AUTODESK UNIVERSITY

AUME763

Conceptual Design for Architects

Lejla Secerbegovic
Autodesk GmbH, Germany

Learning Objectives

- Learn about the importance of digital tools in conceptual design for architects
- Learn how to use Autodesk FormIt to sketch and investigate your design
- Learn how you can use your FormIt sketch in other Autodesk Programs like Revit or Infraworks
- Learn how you can utilize Infraworks for your architectural projects

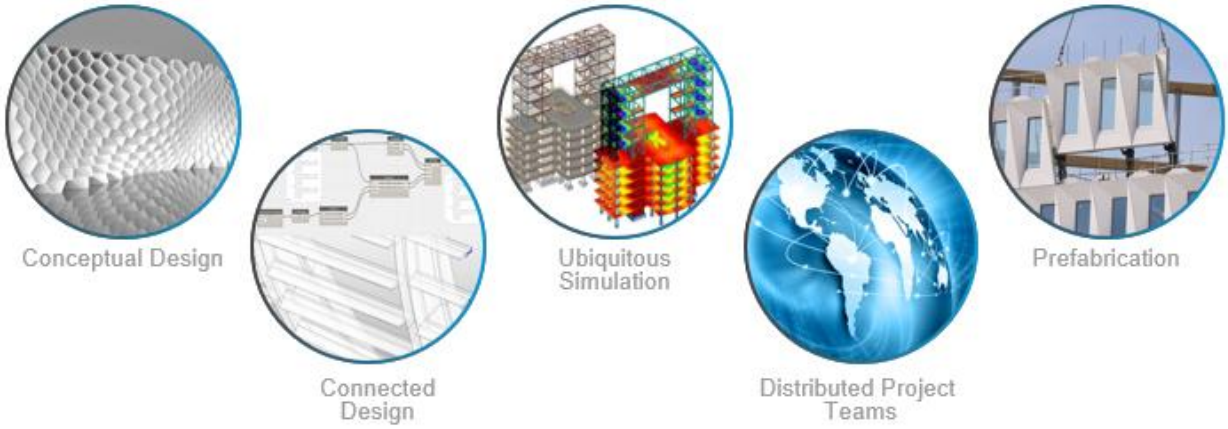
Description

In this class you will learn about workflows and tools for architects during the conceptual design phase. Tools like FormIt, Revit and Infraworks can easily be used to sketch design easily in early stages, explore different options and finally use this model as basis for further planning.

Speaker(s)

Lejla Secerbegovic is a licensed architect in Germany and working as a technical specialist for BIM-related topics at Autodesk in Central Europe. Before joining Autodesk in 2015, Lejla collected valuable practical experience not only at various architectural practices but also as a Revit specialist and BIM project manager at Max Bögl, the largest private construction company in Germany. Lejla also regularly speaks at various non-Autodesk events, like RTC and independent BIM conferences. She blogs on the official Autodesk German BIM Blog http://blogs.autodesk.com/bimblog as well as on her private blog http://bim-me-up.com. You can follow Lejla on Twitter (@archBIM) for regular updates around various BIM topics.

Introduction



Our customers are experiencing a lot of change in the industry too and much of it is driven by (or at least facilitated by) BIM. This change is disruptive but it also brings a lot of opportunity for our customers to transform their businesses and enter new areas of work. Here are some examples:

1. Architects and Engineers are exploring a lot more design alternatives earlier on in a project. Not only does this deliver more exciting and innovative buildings but it also drives a deeper understanding of detail in the conceptual design phase when the cost of exploring changes is minimal and the ability to make those changes is at a maximum

2. BIM is helping the industry move out of the dark ages and become more efficient – one of the ways this is happening is by multiple personas connecting different phases of design together and blurring the lines between roles - an example is an Engineer and architect collaborating together in conceptual design or a engineer and contractor working together to bring fabrication level of detail much earlier into a project than before

3. Simulation is everywhere and is used by more people and personas than ever before. You saw that Autodesk has invested a lot in Simulation in the last few years and what we see is more personas starting to adopt all kinds of simulation (Robot, GBS, CFD) through an integrated BIM approach and linking their Revit models directly with the simulation products

4. Our customers are taking the opportunity to move outside of their “territory” and get involved in projects nationally and even internationally. The reputation that our customers attain as BIM leaders helps to drive this opportunity

5. There is more and more prefabrication. I’m sure you all saw the 30 storey building in China that was completed in 15 days by the Broad Group but this really is a global trend.

Autodesk FormIt

When it comes to the conceptual design in Architecture, we notice that there is still a lot of hand drawing and that most digital applications do not support BIM processes, which means the sketched need to be redrawn in a BIM application.
In addition, designers are usually not trained to utilize BIM tools or find these too complicated for exploring design ideas. BIM tools tend to require more information from the designer than there is typically available at an early design stage.

Autodesk's solution for these Issues is based on FormIt Pro.
With Autodesk FormIt Pro web and mobile app, you can sketch, collaborate, analyze, and iterate early-stage design concepts on your tablet or web browser. FormIt 360 Pro connects conceptual design with Building Information Modeling (BIM) processes for more fluid workflows. It have 4 key values that I'd like to discuss in more detail. It allows you to:
- Work smarter with BIM-based conceptual design
- Create design concepts with intuitive tools
- Analyze your designs earlier than ever
- Sketch and Collaborate in 3D anywhere, anytime

FormIt PRO is part of the Autodesk AEC Collection.

There is also a free version of FormIt offering the basic tools for sketching. In this overview you can see which features are included in the free and the Pro version:

— FORMIT VS FORMIT PRO	FORMIT (free)	FORMIT PRO
Intuitive 3D sketching tools	✓	✓
Revit interoperability with FormIt Add-In	✓	✓
Conceptual design with location data, levels, images, and materials	✓	✓
Available as free iPad tablet app	✓	✓
Available as web browser app	✓	✓
Available as Windows-installed App		✓
Real-time collaboration		✓
Whole-building energy analysis		✓
Solar analysis		✓
Access to Autodesk Material Library		✓
Computational design with native Dynamo integration		✓

https://www.autodesk.com/products/formit/compare

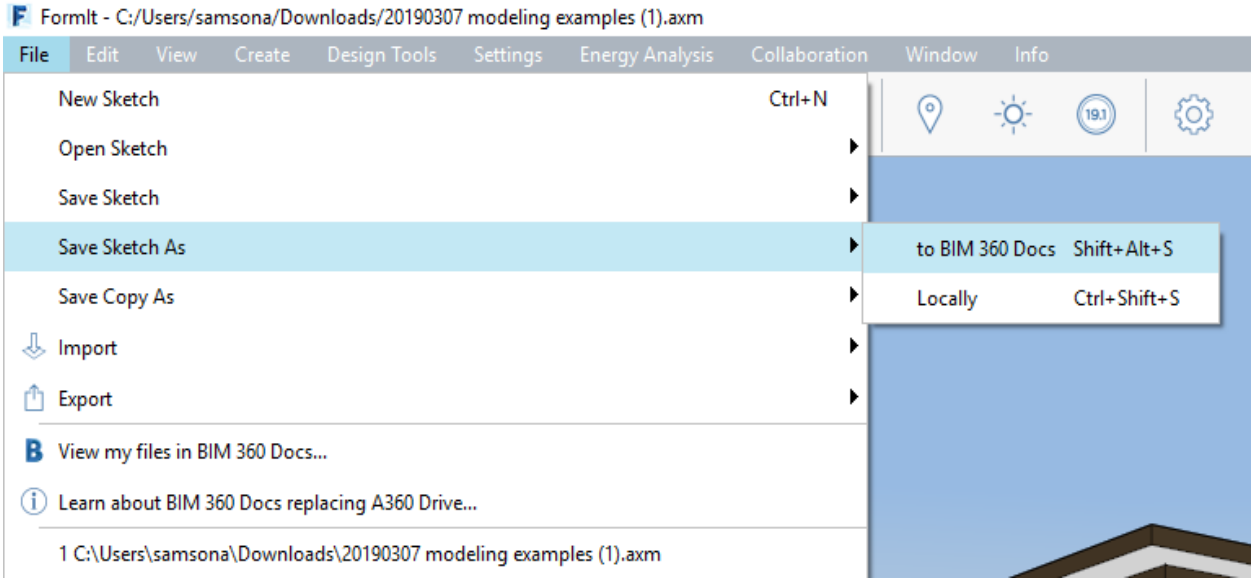
In addition to the videos used in the presentation, we have an extensive FormIt Primer with a step by step tutorials, which is why I am not explaining the tools here.

Please check out the FormIt Primer:

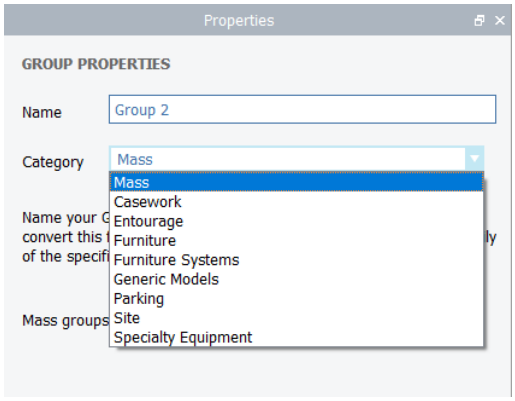
https://windows.help.formit.autodesk.com/building-the-farnsworth-house

FormIt Integrations with other Autodesk Products

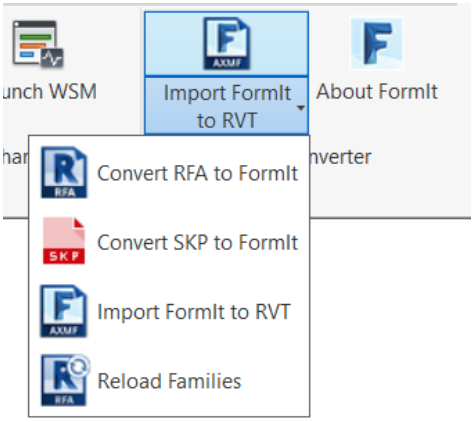
- **Autodesk BIM 360 Platform**: you can store your models on the BIM 360 platform and use it to collabore with your whole team or to share the model with others.



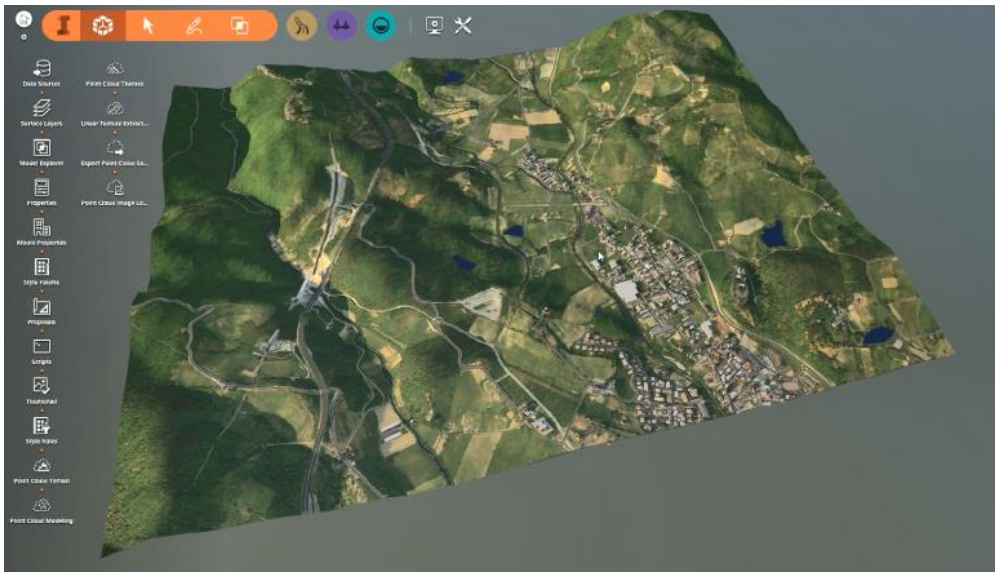
- **Autodesk Revit:** you can import your FormIt sketch directly into Revit and use it inside the massing environment to build up your BIM model.Groups in FormIt. If you use Groups in FormIt, these will be loaded as non-hosted Revit Families. The category can be set in FormIt:



In addition, all loadable Revit Famillies like furniture can be converted and sent to FormIt. These Families will then be recognized as native Revit families once the FormIt model has been loaded to Revit.



- **Autodesk Infraworks** is a conceptual infrastructure design tool introduced in the second part of this session. It is often used for urban layout design by architect and can read most common 3D and BIM formats, including FBX which you can also export from FormIt.



Autodesk Infraworks for Architects

What is Infrawroks?

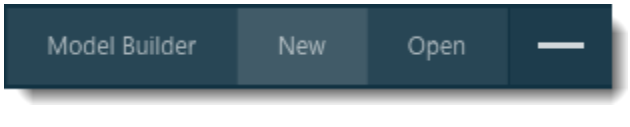
- Preliminary infrastructure design software included in the Autodesk AEC Collections
- A visual 3D design and communication platform for civil engineers, designers and land planners
- Desktop Software with integrated cloud services

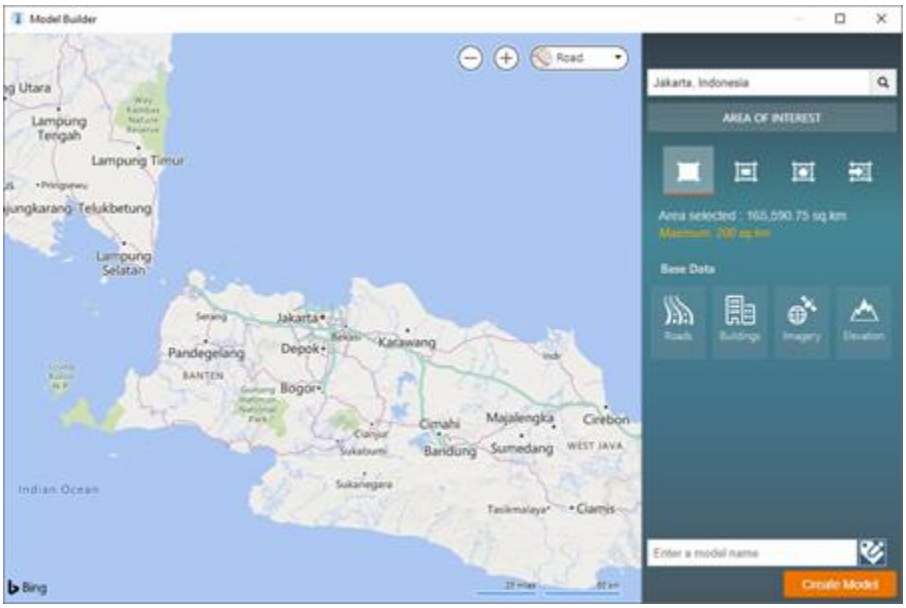
Model Builder is an Infraworks service which uses the cloud to find data layers and build a model for an area you specify.

You can use the Model Builder with or without a BIM 360 account.

- If you have a BIM 360 account, you can store your models in the BIM 360 Document Management project folder of your choosing.
- If you do not have a BIM 360 account, you can store your models locally on your system.

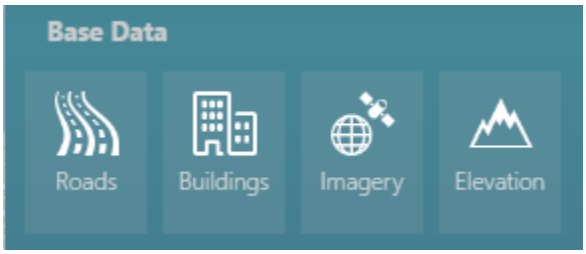
To access Model Builder, from InfraWorks Home, click + to expand the horizontal menu, and click Model Builder.





Model Builder Data Sources

Hover your cursor over any of the data sets to view information about the data source.



- **Roads and Railways**

  OpenStreetMap's Highway and Railway data sets are used to create roads and railway features in the model.

- **Buildings**

  Building data is from the OpenStreetMap dataset.

- **Imagery**

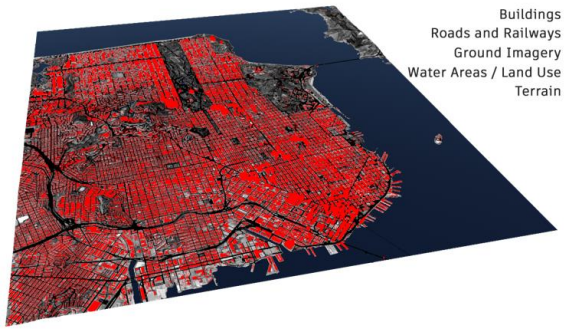
  Satellite imagery from Microsoft® Bing Maps is draped over the model terrain.

- **Elevation**

  Global terrain data is available in 10- and 30 meter DEMs depending on the geographic location of your area of interest. Terrain data for the United States and its territories uses USGS 10 meter DEMs from the National Elevation Dataset (NED). Between -60° and +60° latitude we use SRTMGL1 30m DEM data. Between +60° and +83° latitude we use ASTER GDEM v2 30m DEM data.

- **Water**

  Water body data is also from the OpenStreetMap dataset.



Please note there are already a couple of Infraworks for Architects sessions on AU online available, which provide a more in-depth overview of the tools:
https://www.autodesk.com/autodesk-university/class/InfraWorks-360-Architects-2015-0
https://www.autodesk.com/autodesk-university/class/InfraWorks-Architects-2017