

# Safe harbor



Each of the presentations today will contain forward-looking statements about our strategies, products, future results, performance or achievements, financial, operational and otherwise, including statements about our strategic priorities, business model transition, and guidance for the first quarter and fiscal year 2024; total addressable market (TAM), our long term financial and operational goals; our M&A strategy; our capital allocation initiatives; and our stock repurchase program. These statements reflect management's current expectations, estimates and assumptions based on the information currently available to us. These forward-looking statements are not guarantees of future performance and involve significant risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from results, performance or achievements expressed or implied by the forward-looking statements contained in these presentations, such as a failure to maintain subscriptions, billings, revenue, deferred revenue, margins and cash flow growth; difficulty in predicting those financial and performance metrics; failure to maintain disciplined and focused investment; failure to successfully integrate acquisitions and manage transitions to new business models and markets, including our efforts to expand in construction and manufacturing, and attract customers to our cloud-based offerings; failure to successfully expand adoption of our products; and negative developments in worldwide economic, business or political conditions.

A discussion of factors that may affect future results is contained in our most recent Form 10-K and Form 10-Q filings available at [www.sec.gov](http://www.sec.gov), including descriptions of the risk factors that may impact us and the forward-looking statements made in these presentations. The forward-looking statements made in these presentations are being made as of the time and date of their live presentation. If these presentations are reviewed after the time and date of their live presentation, even if subsequently made available by us, on our website or otherwise, these presentations may not contain current or accurate information. We disclaim any obligation to update or revise any forward-looking statement based on new information, future events or otherwise.

## **Non-GAAP Financial Measures**

These presentations include certain non-GAAP financial measures. Please see the section entitled "Reconciliation of GAAP Financial Measures to non-GAAP Financial Measures" in the Appendices attached to the presentations for an explanation of management's use of these measures and a reconciliation of the most directly comparable GAAP financial measures.



AUTODESK INVESTOR DAY

March 22, 2023

# Accelerating Digital Transformation in AEC

**Amy Bunszel**

Executive Vice President

Architecture, Engineering & Construction Design Solutions

# What we'll cover today



1

Industry context

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2

Reinforcing the core

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3

Expanding building information modeling

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4

Forma and the future of building information modeling

# Architecture, engineering & construction



# Architecture, engineering & construction



Source:

Cambashi FY23 Application TAM


Models based on Cambashi FY23 Professions Dataset and Autodesk estimates (Totals may not sum due to rounding)

# AEC external trends



## Unprecedented demand

- Sustainability and resiliency
- Demographic shifts
- Stimulus packages



## Work has changed

- Remote work
- Material supply chain
- Industrialization



## Digital transformation

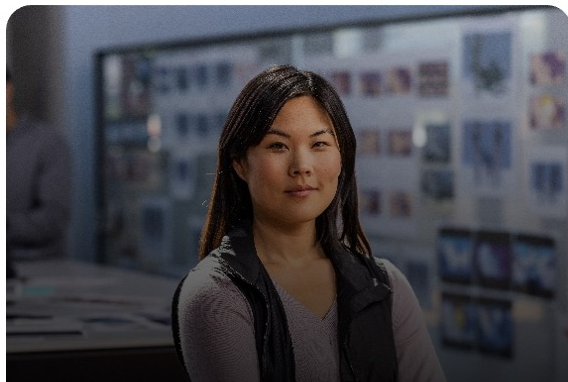
- Data and tool explosion
- Digital twins requested by owners
- Automation driven by AI / ML

# Digital transformation accelerates



**High engagement**  
**91%**  
of businesses  
are engaged in  
a digital initiative

Source: Gartner



**High impact**  
**Up to 2X**  
EBITDA impact in  
successful digital  
transformations

Source: McKinsey



**Leadership focus**  
**97%**  
of IT decision-makers  
are involved in digital  
transformation initiatives

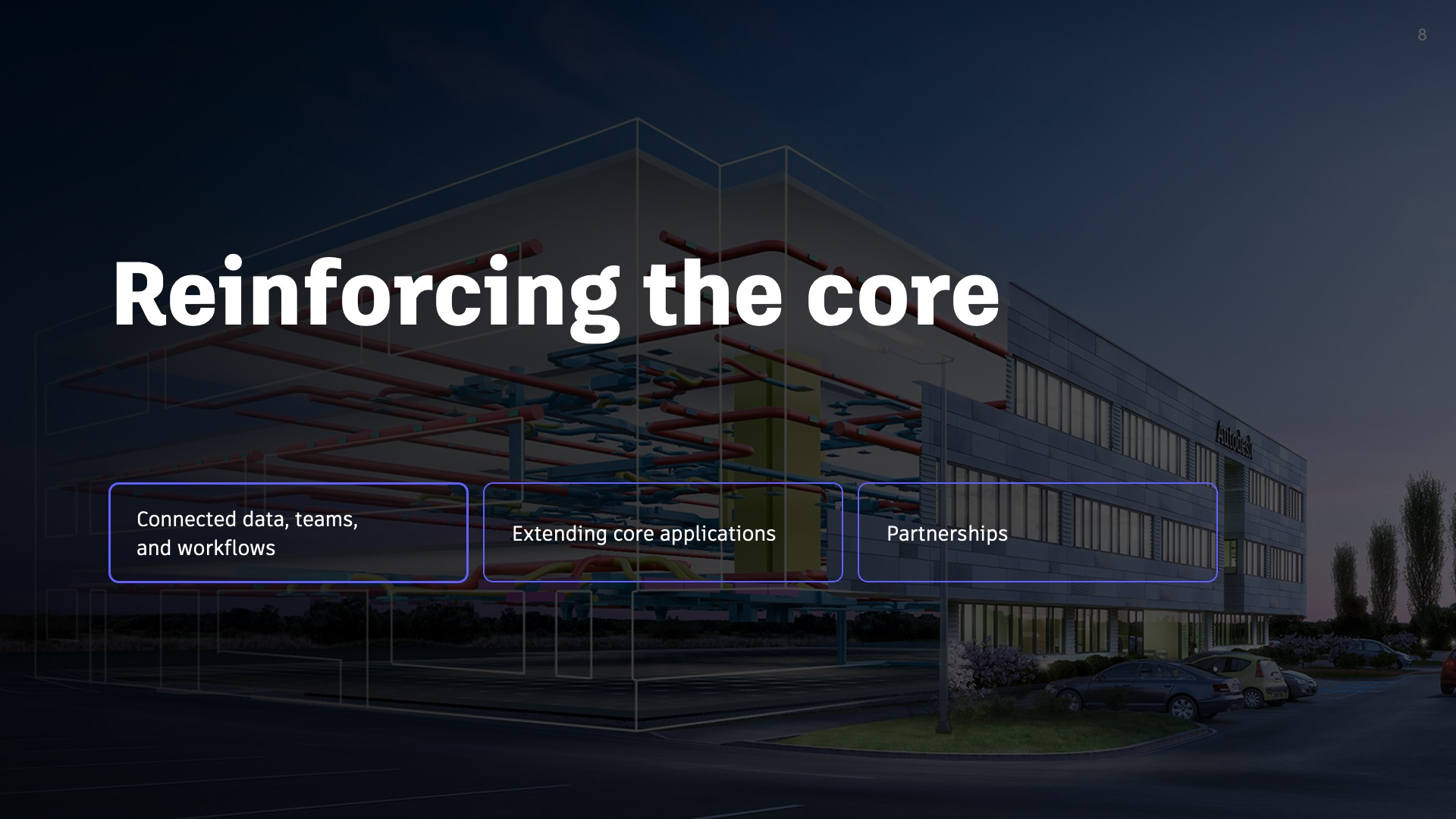
Source: MuleSoft

# Reinforcing the core

Connected data, teams,  
and workflows

Extending core applications

Partnerships



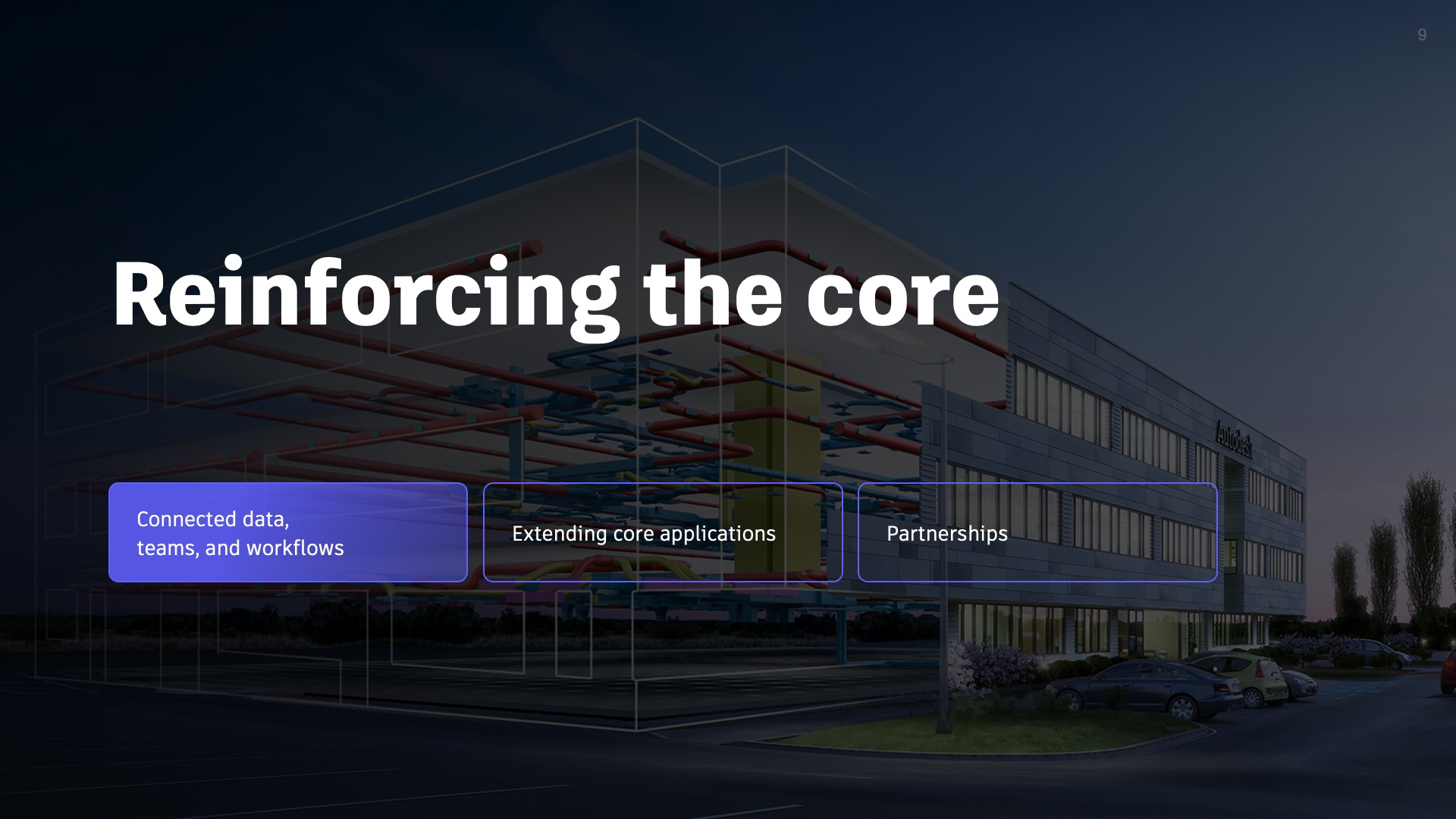


# Reinforcing the core

Connected data,  
teams, and workflows

Extending core applications

Partnerships



# Autodesk BIM Collaborate Pro opportunity

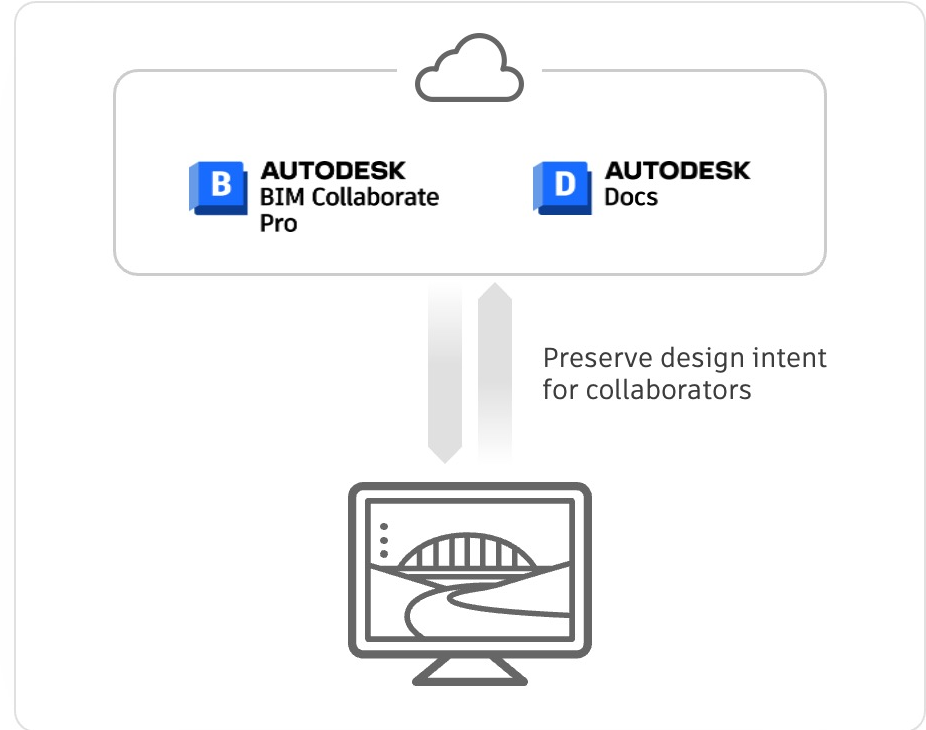
Demand for digital project delivery remains strong



# Collaboration for Civil 3D

## Civil 3D and Desktop Connector updates increase workload capacity and enhance cloud collaboration

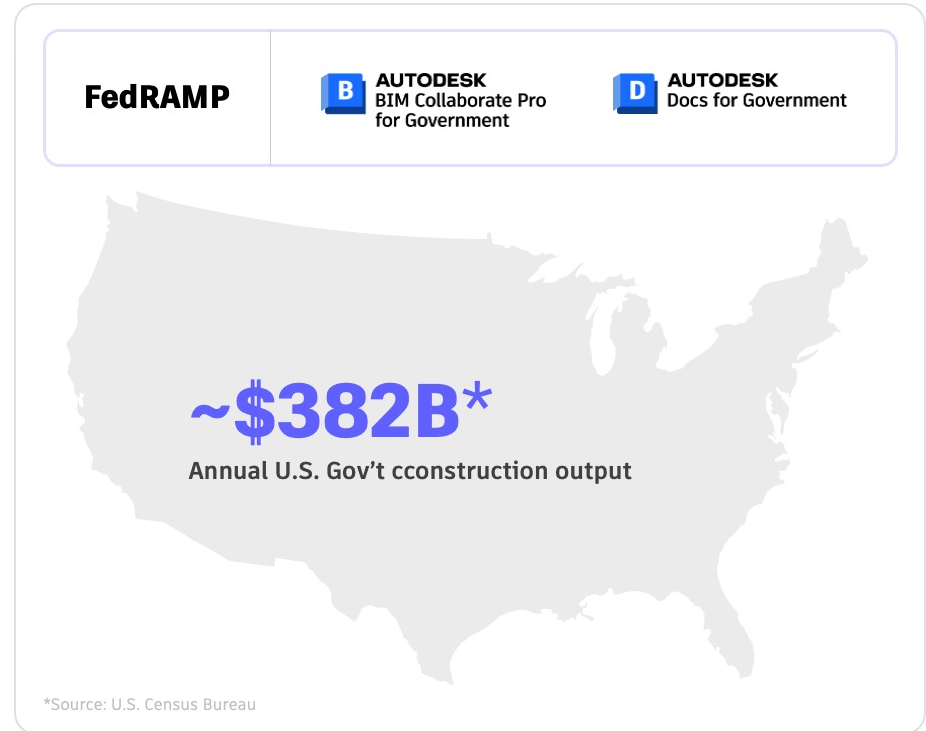
- Cloud-based document management
- Project data insights throughout the project lifecycle
- These enhancements **expand our target user base by ~51%**



# FedRAMP offerings & strategy

## Grow Autodesk's design and construction cloud solutions for U.S. federal projects

- Launch Autodesk for Government with Authority to Operate (ATO) from the General Services Administration (GSA)
- Increase in infrastructure spend leads to more opportunities (e.g., Infrastructure Investment and Jobs Act)



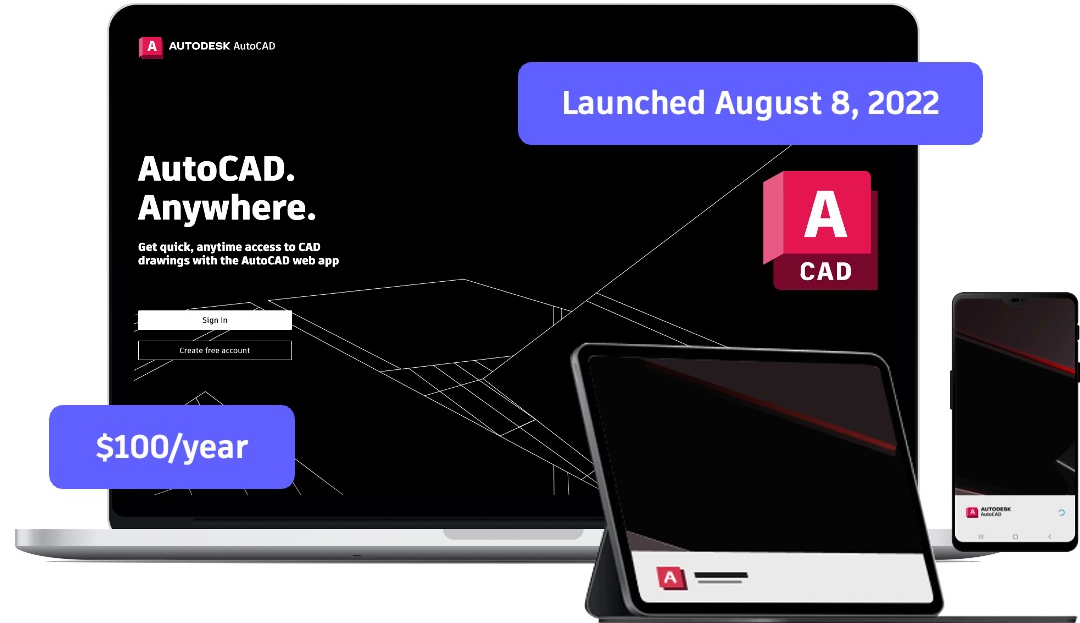
# Reinforcing the core

Connected data,  
teams, and workflows

Extending core applications

Partnerships

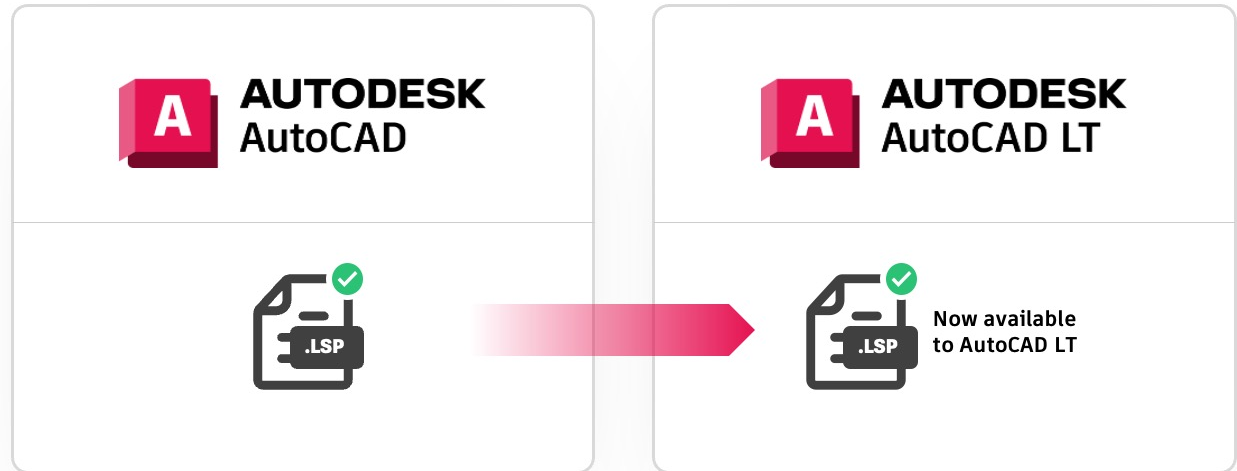
# NEW! AutoCAD Web offering



# AutoCAD LT includes AutoLISP automation

## AutoLISP automation

AutoLISP interacts with AutoCAD to automate and customize repetitive tasks



# Machine learning in AutoCAD

Meeting pervasive customer needs with insights and automations



## Markup Import & Assist

Customers can now import handwritten markup from any device, and AutoCAD will import just the markup and assist them by automating the instructions within that text



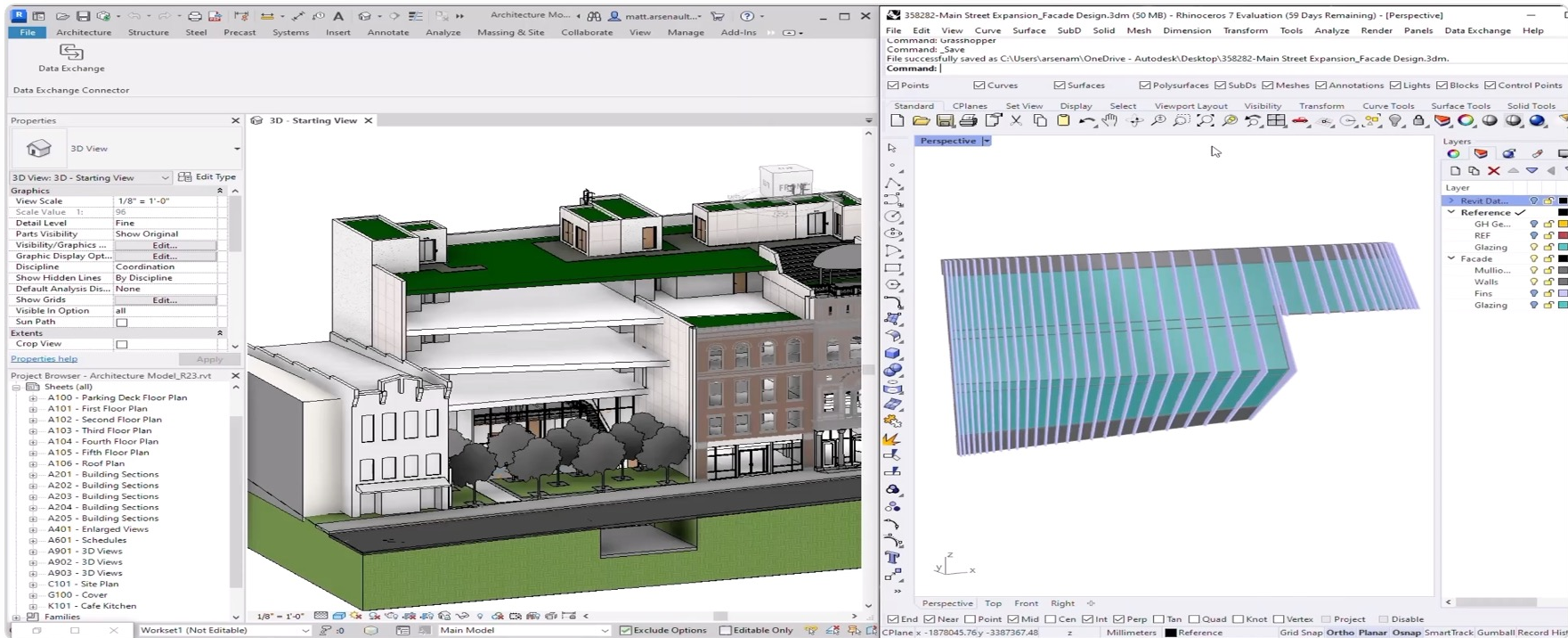
## Smart Blocks

Customers get recommendations on the blocks that are most relevant and AutoCAD will automatically scale, rotate and place it in their drawing



# Autodesk and Rhino data exchanges

Transforming how customers work on projects together

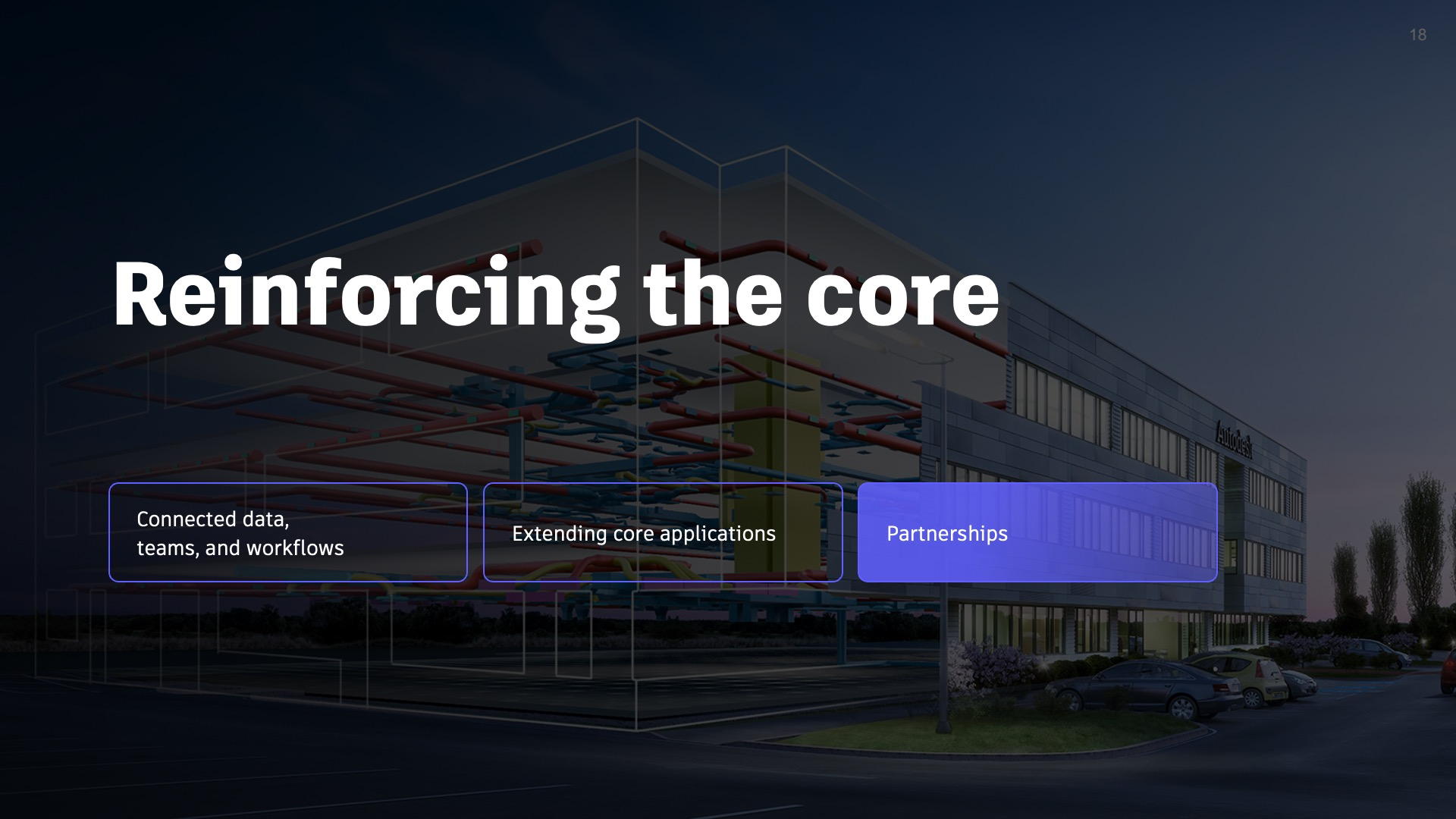


# Reinforcing the core

Connected data,  
teams, and workflows

Extending core applications

Partnerships



# Bringing BIM to electrical engineers

## Schneider Electric

Reach **~1M\*** net-new electrical professionals world-wide

Enhance existing Revit workflows to enable advanced electrical design

Deliver unparalleled smart energy analysis tools



# Bringing immersive visualization to Revit customers

## Epic Games

Showcase designs to clients with immersive realism

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Automate real-time renderings, scenes & scenarios that previously took days to complete

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Capture the look and feel of environmental conditions with immersive video-game quality



# Digitalizing building operations to owner-operators

## Eptura

Optimize costs through BIM-based maintenance and space planning

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Improve comfort and safety with the fast resolution of occupant issues

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Reduce carbon through visibility into carbon usage and energy benchmarking



# Expanding building information modeling (BIM)

Road & rail

Water

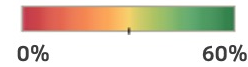
Sustainability

# The BIM process



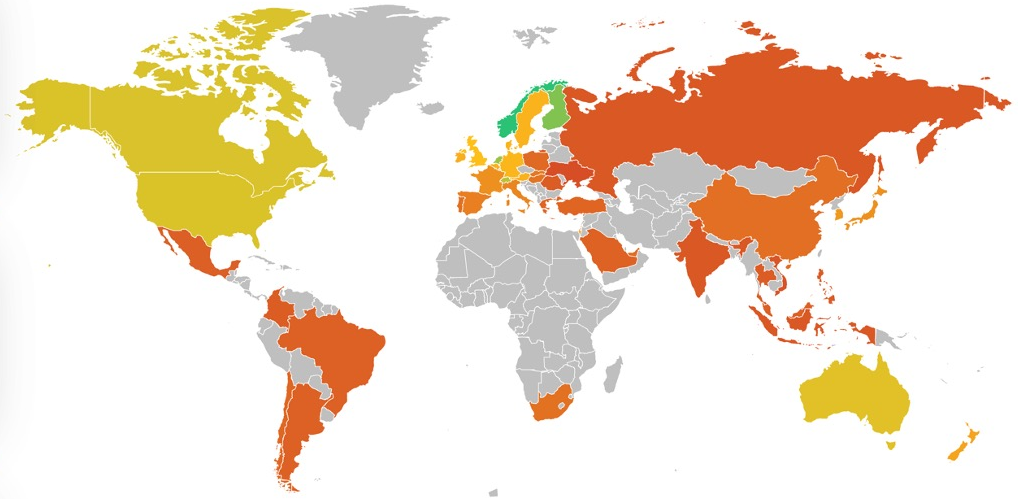
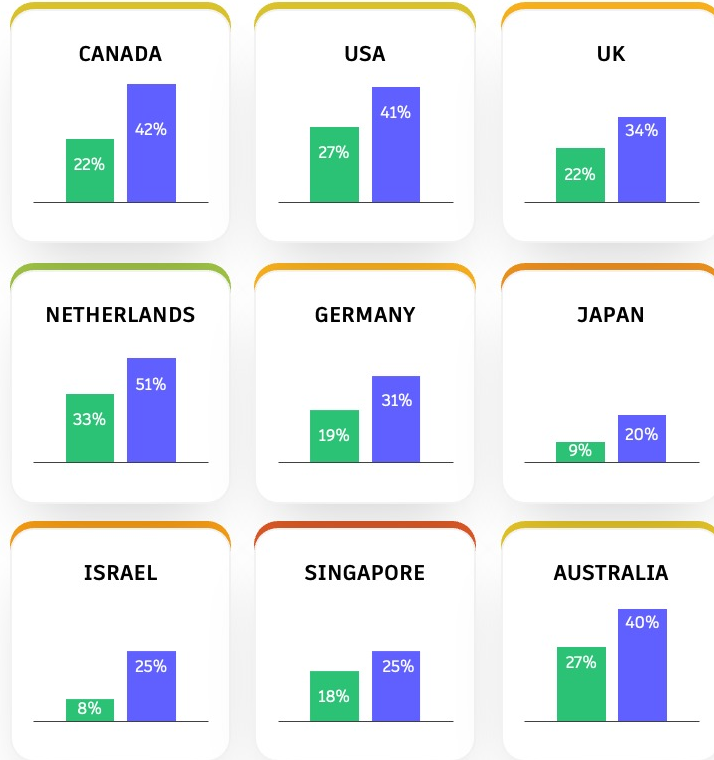
# Overall BIM penetration

% BIM Penetration



FY20

FY23



COUNTRIES INSTITUTED WITH NEW BIM POLICIES IN FY23



Source: Cambashi, AEC Design TAM - The figures presented are estimates and are likely understated given the impact of piracy rates, availability of free software, in-house development, new uses and other variables




# AEC industry customer engagement framework

How we are addressing customer sentiment




**Executive customer councils**

Industry thought leadership and industry business challenges



**Customer advisory boards**

Product strategy, roadmaps, prioritization, and new investments



**Industry associations**

Autodesk industry engagement

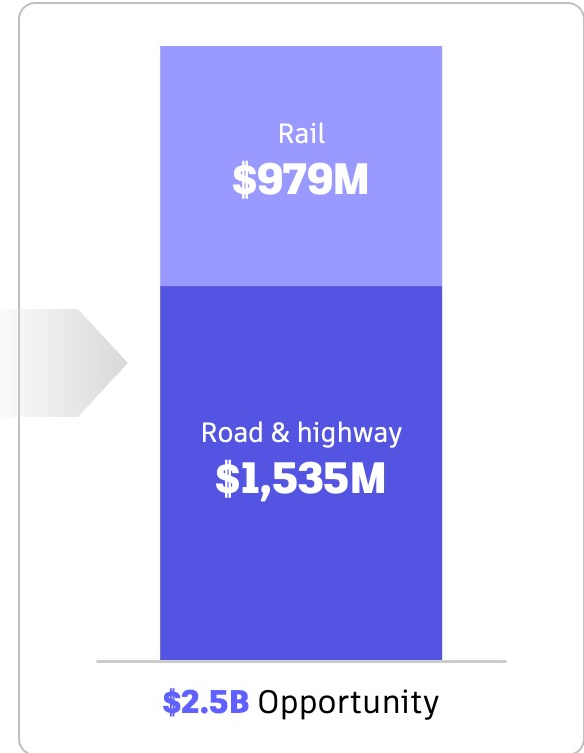
# Expanding building information modeling (BIM)

Road & rail

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Sustainability

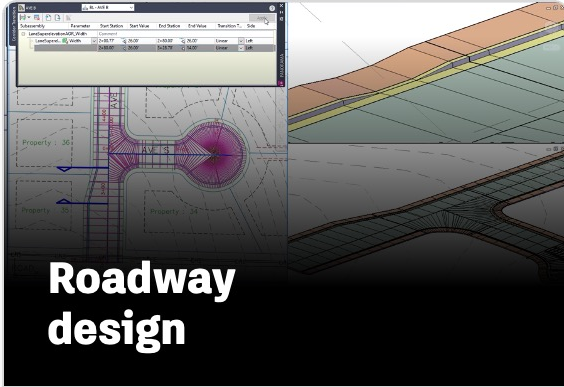
# Road and rail global design opportunity



Source: GlobalData Construction Market Data, Cambashi 2022 Industry TAM

Disclaimer: The share figures presented are estimates and are likely understated given the impact of piracy rates, availability of free software, in-house development, new uses and other variables.

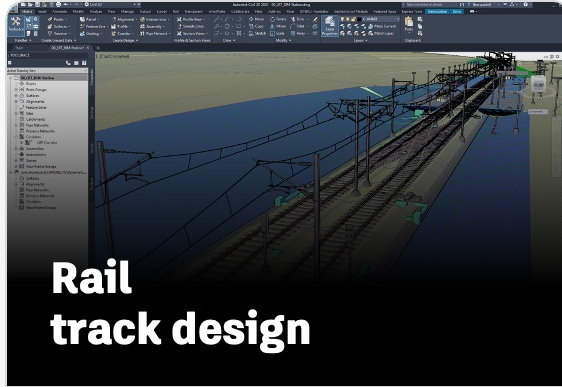
# Road and rail drivers



## Roadway design

### Corridor modeling workflows

Increased efficiency of roadway design workflows all without custom content or supplemental geometry



## Rail track design

### Specialized tools for railway scenarios

New APIs enable development of custom railway workflows. Newer cloud-based point cloud workflows are critical to railway maintenance and design workflows



## Civil structures design

### Workflow expansion

Expanded design workflow supports parametric bridge and tunnel components created as Revit families

# Road and rail sales win



**BLA-BIM ALLIANCE**

Iowa DoT led pooled research initiative  
to evolve from CAD to BIM (20 U.S. DoTs)


# Expanding building information modeling (BIM)

Road & rail

Water


Sustainability

# Water design and operations opportunity




## Networks

- Drainage
- Water distribution
- Storm/sewer/flood



## Treatment

- Water/wastewater
- Industrial processes

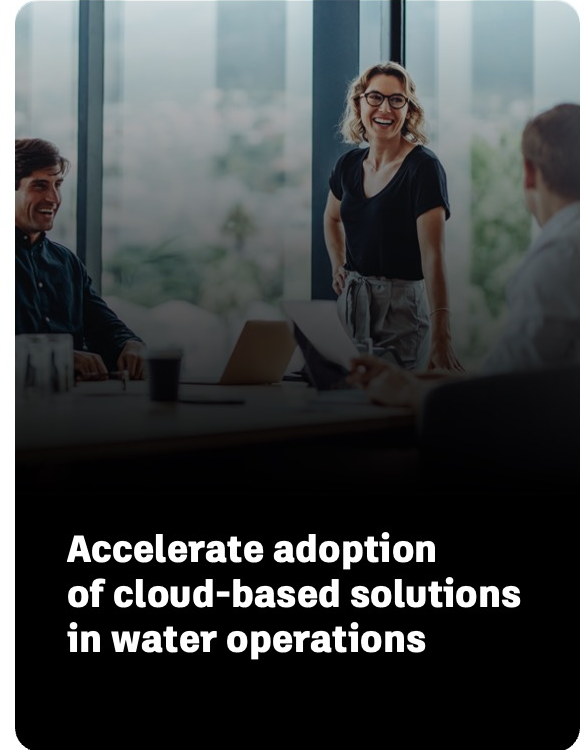
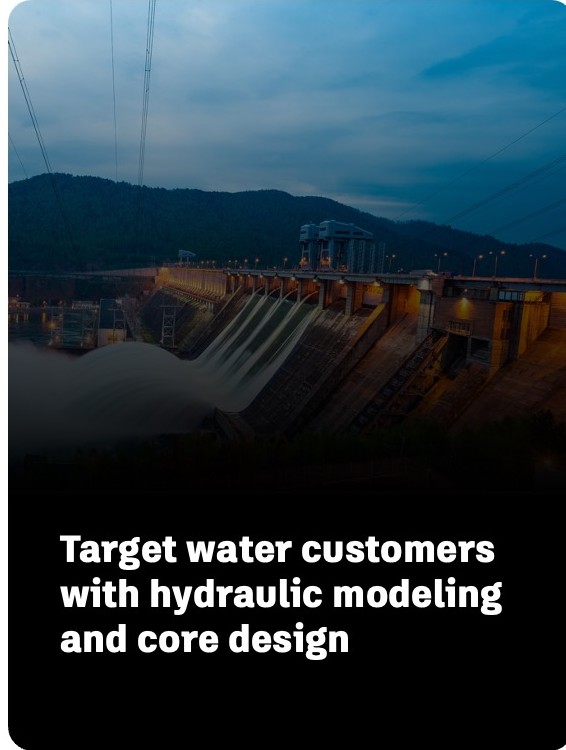


## Structures

- Water retaining (dams, dikes)
- Coastal defense (seawalls, levees)
- Canals (irrigation, power, navigation)



# Water drivers





# Water sales win



Driving the future of water

# Expanding building information modeling (BIM)

Road & rail

Water

Sustainability

# Embodied carbon opportunity

Coming soon! Embodied carbon tech preview

**AUTODESK INSIGHT**
INSIGHTS SUPPORT ▾ ABOUT

> All Uncategorized

Architecture  
Model\_Build New

View by: Constructions ▾

- 1/8 in Pilkington single glazing
- Air partition
- Basic Wall: Core - Concrete + EIFS
- Basic Wall: Exterior - 13" Rainscre...
- Basic Wall: Exterior - 13" Rainscre...
- Basic Wall: Exterior - EIFS on MTL ...
- Basic Wall: Exterior - EIFS on MTL ...
- Basic Wall: Exterior - EIFS on MTL ...

Total EC by Material (kgCO<sub>2</sub>e)

**Constructions**

Construction Name	Detail Level	Description	Total Thickness (mm)	Area (m <sup>2</sup> )	EC (kgCO <sub>2</sub> e)	EC Intensity (kgCO <sub>2</sub> e/m <sup>2</sup> )
Basic Wall: Core - Concrete + EIFS	Detailed	--	254	428.37	43560.14	101.69
Basic Wall: Exterior - 13" Rainscreen w Insulation on Meta...	Detailed	--	330.2	1598.57	121381.49	75.93
Basic Wall: Exterior - EIFS on MTL Stud	Detailed	--	311.15	519.19	30829.41	59.38
Basic Wall: Solar Wall (Layered)	Detailed	--	609.8	233.88	20421.88	87.32
<b>Total</b>				2780.02	216192.93	

**Materials by construction**

Material Name	Description	Thickness(mm)	Density(kg/m <sup>3</sup> )	Thermal Resistance(n	EC Definition	EC Coefficient (A1-A3)	Area(m <sup>2</sup> )	Volume(m <sup>3</sup> )	Mass(kg)	EC (kgCO <sub>2</sub> e)
<b>Basic Wall: Core - Concrete + EIFS</b>										
Gypsum Wall Board	--	4	1100	0.01	Gypsum Sheathing Board	> 4.42 kgCO <sub>2</sub> e/m <sup>2</sup>	428.37	1.71	1884.81	1893.76
Concrete, Cast-in-Place gray	--	210	2300	0.2	Ready-Mix Concrete	> 406.78 kgCO <sub>2</sub> e/m <sup>3</sup>	428.37	89.96	206901.24	36592.67
EIFS, Exterior Insulation	--	40	24	1.74	Board Insulation	> 6.81 kgCO <sub>2</sub> e/m <sup>2</sup> RSI	428.37	1713	411.23	5073.72
<b>Total</b>		254					428.37	108.81	209197.29	43560.14
<b>Basic Wall: Exterior - 13" Rainscreen w Insulation on Metal Stud</b>										
Gypsum Wall Board	--	15.875	1100	0.02	Gypsum Sheathing Board	> 4.42 kgCO <sub>2</sub> e/m <sup>2</sup>	1598.57	25.38	27915.09	7067.09

# Renovation opportunity

Revit, Reality Capture, and the cloud



# Sustainability sales win



RAMBOLL

Advancing sustainability across their entire ecosystem


# Forma and the future of building information modeling (BIM)

Forma 1.0

Data investments


Digital twins

# BIM as we know it must evolve to meet industry needs




**Better connected  
and granular data**

...to enable collaboration and  
drive better project outcomes



**Augmented and  
immersive design**

...to enable highly interactive  
and concurrent environments



**Real-world context  
and real-time insights**

...to better inform decisions  
earlier in the process

# AUTODESK Forma





# Forma will reimagine BIM

## What is Forma?

- **Industry cloud** for architecture, engineering, construction, and operations
- **Transforms BIM** workflows from linear to concurrent across the teams that plan, design, build, and operate the built environment
- **Granular data** that flows seamlessly throughout project phases, stakeholders, and asset types (building, water, transportation)



# Forma delivers better business outcomes

## What will you get with Forma?



### Optimize decisions

Through AI/ML assisted analysis and outcome-based design environment

### Increase productivity

with AI tools providing real time insights much earlier in the process

### Improve collaboration

through seamless flow of granular data across project phases, stakeholders and asset types

### Real-time insights

improve cost and predictability of the project, and its sustainability and performance.

# Forma and the future of building information modeling (BIM)

Forma 1.0

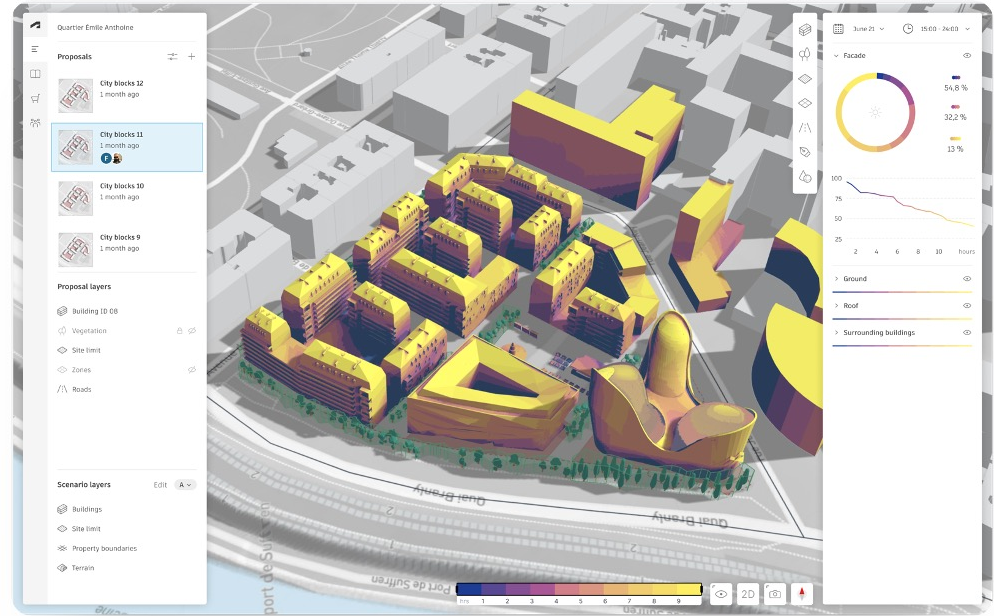
Data investments

Digital twins

# Forma 1.0 will initially transform early stage building design

**First Forma offering will unlock value at the beginning of the project lifecycle with outcome-based design**

- Contextual modelling & automated data
- Conceptual building design & design automations
- Real-time environmental analysis
- Cloud native with two-way Revit sync



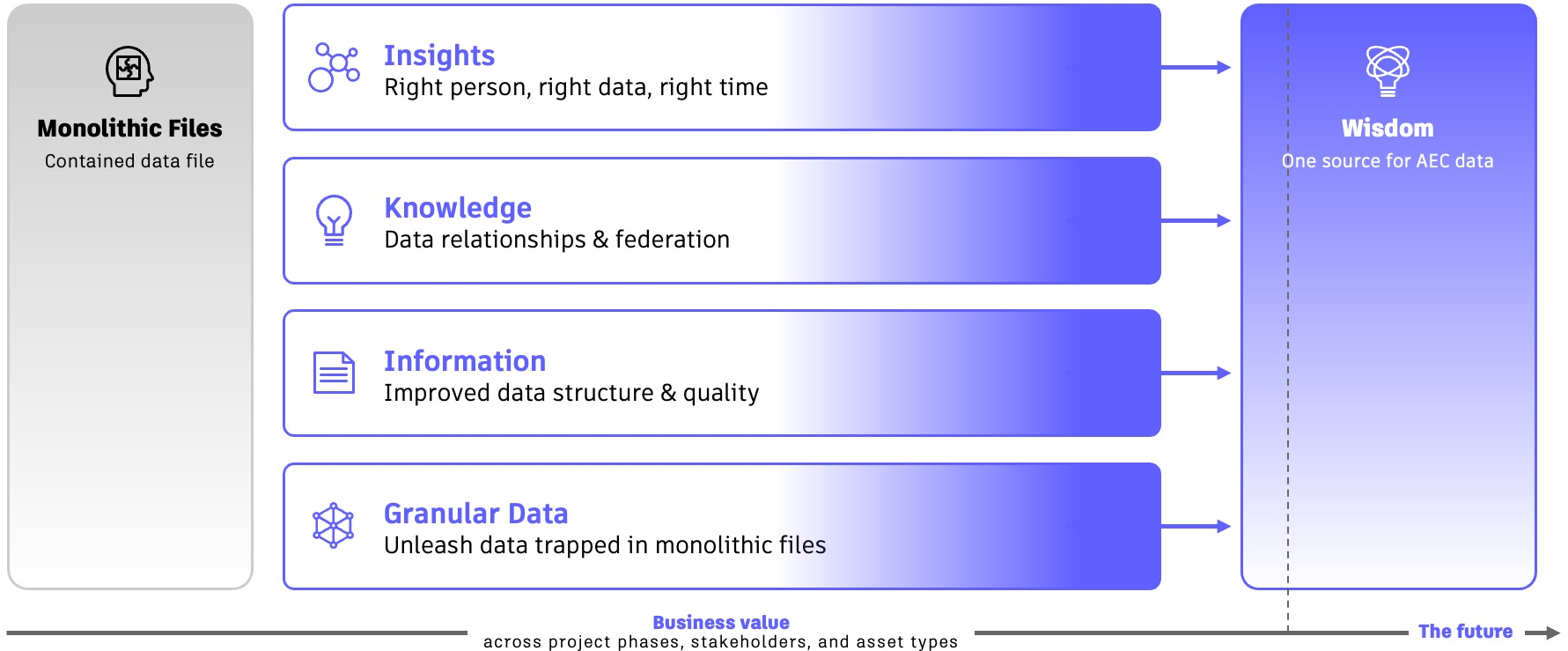
# Forma and the future of building information modeling (BIM)

Forma 1.0

Data investments

Digital twins

# Path to AEC data model



# Forma and the future of building information modeling (BIM)

Forma 1.0

Data investments

Digital twins

# Tandem extends digital thread to facility monitoring

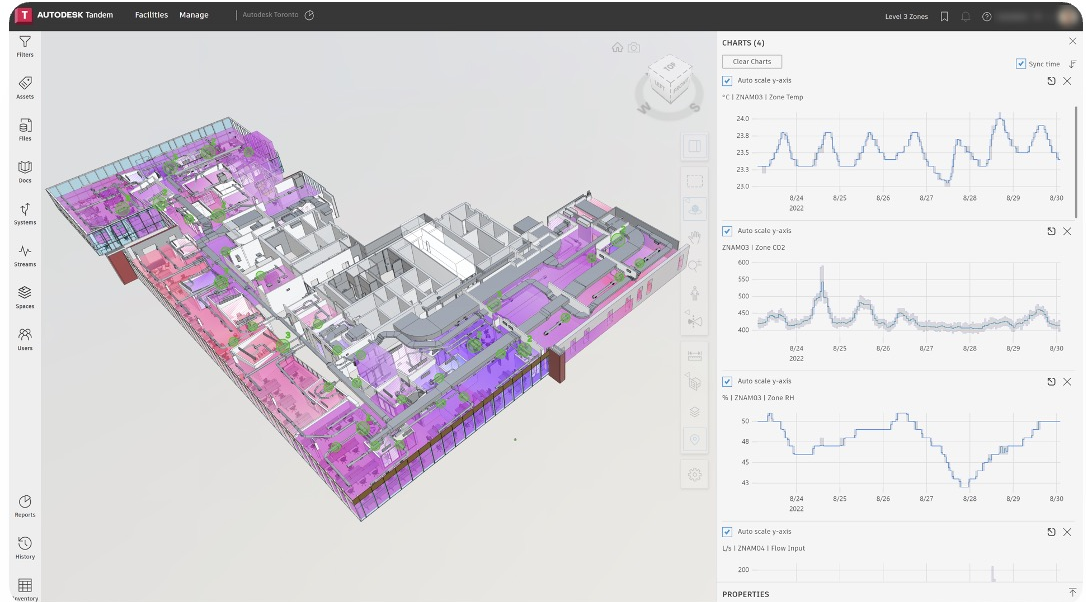


## Twin building

Harness BIM to define and build your digital twin with connections to operational systems and data

## Facility monitoring

Inform decisions with the insight provided by your digital twin to improve efficiency and reduce cost





# Why we win in AEC

