



2022 Digital Construction Summer School

Industrialized Construction

Curriculum overview

John Herridge

AEC Technical Marketing Mgr. | Autodesk, Inc.



About me



John Herridge

AEC Technical Marketing Mgr.
Autodesk, Inc.

- 35 years of AEC industry experience
- 16 years with Autodesk Education team
- Autodesk University speaker for multiple years
- Autodesk Certified Instructor Platinum

Presentation agenda

- About industrialized construction curriculum
- Module overview
- Course format and applications
- Virtual Autodesk Technology Center tours
- Q & A

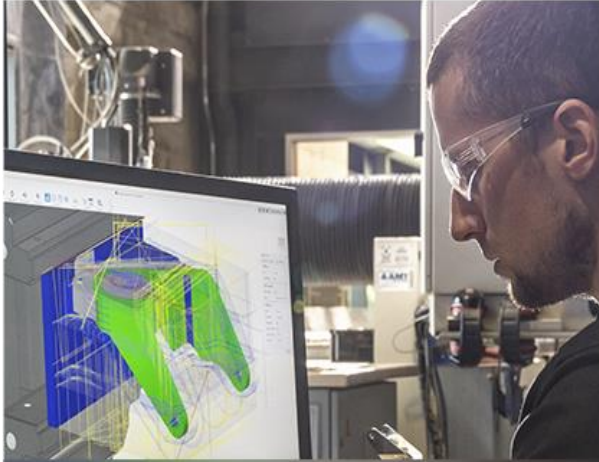


A 3D architectural rendering of a building's structural frame, showing a complex network of dark, metallic-looking beams and supports. The structure is partially visible on the left side of the slide, extending from the top left towards the bottom center. The lighting creates highlights and shadows, emphasizing the geometric forms and the industrial aesthetic.

Industrialized Construction

Autodesk overview

Autodesk IC strategy



Enable Data for
Manufacturing & Assembly



Connect Autodesk
platform for the ecosystem
to make IC easier

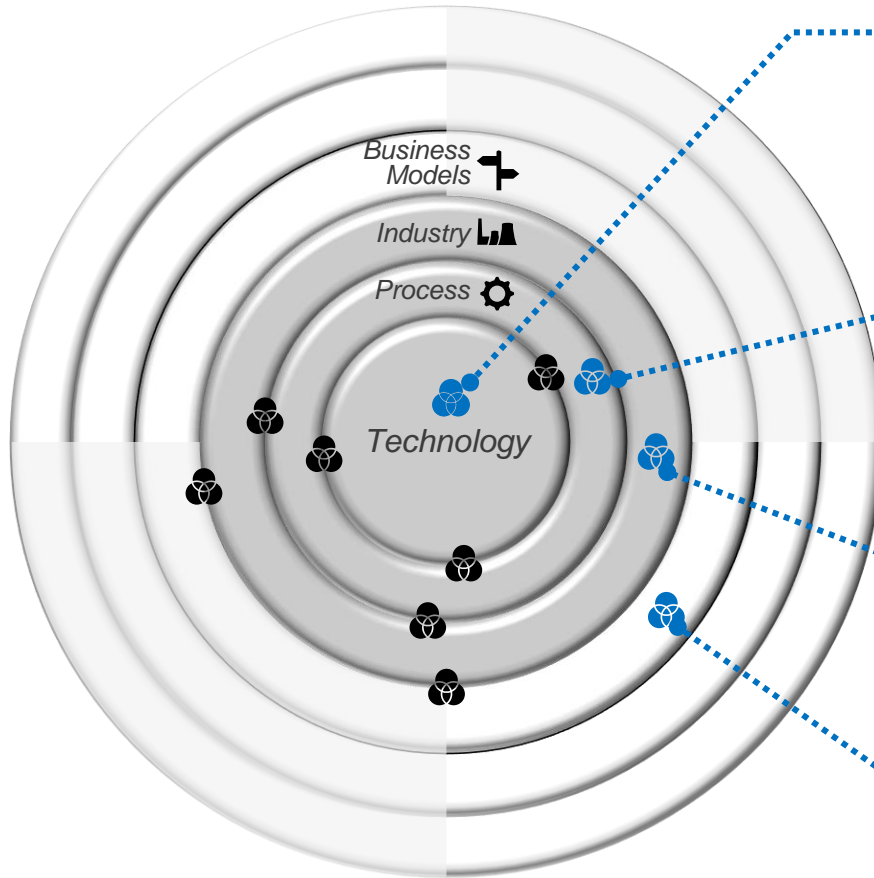


Create a collaborative
knowledge center for IC
to share best practices



Industrialized Construction

The application of
manufacturing techniques
to the built environment



● **Technology Convergence**
*e.g. melding of Telco, computing,
consumer electronics*

● **Process Convergence**
*Design ↔ Build ↔ Operate
Operate ↔ Build ↔ Design*

● **Industry Convergence**
*Manufacturing – Design – Construction
Industrialized Construction*

● **Business Model Convergence**
*New value propositions, new roles, new
drivers*

INDUSTRIALIZED CONSTRUCTION



Advanced
Building
Products



Single Trade
Assemblies



Multi Trade
Assemblies



Volumetric
Modular



Robotics &
Automation



Additive
Manufacturing

Prefabrication Continuum



Productization



DfMA



BIM



Lean MFG



Cloud



Big Data &
Analytics



IOT

PROCESS ENABLERS

TECHNOLOGY ENABLERS

100%

increase in global building floor area by 2060 owing to population growth and rapid urbanization.

40%

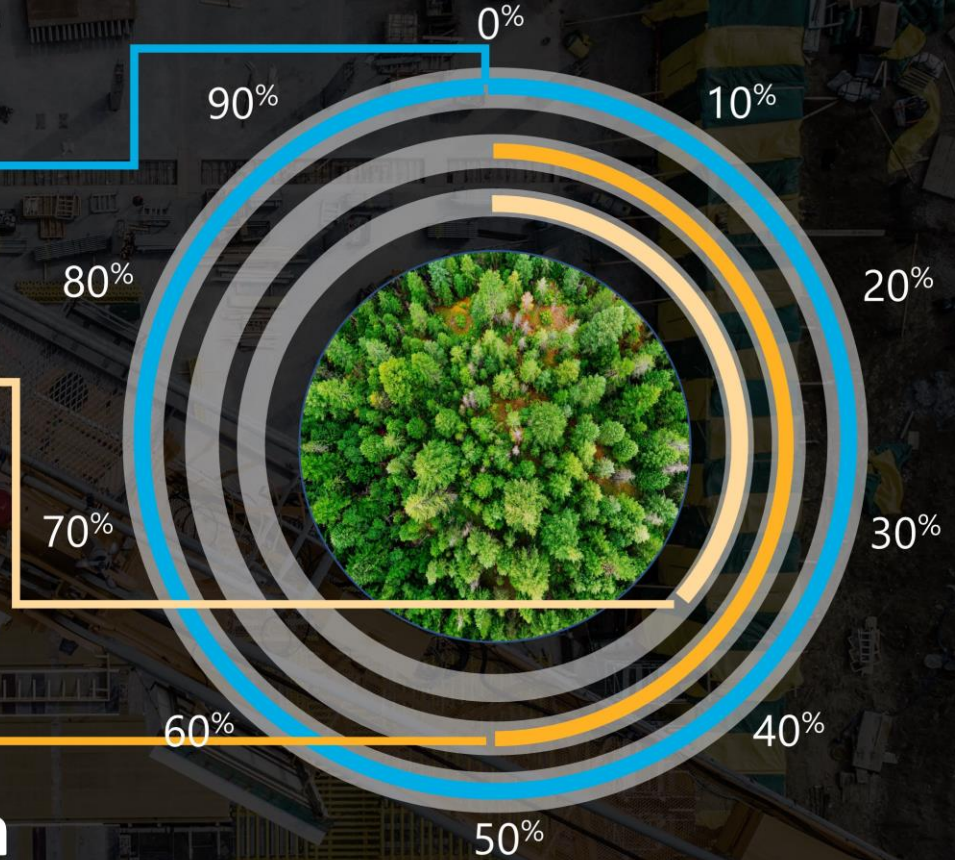
of solid waste comes from the construction industry

50%

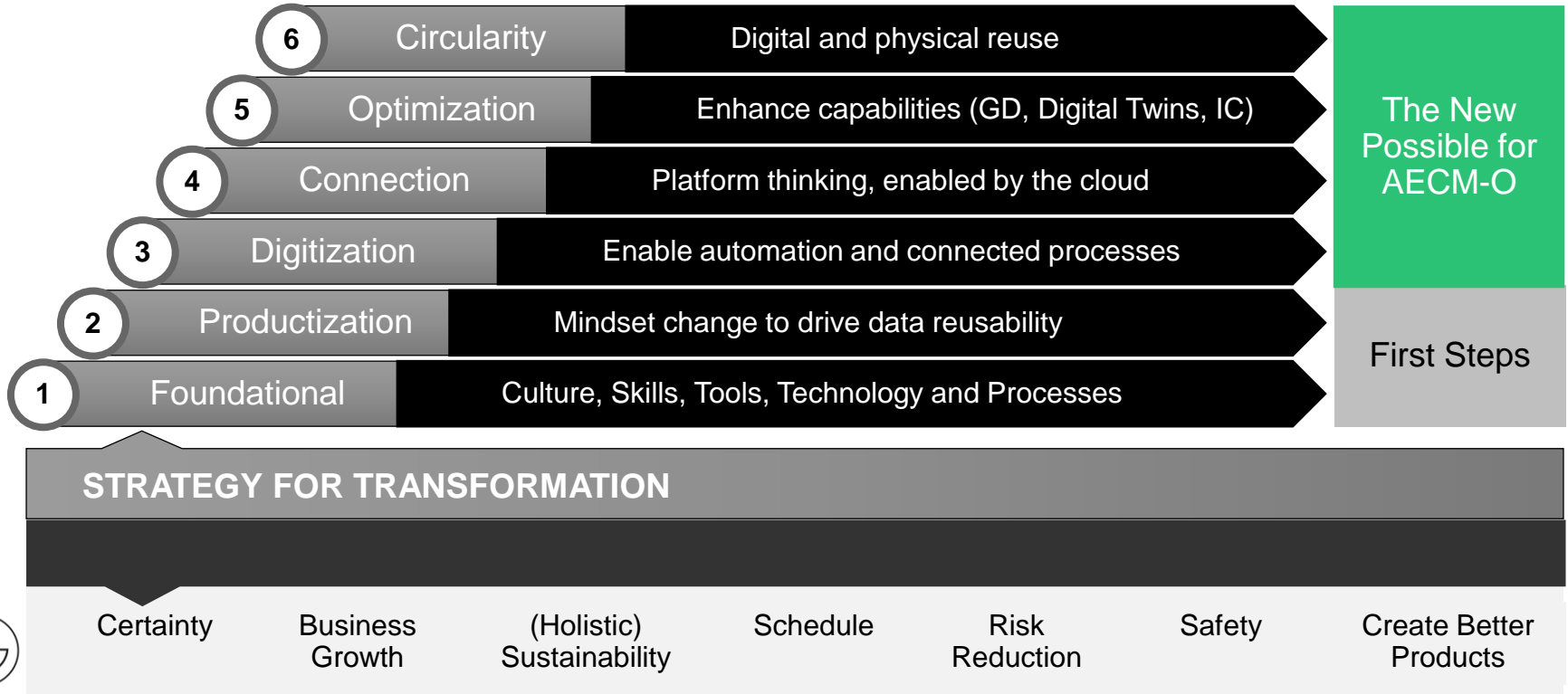
of all global material consumption comes from the building sector

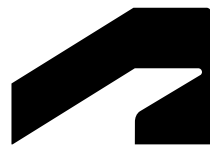
Sustainable Construction

Maximizing Quality, Safety, Schedule and Cost Control while Winning More Work



Transformation framework



A close-up, low-angle shot of a metallic, industrial structure on the left side of the slide. The structure is composed of several interconnected, polished metal beams and plates, creating a complex, geometric framework. The lighting highlights the reflective surfaces and sharp edges of the metal, giving it a high-tech, industrial appearance.

Industrialized Construction curriculum

High level overview

Curriculum authors

Industrialized construction curriculum



Amy Marks (Queen of Prefab)
VP, Industrialized Construction Strategy
Autodesk, Inc.



Anil Sawhney
Dir. of Infrastructure Sector
RICS

Industrialized Construction curriculum

Industrialized construction for the build environment lifecycle



Introduction to Industrialized Construction

An introduction to the whole course, this module introduces students to the megatrends encompassing Industrialized Construction for the built environment lifecycle.

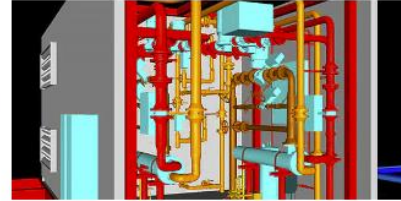
[➔ Download module assets](#)



Productization, DfMA, and Sustainability

Students will explore the concept of productization, design for manufacture and assembly (DfMA) and DATA for manufacture and assembly with a large emphasis on linkage of these concepts with other elements of the House of Industrialized Construction (IC).

[➔ Download module assets](#)



Rise of MEP Assembly

Students will learn about the MEP subcontractors' evolution and innovation in prefab processes and explore the role of an integrated, multi-trade approach and applied manufacturing techniques in product orientation.

[➔ Download module assets](#)



Applying the Transformation Framework to Industrialized Construction

Students will explore the application of the transformation framework to Industrialized Construction through the layers of outcomes, strategy, and final state by looking in-depth at each stage of the six-stage transformation framework.

[➔ Download module assets](#)

Industrialized Construction curriculum

Course modules high level

Modules included are:

M1: Introduction to Industrialized Construction

M2: Productization, DfMA, and Sustainability

M3: Rise of MEP Assembly

M4: Applying the Transformation framework to Industrialized Construction

M5: Convergence of Technology, Process, and Business models in Industrialized Construction

M6: Applying machine learning, AI, and Advanced Construction Technologies

M7: Future of Work in Industrialized Construction

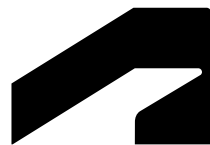
Content breakdown

25 hours of content

- Videos, readings, and podcasts
- Discussion questions
- Social media posts

7 assessments

- One for each module



Industrialized Construction curriculum

Module overview

Introduction to Industrialized Construction

Module 1

- Overview of four types of convergence
- Introduction to the house of industrialized construction
- Introduction to the transformation framework



Introduction to Industrialized Construction

Productization, DfMA, and Sustainability

Module 2

- What is design for manufacturing and assembly (DfMA)?
- The shift from a project-centric mindset to a productization-centric mindset
- Introduction to a circular economy

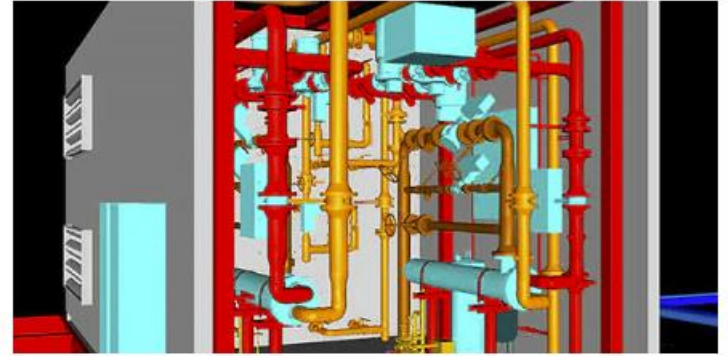


Productization, DfMA, and Sustainability

Rise of MEP Assembly

Module 3

- The rise of multi-trade assemblies
- Overview of three types of convergence customers
- Explore where the opportunities are for MEP assemblies



Rise of MEP Assembly

Applying the Transformation Framework

Module 4

- Overview of Autodesk's vision for industrialized construction
- Discuss the need for transformation
- Explain the six stages of transformation



Applying the Transformation
Framework

Convergence of Technology, Process, and Business Models

Module 5

- Convergence, why now?
- Risks associated with assumption-based design
- The solution is manufacturing informed design for the built environment



Convergence of Technology, Process, and Business Models

Machine Learning, AI, and Advanced Construction Technologies

Module 6

- The impact of bad data in construction
- Introduction and applications of:
 - artificial intelligence and machine learning
 - robotics
 - additive manufacturing
 - digital twins
 - ar/ vr/ mr



Machine Learning, AI, and Advanced Construction Technologies

Future of Work in Industrialized Construction

Module 7

- What trends and processes are driving change in the future of work
- Culture changes required to embrace the future of work
- Overview of the new convergence roles
- Overview of the future of work whitepaper



Future of Work in Industrialized Construction

Course applications

Module name	Course applications
M1: Introduction to Industrialized Construction	Introduction to Construction Management
M2: Productization, DfMA, and Sustainability	Construction Techniques Advanced BIM Sustainable Construction
M3: Rise of MEP Assembly	Building Mechanical Systems Construction Estimating Project Control and Scheduling
M4: Applying the Transformation framework to Industrialized Construction	Project Control and Scheduling

Course applications

Module name	Course applications
M5: Convergence of Technology, Process, and Business models in Industrialized Construction	Construction Information Technology
M6: Applying machine learning, AI, and Advanced Construction Technologies	Elective courses Advanced Construction Information Technology Construction Estimating 2
M7: Future of Work in Industrialized Construction	Introduction to Construction Management Construction Project Management Jobsite Construction Management

Next steps

- Pilot two to three modules this fall semester
 - Provide course feedback
 - Let us know what topics you would be interested in learning more about
- Request access to the module assessment answer keys
- Autodesk University 2022 | Sep 27 – 29 in New Orleans
 - Face to face conference
 - Registration for conference; educator discount available
 - Attend our panel session: CS502038

IC Curriculum that Brings Industry and Academia Together



IC curriculum



IC curriculum
answer key request form



Autodesk University

Virtual Autodesk Technology Center tours

technologycenterstours.autodesk.com/



The Autodesk Technology Centers catalyze new possibilities for making. Explore the global Technology Centers 360-degree virtual tours to get a glimpse into how the global network of innovation leaders and data-enabled fabrication workshops are empowering innovators in achieving the new possible, together.



Questions and Answers



Autodesk and the Autodesk logo are registered trademarks or trademarks of Autodesk, Inc., and/or its subsidiaries and/or affiliates in the USA and/or other countries. All other brand names, product names, or trademarks belong to their respective holders. Autodesk reserves the right to alter product and services offerings, and specifications and pricing at any time without notice, and is not responsible for typographical or graphical errors that may appear in this document.

© 2022 Autodesk. All rights reserved.