

The background is a collage of architectural and design-related images. It includes blueprints, 3D models of buildings, and screenshots of software interfaces. One prominent image shows a 3D model of a building with yellow and blue blocks. Another shows a 3D rendering of a living room with a sofa and coffee table. There are also various technical drawings and diagrams scattered throughout.

# ADE Formats Primer

Katie Pierce Meyer  
Tim Walsh  
Aliza Leventhal

Designing the Future Landscape: Digital  
Architecture, Design & Engineering Assets

Library of Congress, Architect of the Capitol, National Gallery of Art

November 16<sup>th</sup>, 2017

1960s-1980s

Katie Pierce Meyer  
Architecture & Planning Librarian  
University of Texas, Austin  
@kpiercemeyer

1990s-2000s

Tim Walsh  
Digital Archivist  
Canadian Centre for Architecture  
@bitarchivist

2010s

Aliza Leventhal  
Corporate Librarian/ Archivist  
Sasaki  
@alizaleventhal

# 1960s

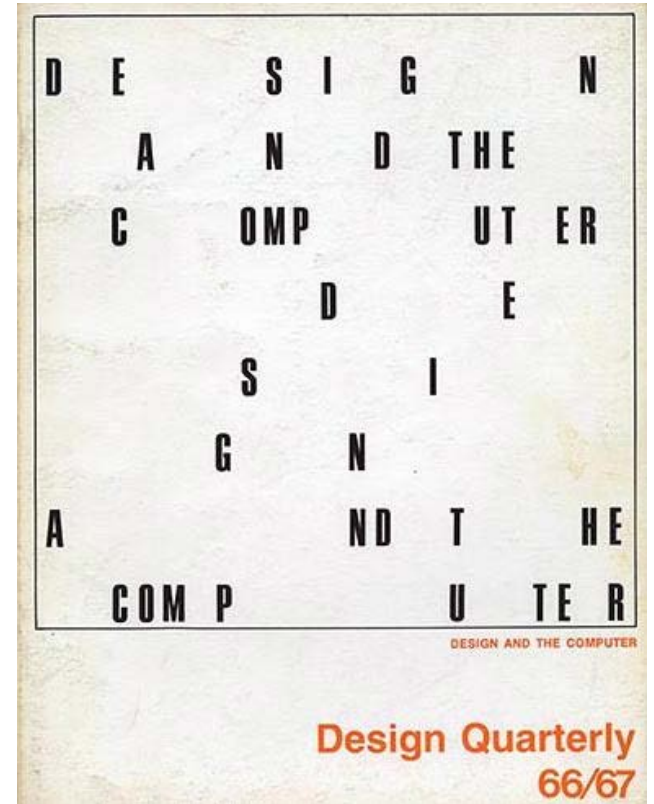
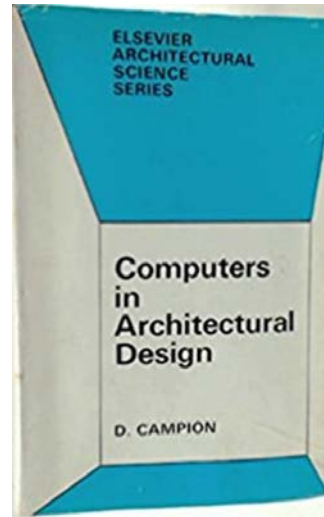
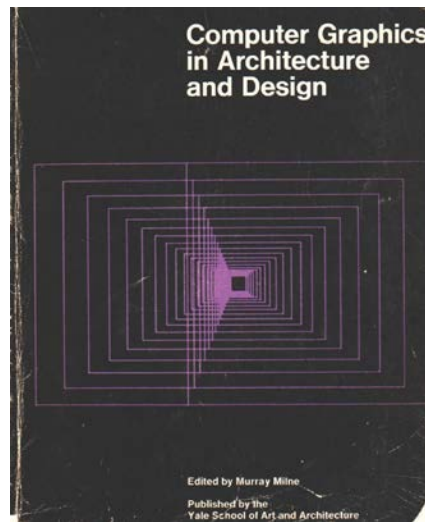
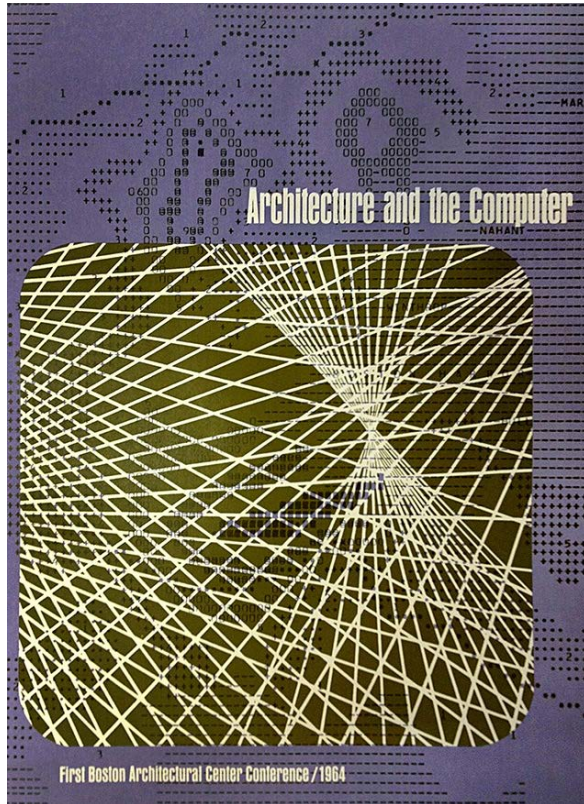
Experimental

Collaborative

Academic



1960s



# 1970s

Beginning of commercial program availability

- create 2D drawings and 3D models,
- to store and reuse a library of design applications,
- and to produce proposals and presentations





## Preservation challenges: 1960s - 1970s

- Documenting what was tried, debated, and presented to various audiences
- What had and has value for the history of computer technology
- Experimentation and adaptation to new markets

# 1980s

Applicon

Arrigoni Technology

AutoDesk

Autotrol technology

Bausch & Lomb

Bentley Systems, Inc.

BruningCAD

CADAM

CalComp

Calma Company

Carrier Corporation

Cascade Graphics

Computervision

Dassault Systèmes

Digital Equipment Corporation

Formtek

Graph/Net

Holquin

HOK

IBM Corp.

Interactive Computer Systems

Intergraph

McAuto

MiCAD

Prime Computer

RUCAPS

Sigma Design

SKOK

Summagraphics

T & W Systems

TRICAD

## Why the leading edge in building design is not a straight one.

**ARRIS**

CAD that gives you the most powerful edge.

FREE "TRIAL" COPY

ARRIS CAD is the most powerful CAD system available. It's the only CAD system that gives you the most powerful edge. It's the only CAD system that gives you the most powerful edge. It's the only CAD system that gives you the most powerful edge.

## Power Tools

VERSACAD

For new building life, see all the new features and ask for the "Power Tools" booklet.

## INTRODUCING CADVANCE YOU'LL PICK IT FOR ITS LOOKS, BUT RESPECT IT FOR ITS INTELLIGENCE.

### REALIZING

CAD FROM McDONNELL DOUGLAS GIVES ARCHITECTS THE TOOLS TO CREATE DESIGNS THAT BECOME REALITIES.

McDONNELL & DOUGLAS ARCHITECTS  
ARCHITECTURAL DESIGN GROUP  
ON THE INFORMATION HIGHWAY

## Finally, A Practical Way To Integrate Drawings And Data.

Introducing Drawbase.

**SKOK**

Drawbase Gives You The Whole Story.

## You can get more than drawing from a CAD system

Marketing Programming Project Initiation Design Development Construction Documents Construction Building Occupancy

INTERGRAPH

For more information, direct inquiries to: Product Information—Dept. 1204, INTERGRAPH Corporation, One Madison Industrial Park, Huntsville, AL 35897-4301. Or call collect: 256-772-2000.

You can get it all. INTERGRAPH

## IT ALSO DRAWS RAVE REVIEWS.

CADPLAN COMPUTER-AIDED DESIGN SOFTWARE PREFERRED 3 TO 1 IN AIA CHICAGO SHOOTOUT!

**CADPLAN THE DESIGNERS' CHOICE**

CALCOMP



1980s

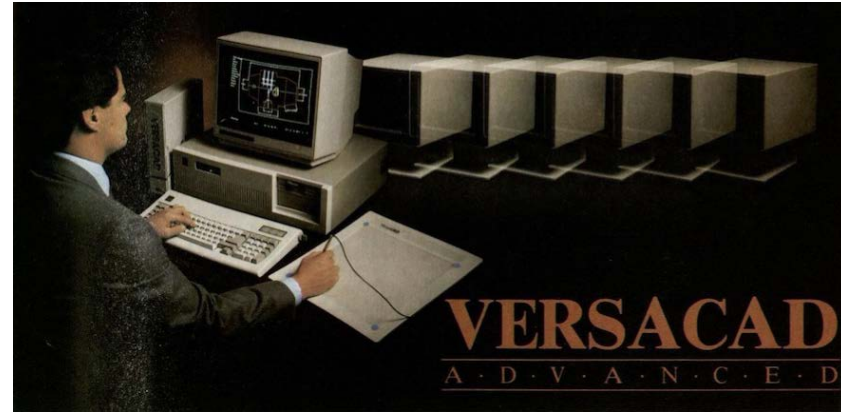


AutoDesk  
AutoCAD

T & W Systems  
VersaCAD



Dassault Systèmes  
CATIA



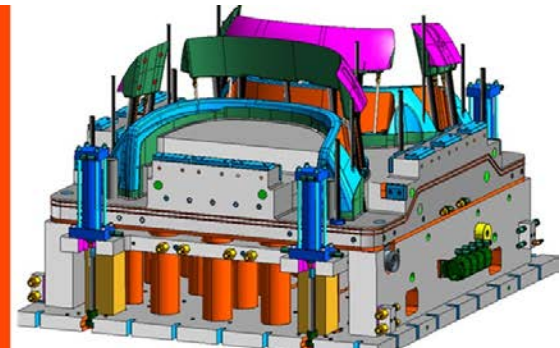
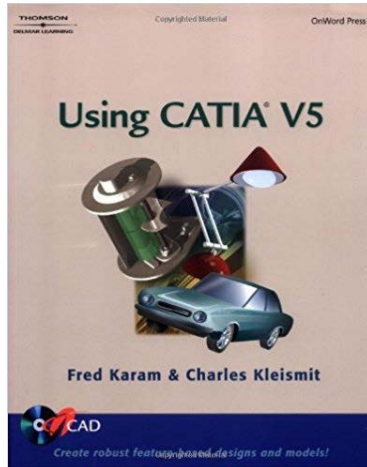
**VERSACAD**  
A · D · V · A · N · C · E · D

## Preservation challenges: 1980s

- Hardware/software bundles
- Software development or adaptation across fields
- Proprietary systems
- Documenting the context
- Vendor success, mergers, and failures

# 1990s

Standardization in aerospace, automotive, engineering industries

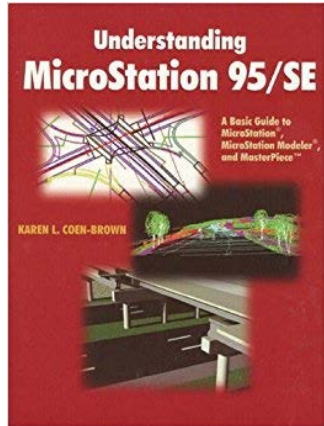
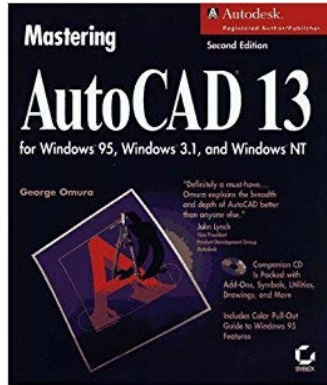


# 32-bit OSes and desktop 3D: Windows NT and SGI

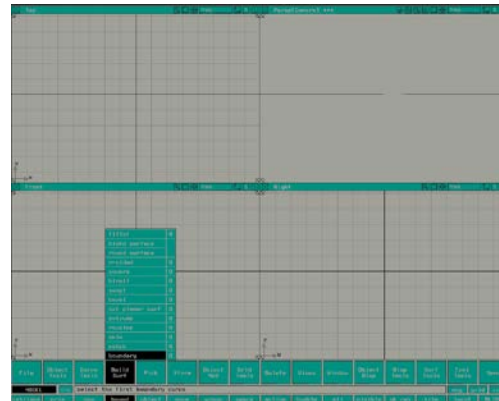
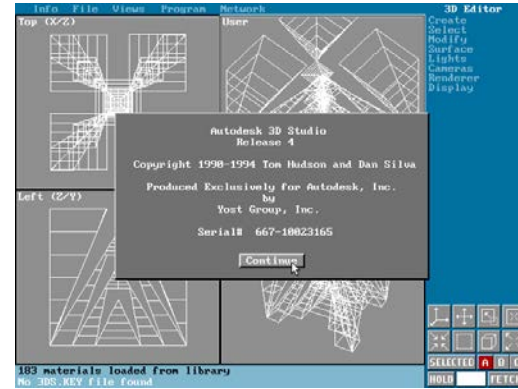


# 3D modeling: architecture & engineering

form.Z



# 3D modeling: film, games & SFX







AutoCAD: .dwg, .dxf, .dwf

Bentley: .dgn

Maya: .ma, .mb

Alias: .wire

formZ: .fmz

CATIA: .CATDrawing, .CATPart

SOLIDWORKS: .SLDPRT

IGES: .iges

VersaCAD: .2d

CADKEY: .cdl

DesignCAD: .dc, .dc2, .dc3

Drafix: .dfx

FastCAD: .fcd, .fcw

MiniCAD: .mcd

OrCAD: .opj

PowerCADD: .pc6, .pc7

ArchiCAD: .pln, .pla

AutoSketch: .skf

TurboCAD: .tcw

TurboCAD Mac: .tc2, .tc3, .tcd, .tcm,  
.tcp

TopSolid: .top, .topprj

STEP: .stp, .step

Claris CAD: .ccad

Vellum/Vellum Solids: .vlm, .vc6

## New preservation challenges: 1990s

- Explosion in number of CAD applications
- Application of software across disciplines
- Experimentation in practice
- Protective market - expensive licenses, hardware keys
- Proprietary hardware platforms (e.g., SGI)
- Lack of fully interoperable vendor-neutral file formats



# 2000s

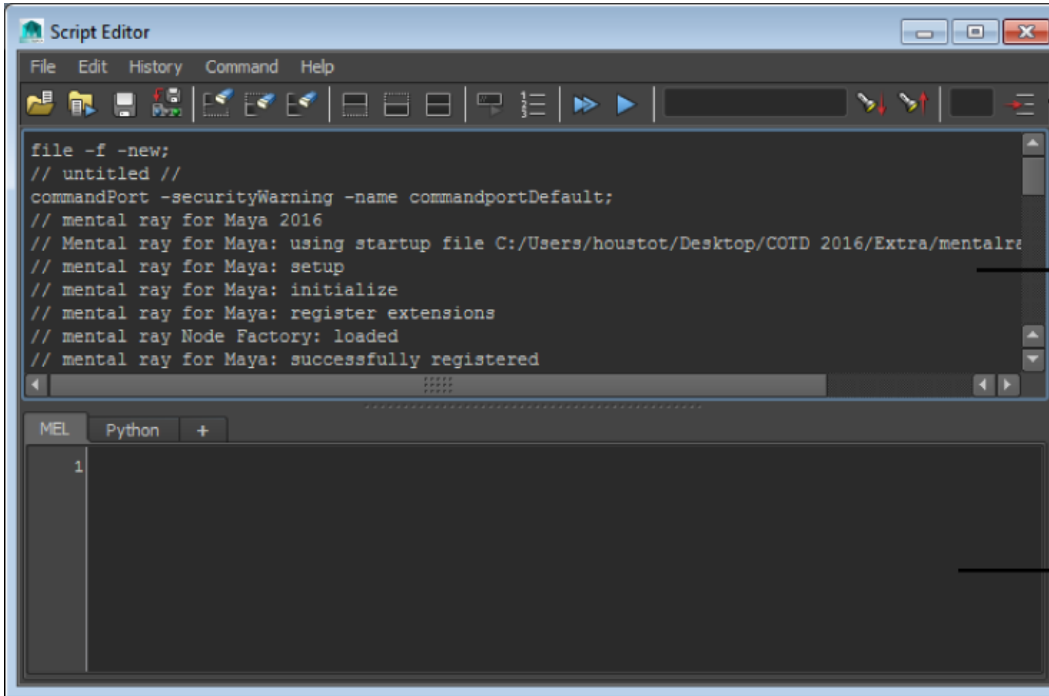
Further development and mass adoption of 3D modeling



Adoption of 3D printing and automated fabrication



# Experimentation/ adoption in scripting and generative design



Toolbar

Top pane: history of commands and results.

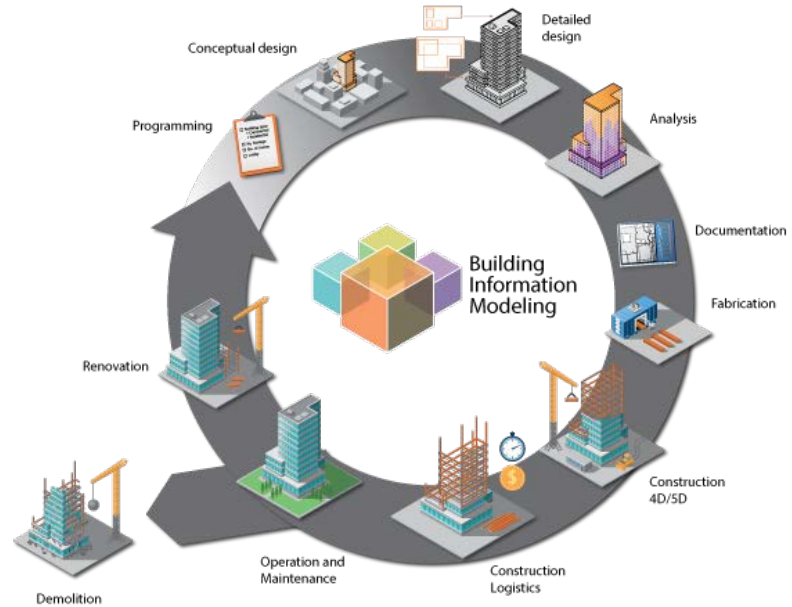
Bottom pane: enter MEL or Python commands in the corresponding tab.



# Building Information Modeling (BIM)



GRAPHISOFT®  
**ARCHICAD**



## New preservation challenges: 2000s

- Increasing use of scripting and parametricism = increased number of dependencies, more data potentially lost in migration to other formats
- More complex workflows involving increasing numbers of chained software platforms
- Vast increase in number of project files and file size
- Commonly used backup storage media from period (“archival” gold CD-Rs, LTO tape) have shorter reliable lifespans than advertised, are no substitute for active management



2010s



SketchUp



ENSCAPE™



Autodesk  
Ecotect



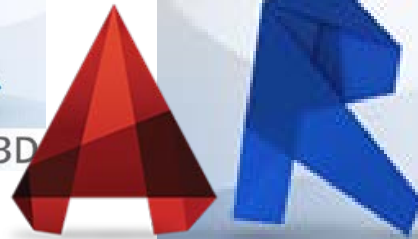
MAX



LUMION



C3D



**SOLIDWORKS**



**LAND-FX**



form-Z

# 2010s

## Parametric design



## Computational Design and Visual Scripting



# 2010s

## Parametric design



**Rhinoceros:** versatile and light 3D modeler, works well with curves and draping fluid surfaces.



**SketchUp:** light and low learning curve 3D modeler, builds off a push-pull workflow



**Kangaroo Physics:** an app for Rhino for interactive simulation and optimization.



**Ladybug, Honeybee, Butterfly, Dragonfly:** each is an energy modeling tool that links data sources and simulation programs.



**SolidWorks:** a solid modeling CAD/CAE program that serves a wide variety of industries.



**Revit:** leading Building Information Modeling software in the USA, heavy data component and supports collaborative work-sharing amongst multiple disciplines in real-time.



# 2010s

## Computational Design and Visual Scripting



**Grasshopper:** graphical algorithm and script editor intended to integrate with Rhino.

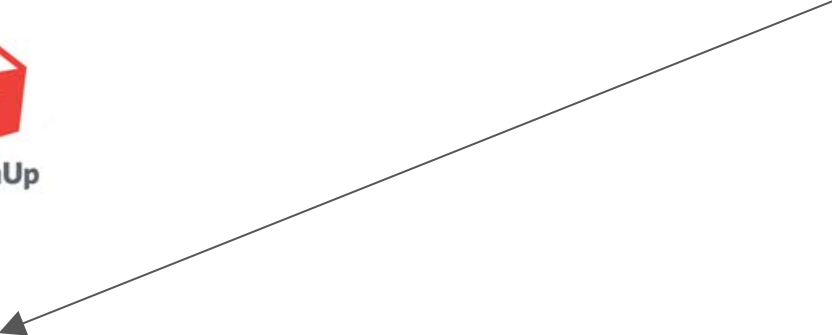


**Dynamo:** an open source computational design tool intended to integrate with Revit.

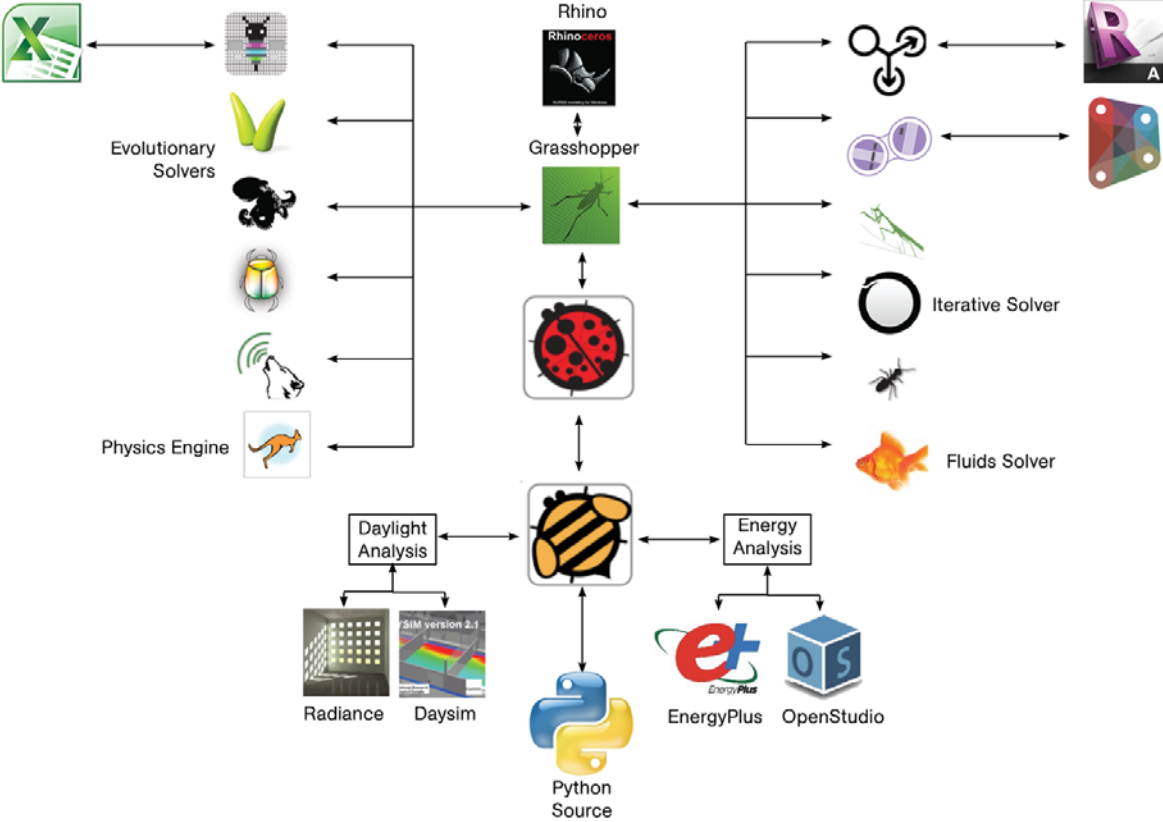
# 2010s

Parametric design

Computational Design  
and Visual Scripting



# 2010s



# 2010s



**GreenBIM:** provides live project sharing for geographically separated teams at reliable speeds.



**A360:** Autodesk cloud-based Revit platform for disparately located teams of architects, engineers and designers to collaborate within a centralized workspace.



**Adobe Creative Cloud:** web-based versions the entire collection of 20+ Adobe desktop and mobile applications; including: InDesign, Photoshop, and Illustrator.

# 2010s

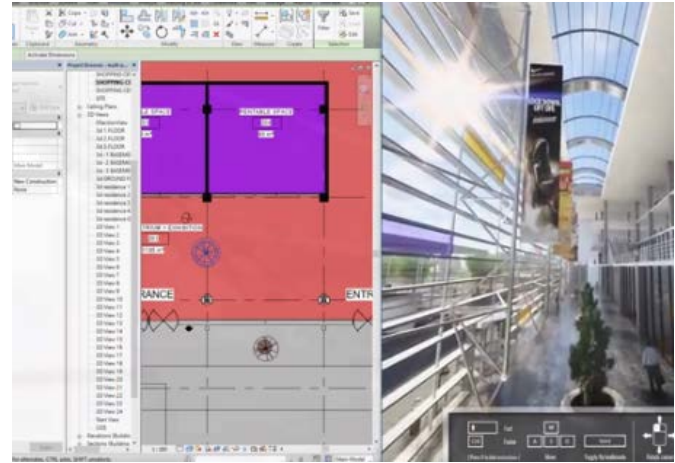
## Augmented Reality

A live view of the physical, real-world environment with computer-generated sensory input



## Virtual Reality

An immersive multimedia/computer-simulated reality



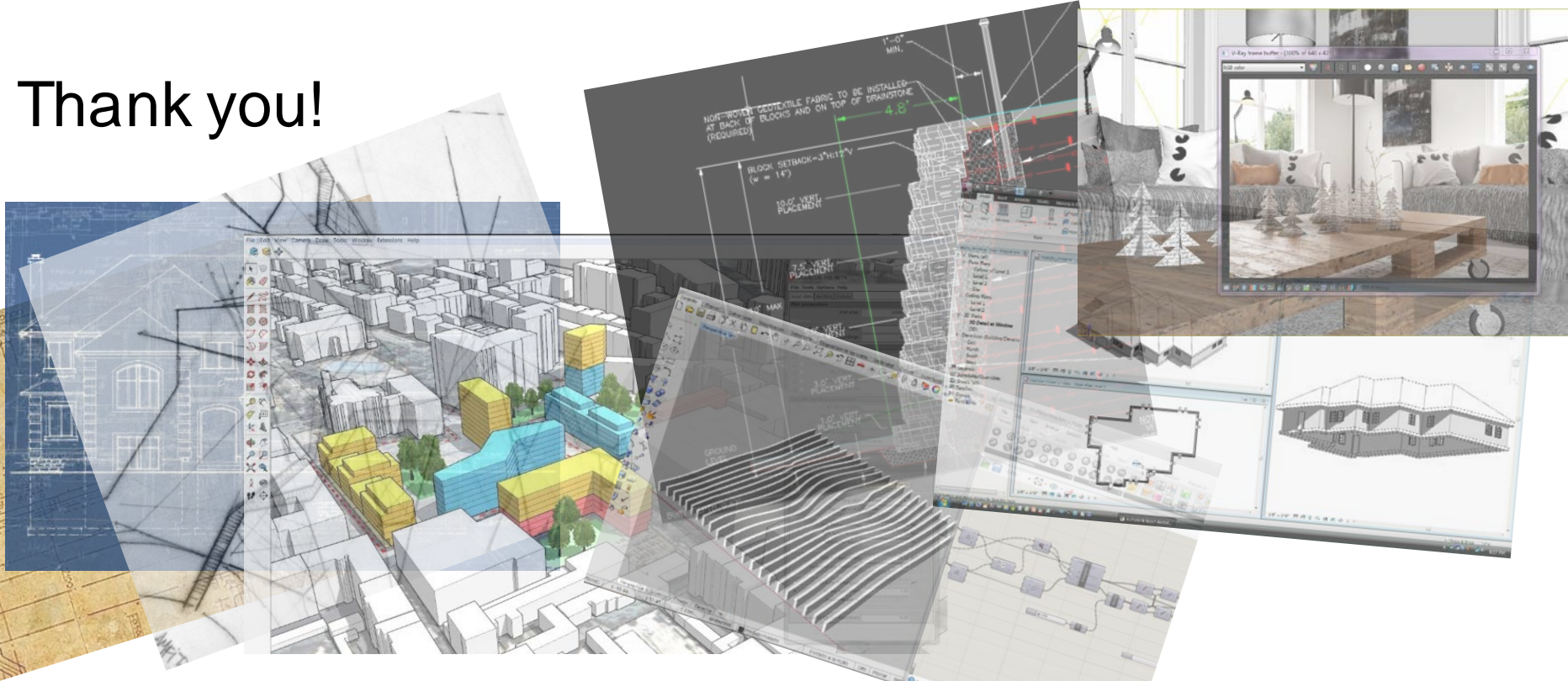
Revit + Enscape

## New preservation challenges: 2010s

- Increasing use of scripting and parametricism = increased number of dependencies, more data potentially lost in migration to other formats
  - More experimentation
- More complex workflows involving increasing numbers of chained software platforms
  - Difficult to identify or follow the evolution of a file through multiple software.
  - More collaboration, web-based platforms, cloud storage
- Vast increase in number of project files and file size
  - Tera and Petabytes
- Digital deliverables



# Thank you!



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