

AS501404

# Sweco's Use of Autodesk and Esri Tech to Streamline Workflows in Architecture

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## Learning Objectives

- Learn how to maximize Autodesk's and Esri's technology to achieve efficient workflows.
- Learn about synergies between GIS, Spacemaker, Revit, and other tools.
- Learn how to ensure efficiency when sharing data between stakeholders, processes, and platforms.
- Gain insights into efficient BIM-GIS workflows.

Projects often employ tools such as GIS, Spacemaker, Revit, or all the above, but the different contributors and stakeholders are frequently stuck in silos, focusing simply on their immediate needs and not a project's full timeline, which makes them inefficient. To mitigate this, Sweco has developed methods and workflows to streamline the flow of data in projects and to digitalize this process and utilize all available and new data early on. This ensures that the project starts on the right foot, workflows are efficient, and all the data is available and utilized. With this method, you can pinpoint a place of interest, analyze the potential of the site, and work through to a finished project.

## Speaker



### **Adam Sjödin**

*Urban Planner & Digital Strategist  
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Adam has over 10 years of experience as an Urban Planner, working with regional and urban planning projects across the whole spectrum of scales and phases, in Sweden, Europe, Asia and the Middle East. Adam also plays a key role in the development of projects as a digital strategist at Sweco where he has a leading role in setting the digitalization strategies for Sweco's architects and their projects.

Adam has worked extensively as a process leader and working with the digitization of these working methods. Adam has experience as an expert and project manager in both small and large projects. He is an experienced process manager working in complex urban planning assignments on different scales with multiple stakeholders involved. Adam is a leading expert in practical integration of GIS and BIM data in architecture and planning projects.

**#1** in the Nordics

**#4** Largest global architectural practice

**17,500** Architects and Engineers

More than **100** offices worldwide

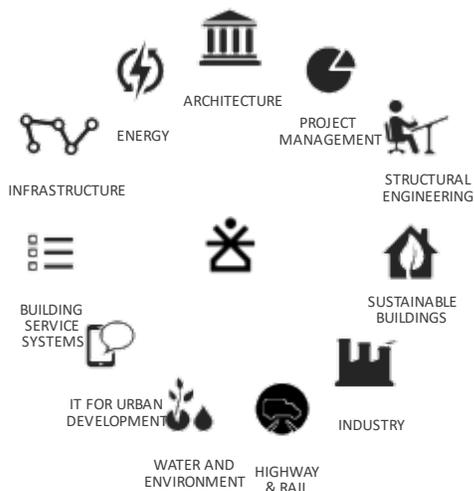
Over **50,000** projects per year

in **70** Countries



## Sweco

At Sweco we are 17,500 experts across more than 100 offices and our ambition is to help our clients solve any challenge at hand, no matter scale or location.



We were founded in 1958.  
Sweco is based on our founder Gunnar Nordstrom's vision of a combined architecture and engineering company.  
The idea is to bring different perspectives together to solve the challenges of our time.  
We carry out over 50 000 assignments in 70 countries every year.

## How do you go from idea to a project ready to be realized?

In the early stages of the architecture process, the client's needs and vision are investigated. In close dialogue with our clients, ideas are developed into tangible projects with the potential to be realized. In these early stages the "what" and "why" are as important as the "how."

These stage often (but not always) involves finding a site suitable for development, assessing the site conditions and potential then developing an idea and proposal that suits the site.

One of the biggest challenges in this stage, besides just finding available plots in a heavily developed metropolitan region, is managing risk. This because in this stage everything is purely speculative, there are no guarantees that a project will go all the way.

Therefore, it's important to have efficient workflows and have consistency in the results.

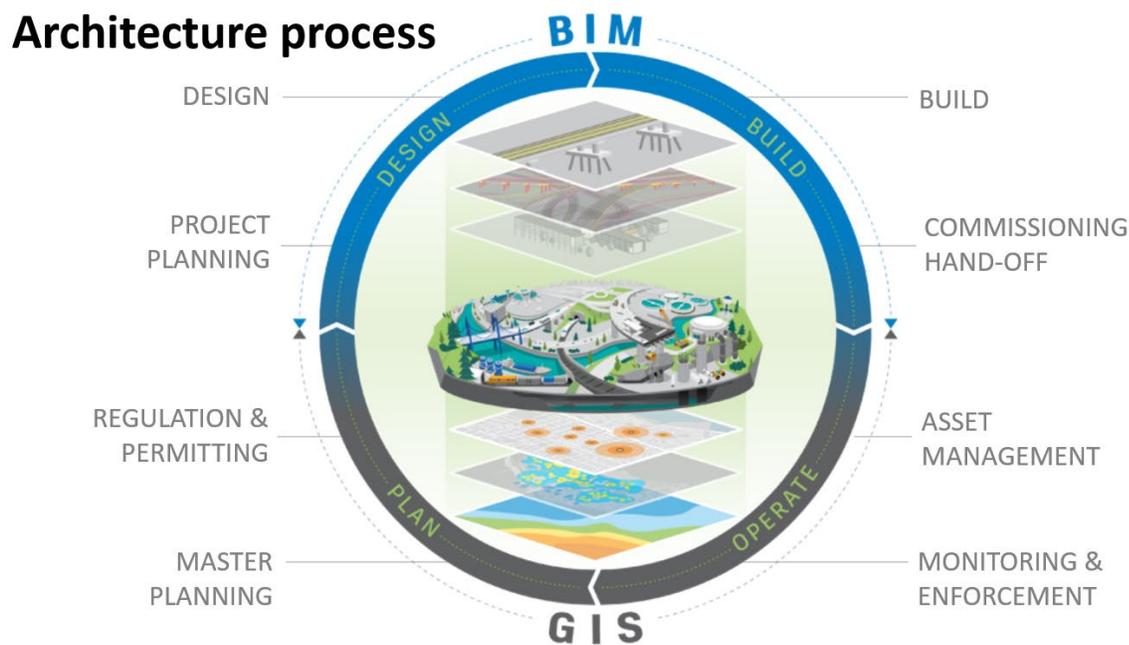


Figure 1 BIM-GIS process. (Source Autodesk / ESRI)

## Context

The digitalization organization at Sweco Architects have defined some overarching trends in digitalization for our industry. These three major trends have guided our strategic work with digitalization for the last couple of years. Our methods and workflows in the early stages of the architecture process are very much a reflection on our view on these trends.

The three trends are:

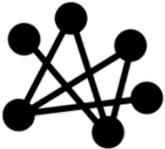


### OPEN DATA

How does it affect the industry when authorities and municipalities make their information available?

GIS will be almost as important a tool as BIM for architects

Municipal authorities will, with open data and digital service, get a new way to compete for citizens and companies



### PARAMETRIC DESIGN

Design will be guided more by data and largely on open data.

Greater work volume in the very earliest stages while construction documents will be largely automated.

Evidence-based design will help us in sustainability, accessibility, etc.



### AUTOMATION

The automation of processes takes place continuously.

Automation in design will be less than in production.

## Parametric & generative design

Parametric design enables detailed analyses to be carried out quickly and accurately to map a place's possibilities and conditions. It is also possible to produce analyses quickly and efficiently on how different solutions respond to the design parameters that are important for a specific project. Everything that is measurable can be analyzed, which gives unlimited possibilities.

By effectively analyzing a site and taking maximum advantage of its conditions, sustainable construction is facilitated. For example, parametric analyses can show how renewable energy sources such as solar and wind can be integrated into the design and how the effect of these can be optimized.

Parametric design also allows for changes at a later stage without the need to re-model anything. This contributes to a more cost-effective flow.

By automating repetitive and monotonous tasks, more focus can be placed on architecture and sustainability in our projects.

Traditionally we have worked with parametric and generative design in Rhino/Grasshopper and Revit/Dynamo, but these tools require a high level of specialized expertise and has thus made parametric design unavailable for many colleges.

With Spacemaker being very easy to use and cloud based, we have been able to make parametric design available to a much wider audience at the office and reap the benefits of parametric design in more projects.

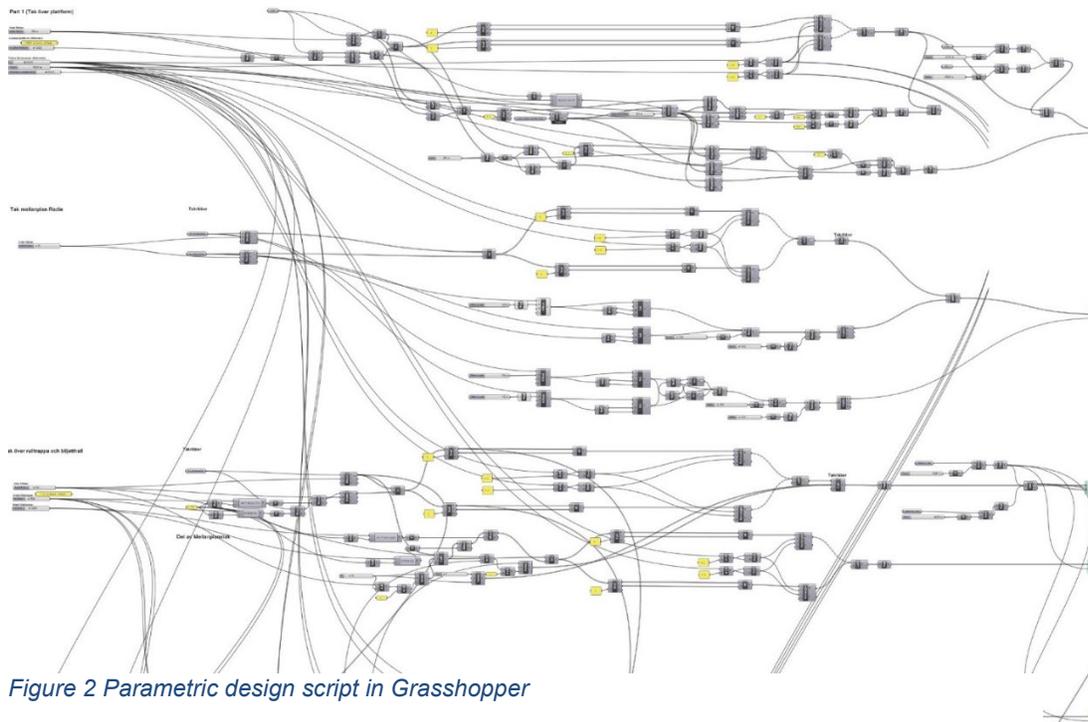


Figure 2 Parametric design script in Grasshopper

## Workflow

The architectural process is often visualized as one continuous line or circle, where you start somewhere and then move in one direction forward through the line/circle. This however is not reflecting reality, in real projects you constantly move back and forward in the process, thing might be because of new information, new requirements or just the nature of a creative process.

This combined with the large number of tools and software usually involved in workflows can lead to a lot of extra work exporting, importing, and converting different file formats. Because of this we have focused on finding a streamlined ideal workflow with software that we know work well together, which is the foundation of our methodology.

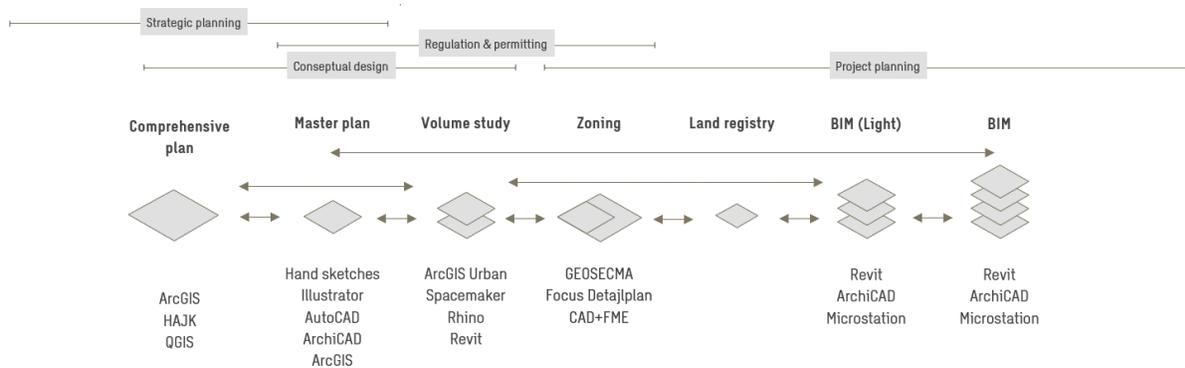


Figure 3 Architecture process and a selection of software used in different stages

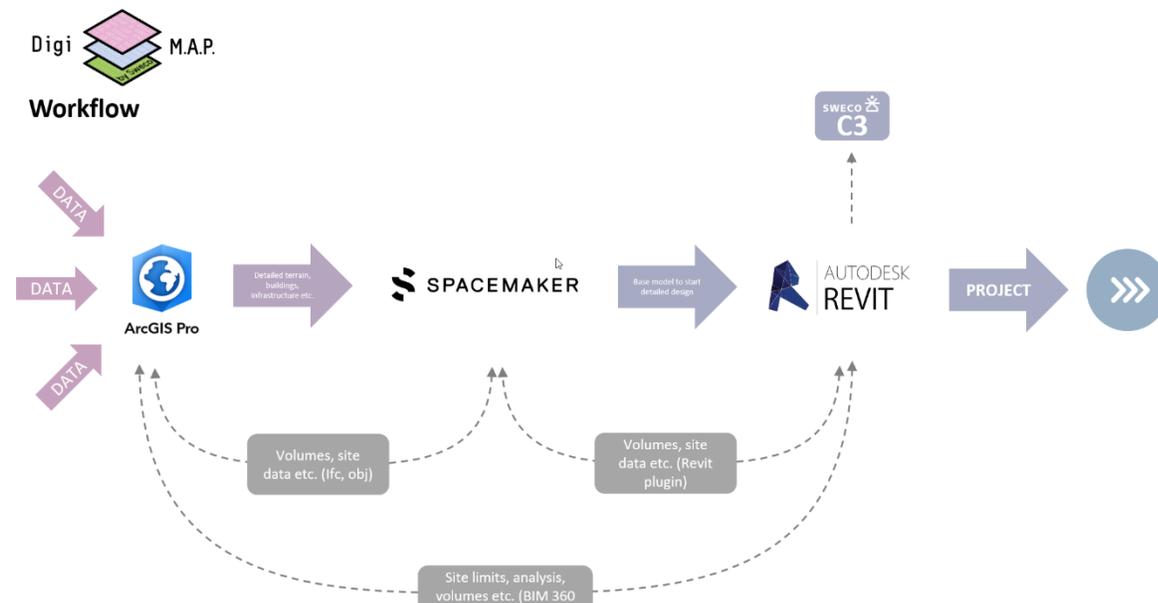


Figure 4 Sweco's Digi MAP process and software used

*Additional links for more information:*

Read more about Sweco's work with digitalization and sustainability

**Urban Insight** – a knowledge platform where we bring experts together to develop new innovations, ideas and solutions on how to plan and design sustainable cities and societies.  
<https://www.swecourbaninsight.com/>

**Report:** Building the future through circular data – Tools for mining the 'green gold'  
<https://www.swecourbaninsight.com/building-the-future-through-circular-data-tools-for-mining-the-green-gold/>