WHITE PAPER

CLOUD-BASED ENGINEERING SOFTWARE FOR MULTI-PEOPLE TEAMS

This paper addresses the challenges large companies face in having teams collaborate on design or engineering projects and proposes the use of cloud-based software with dedicated team plans to increase productivity and foster cooperation. Its focus is on computer-aided engineering (CAE), which traditionally has had very limited collaboration possibilities until the emergence of the cloud.



SIMSCALE

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Introduction

In any industry, the bigger a team, the harder it is for its members to collaborate on projects. When it comes to engineering, the hurdles are even bigger due to the software solutions used, which rarely provide collaboration capabilities. From computer-aided design to computer-aided engineering tools, engineers are generally used to working alone on a project, saving the results, and only after discussing it with a few of their colleagues.

This is mainly due to how these tools are deployed, as traditionally, engineering solutions have been desktop-based. With limited licenses installed on dedicated computers, not only collaboration is limited but so is accessibility, as the usage requires being present in a particular location. In turn, cloud computing has challenged the status quo, opening up possibilities for easy access via a standard web browser for entire departments.

The Cloud, SaaS and Collaboration

The best projects are often group efforts. This has been a known fact for a long time and is the reason why technology providers across dozens of industries have struggled to accommodate teamwork and enhance collaboration.

It wasn't until the emergence of the cloud, however, that online collaboration reached its potential. Bringing the software-as-a-service (SaaS) model, the cloud revolution has allowed customers to get access to an application by 'renting it' with a monthly or yearly subscription without requiring to purchase the software license and, as is the case for CAE, the hardware required to run it.

Cloud computing has made it possible for entire applications, no matter their complexity, to be developed, installed, and accessed by a thin client model, typically a web browser.

Before the SaaS model, online collaboration relied on each user having an application installed on their computer, and struggling with license installation and updates.

The difference with cloud-based software and SaaS solutions is that they only have the latest version accessible at all times, with all updates and releases happening in the background and being immediately accessible to all users. This way, team members working together needn't worry about having the same software version in order to see the same things; there only is one version.

While the cloud is embraced by many industries, engineering has not been as fast in joining the trend. Despite having been among the first fields to benefit from technology as early as the 1980s, both computer-aided design (CAD) and computer-aided engineering (CAE) are reluctant to catch this particular high-speed train.



Status Quo in CAD and CAE Software

Most of the CAD and CAE software on the market is still the traditional, on-premises one. Developed over several decades, the most popular tools include a whole host of complex features and are uncontestedly state of the art. They are not known for their accessibility, cost-effectiveness or ease of use, however. And these challenges can limit the technology's adoption altogether.

Whereas CAD software is part of any engineer's toolbox, with or without the cloud, for CAE the situation is quite different. In fact, we estimate that one out of 20 engineers who could benefit from simulation in their product development process has access to simulation tools. The low numbers are tied to large upfront hardware as well as software investments they imply.

Moreover, the expertise that users need in order to operate these rather complex software packages is significant.

Consequently, proving the added value of traditional simulation tools might take several months. That is where the on-demand software model, more commonly known as "SaaS", comes into play.

Fostering the democratization of CAE, cloud-based solutions delivered as SaaS make this complex technology available to a broader range of professionals, from simulation experts to designers and hobbyists. With a focus on accessibility and ease of use, cloud-based simulation solutions can be run by professionals without a background in HPC systems, engineering or computer science. All in all, SaaS solutions fill this growing need for on-demand engineering simulation capabilities by leveraging the performance and scalability of HPC systems and eliminating high upfront costs and software licensing. Everything is compactly embedded into a web browser to run sophisticated simulations without compromising on simulation performance or security.

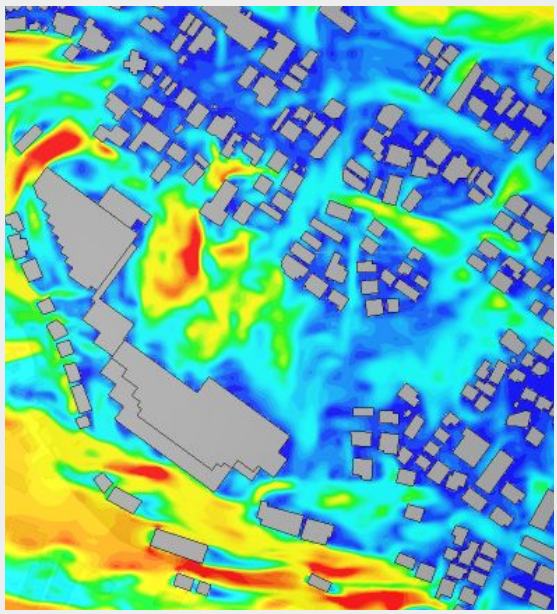


Collaboration and Engineering Software

Besides accessibility, learning, and cost, users of desktop-based CAE software face another issue; limited collaboration options. Large teams in particular struggle with this most. In multinational companies, the challenges are even bigger as these teams are often dispersed around the globe across different time zones, making teamwork and feedback rounds even more difficult. To them, the cloud brings solutions.

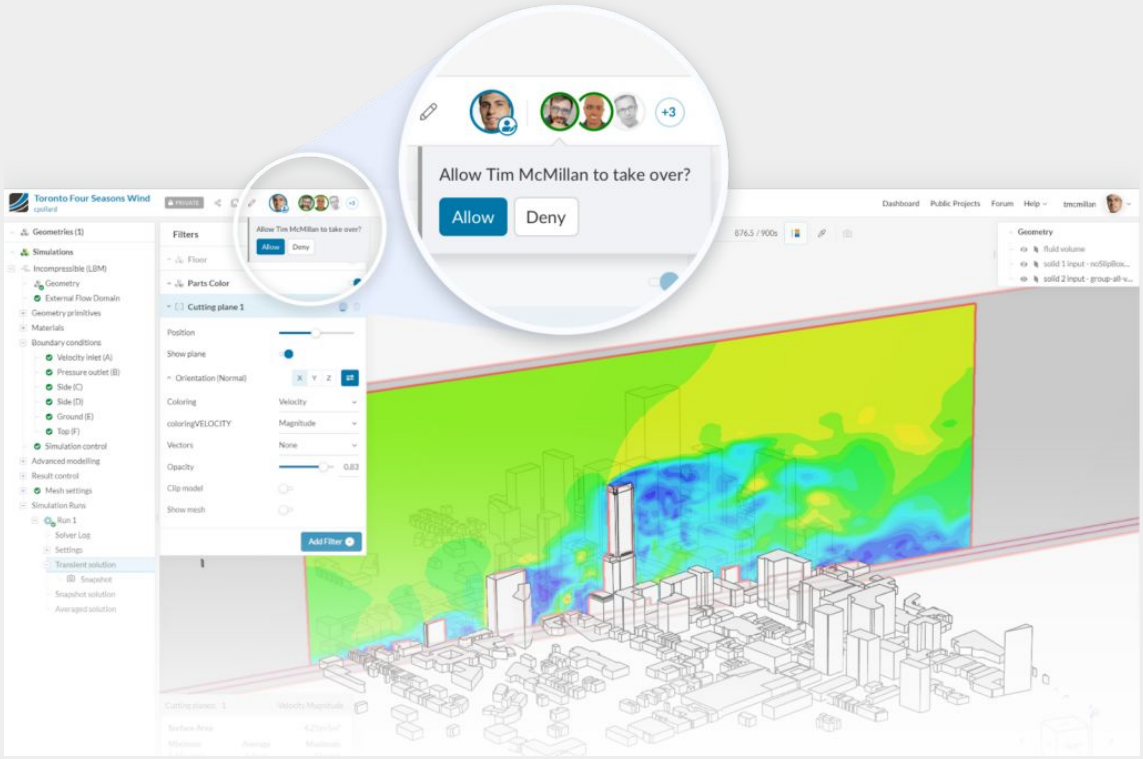
And while users might still be torn when it comes to moving to the cloud, renowned as well as new players in the industry have acknowledged that digitalization in engineering is bound to happen. AutoDesk®, Dassault Systèmes®, Siemens®, Onshape, and SimScale are only a few of the CAD and CAE companies that have brought cloud-based solutions and collaboration features to the market. In fact, SimScale, the world's first production-ready SaaS application for computer-aided engineering, has released enhanced collaboration features dedicated to meet the needs of large engineering teams.

Since 2015, the company has been housing a collaborative community now of over 200K users worldwide that can access, copy, and share simulation projects in the public projects library, from CFD and FEA to thermodynamics.



Yet, as this benefits singular users, consultants, and students, what about the engineering and architecture teams with multiple people using simulation, that need to share and edit their same simulation projects, in real-time?

Solutions for Multi-People Teams



Engineering teams across many industries frequently experience tight project timelines and deadlines, meaning multiple designers/engineers will be running or using simulations on a given project. Additionally, international companies with teams working in various countries and timezones struggle to communicate and work together as efficiently as possible in a remote-working setup.

However, this workflow means multiple users running simulations on a copied project, forcing work to be completed sequentially and in silos.

Further, the resulting simulation data must be exchanged outside of the simulation tool to keep all engineers aligned and up-to-date.

Aiming to facilitate better collaboration between professional teams that need to work together and iterate as quickly as possible, SimScale offers enhanced collaboration features and a multi-user licensing package, all of which would be nearly impossible to access and house on an on-premises tool. With collaboration features, teams can save time, organize tasks, scale their simulation expertise, and have broader visibility and control within their projects.

Collaboration Features on SimScale

With the collaboration features available on SimScale, multiple users are able to work simultaneously from any location, eliminating the need to copy projects and start over from scratch. Simulations can be kept within one project, instead of having multiple projects for the same application. Moreover, team members can share knowledge and know-how quickly, and even in remote work setups, as different members can access the same project in real-time. All of this, controlled through a dashboard. Below, the main features, available with the Team and Enterprise plans, and their benefits are described.

Editing Capabilities

A design engineer finishes a new design iteration, and quickly sets up an analysis. They can ask simulation experts from their department for review of the setup or get help from SimScale's support team directly. This way, iteration time is reduced from weeks to hours or minutes.

Dedicated Support

With SimScale's Team plan, users can experience higher levels of support for their projects. The team plan includes a dedicated technical account manager, available to help the team at every step. Additionally, this includes in-project support via live editing by SimScale's support.

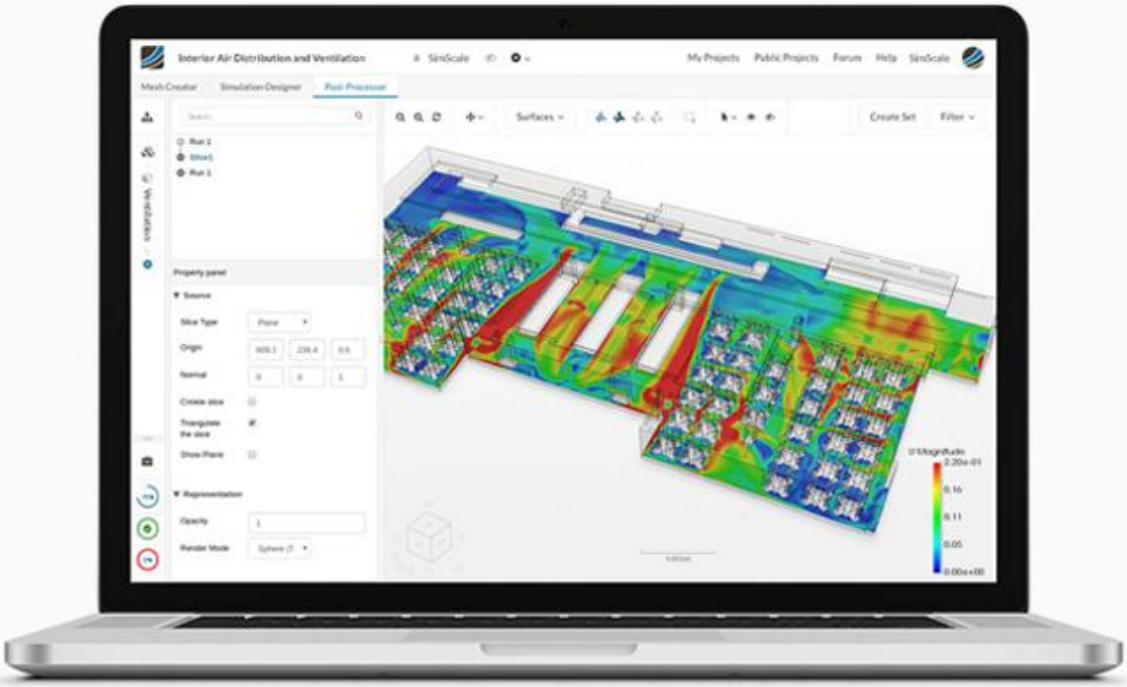
Shared Dashboards

All projects created by any of a company's internal users will automatically be shared with all others in the team. The shared dashboards allow teams to work together in one shared workspace, keep an overview of all open projects, and have automatic sharing across the team.

Optimized Usage Overview

Cost accounting can be done by filtering the computation jobs by project name and time frame to get a summary of core hours consumed. Users can also export any filter view for external processing.





About SimScale

Founded in 2012 with offices in Munich, New York, and Boston, **SimScale** is the world's first production-ready SaaS application for simulation.

By providing instant access to computational fluid dynamics (CFD) and finite element analysis (FEA) to over 200,000 users, SimScale has moved high-fidelity physics simulation technology from a complex and cost-prohibitive desktop application to a user-friendly cloud application accessible online via a subscription-based pricing model.

Why SimScale?

Zero hardware or maintenance investment. By leveraging the power of the cloud, SimScale helps you save on average $30K by cutting the cost of expensive hardware and software maintenance fees.

No installation. No maintenance
All you need is Internet connection to run demanding simulations on a laptop or PC of your choice. We take care of software updates for you in the background.

Seamless collaboration
With SimScale, globally distributed design and engineering teams can easily share and collaborate on their projects in real time. No more hassle with data exchange or expanding the usage of CAE software across your organization.



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