IM501266-rt

Digital Transformation in Industrial Machinery

Paul Munford, Autodesk

Learning Objectives

- Gain insight into Industry trends and pressures, through access to your peers.
- Understand how to measure the success or failure of your digital transformation initiatives.
- Discover best practices, partners, and solutions for digital transformation
- Get real world answers to your digital transformation questions.

Description

Digital Transformation is the hot topic in the industrial machinery industry - but, what does digital transformation mean to you?

- What problem(s) are you facing?
- What needs to change?
- Why digital transformation?
- How will we recognize success?

In which part of your business does transformation need to occur? Sales? Logistics? Inventory? Design and manufacturing? All of these!

In this round table for Industrial machinery leaders, we'll discuss current industry trends and pressures, share considerations for effective change and debate how we can measure success (and failure!) of our digital transformation initiatives.

Join the best minds in the industry to help you find answers and clarify your goals and approach to digital transformation in Industrial machinery.

Conclusion

Roundtables are a little different from a normal class – we can't draw a conclusion until after the roundtable is over!

This edited version of the handout has been added after the roundtable to include class notes and photos from the session.

Please send your feedback on this roundtable to Paul.Munford@Autodesk.com.

Paul Munford

Paul Munford is a laugher, dreamer, raconteur, CAD geek, and Industry Marketing Manager for Autodesk in the UK.

Paul's background in manufacturing items for the construction industry gives him a foot in digital prototyping and a foot in Building Information Modeling (BIM).

Paul was a speaker at Autodesk University for the first time in 2012, and he says it's the most fun anyone can have with 250 other people in the room.

@PaulCADmunford

Roundtable expectations and format

Roundtable *– a mediated discussion engaging attendees. A collaborative experience intended to help solve a challenge or answer a question shared by industry peers.*

The intent of this roundtable is to discuss *'Digital transformation in the Industrial machinery business'* – to better understand the topic and where your company is on the maturity scale.

I hope that we will all leave the roundtable with a better understanding of the opportunity that digital transformation offers and begin to formulate our objectives to plan for digital transformation.

Digital Transformation Workshop

This roundtable will be run as a truncated or 'mini' version of an Autodesk digital transformation workshop. Digital transformation workshops last all day, let's see how far we can get in 90 minutes!

If you are interested in hosting a full day-long digital transformation workshop at your company, please contact your Autodesk or Autodesk partner account manager for details.

Contents

Digital Transformation Workshop Overview

The Manufacturing industry is undergoing major changes with complexities of doing business today, supply chain instability, and labor shortages.

Manufacturers who can overcome these challenges are well positioned for growth and prosperity.

More than ever, digital technologies have a role to play, but with so many use cases for digitalization, how can senior leaders make practical progress in moving their organizations towards their own **Digital Transformation**?

Welcome to the Autodesk Digital Transformation Workshop.

During this highly interactive session you will:

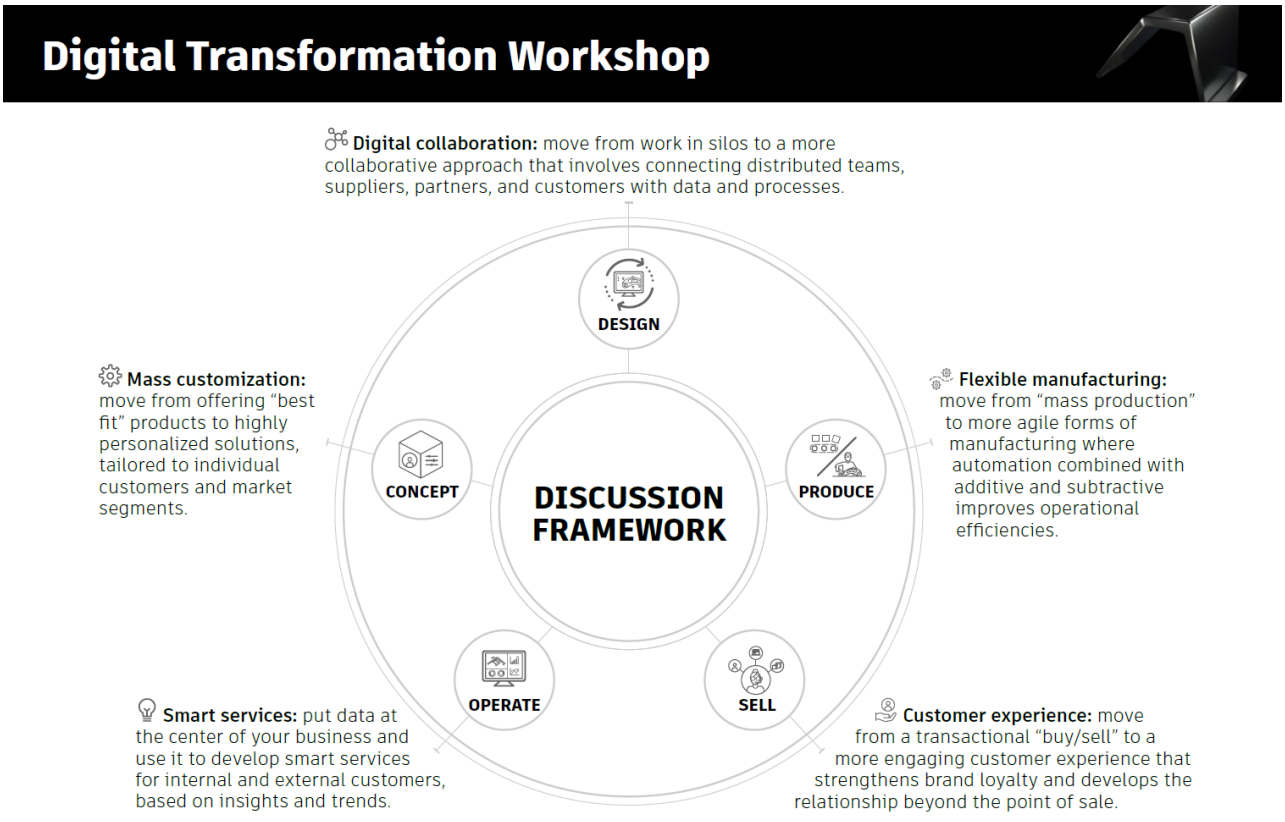
☐ Identify the five key digital capabilities critical to success in design and manufacturing.

☐ Determine the current level of your organization for each capability.

The workshop does not focus on software products, features, or functionality. Instead, you will explore how these digital capabilities can help you win more business, develop better products, increase your ability to innovate, drive efficiency and deliver a better customer experience.

Together with a group of your peers from other industries, you will spend the session discussing the following trends:

☐ Mass customization.
☐ Smart services.
☐ Digital collaboration.
☐ Personalized customer experience.
☐ Flexible manufacturing.



Agenda

Task	Time (Min)	Person
Settling in	2	Paul Munford
Welcome, Introductions & objectives.	8	Paul Munford
Digital transformation.	3	Paul Munford
Mass customization.	12.5	All
Digital Collaboration	12.5	All
Flexible manufacturing.	12.5	All
Break	10	-
Customer experience.	12.5	All
Connected services.	12.5	All
Conclusion	4.5	All
Total	**90**	

What next?

What was your takeaway from this roundtable? How has it changed, or verified your current thinking? What will you do next?

What is your vision for the ''Digital Transformation process in your industry and/or company?

- *Who are your stakeholders?*
- *What are their requirements?*
- *Can you create a baseline measurement – 'where are we now?'*
- *What KPIs will you set to measure the success or failure of your project?*
- *What consulting, training or technology will you need to invest in?*
- *Whose support will you need to fund your project?*
- *What evidence will you present to justify the expense?*
- *What is the 'Low hanging fruit'? What are the small changes you could make today that will pay off for your company?*
- *How will you tackle the remainder?*
- *How will you plan the work? How will you work the plan!*

Please feel free to share the handout, presentation, and class page from Autodesk University Online.

Digital Transformation in Industrial Machinery Roundtable – Class notes

Mass customization (Concept phase)

Q: How is mass customization impacting your business? Or if it is not, what could mass customization enable you to do?

- Customers are looking for project templates or customers are wanting to change things every single time. Manufacturers need to figure out how to make a machine flexible enough to handle any requests or understand requests.
- Level of strain with bespoke project after project leads to burn out, losing talent.
- Often with requests for bespoke solutions, sales says yes–whether it's possible to manufacture that request or not.
- Challenges that arise with bespoke projects:
    - Ex: Can't make new assembly until customer requests a new color
    - Ex: Updating scope of work mid-project without communicating, then have to move heaven and earth to accommodate updates and deliver what the customer wants to avoid damaging company reputation
- On the flip side, when following a manual process, a project might be treated like a bespoke project even though it isn't–strong need for automation tools.
- Success example: company went from using excel, switched to using iLogic
- Common thread: lack of wanting to change, have to change process to activate change
    - Ex: PLM installation
    - Order of impact for enacting change: People > Process > Tools

ADSK: In our experience, the secret of mass customization involves two things:

- Introducing design automation into your business
- Making it available at the appropriate points

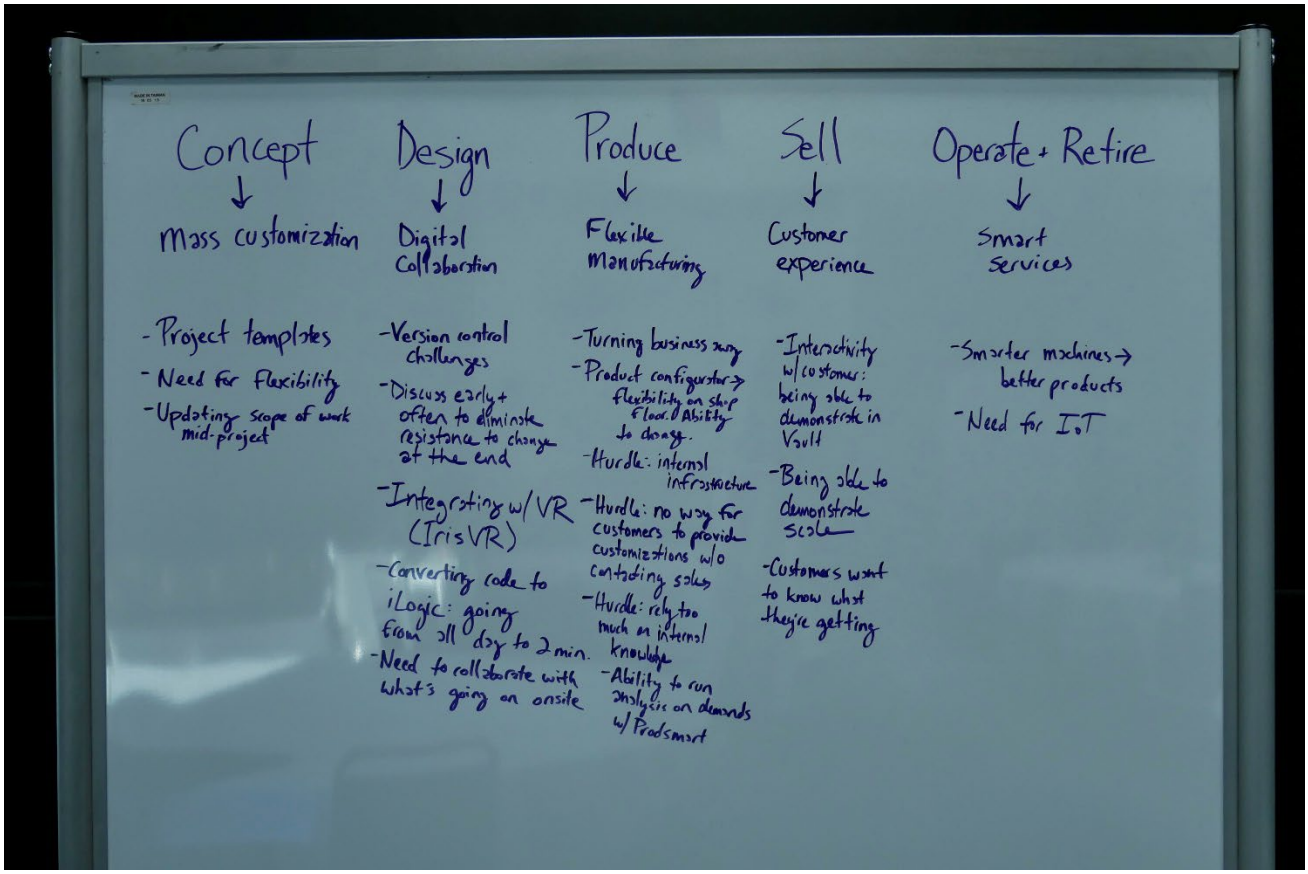
Digital collaboration (Design phase)

Q: Who has a 'perfect', foolproof collaboration system at their company? What is or is not working for you?

- Challenge with too many engineers pulling from Vault, editing local and not returning, people overwriting others' changes when file checked back in
- At a company with 20 different plants, challenges with getting people to buy in and see the actual changes that are going to happen. Need to get people involved early and often to eliminate last minute things where people aren't on the same page
- Challenge example: everyone collaborates with screenshots right now, can't get a shared views image into a place where you can collaborate (want Inventor screenshot, not the model)
- Sending out prints for collaboration with construction
- Implementing IR and VR
    - Ex: Iris VR to integrate with Vault
- Big benefit by working with iLogic, converting code to iLogic, went from taking all day and all night to 2 min
- Think line is the free viewer version of Vault – provides a way for someone to externally view (but can't change file)
- Success with providing orientation for different types of users
- Step in process: when something isn't in Vault, shop floor knows they need to call someone and find out where it is and it needs to be checked back in
- Process need: ability to collaborate with what's happening onsite and compare to what we think is happening

ADSK: In our experience, success in collaboration is about two things:

- Seeking input from collaborators earlier
- Validating information upfront – Digital simulation, rapid prototyping



Flexible manufacturing (Production phase)

Flexible manufacturing might involve:

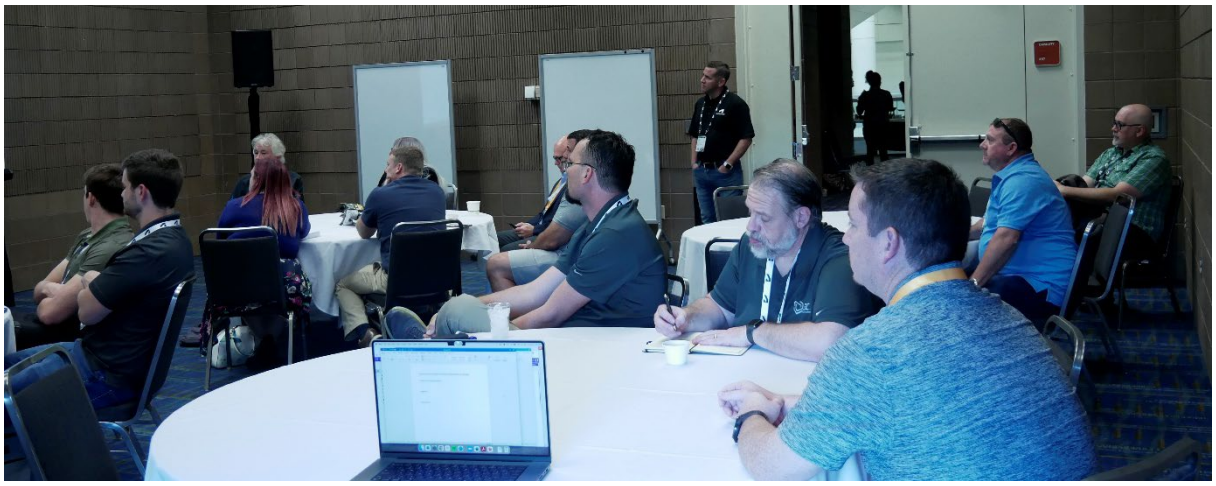
- Additive, subtractive, or mixed manufacturing
- The ability to send a programmed part to any machine in your organization that has capacity
- The ability to manufacture customized products to order
- The ability to subcontract the same items to multiple subcontractors, to alleviate supply chain bottlenecks or distribute manufacturing to regional hubs

Q: How does flexible manufacturing currently impact your business? How could it?

- The process from engineering to shop floor is very rigid, flexible manufacturing will allow a 3rd party to submit CAD, run CAD against features to provide pricing, then Fusion pulls in file names
- To make manufacturing more flexible, the process needs to become more rigid–but without losing the benefits of an automated workflow.
- Having a product configurator leads to flexibility on the shop floor. Ability to make changes up until the moment something is manufactured.
- Hurdle: internal infrastructure (ERP not up to current industry standards)
- Hurdle: catalogues aren't set up to sell a product, no way for customers to provide information on customizations without contacting sales.
- Hurdle: rely too much on institutional knowledge, no one at company can communicate workflows or they don't want to
    - Mindset: if I share this information, I won't be needed anymore
- Prodsmart acquisition: "This is what I've been looking for, for years"
    - "Can track everything down to the second" Can track jobs that are waiting on parts, run real time analysis on what demands are and can see what customers are getting in a timely fashion, or can give suppliers a heads up that there will be a spike in demand coming
    - With Fusion Manage enterprise, you can give a supplier access

ADSK: Benefits of flexible manufacturing:

- Integrated – design and manufacturing tools work from the same data. Removing 'stage gates' and allowing CAM programming to start earlier, knowing that CAD changes will update toolpaths.
- Hybrid of additive, subtractive, and mixed – for example in rapid tooling design.
- Automated – automating the creation of toolpaths, connecting tolerancing and finishing data in the model to the CAM programming environment. Creating tool paths that will run on multiples (of the same type) of machines, to use spare production capacity.



Customer experience (Sales phase)

Q: What does customer service mean to you? How is it currently impacting your business?

- Installation engineer: there have been occasions where a customer is looking over shoulder and we can pull up Vault on app and show the customer the exact part that needs to be fixed. It's an educational moment, offers a much better idea of what they're going to get so they can imagine the value.
- Being able to see the scale of a model leads to the customer understanding the value.
- Need the ability to limit what customers can see–have to create second model which has implications on Vault and PLM.
- Being really clear about value leads to more business.

Q: Are customers expecting things like AR and VR? Are customer expectations changing?

- Ex: AG industry – farmers mainly over 50, but quickest to adopt new tech. Not super techy but once they see the value of something, they want it
- More people are expecting data-driven, cost-effective changes, knowing what they are getting. More difficult with non-digitalized dataset.
- Being able to demonstrate value > customer buy-in and willingness to change
    - Again: customers want to know what they're getting!
- Challenge: customers fabricating a part themselves that is close enough to expediate process of calling for replacement part

The key to successful customer service is:

- Understand customer values through configuration and automation
- Deliver consistently – making sure customer's business doesn't suffer

SMART services (Operate and retire phase)

Q: What does "SMART" services mean to you? Is this something that's impacting your business, and if so, how?

- Customers asking for machine stats to see if they're down or not
- Having the ability for machines to become smarter will improve products
- Machine lifecycle is much harder to track manually than digitally
- Have ways to connect machinery to the internet, to see what is breaking and see what needs to be fixed, IoT
- "Important to small mom and pop businesses to have IoT"

ADSK: Importance of SMART services:

- Internal data strategy: in our experience - smart services start with IT strategies such as network security and the safe handling of customer data. You need to get this right before you can start collecting data from customers' products or use this data to add value to the post-sales services that you offer.
- Insight: what does your customer really want to know? And how can you deliver what they want to know, when they want to know it – based off the data that they have entrusted to you?

Thanks

Thank you very much to Jan Niestrath for helping me to create this class, and to Asif Moghal and Marie Olivares for permission to use the 'Digital Transformation Workshop' format and content.

Resources

More free classes on digital transformation topics from previous Autodesk University conferences on **Autodesk University Online:** Click here for more AU classes by Paul Munford

Keynotes and featured content:

522828 Tech Trends: The Impact of Digital Transformation on the Future of Work

Industry talks:

CS500145 Successful Digital Transformation Through a Product Management Organization

LO-AEC26 Leading Digital Transformation

MFG469205 Grow Your Business: Enhance Your Digital Online-Customer Experience

Panel discussion:

MFG500104 Expanding Diversity and Inclusion in Manufacturing Workforce Development

Instructional demos:

MFG469225 Sales Engineering Automation Using Forge, Fusion Lifecycle, and Vault

AULON31390 Sales Automation with Configurator 360 and Codeo Configurator

More resources

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