



# AYDBABTU: Autodesk® Revit® Data Management

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Firm-wide BIM Manager - HOK

# AYDBABTU: Or How I Learned to Stop Worrying and Love the ~~Bomb~~ BIM

kingdom—animal

phylum—chordata

subphylum—vertebrata

class—mammalia

subclass—theria

order—primates

family—hominidae

genus—homo

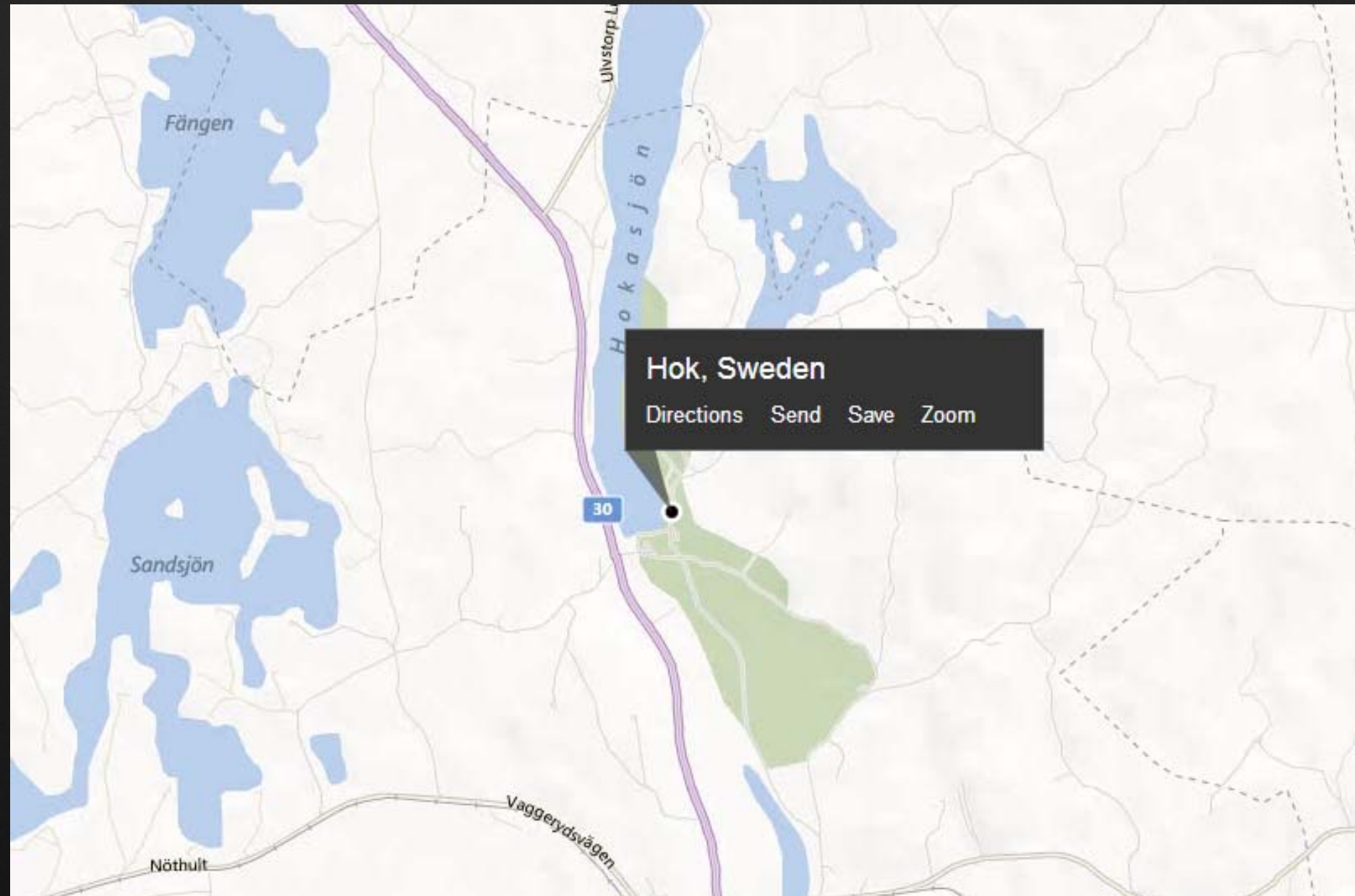
species—sapiens

subspecies—sapiens


name – greg







DESIGN



THOUGHT LEADERSHIP

PEOPLE

ABOUT

ATIONS

SUSTAINABILITY

SOCIAL RESPONSIBILITY

CAREERS

NEWS

CONNECT

CONTACT US

VALUES


These values guide everything HOK does for our clients:

We **create** exceptional environments that meet our clients' most complex design challenges.

We **inspire** people through our work by expressing timeless cultural, organizational and personal values.

We **connect** people and place with ideas that come from many minds and imaginations.

We **care** about serving our clients, enriching lives, improving communities and protecting our natural environment through design.



PEOPLE

Design is all about people. You can meet some of HOK's people here.

LOCATIONS

We bring global expertise to every local project.

Atlanta

Beijing

Calgary

Chicago

Dallas

Denver

Dubai

Hong Kong

Houston

London

Los Angeles

Miami

Mumbai

New York

Ottawa

San Francisco

Seattle

Shanghai

Singapore


St. Louis

Tampa

Toronto

Vancouver

Washington, DC



THOUGHT LEADERSHIP


Director of Interior Design Tom Polucci talks about HOK's focus on **creating the best experiences** for clients.

85%


Amount of HOK's work that comes from repeat clients

EXPERTISE


HOK's experts in strategic practice areas create design solutions that bring great value to our clients.




Aviation - Transportation




Civic - Cultural




Commercial




Corporate




Education




Government




Healthcare




Hospitality




Justice




Residential



Retail




Science - Technology



Tall Buildings

Our ability to connect planning and design services across market sectors in every part of the world allows us to see the "big picture" and help clients innovate.

 Autodesk University

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**40.754036 -73.98539**

**Building = Commercial**

**Floor = 6**

**Zone = 2**

**Space = 6-A201**

**Desk = 4**

**Chair = Office**

**Job = Professional**

**Trade = Architecture & Technology**

**Company = HOK**

**Position = Firm Wide buildingSMART Leader**

@gschleusner

- *greg is very convincing autonomous carbon unit, being of interesting the people of earth. Please to be you friend*

[greg.schleusner@hok.com](mailto:greg.schleusner@hok.com)

Put a  on it

- Lots of software
- Regular bim stuff
- Data management
- Lots of process improvement and development specs
- Work with software vendors
- Drofus implementation
- Researching stuff

# Class Summary

As client and project requirements become more and more complex; the need to manage information in Autodesk Revit software and data connected to Revit becomes exceedingly important. This class will survey the landscape of tools available to aid in this task, including tools for family and parameter management as well as specific tools for program management. Autodesk® Vault software, dRofus, Microsoft® Access®, Microsoft® Excel® tools and others will be covered. During the class, we will touch on project experience with many of these tools and provide guidance on how to approach many data management challenges in Revit.

# Learning Objectives

At the end of this class, you will be able to:

- Understand the benefits of data management for revit projects
- Learn the tools available in the market to aide in managing revit and connected data
- Understand when to develop your own solutions for data management via the revit API
- Understand how various BIM uses can affect your collaboration and data management strategy

# Basic Terminology

# Start from the Beginning

- BIM – 2 Concepts not one (to me)...building, information, model
- Key/Link
- Model Element.....
- COBIE
- IFC
- Information Exchanges

# Data Model, Model, Model Data, Data

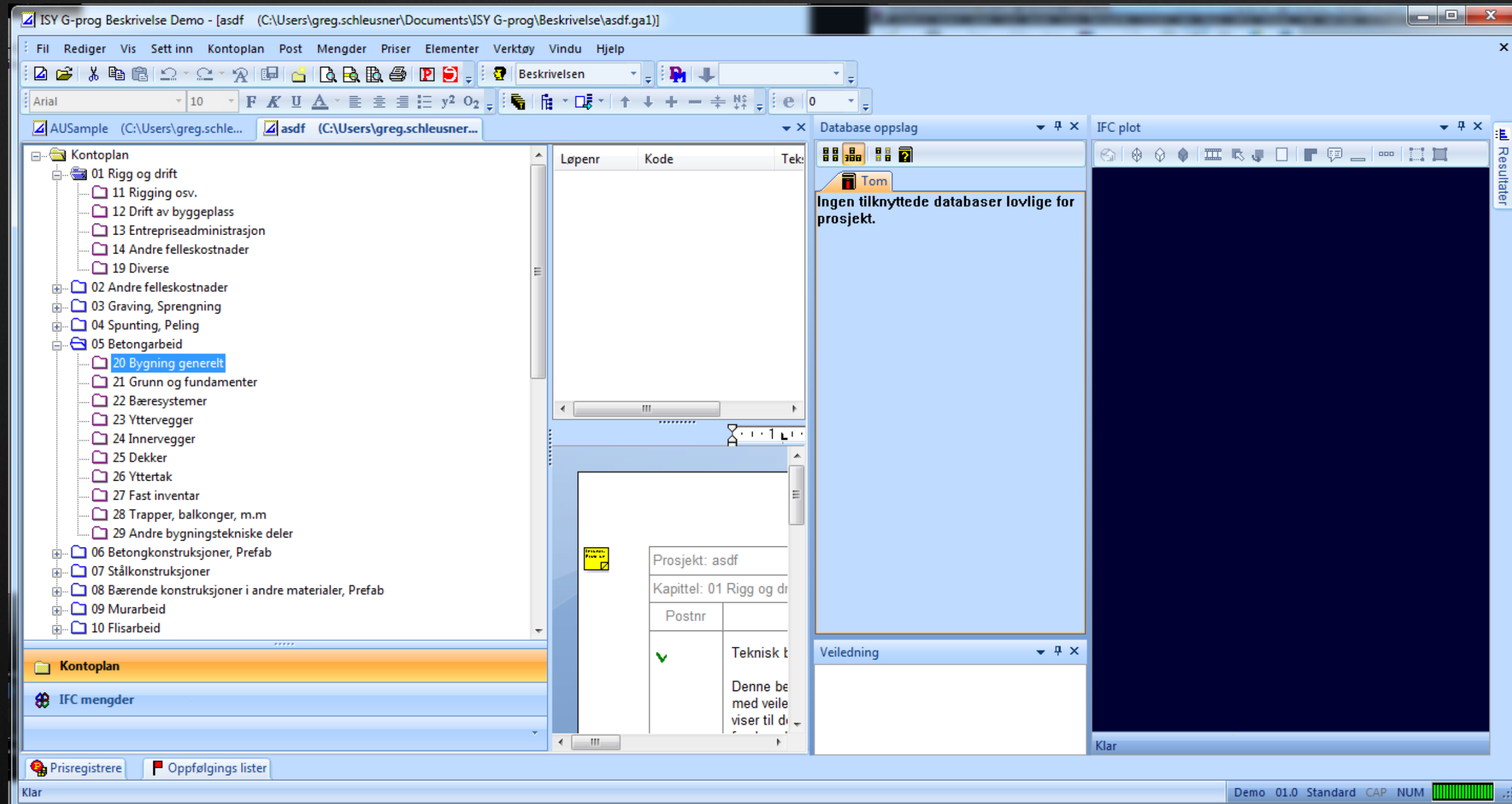
# Can you design a building with text alone?



# Data or the Model (Mad lib)

To build a building the first thing you need is a \_\_\_\_\_ which is a mix of \_\_\_\_\_ and \_\_\_\_\_. If you don't have either you can't build or operate the building

# Data or the Model



Lets \_\_\_\_\_ about data  
(VERB)

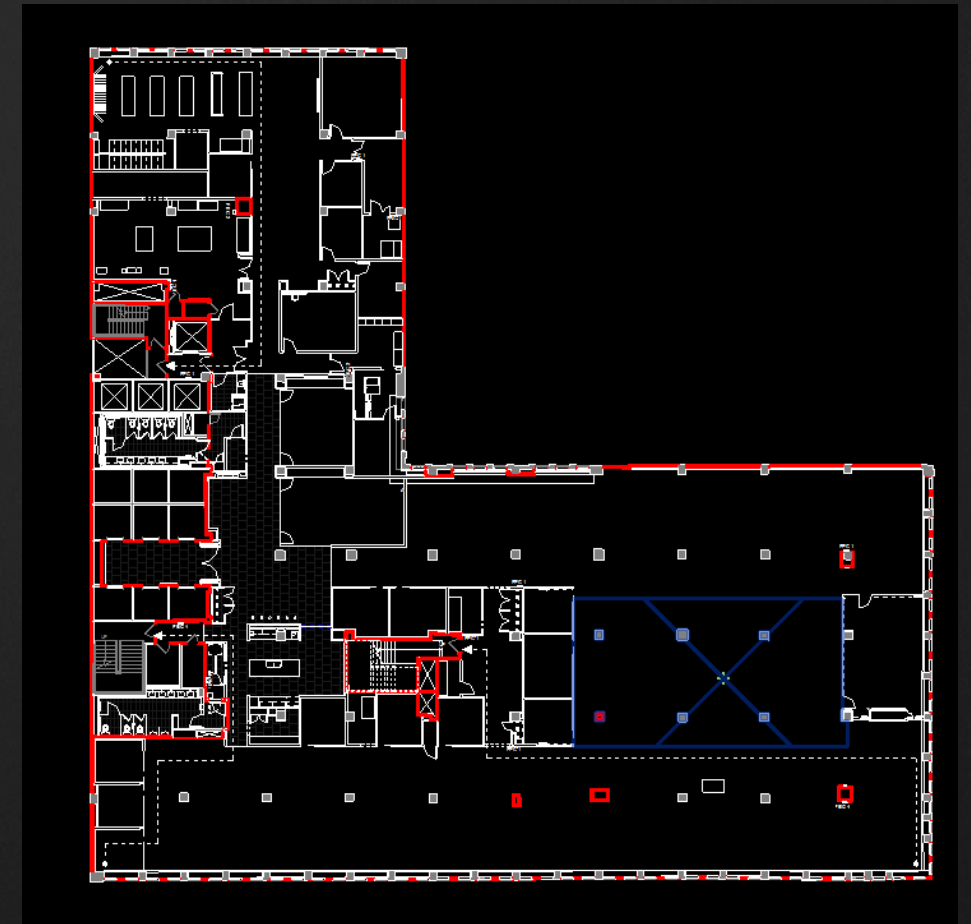
# Owners are asking

- Data requirements
  - COBIE
  - Unique owner requirements
    - [VA](#), [Finland](#), [USACE](#), [IU](#), GSA, Singapore,
- Coding requirements
  - UniClass , DIN276, [Omniclass](#), Masterformat, Uniformat, ....UBERCLASS

# Projects Need it

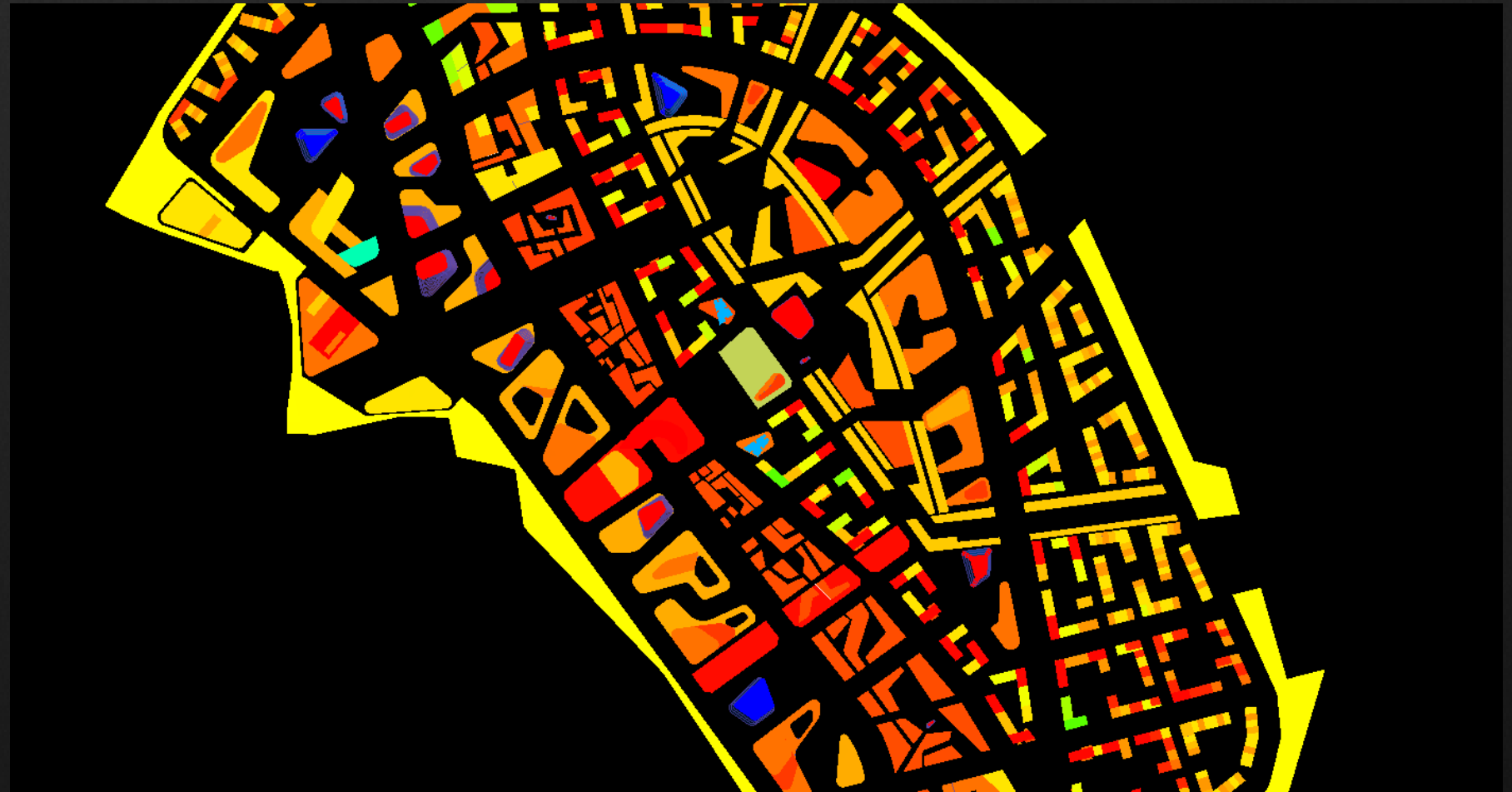
- Translation
- Consistency (QA/QC)
- Efficiency
- Information reuse
  - Examples

Rating Plans, Occupancy Calculations, Distributed Project Files...



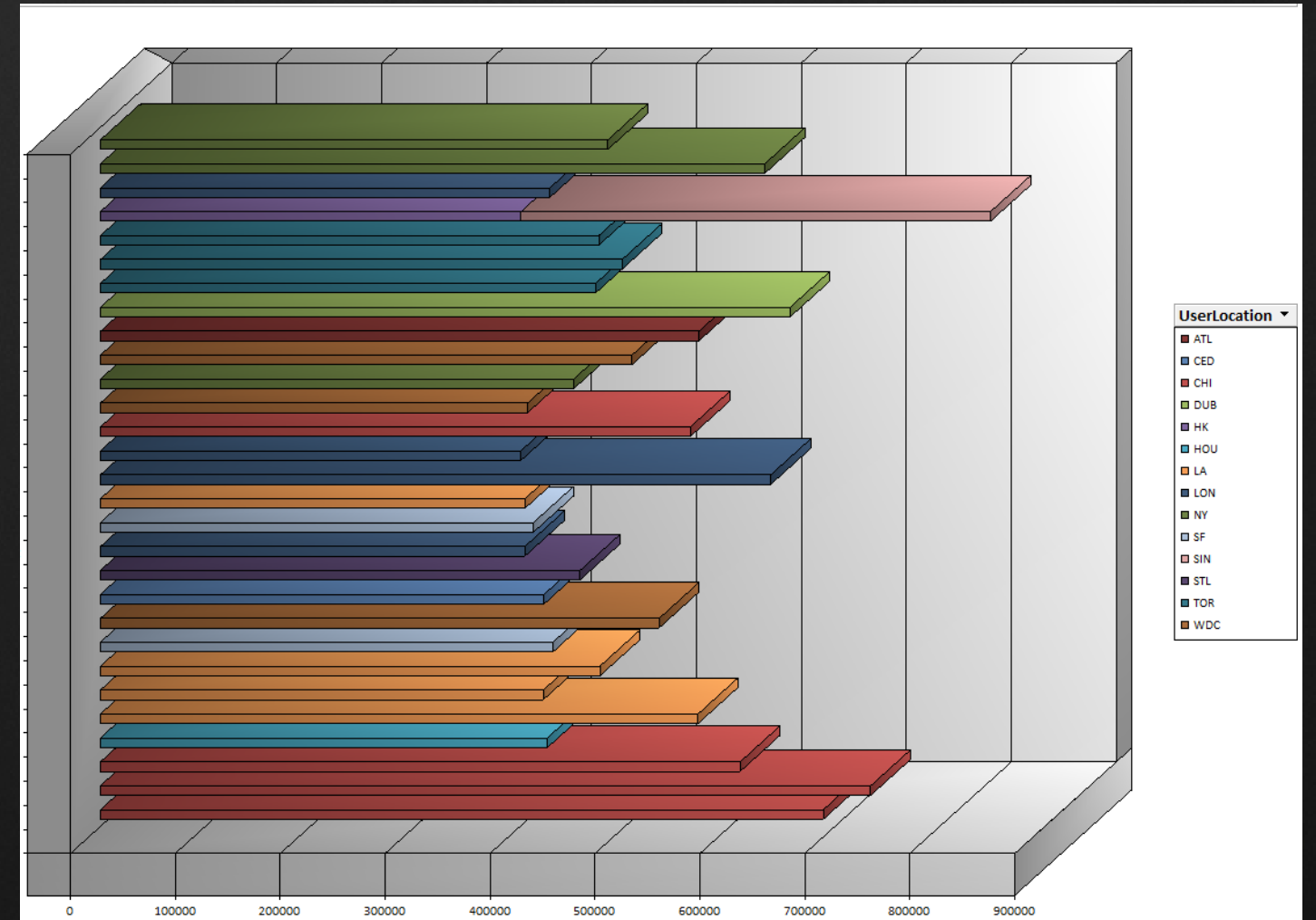
# Designs can learn from it

- Analysis
- Optimization

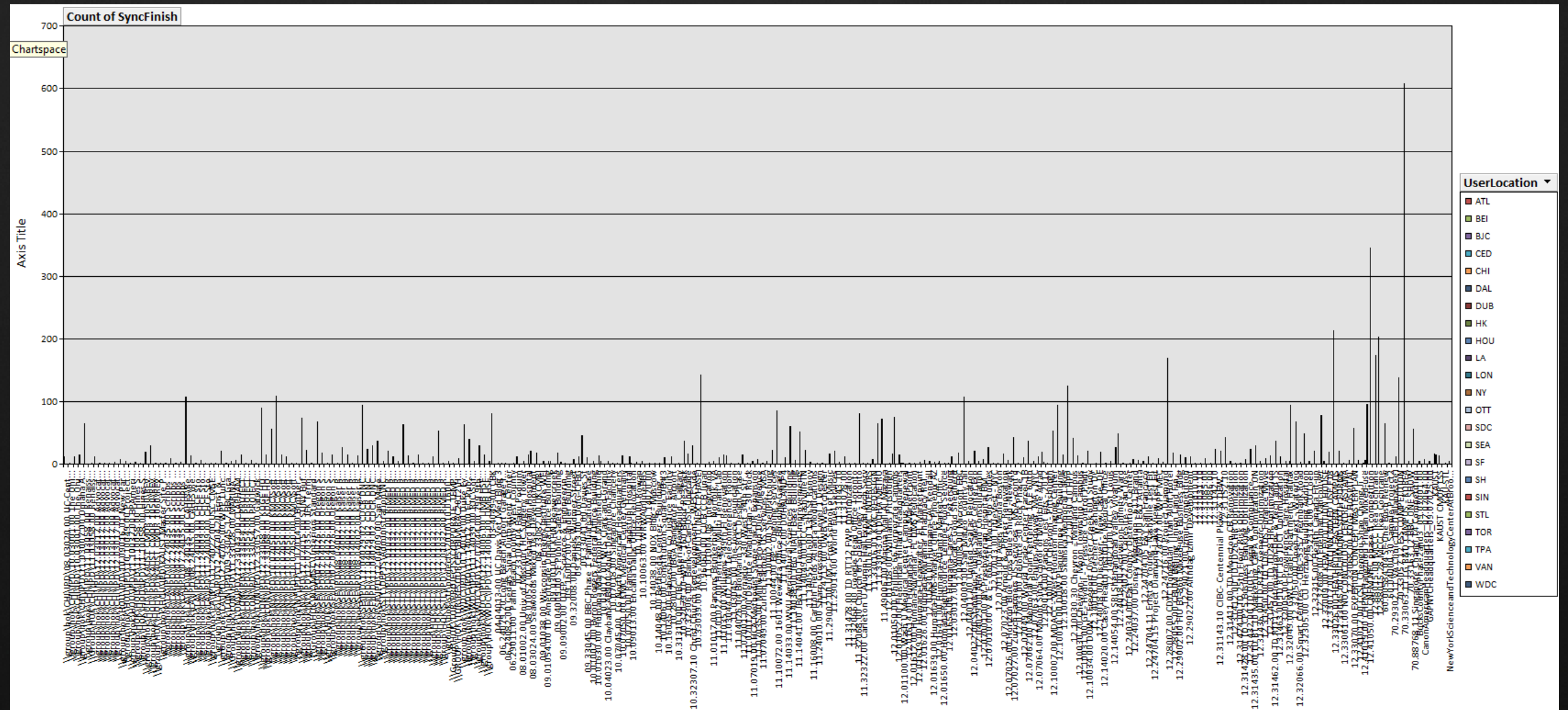


# Business Intelligence

- Team size
- Family use
- Preemptive support
- Project performance
- Social / crowd learning
- Pattern/ trend recognition
- Design interrogation



# Business Intelligence



# Challenges

- Most design staff won't have worked with any sort of data tools outside of excel
- Tools and processes are immature
- BIM momentum has out stretched the markets ability to produce software to solve these problems

# Transactional Tools

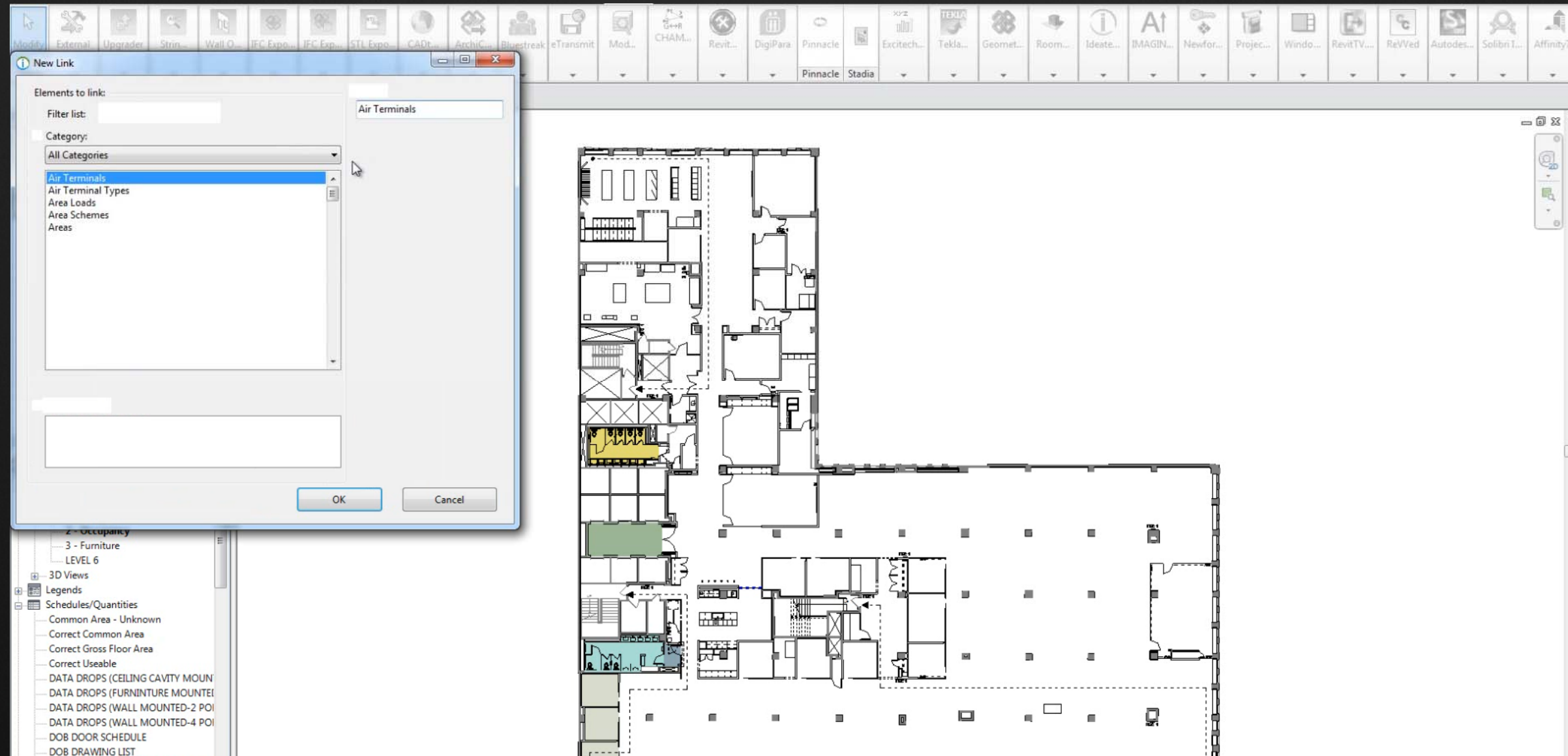


# Excel Based...

- Great at editing data
- Most if not all tools set the “Key” for you
- Excel file should be seen as temporary
- Good for coding and one time updates
  - Hardware vendors
  - Space classifications
  - COBIE and others
- If the design is in flux will often be out of date
- Most flexible, but potentially dangerous



# Ideate BIMLink



# Access

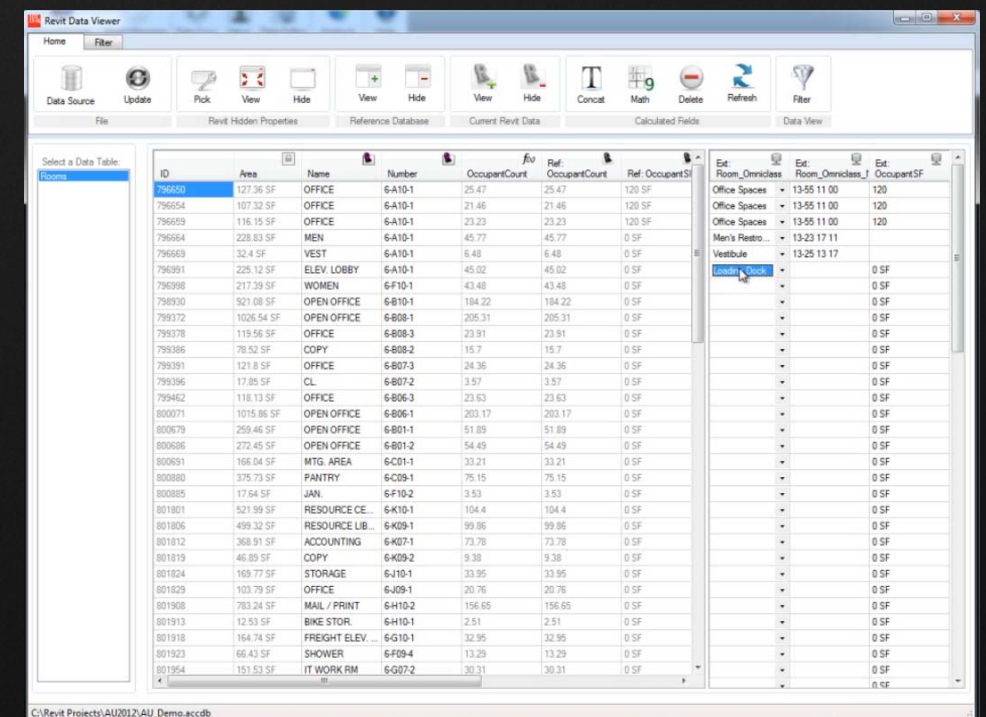
- Allows for relational concepts
- Often used for “sync and persist” type tasks
- Key gets more complicated based the object type
- Access is very finicky and fragile
- Need to jump through hoops in 64bit/32bit access environment

Autodesk DB Link



# Hybrid Approach – HOK Data Editor

- Excel like ease of editing
- Defined settings for project team
- Foundation for more project data applications
- Beginning of connection to broader project database
- Not a replacement for one off tools
- Currently still Access based



ID	Area	Name	Number	OccupantCount	Ref. OccupantCount	Ref. OccupantSF
796555	127.36 SF	OFFICE	6-A10-1	25.47	25.47	120 SF
796554	107.32 SF	OFFICE	6-A10-1	21.46	21.46	120 SF
796553	116.15 SF	OFFICE	6-A10-1	23.23	23.23	120 SF
796554	228.83 SF	MEN	6-A10-1	45.77	45.77	0 SF
796553	32.4 SF	VEST	6-A10-1	6.48	6.48	0 SF
796391	225.12 SF	ELEV LOBBY	6-A10-1	45.02	45.02	0 SF
796398	217.39 SF	WOMEN	6-F10-1	43.48	43.48	0 SF
796390	527.08 SF	OPEN OFFICE	6-B10-1	184.22	184.22	0 SF
796372	1026.54 SF	OPEN OFFICE	6-B08-1	205.31	205.31	0 SF
796378	119.56 SF	OFFICE	6-B08-3	23.91	23.91	0 SF
796386	76.52 SF	COPY	6-B08-2	15.7	15.7	0 SF
796391	121.8 SF	OFFICE	6-B07-3	24.36	24.36	0 SF
796396	17.85 SF	CL	6-B07-2	3.57	3.57	0 SF
796452	118.13 SF	OFFICE	6-B06-3	23.63	23.63	0 SF
800071	1015.86 SF	OPEN OFFICE	6-B01-1	203.17	203.17	0 SF
800679	259.46 SF	OPEN OFFICE	6-B01-1	51.89	51.89	0 SF
800686	272.45 SF	OPEN OFFICE	6-B01-2	54.49	54.49	0 SF
800691	166.04 SF	MTG AREA	6-C01-1	33.21	33.21	0 SF
800880	375.73 SF	PANTRY	6-C09-1	75.15	75.15	0 SF
800885	17.64 SF	JAN.	6-F10-2	3.53	3.53	0 SF
801801	521.99 SF	RESOURCE CE...	6-K10-1	104.4	104.4	0 SF
801806	499.32 SF	RESOURCE LIB...	6-K09-1	99.86	99.86	0 SF
801812	368.91 SF	ACCOUNTING	6-K07-1	73.78	73.78	0 SF
801819	46.89 SF	COPY	6-K09-2	9.38	9.38	0 SF
801824	169.77 SF	STORAGE	6-J10-1	33.95	33.95	0 SF
801829	103.79 SF	OFFICE	6-J09-1	20.76	20.76	0 SF
801908	783.24 SF	MAIL / PRINT	6-H10-2	156.65	156.65	0 SF
801913	12.53 SF	BIKE STOR	6-H10-1	2.51	2.51	0 SF
801918	164.74 SF	FREIGHT ELEV...	6-G10-1	32.95	32.95	0 SF
801923	66.43 SF	SHOWER	6-F09-4	13.29	13.29	0 SF
801954	151.53 SF	IT WORK RM	6-G07-2	30.31	30.31	0 SF

# Plugins, Custom Tools and Hacks


# Single Use Tools

  
Basic Reporting

  
Change/Replace Line Styles

  
Delete Views & Links


  
External Wall Direction

  
Door Mark Renumbering

  
Export Families to RFA

  
3D Mass from Rooms

  
Import Images Drafting Views

  
Revision Cloud Reporting

  
Selection Set Manager

  
View Creator

  
Import openNURBS

External

Upgrader

Strin...

Wall O...

IFC Expo...

IFC Exp...

STL Expo...

CADt...

ArchiC...

Bluestreak

eTransmit

Mod...

CHAM...

Revit...

DigiPara

Pinnacle

Stadia

Excitech...

Tekla...

Geomet...

Room...

Ideate...

IM

Element Tools

Parameter Tools

Export Revisions

Batch Export

Door Mark

Import Image

Sheet Manager

Data Sync

Setup

Data Editor

Analysis

Help

HOK Customizations

HOK Revit Data

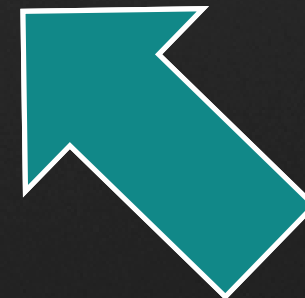
HOK AVF

Help

# Examples

- CASE
- Whitefeet
- CTC
- Autodesk File Upgrader
- Autodesk BIM Review
- Excitech: Revit Toolkit
- Ideate Explorer
- Sumex Design
- Newforma
- DigiPara
- LandCADD
- DigiPara® Elevatorarchitect

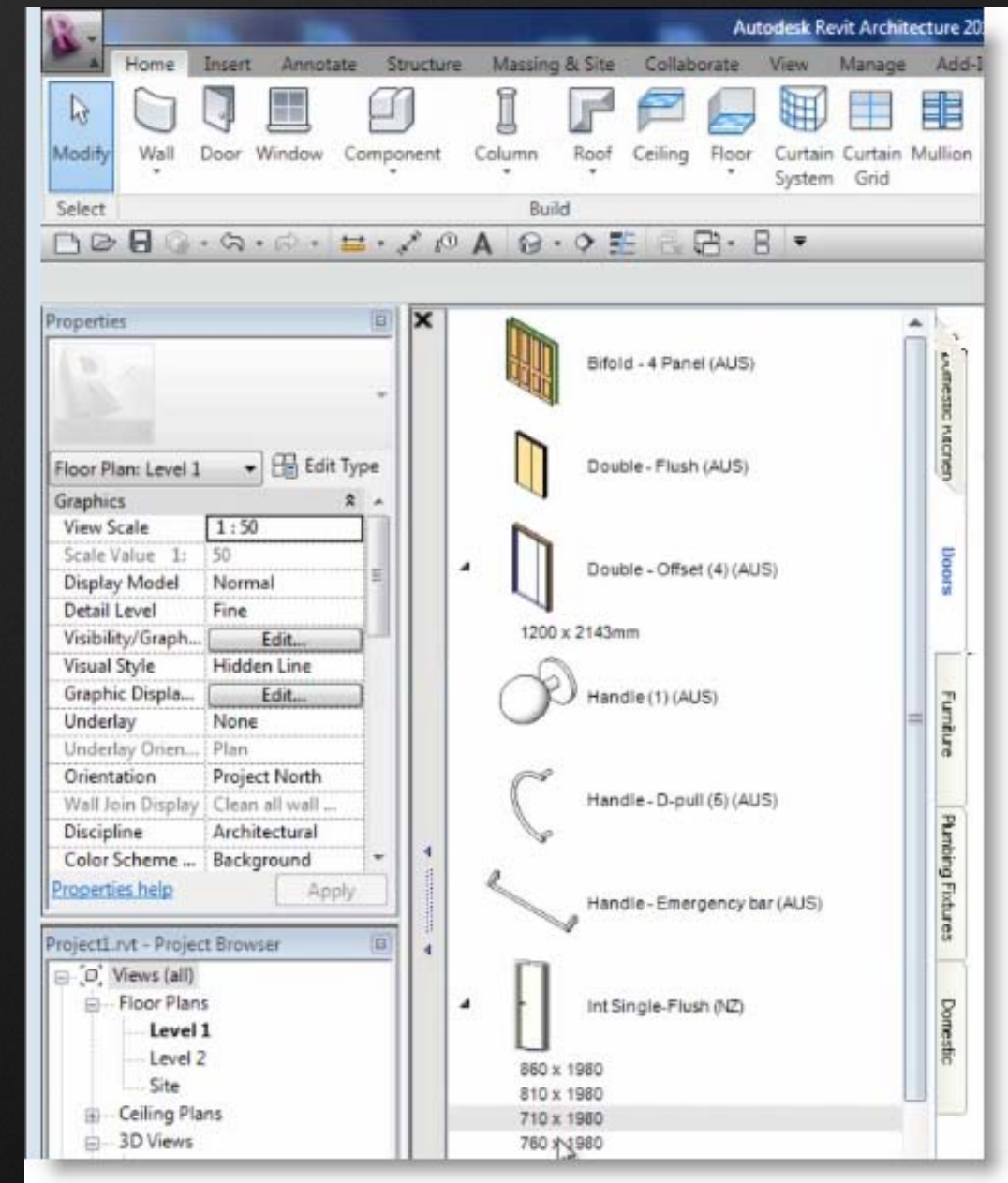
# Hacks (Not for the faint of heart)

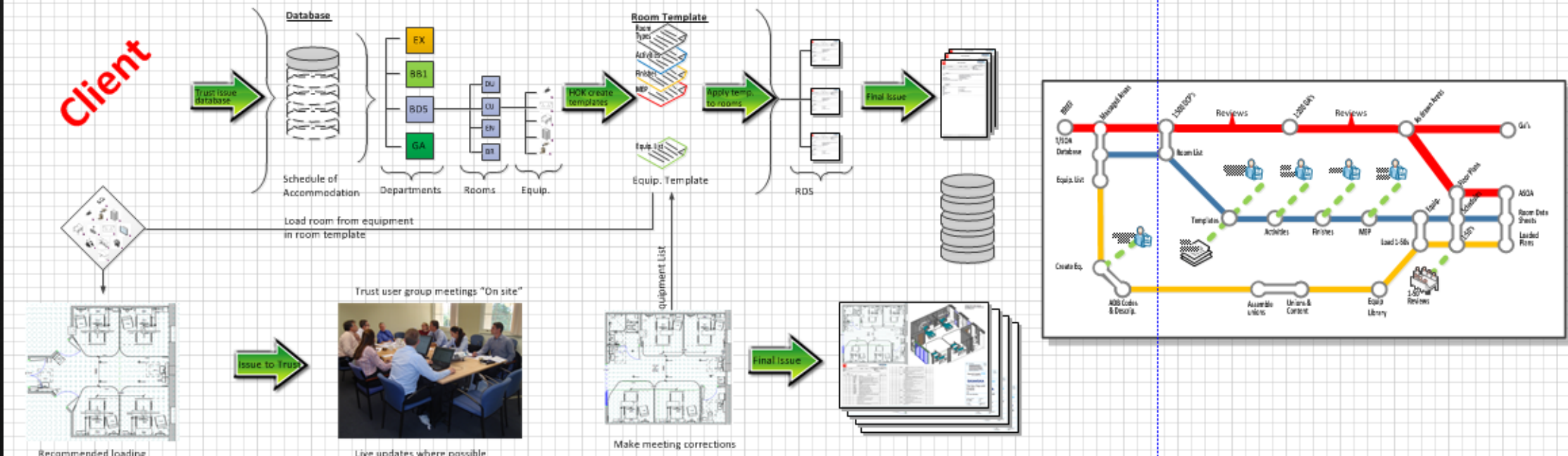


# Family Management

# Three tasks of Family tools

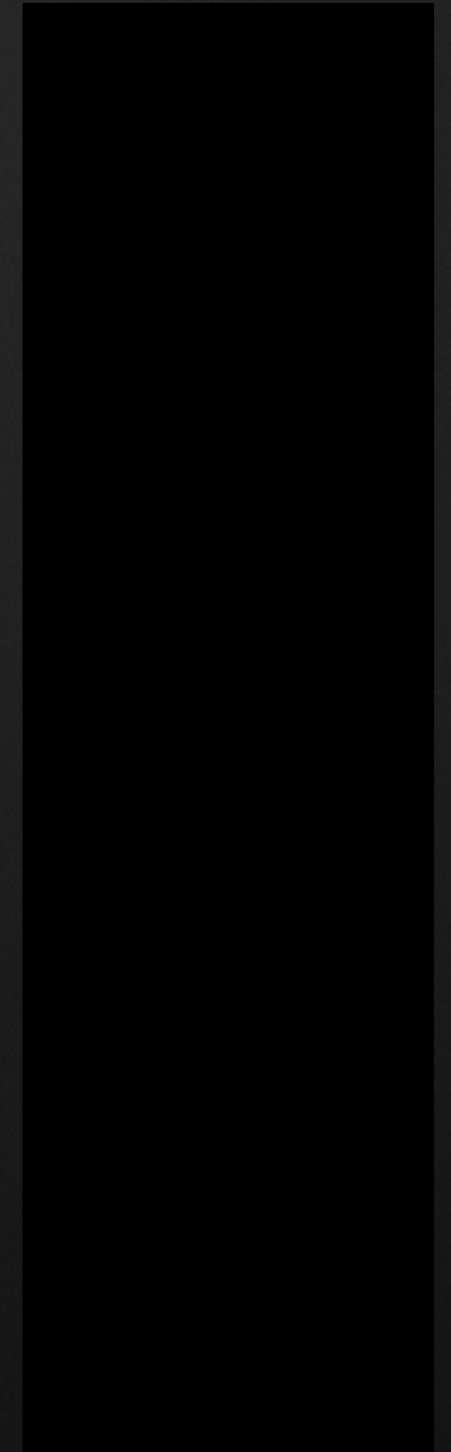
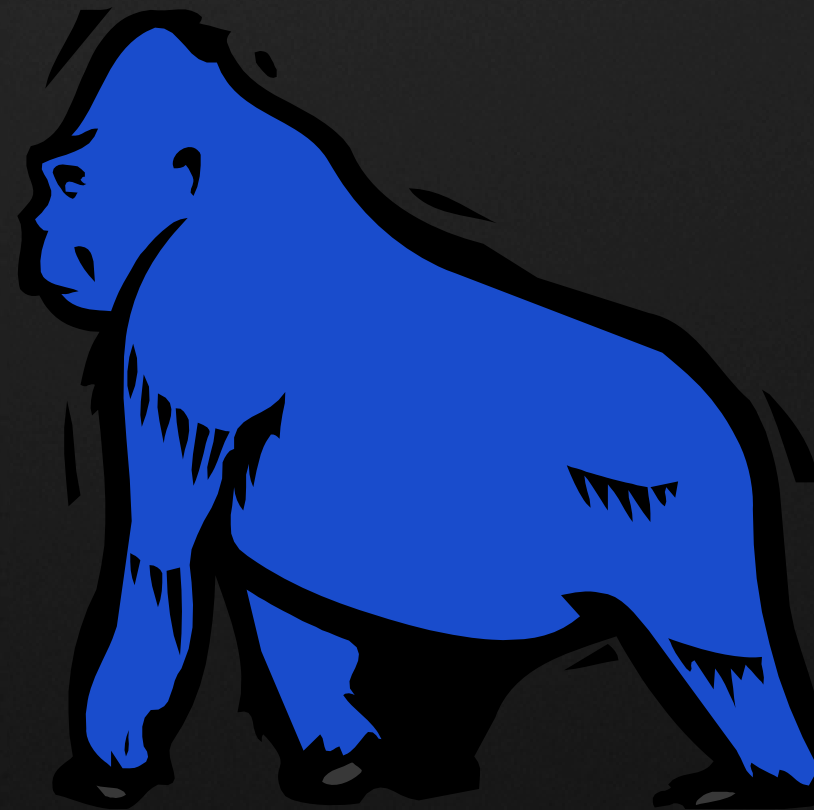
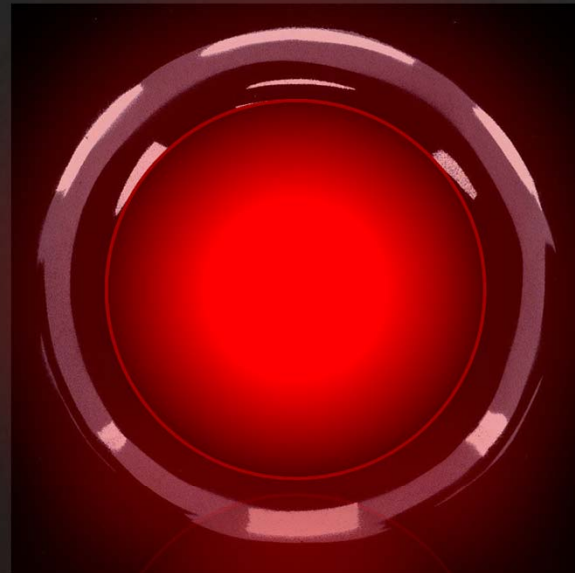
- Find it – consistency and efficiency
- Load it - efficiency
- **Update**





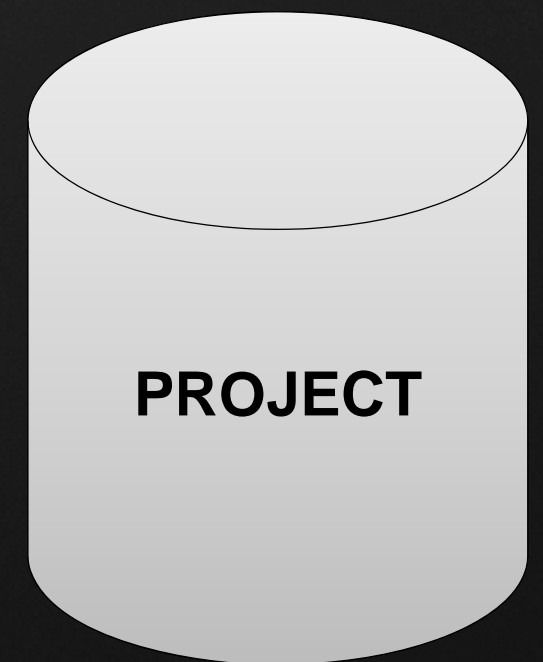
# Three Pools of Families

- Firm
- Office
- Project



# Three Pools of Families

Most if not all tools fail on one or more of these categories currently

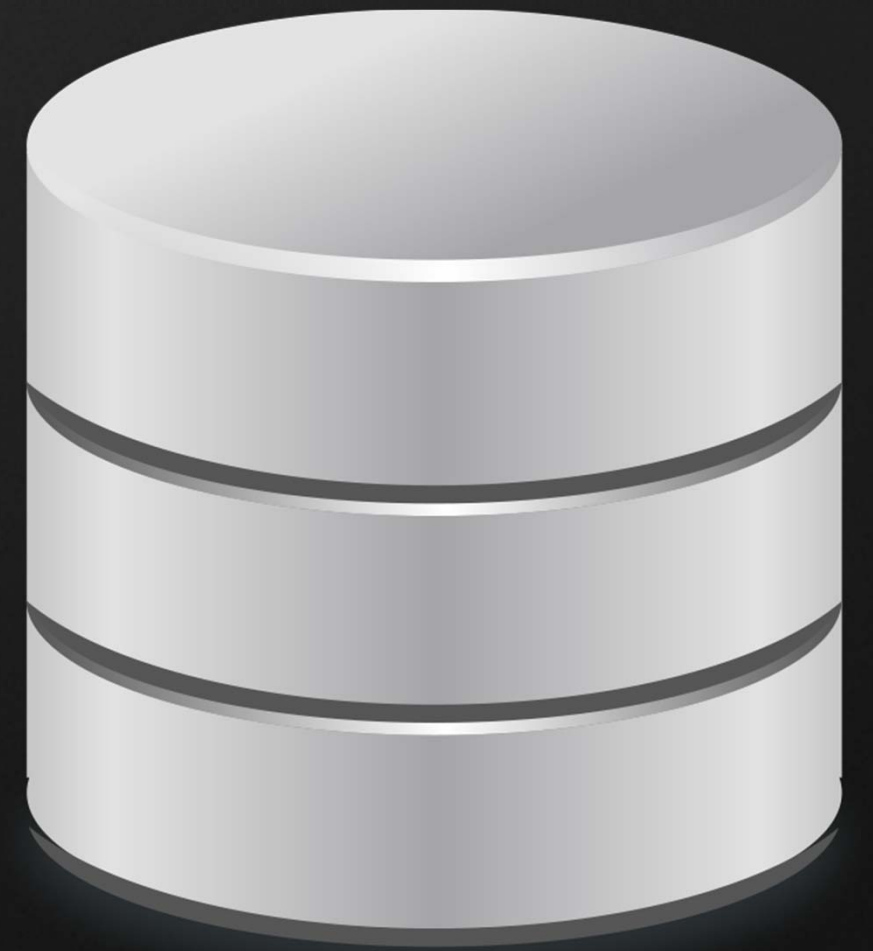


# Market

- BIMlist – CTC
- Family Browser – Kiwi Codes
- Smart Browser – Tools4Revit
- Library Manager - SmartBIM
- Revit Family Manager – Familit
- Content Studio – Content Studio
- Content Controller - OFCdesk
- Vault – Autodesk
- Open Asset BIM – Axomic
- Others....

# Video Break

# Data Management Tools



# A place for Data

- Linked to the model not in the model
- Import to model when needed
- Model and data management tools have different strengths

# Design > Construction > FM

- Different needs and goals
- Different views of data
- Design
  - Need to be flexible and adaptable
- Construction
  - Not clear value beyond bridging design to operations
- FM
  - Different views of data
  - Benefits can come from early transition

# Revit- Design

## Characteristics

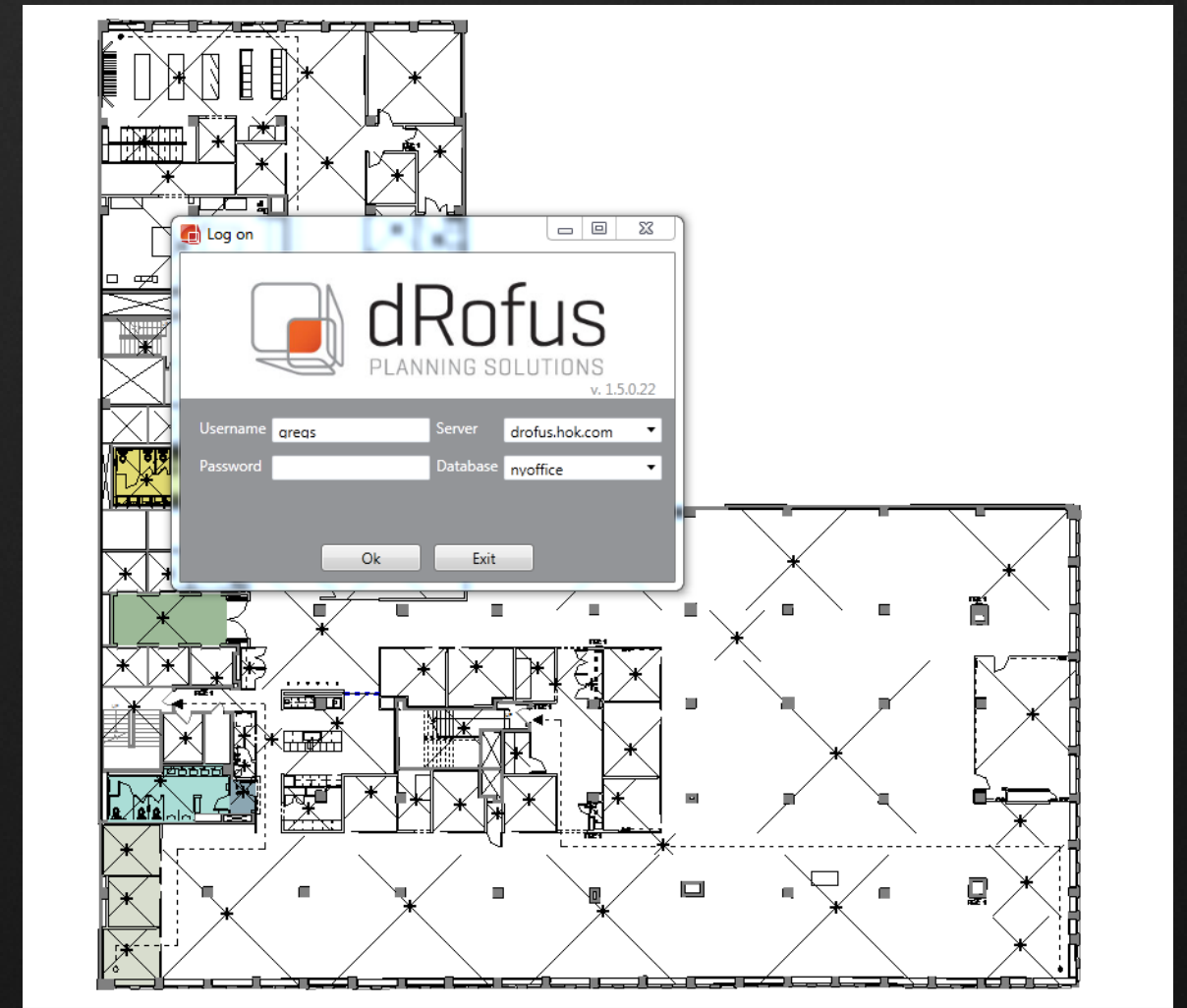
- Direct Connection to Revit
- Benefit the design process
- Extend Revit functionality
- Mix of Data driven by Revit and Database

- Codebook
- dRofus
- Onetools
- Affinity
- Custom Tools

## Candidates

- Assemble

# dR ofus



# Revit- Construction

What's the value statement to directly connect to Revit

## Challenges

- MEP for Fabrication not Revit
- Structure for Fabrication not Revit
- No clear update process
- Record Model a secondary process
- Most exports are not editable

## Tools

- dRofus\*
- FAB MEP\*
- Sigma
- Tekla

# Revit- Operations

Translation or direct to Revit?

Revit direct benefits

- Data and geometry in sync
- Solves technical aspects of facility updates

Challenges to Revit

- Performance and learning curve
- File management/ cost
- Enterprise support multi-building, GIS...
- Analysis

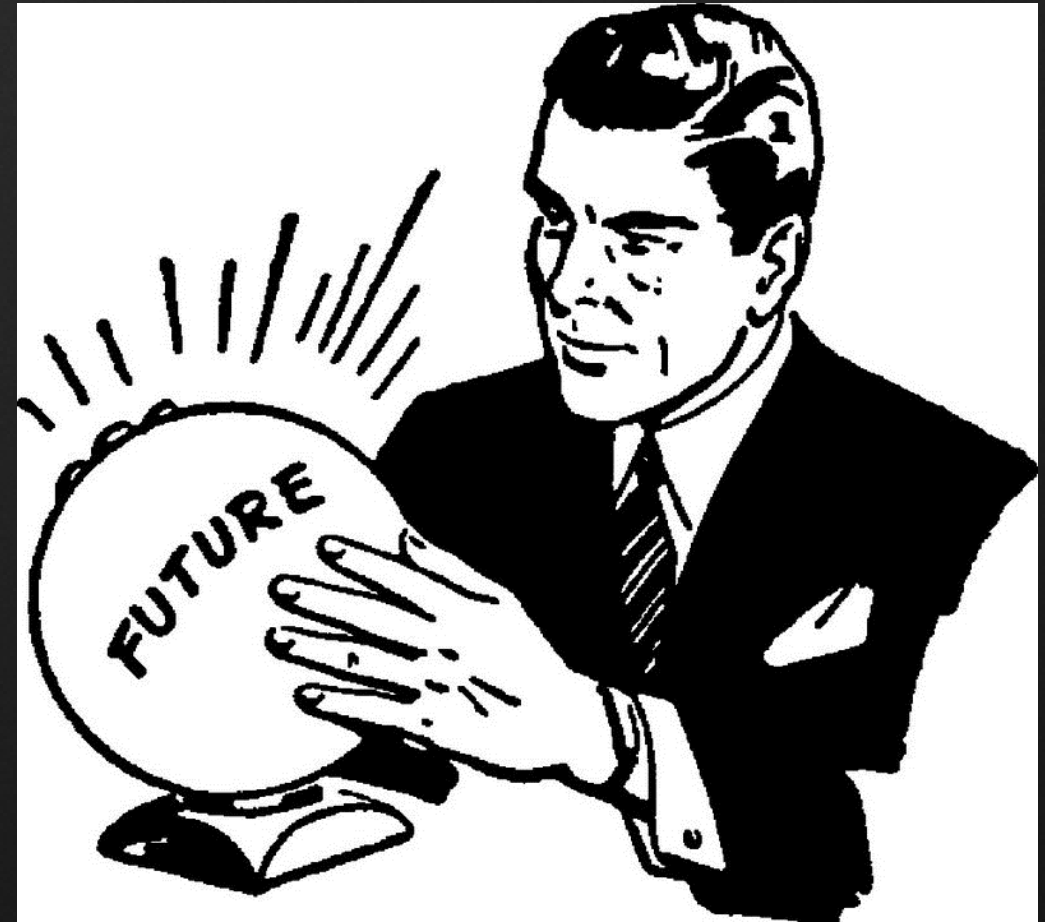
Tools

- Maximo (Labs Project)
- FM Systems
- OneTools

# Long-term Revit and Data Management

- Revit is not immutable
  - Changes occur with upgrade – Ex. Heat Transfer 2013
- Files need to be upgraded
- Data in Revit inaccessible without opening Revit
- No time/ states

# Future Directions



# Model Storage Technologies

- Model servers
  - Access multiple models/ projects at the same time
  - Enterprise scale
  - Data processes at the server not the desktop?
- Examples
  - BIMserver.org
  - GTEAM
  - dRofus (Jotne)
  - Eurostep\*

# BIM/ GIS Living in harmony 😊

- BIM and GIS linked together
- Unified Level of Development (LOD)
  - CityGML, BIM

## Intersecting Tools

- AIM (Infrastructure Modeler)
- City Engine
- ARCGIS
- SAFE

# This is the future I want



