

Integrating Revit Models Using the BIM Interoperability Tools

Matt Davoren
President & COO



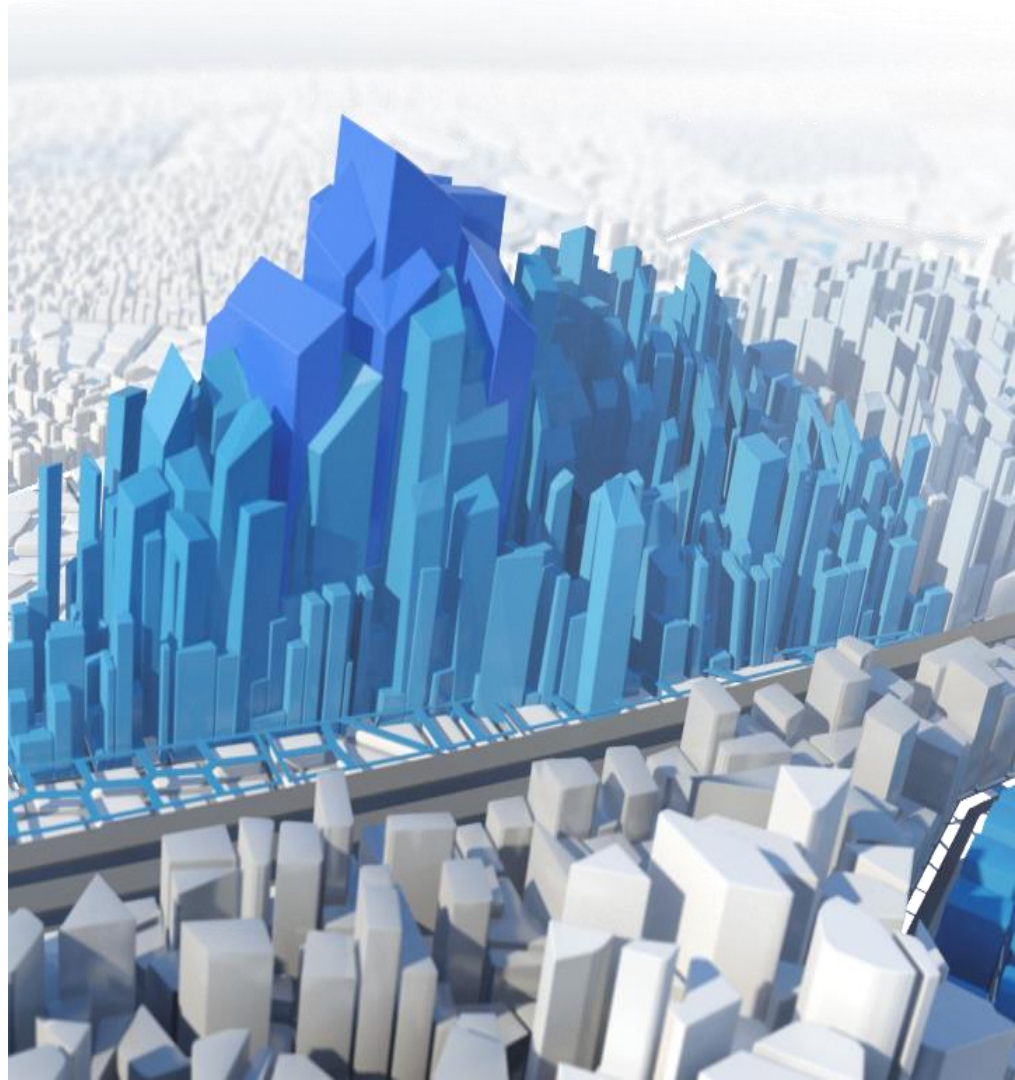
Chuck Mies LEED AP, ASSOC. AIA
Senior Manager, Business Development



Purpose

Over the next 40 minutes, we will cover...

- What are the opportunities for an FM:Systems integration with BIM
- What are the BIM Interoperability Tools and how do I get them?
- The role of the classification manager in standardizing data input
- How to use the Model Checker for validation of the model



About Your Presenters

Who are these guys?



Matt Davoren, President & COO // CADD Microsystems

Matt's career in the AEC software industry spans over 30 years, mainly Architecture, Engineering and Facilities Management systems. Under Matt's leadership, the company has developed several go to market solutions primarily focused on an Autodesk platform. Matt is responsible for the company's vision & strategies to take the current software offerings and develop solutions that work in a corporate agency and organization, given the culture, work environment and economies. He has been involved in several projects assisting AEC & FM firms in developing their internal standards for corporate and organizational systems. He is a member of the AIA & IFMA and has been a speaker at Autodesk University, IFMA and CFTA events.



Chuck Mies, Senior Manager, Business Development // Autodesk

Chuck is a member of the Autodesk Business Development Team focused on looking at the application of technology to the entire ecosystem of a project, extending from preliminary design through operations and maintenance. In this role Chuck works on a global scale with owners in Healthcare, Education and Retail/Hospitality as a resource to assist these clients and the firms that work for them understand the value of Building Information Modeling and the ways to maximize the value of BIM. Chuck's background includes 34 years of professional experience spread across the practices of Architecture, facilities management and technology consulting.



Challenges:

What challenges are owners facing that BIM can solve?

Benefits

Case Studies



Gatwick Airport

- Saving 20,000 person-hours annually across their 140 active projects with their 40-person inspector team by utilizing digital workflows in BIM 360

Bronson Healthcare Group



- 6.6% savings against budget compared to similar **renovation** projects
 - Reduced construction time by 3 weeks on one project resulted in \$1.4M additional revenue due to early open



Mortenson Construction

- Compared 2 similar projects – one traditional 2D workflow and one in BIM
- BIM completed 6 months faster, 780 fewer RFI's, \$585K savings in RFI admin

Denver Airport

- Saving \$375K annually after switching to digital workflow with BIM 360 for inspections
- Saved approx. 4,000 hours from budget by transferring data collected during design & construction with BIM process to O & M software





Opportunity:

How to owners take advantage of
the opportunity of BIM?

Challenges

The Cost to Owners

- Poor use of data, coupled with highly fragmented teams, costs the US \$15.8B annually on capital construction projects
- The owner's burden of that money wasted is about 2/3 of those costs during ongoing operations



\$0.23

NIST 2004 Report: Owner Cost per square foot / per year recreating lost information from poor process interoperability

7.1%

Total potential savings based on three case study projects (using all NIST cost avoidance categories) identified by The Ohio State University Wexner Medical Campus 2012 BIM Feasibility Study

2

Number of staff years of data entry saved by the BIM to CMMS integration prototype for Maricopa County in their 500K sf new court tower project.

*2012 AIA TAP Submission
Maricopa County Arizona
Gilbane Building Company*

2x

Productivity gain documented by Carolinas Health Systems when using BIM-based processes to track and manage space.

*CAD = 5,000 sf / hour vs BIM = 10,000 sf / hour
“Using BIM for Space Chargebacks in a Healthcare Facility”
Autodesk, Inc. white paper, 2013*

50,000

Individual data elements (space information only) that were populated directly into the space management system for 4 buildings at Xavier University.

Saved (1) Year of Site Observation and Input.

*Messer Construction
Xavier University Success Story
Autodesk, Inc., 2013*

Momentum

B u i l d i n g I N F O R M A T I O N M o d e l



Trends for BIM

2012



Xavier University
BIM Modeling on campus

2013 - 2017

Education and Enhanced Tools

2019

- **25+**FM:Systems customers are working to integrate models
-

End in mind



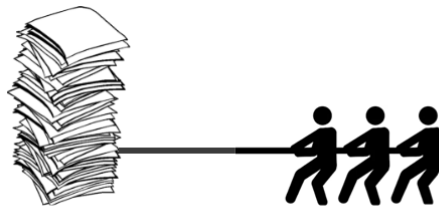
Control your data

Are you in charge of your data....

or is it in charge of you?

“Know what you want and what you need it for!”

As-Built or *As-Designed*...
what's in your **inbox**?



Advantage: FM:Systems – Space AND Assets

FM:Systems BIM software integration provides a bidirectional link between Autodesk Revit models and the FM:Systems which helps AEC and facilities professionals manage **space & assets!**

Model Integrity

How to make sure your Revit model is clean and ready



Good Model Practices

If possible, **don't** upgrade. Keep the Revit model in the same version as long as possible. A good reason to make sure Building Execution Plans (BEP) are in order.

If a project comes back to life after active design, try to follow these steps:

- Always keep an archive/backup copy of the original model. Just in case.
- Don't skip versions – if you need to upgrade from 2016 to 2019, go to 2017 first, then 2018, and finally 2019.
- Clean up the model before upgrading – purge, resolve warnings, etc.
- Model Groups and Detail Groups - Explode and delete if possible.
- When you open the model in the new version, check the Audit box.
- In Workshared project files, have everyone sync with central and close local files. Open a detached copy with worksets preserved, then save as a new central with a new name. This will force users to get new local files.
- Follow best practices and get out of the central model once the upgrade is done.

Opportunity

How do owners take advantage of BIM?

1

Have clear
standards /
requirements for
process and data



2



Make it easy for
your consultants
to follow your
process and
meet your data
requirements

3

Own your data!
By hosting and
managing it
yourself and
giving your
consultants
access





BIM and Valuable Data:

How do owners get valuable data out of the BIM process?

Valuable Data – A Workflow

How do owners get valuable data out of the BIM process?



Classify

Provide tools to your consultants to help them apply the data you want correctly in the models

...



Validate

Provide tools to help consultants measure models against your requirements to ensure compliance

...



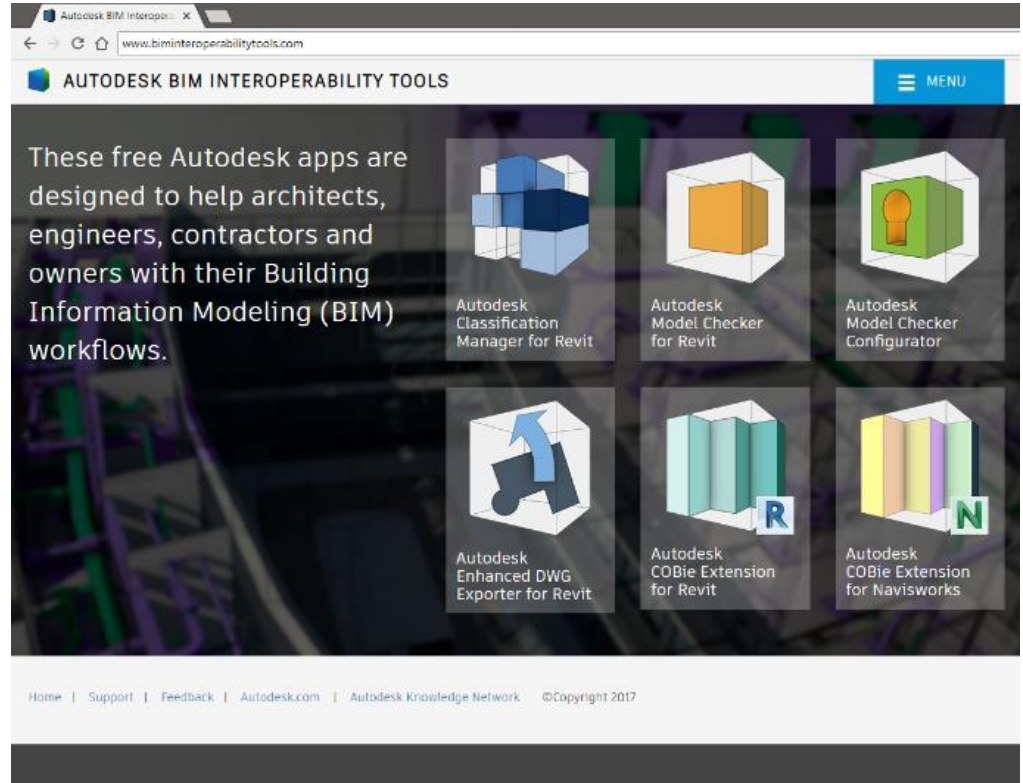
Deliver

Utilize tools to automate the transfer of data from design & construction to operations & maintenance

Autodesk Toolset for Interoperability

www. **BIM Interoperability Tools** .com

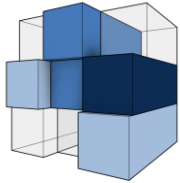
- Autodesk provides **free tools** to help you with interoperability
- These tools help you **classify, validate,** and then **deliver**
- In development since 2011, they have been **downloaded over 280,000 times** worldwide
- You can also find these in your **Autodesk Desktop App**



BIM Interoperability Tools



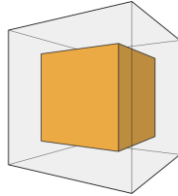
Classify



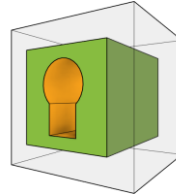
Autodesk
**Classification
Manager**
for Revit



Validate



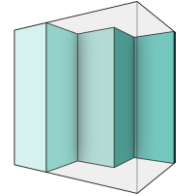
Autodesk
**Model
Checker**
for Revit



Autodesk
**Model Checker
Configurator**
for Revit



Deliver



Autodesk
**COBie
Extension**
for Revit

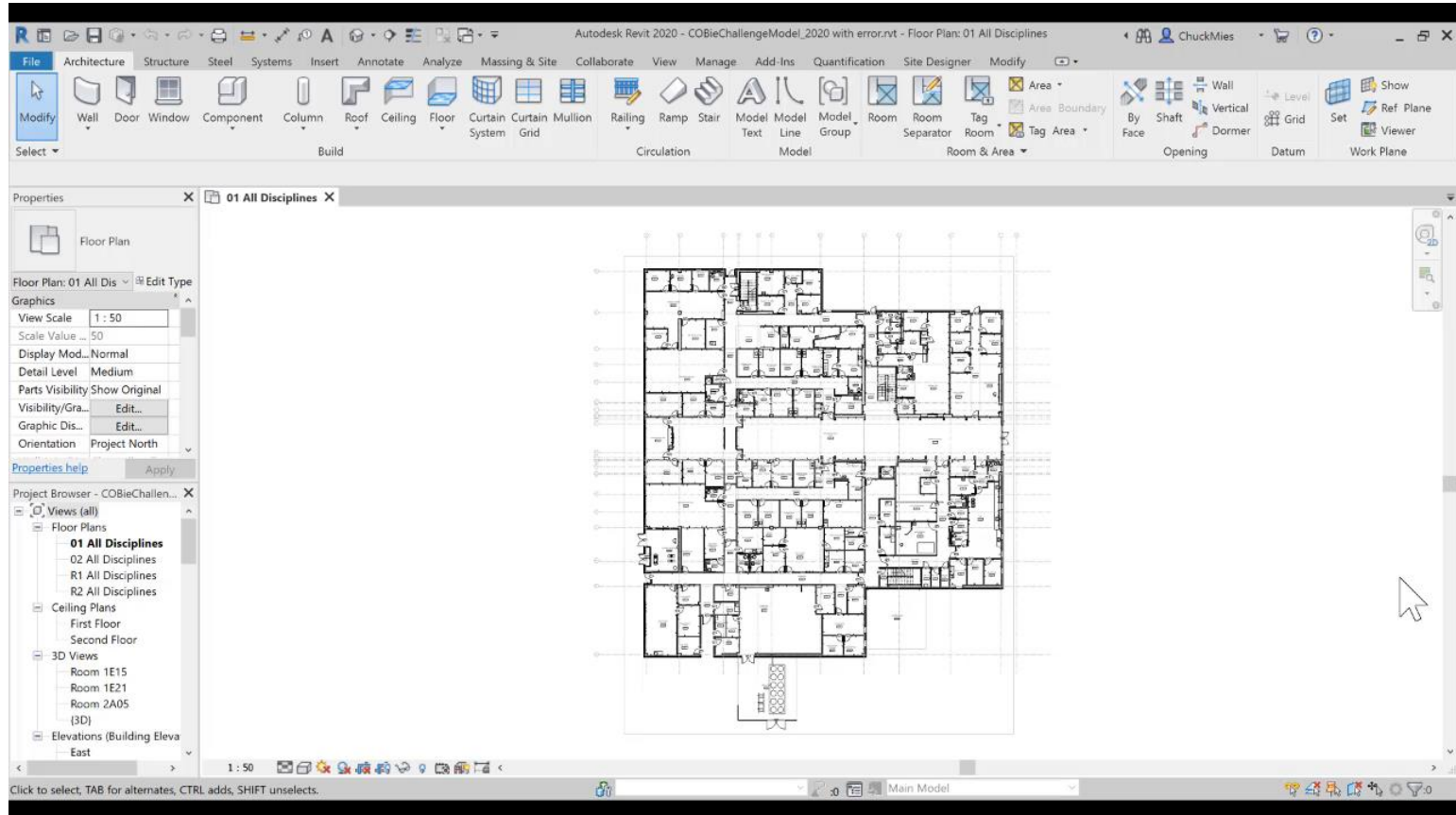


Autodesk
**Enhanced
DWG
Exporter**
for Revit

Getting Started

Getting Started

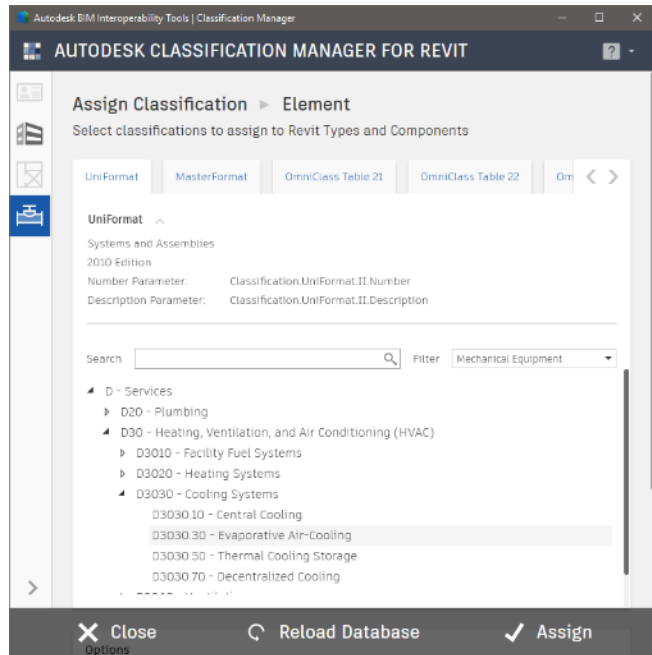
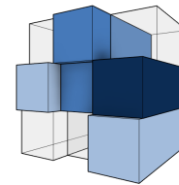
BIM Interoperability Tools – Getting Started



Classify

Autodesk Classification Manager for Revit

Overview



1

Quickly apply data from multiple classification systems to all your elements

2

Robust databases are included with several major classifications systems and mappings across each (UniFormat, MasterFormat, OmniClass, Uniclass, IFC, FICA)

3

Create your own custom database using a simple Excel file with samples

4

Build “picklists” to allow your project teams to be able to choose from a set list of values for any parameter
Solves the problem of consistent naming



Classify



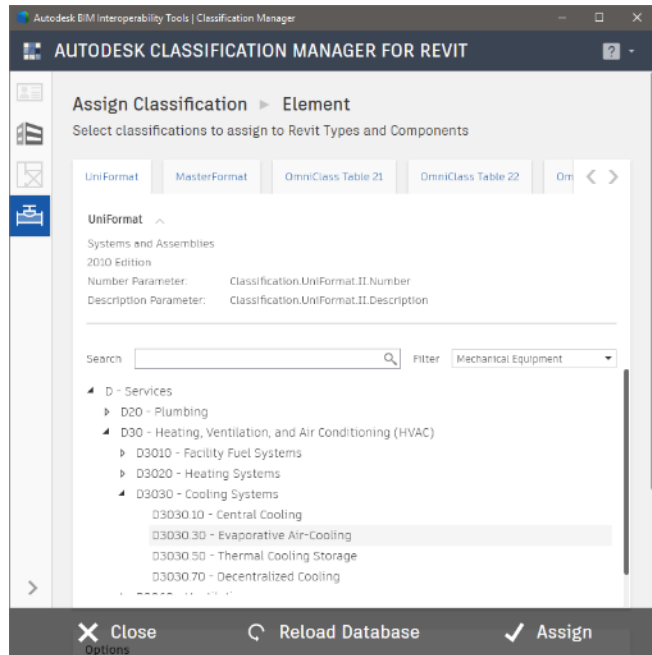
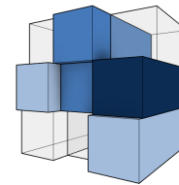
Validate



Deliver

Autodesk Classification Manager for Revit

Demonstration



Demonstration



Classify

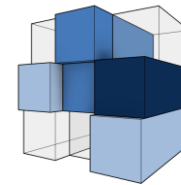


Validate



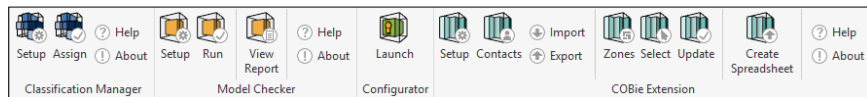
Deliver

Autodesk Classification Manager for Revit



If you already have experience with this tool, here are the New Features of Version 7.0

- All new User Interface
 - Modern design following Autodesk's latest UX format
 - Updated dialogs, new icons, and a dedicated ribbon



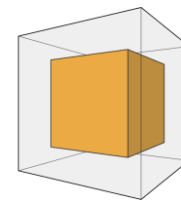
- Single, unified installation package

- Toolbox is now “non-modal” and can stay open as you assign to different elements
- No limit to the number of tabs/databases you can have in Excel file
- Each database now has extended header information available
- New dialog to load databases includes a public library, recent files, and more information about the database (author, date, description)

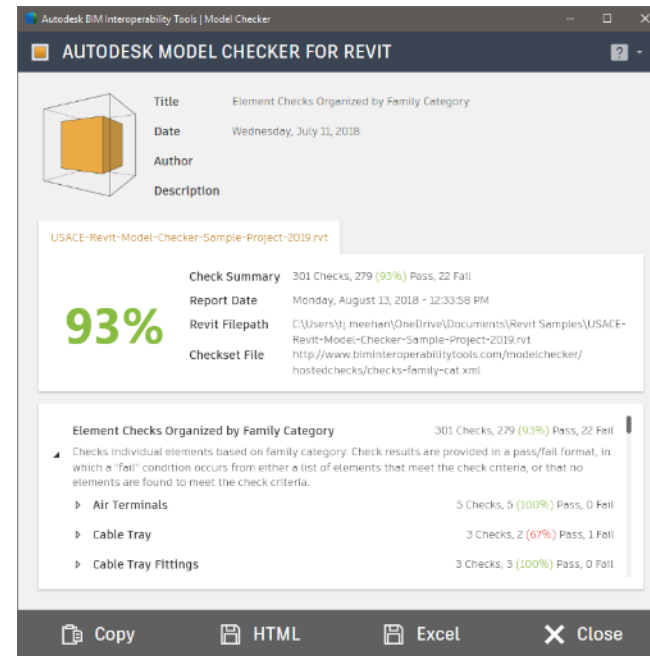
Validate

Autodesk Model Checker for Revit

Overview



- 1 Automatically check your Revit models based on a set of BIM requirements and generate a compliance report
- 2 Reports can be run directly in a Revit model giving project teams the ability to check their compliance at any time
- 3 Several pre-built and pretested checksets are already included for you to use or customize
(General, OSU, WMU, PSU, State of TN, USACE, COBie)
- 4 Create your own custom checksets with the Model Checker Configurator



Classify



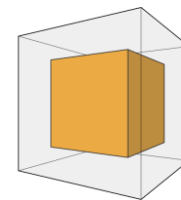
Validate



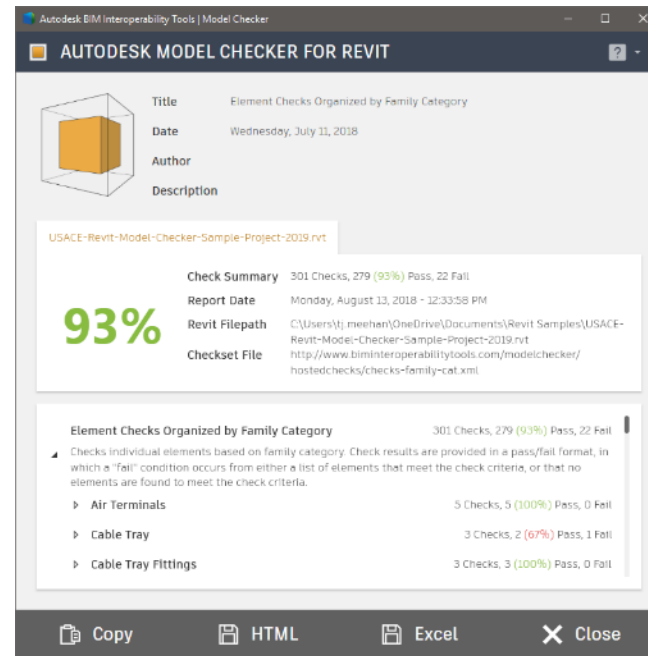
Deliver

Autodesk Model Checker for Revit

Overview



Demonstration



Classify



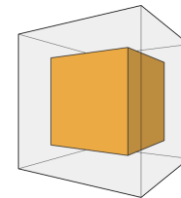
Validate



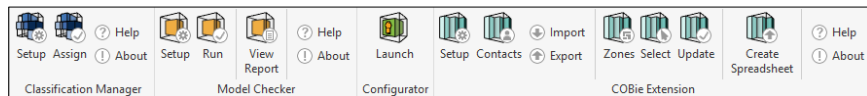
Deliver

Autodesk Model Checker for Revit

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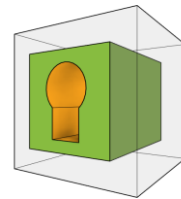
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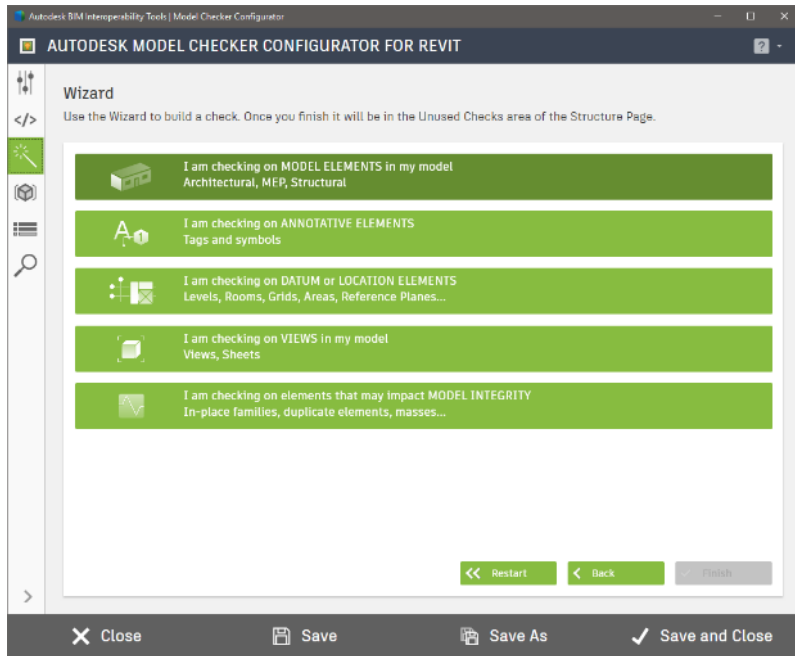
- Single, unified installation package

- Loading checksets now shows more information including date, author, and description
- New “recent files” list
- Expand / collapse / enable / disable all functionality added
- Revamped reports now show detailed summary for the entire checkset as well as each section
- New ability to export reports to Excel

Autodesk Model Checker Configurator for Revit



Overview



- 1 Create your own configuration files for the Autodesk Model Checker for Revit
- 2 3 different methods to build your checks
(Pre-Built, Wizard, Advanced)
- 3 Ships with 30+ sample checkset files to use as templates
- 4 Checkset files are open source XML format



Classify



Validate



Deliver

Deliver

Model Checker for FM:Interact

What does it check for...



Parameters

- Do the 10 necessary parameters for Areas exist?
- Do they have data in them?



Area Schemes & Levels

- Do the 3 necessary Area Schemes exist?
- Does the naming convention for Levels match what is needed?



Areas

- Do they have a Number?
- Is that Number unique?
- Do they have a Name?
- Are they redundant or not enclosed?



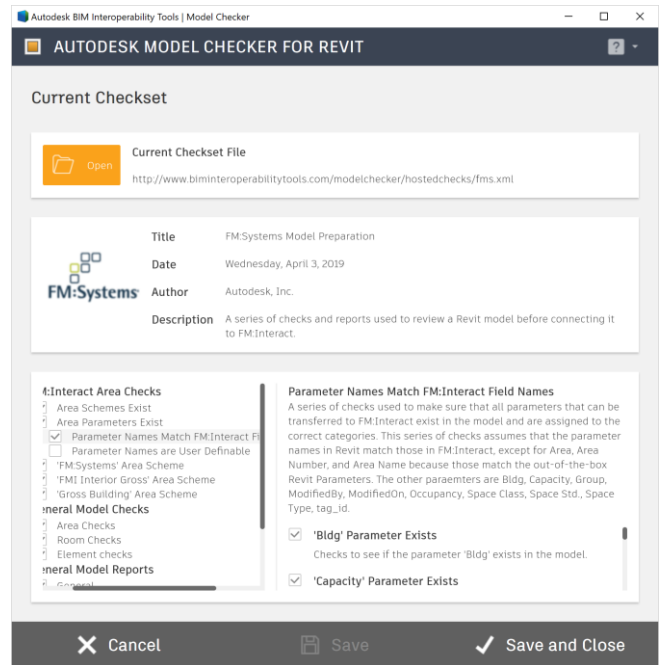
General

- Do Rooms have valid Names and Numbers?
- Any duplicate elements?
- How many items can be purged?
- How many Warnings?
- Size of the model?

Model Checker for FM:Interact

Demonstration...

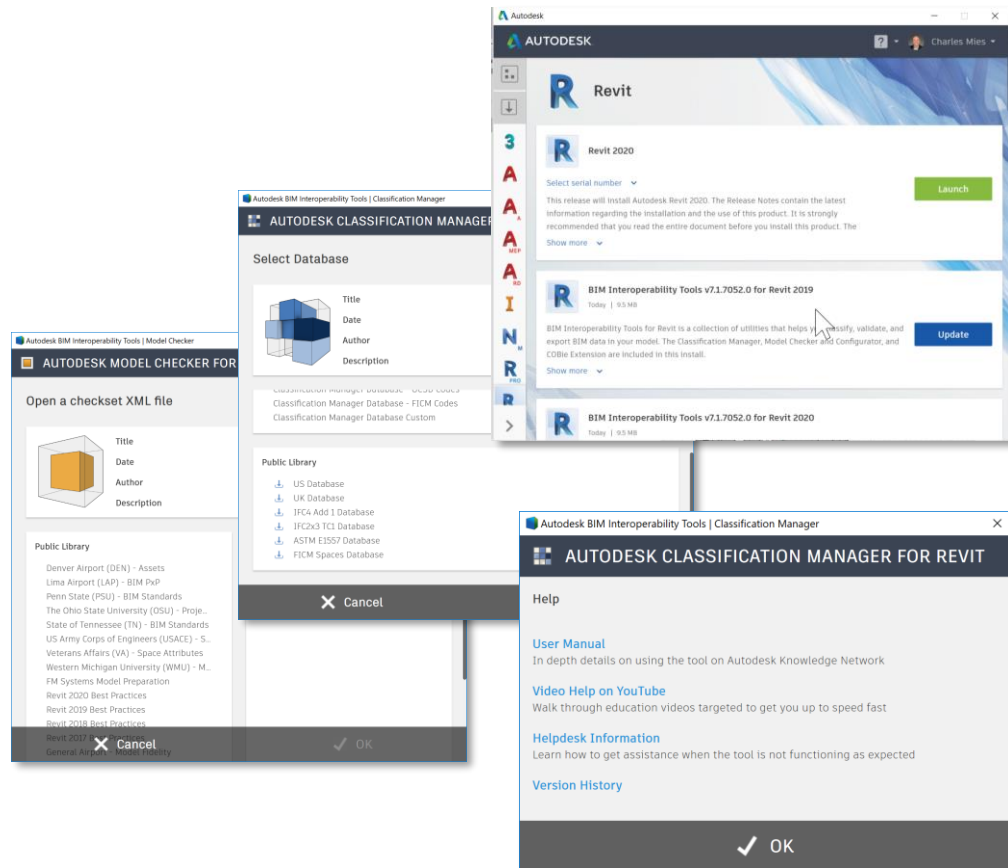
Demonstration



Autodesk Toolset for Interoperability

Getting Started

- Install the tools
 - 2019 and 2020 – Autodesk Desktop App
 - 2017 and 2018 – Download from www.biminteroperabilitytools.com
- Explore all the options available by default
 - Classification Manager Databases
 - Model Check Configurations
- Exploit the available help
 - On Line User Manual
 - YouTube Channel



Questions?



What should you take away from this presentation?

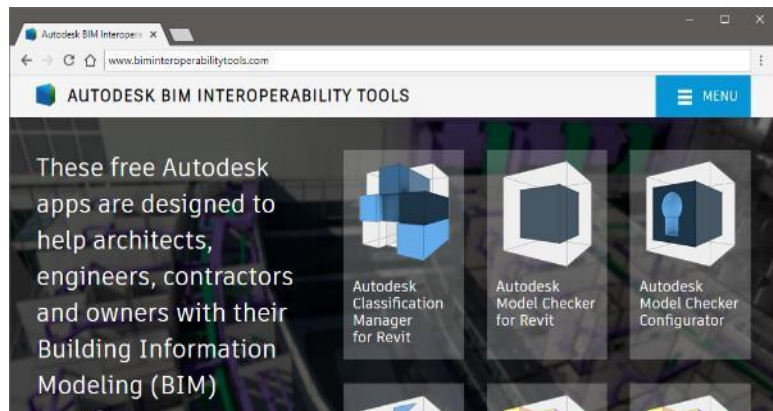
FM:Systems and Autodesk have collaborated to provide tools and workflows that can ensure a successful Revit to FM:Interact Integration



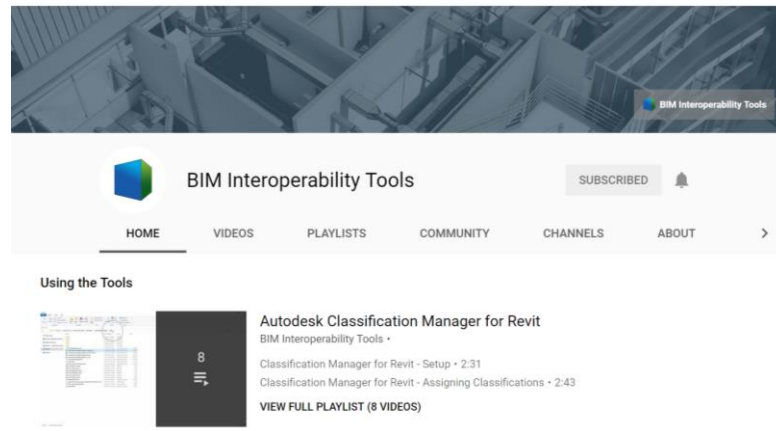
Autodesk's new Toronto office

Resources

Where can you learn more?



www.biminteroperabilitytools.com



www.youtube.com/biminteroperabilitytools



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