empowering OEMs and their suppliers come to market faster, with higher quality products, with significant cost savings.

Adoption Challenges

- Customers struggle with PLM/ERP systems functionality gaps & limited interoperability which stymies adoption.

- Existing solutions for data sharing, collaboration, and visualization are often proprietary, rigid, ad-hoc and poorly suited for a modern web-based Digital Thread paradigm.

- Customers challenged with managing wide array of disparate technical data types/file formats required to achieve enterprise digitalization.

- Until recently, enterprise OEMs and their suppliers have been slow to implement public cloud strategies.

- Process & culture change are hard

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Deploying Connected Digital Thread

Modern, Connected, MBE-Enabled Digital Thread

**Anark Core includes capabilities for connecting the Digital Thread**

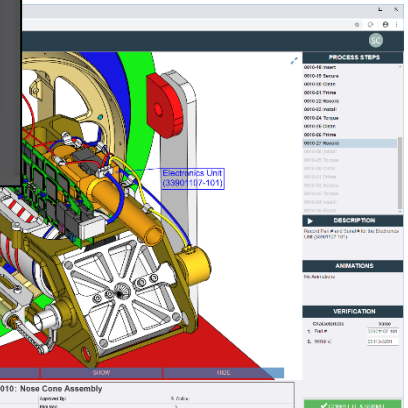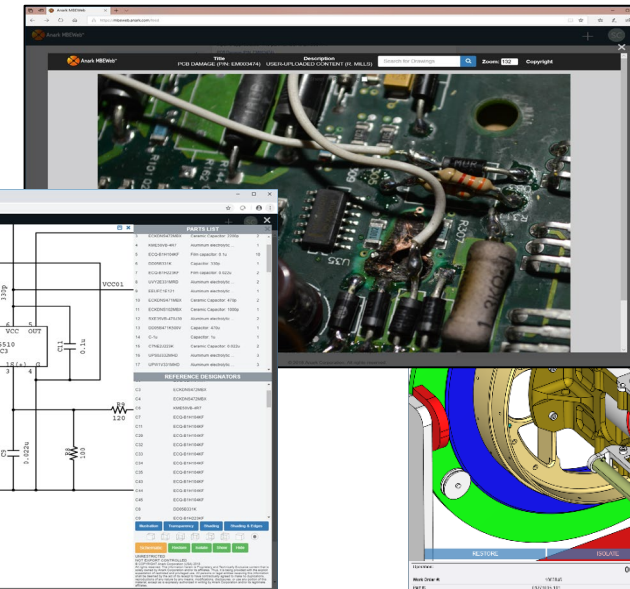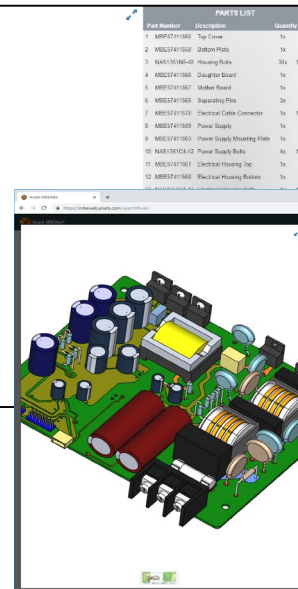*Connected smart technical content, people, and equipment to provide real time visibility and responsiveness*
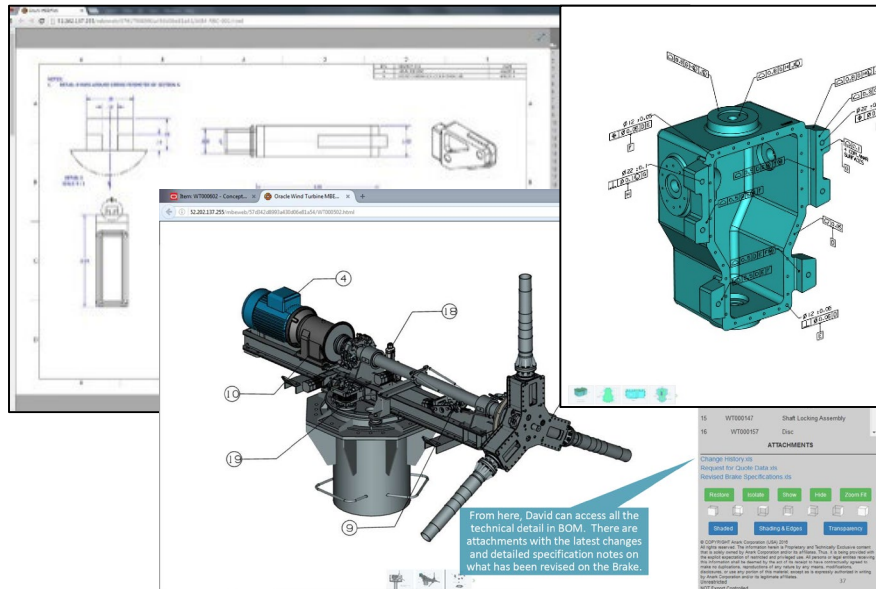

Product Design & Planning

Procurement & Order Management

Manufacturing

Service & Maintenance

Digital Thread

Anark Technical Content including 3D MBE and Tech Collab

Anark Technical Data Packages (TDP) and Activities-based Collab for RFx

Anark Mfg and Quality Inspection Plans with Process Feedback and Tech Collab

Anark Srvc Plans with Status Feedback and Tech Collab

Track & Detect

Real time analytics

Remote Diagnostics

Digital Thread

Anark Core provides deeper technical insight for product improvement and maintenance

Connected, Collaborative, Traceable, Technical Content & Digital Workflows

3D PDF Content
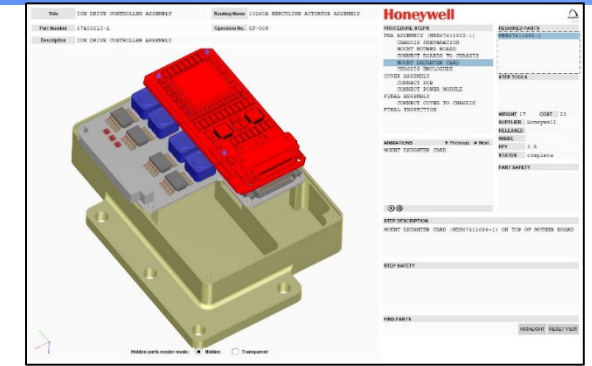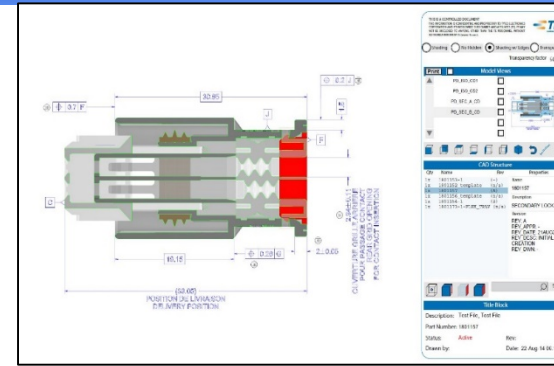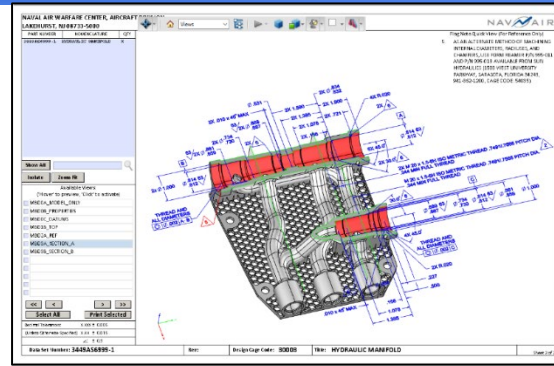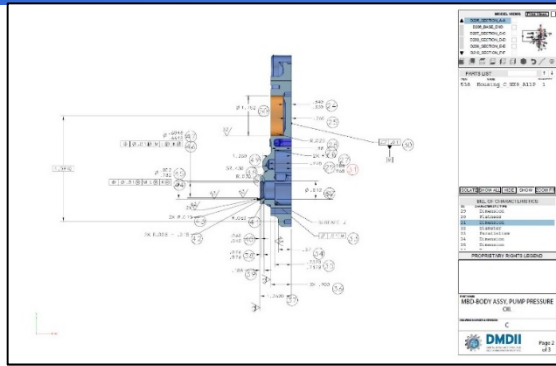
HTML5 Content with Activity Based Collaboration

Anark Open Standards for Technical Content

	Content Standards	3D	Standards Orgs
Web	HTML CSS JS {JSON}	glTF™	W3C® KHRONOS GROUP
Document	PDF	**PRC** ISO 14739-1:2014	ISO 3DPDF CONSORTIUM

Process, Culture, & Technology

'Culture eats strategy for breakfast'
- Peter Drucker

- **Digital Transformation requires organizational commitment, management support, team member alignment**
- **Focus on objectives, outcomes, ideal processes first**
- **Resilient, open, flexible platforms & applications to support process key**
- **Be ready for rapid continuous change...**

Conclusions
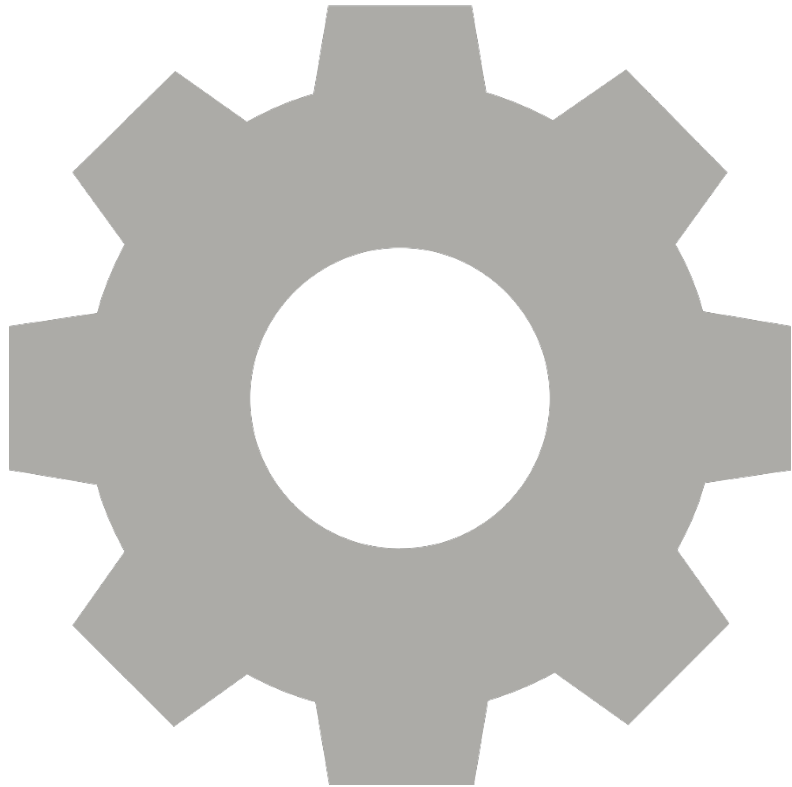
- Effective digital transformation strategy is essential to thrive in today's competitive environment.

- By embracing Industry 4.0, Digital Thread, and Model-Based Enterprise (MBE) processes, innovative OEMs and their suppliers improve efficiency, IP security, and quality, while accelerating new product introduction (NPI) timelines.

- Determining company objectives, best practices & processes is key – Then identify technologies & solutions that can best support those processes

- Management support and employee alignment of vision and outcomes essential

- Effective, flexible and resilient tools that enable interoperability, support for broad digital data types, and connected data exchange and collaboration is necessary for effective digitalization
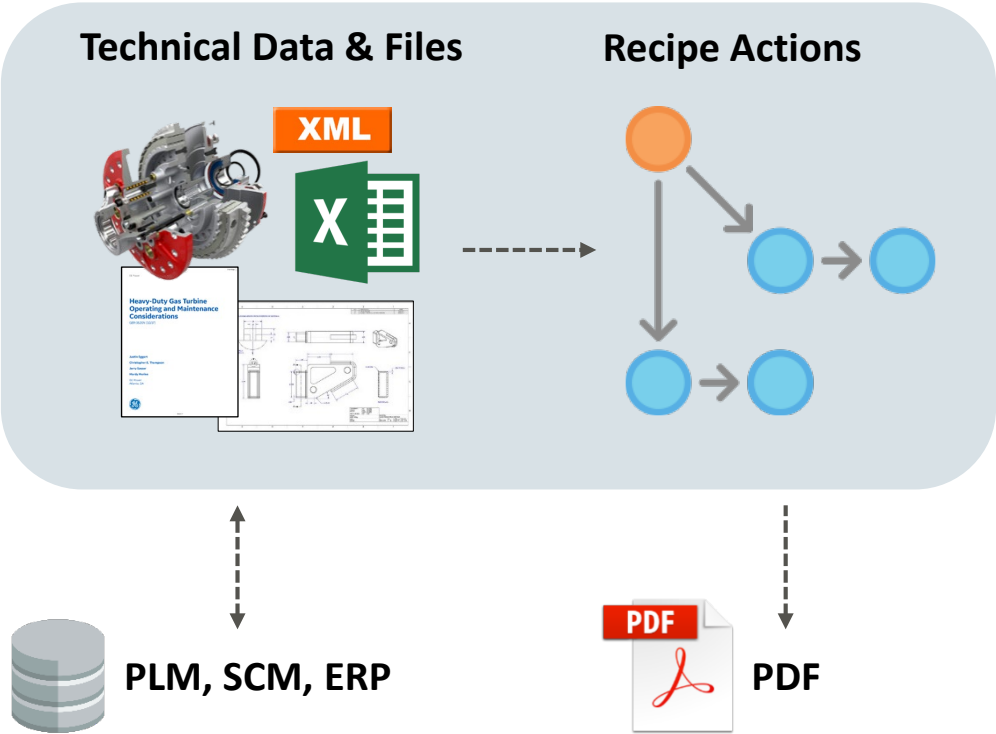
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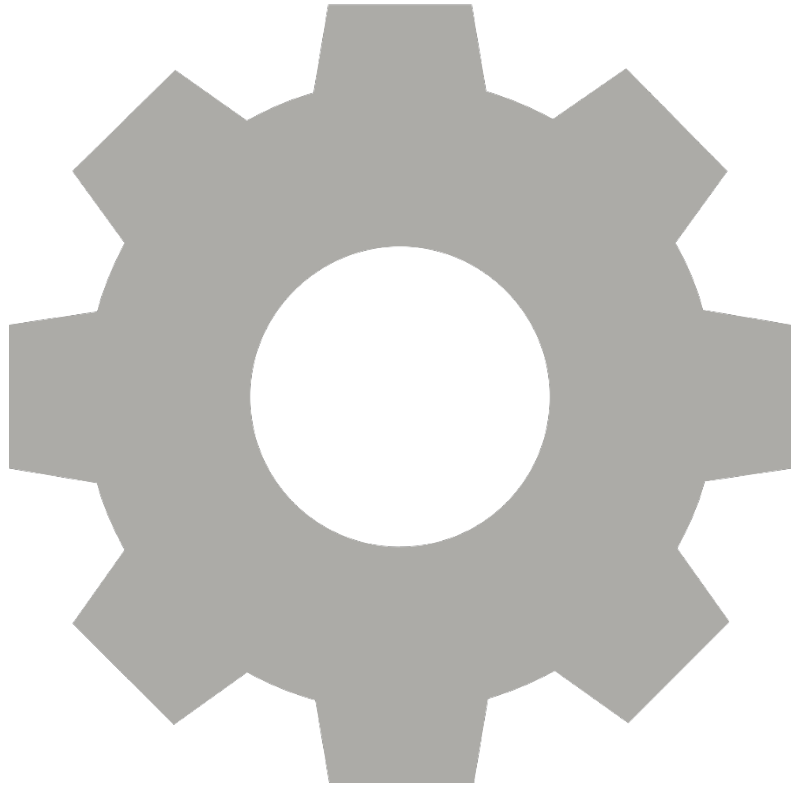
Thank You
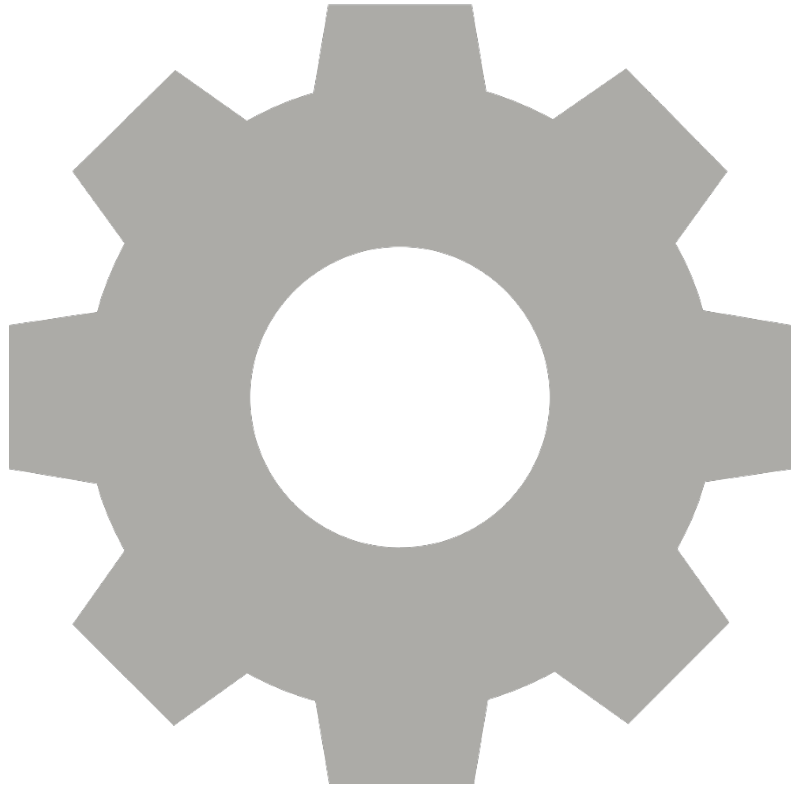
Q&A

Appendix

Anark Content Services for the Digital Thread

ANARK CORE™ SERVER
Publishing Automation Services

Technical Data & Files   **Recipe Actions**

XML

PLM, SCM, ERP   **PDF**

ANARK CORE™ MBEWEB
Content Management & Collaboration Services

Role-Specific Technical Web Content   HTML5

Consume & Collaborate

PLM, SCM, ERP, MES, IOT

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