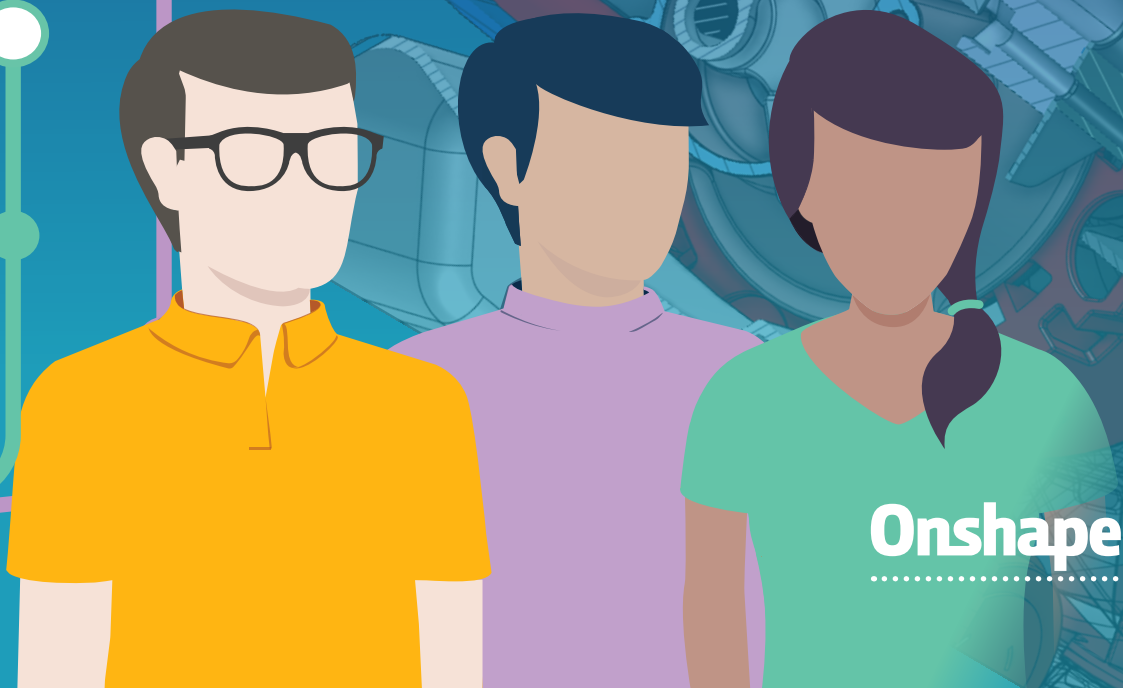# An Introduction to
Agile Product Design

Why Forward-Thinking Companies Need
Real-Time CAD Deployment, Real-Time Data Management
and Real-Time Analytics & Controls
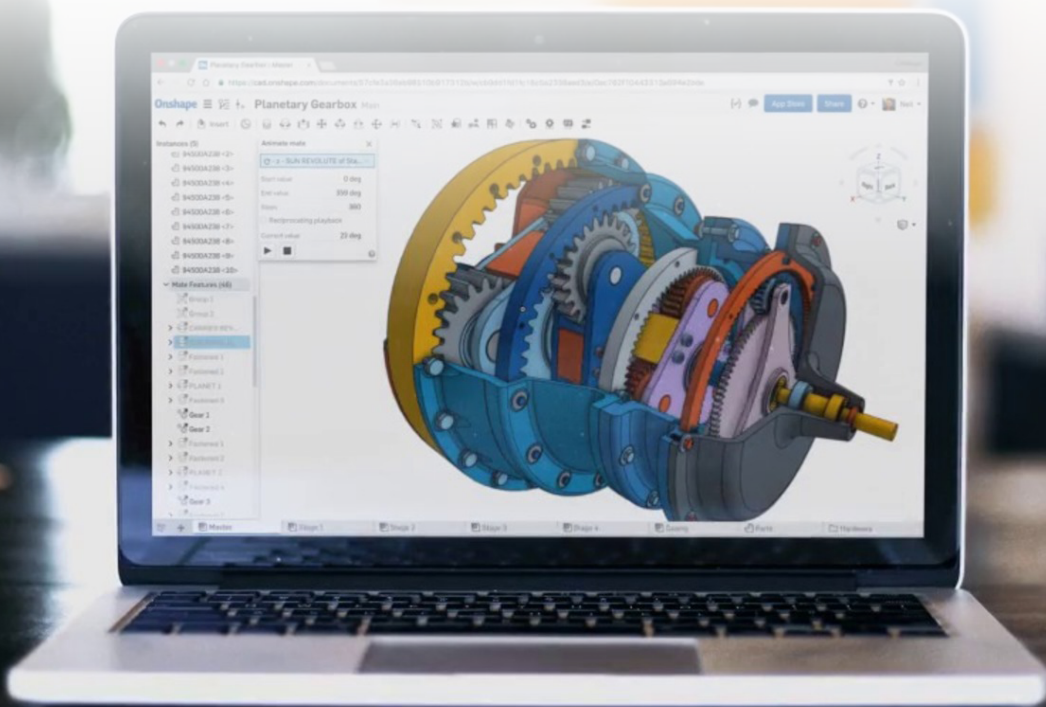
Onshape

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What is Agile Product Design?

Agile Product Design is a new approach to build products faster and with more innovation – strongly emphasizing rapid iteration, tight communication between a geographically diverse team, and an openness to embracing change.

The idea of Agile Development has already been widely adopted with great success in the software world. Favoring "responding to change over following a plan," the approach breaks down software development into short review cycles or "sprints," with incremental product improvements being delivered at the end. Agile Software Development is a collaborative process, using customer feedback to determine the next set of tasks.

These same principles work amazingly well when applied to the design and manufacturing world.
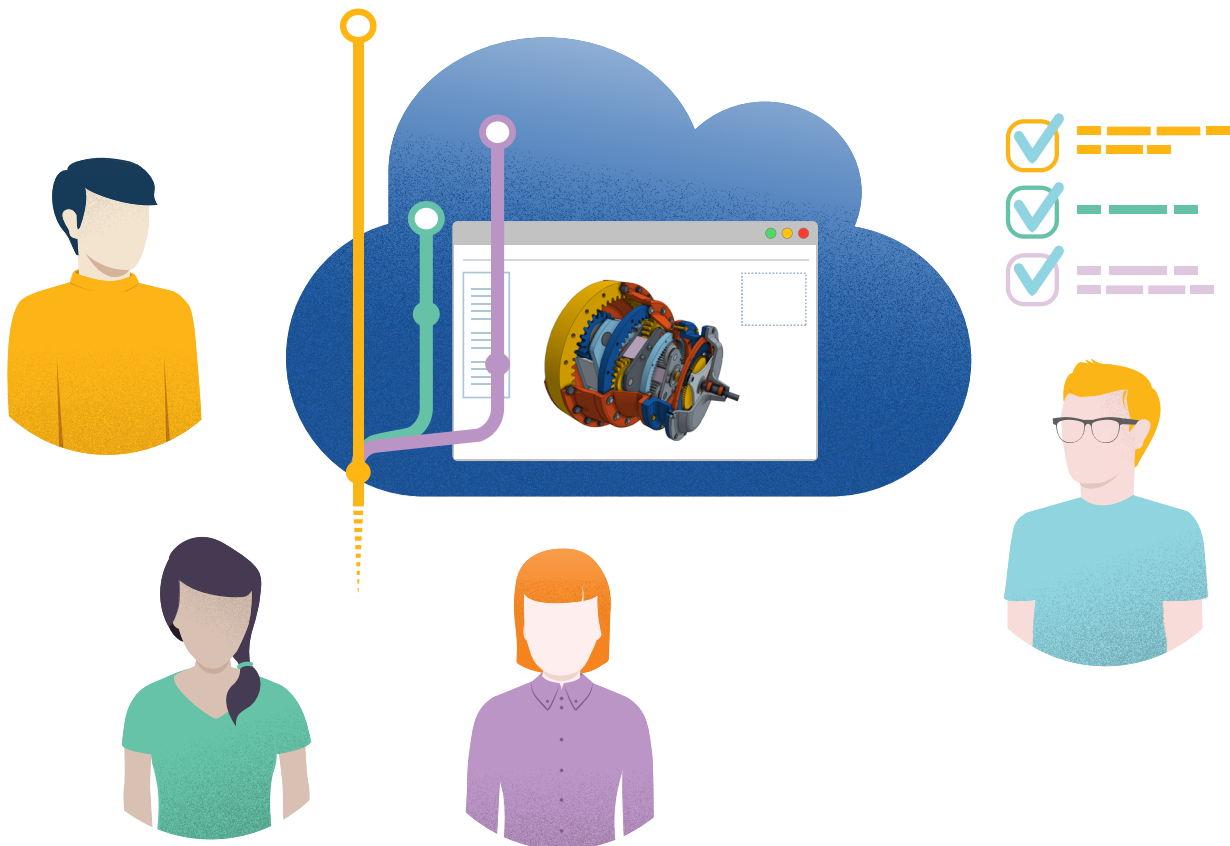
The Benefits of Being More Agile
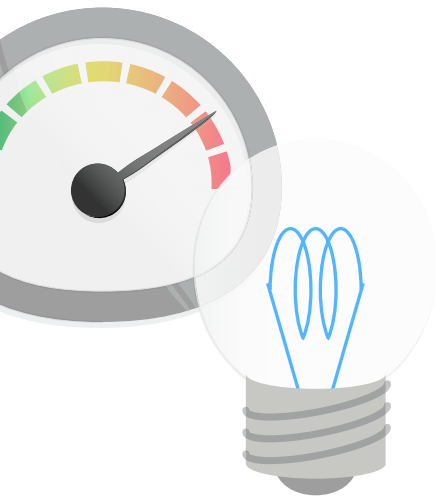
The leaders of many growing companies say they want to keep the same agility they had when they were a startup: the ability to rapidly shift gears and refocus on changing competitive market conditions.

No matter what the size of your company, there are two major benefits to adopting Agile Product Design processes:
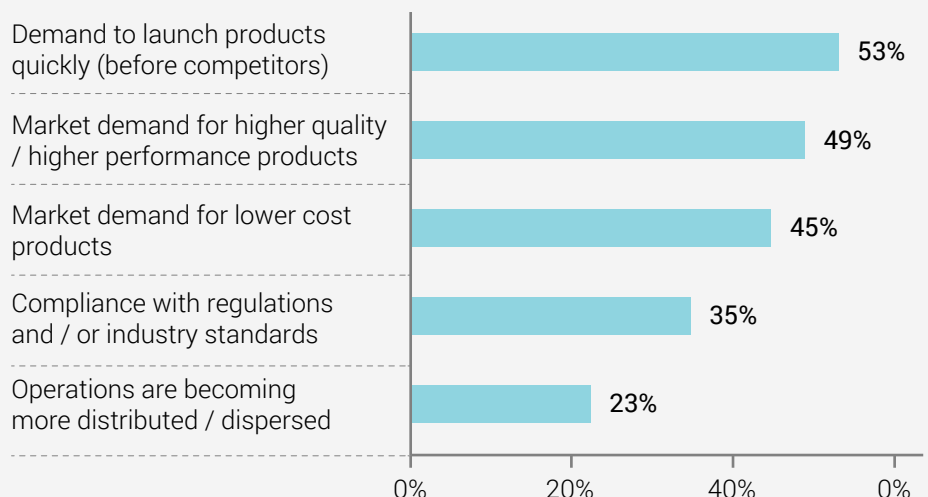
- Boosting *Speed*
- Boosting *Innovation*

Speed is not important for its own sake. It's not about frantically rushing as fast as you can or cracking the whip on lazy employees. It's about cutting out invisible time-wasters and creating time to breathe and explore alternative design ideas – time to be more innovative.

Similarly, innovation is not a pithy marketing buzzword (though it certainly has become overused in the tech space). It's about differentiating your products or services from the competition, giving your customers compelling reasons to choose you besides price.

In a recent study of large enterprise companies by the Aberdeen Group, the need to speed up product design and manufacturing was identified as the number one competitive pressure.

Top Competitive Pressures for Enterprise Companies

Competitive Pressure	Percentage
Demand to launch products quickly (before competitors)	53%
Market demand for higher quality / higher performance products	49%
Market demand for lower cost products	45%
Compliance with regulations and / or industry standards	35%
Operations are becoming more distributed / dispersed	23%

0%　　20%　　40%　　0%

The Benefits of Being More Agile

Why does **speed-to-market** matter so much?

According to the [Boston Consulting Group](#), which releases an annual [Global Innovation Survey](#), agility impacts a company's bottom line in the following ways:

1. **FASTER INNOVATION** – Companies that are built for speed often realize first-mover advantages; they are able to react more quickly to competitors' moves or market shifts with their own product innovations.

2. **LOWER DEVELOPMENT COSTS** – Streamlined processes, limited iterations, and reduced slack release financial and operating resources for other value-adding activities.

3. **LARGER MARKET SHARE** – A product that gets to market early is less likely to face initial competition. A quick introduction also gives a product more time to build market share before it declines into a commodity.

4. **GREATER FORECASTING ACCURACY** – Because the time between product design and product release is shorter, executives may be more willing to green-light trendy products that would otherwise be denied.

Find out how full-cloud CAD can speed up your design team's time-to-market.

Request a customized Agile Design Demo

SIGN UP

How Are Design Teams Changing?

When 3D CAD first became available on desktop personal computers in the 1990s, most design and manufacturing teams worked under one roof. Communicating with the shop floor involved a long walk down the hallway. Now it is far more common for engineers, designers and manufacturers to be spread out in multiple locations, sometimes across the country or across the world.

The composition of teams has also dramatically changed, with contractors, vendors and suppliers being added and removed from projects all the time.

Traditional file-based installed CAD was created for teams that worked together in the same building. Its creators did not envision the globally distributed and rapidly fluctuating teams of today.

THEN   NOW
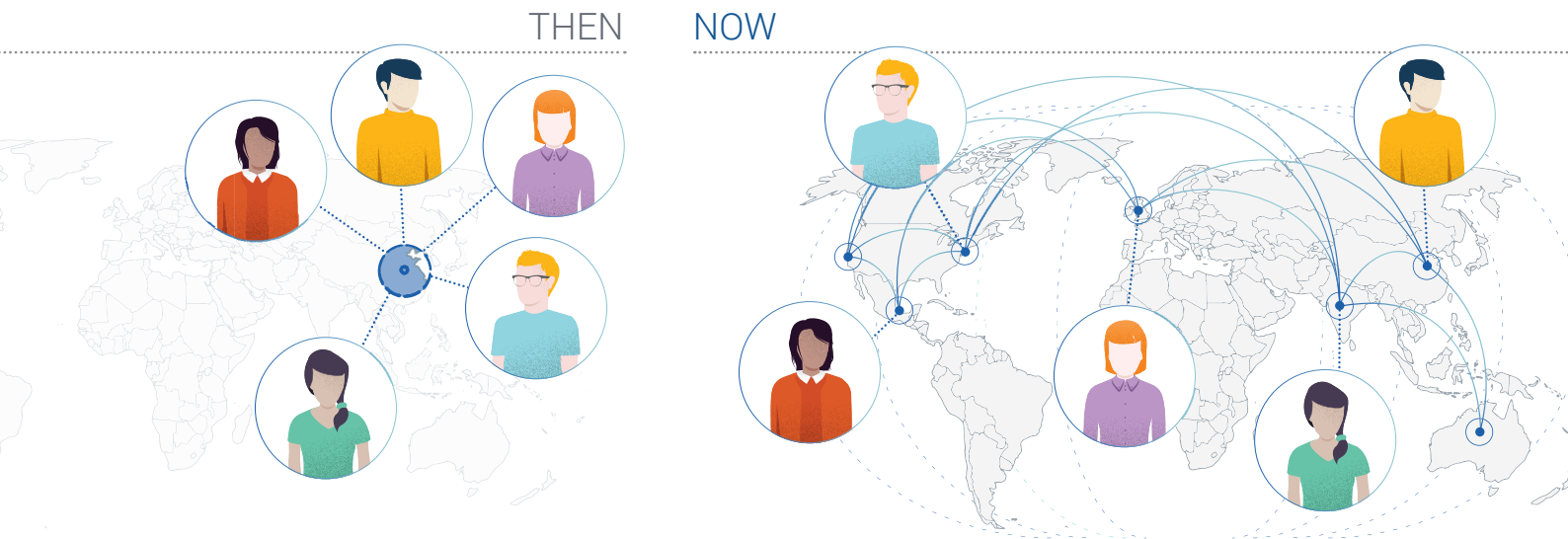
When Onshape founder Jon Hirschtick began his career at MIT's CAD lab, there were probably only thousands of CAD users in the world. Now there are millions.

Read Hirschtick's career insights on how the design world has evolved — and where it's headed — in the 40th anniversary issue of **NASA Tech Briefs** magazine.

LEARN MORE

What Technologies Are Anti-Agile?

Traditional desktop-installed CAD forces your team to work serially (one person at a time) instead of in parallel (multiple people working simultaneously).

Confusion over CAD file copies also undermines the Agile Design process. Copied files make you worry about:

- The danger of you accidentally overwriting your colleague's work

- The danger of your colleagues overwriting your work

- Wondering which file is the latest version of a design

If you manage your CAD files with a cumbersome Product Data Management (PDM) system, there are more headaches with file checkouts, file check-ins, syncing, etc. **It can drive you to madness.** Agile teams also cannot afford to wait weeks or months to provision PDM servers. They can't wait days or even hours to see what each other is doing.


PDM
USB
EMAIL
DROPBOX
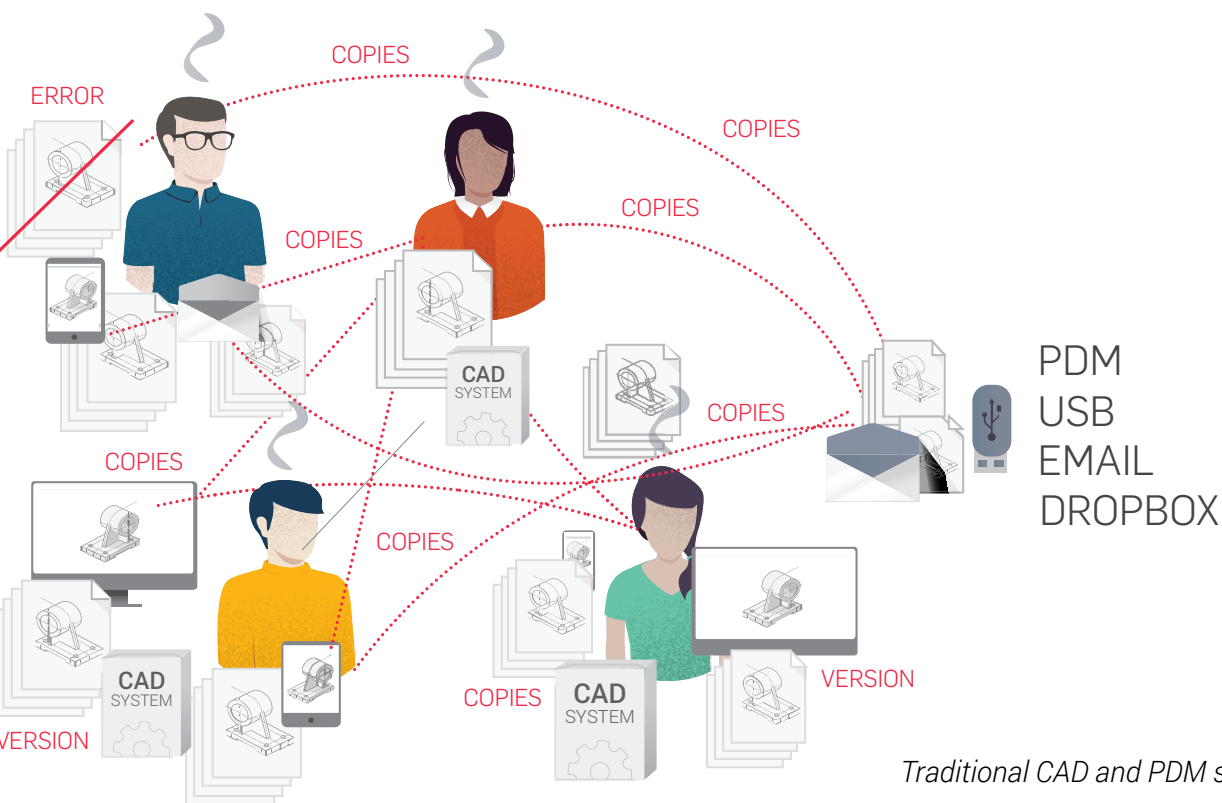
Traditional CAD and PDM systems are file copy machines, leading to chaos and confusion. Read more on why copied CAD files slow down the design process, increase the likelihood of mistakes *and pose an* additional security risk*.*

How Agile Are You? (A Quiz)

1 | Does your company have to wait days or weeks to get new CAD licenses? — ☐ **YES** ☐ **NO**

2 | Do your engineers have to wait days or weeks to provision new computers installed with CAD? — ☐ **YES** ☐ **NO**

3 | Do your engineers ever wait days or weeks for a colleague to check-in files? — ☐ **YES** ☐ **NO**

4 | Does your design team occasionally lose work due to computer crashes? — ☐ **YES** ☐ **NO**

5 | When working with partners, do you ever face delays due to different versions of CAD software? — ☐ **YES** ☐ **NO**

6 | When working in teams, do you ever wonder "which version is the latest version" of a design? — ☐ **YES** ☐ **NO**

7 | Are you ever unable to access your CAD system or your work because you are at a different computer? — ☐ **YES** ☐ **NO**

8 | Do your executives or managers ever receive out-of-date monthly reports? — ☐ **YES** ☐ **NO**

ANSWER KEY:
If you answered "Yes" to one or more of these questions, that is one "Yes" too many.
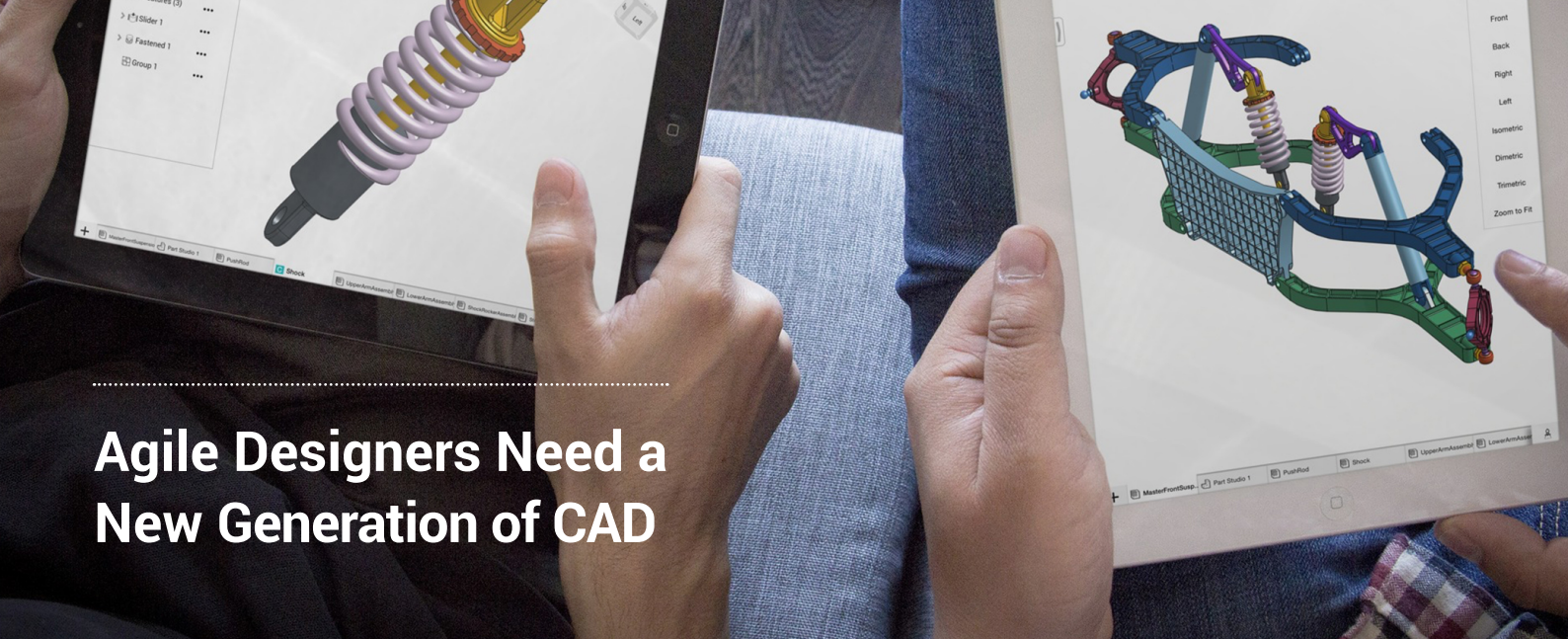
Agile Designers Need a New Generation of CAD

Traditional Design	Agile Design
Serial work processes, file checkout, locking	**Parallel** processes, concurrent work, collaboration
Tasks completed in **weeks, months, years**	Tasks completed in **minutes, hours, days**
Emails, faxes, printouts, meetings	**Text Messages**, video calls, Slack
Work at desks, fixed team, fixed locations	**Work anywhere**, fluid team, global, mobile
Design data **siloed** to hard-core engineers	Design data **continuously available** to multi-disciplinary team
Innovation requires **working around** process and tools	Innovation is **accelerated** by process and tools
Management receives **out-of-date monthly reports**	Management has continuous access to **real-time analytics**

Are you spinning your wheels on the left of this chart?

As you can see, the differences between the traditional design process and Agile Product Design are dramatic ones.

When you spend more time managing CAD licenses and files and less time designing, innovation is less likely to materialize. **You can't squeeze creativity in at the last minute or treat it like an afterthought.**

For design and manufacturing teams seeking to improve their efficiency and productivity, there's good news. There's now a new generation of CAD technology that accelerates the design process instead of slowing it down.

Introducing Onshape

Onshape is the only CAD system with a full-cloud database architecture, which makes it perfect for Agile Product Design.

Your CAD system and CAD data live in one central place in the cloud.

Everyone is always automatically on the same software version of Onshape – the latest one.

With no hassles over downloads or installs, no confusion over file copies, and **no more lost work** from computer crashes, full-cloud CAD is perfect for teams.
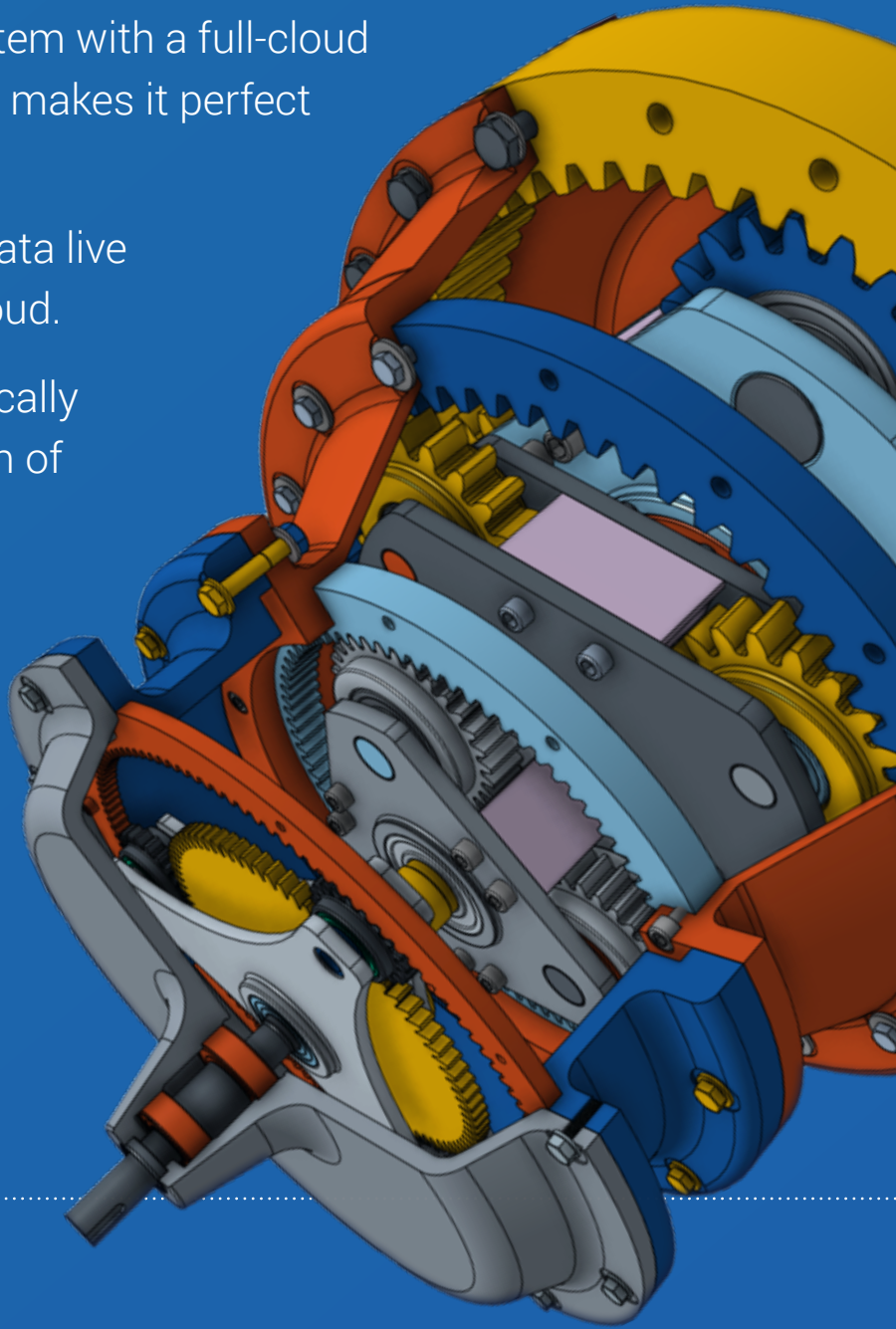
Find out how full-cloud CAD can significantly boost your design team's productivity

Request a Customized Agile Design Demo

SIGN UP

Advantages of Full-Cloud CAD

So just how does Onshape help design and manufacturing teams be more agile? For starters, here are three areas where full-cloud CAD makes the most powerful impact on your business:

○ **1. Real-Time Deployment and Access**

Design teams are constantly changing with new employees and contractors being added (and removed) all the time. Onshape instantly provides secure access to CAD and data management to everyone on a team, everywhere, on every one of their devices. No clients or servers to install. No waiting to get started. And when you remove someone from the team, you can instantly de-provision them. No lingering 'offline' copies.

○ **2. Real-Time Data Managment**

With Onshape, any design change made by anyone, anywhere is instantly reflected to everyone, everywhere – without the need for separate PDM servers, copies, syncing, etc. Unique simultaneous editing means no worries about overwriting each other's changes or finding the latest version.

○ **3. Real-Time Analytics & Controls**

Management and executives get real-time access on any of their devices to comprehensive up-to-the-second data about their product design process (right down to the granularity of a dimension change or rounded edge). It's the information and controls they need to make real-time decisions in the fast-moving Agile Design process.

Let's take a closer look at each one of these benefits...

1

Real-Time Deployment & Access

"I don't have time for that anymore."

That's what a frustrated engineering manager at a Fortune 500 company recently told us when discussing how long it takes his IT department to deliver a new computer and then install traditional CAD and PDM software on it. He oversees machinery design and there's a 2-to-3 week wait to bring new team members on a project.

The engineers are ready to go, but the design tools are not immediately available – even at one of the most successful companies in the world.

This is one of the core reasons why Onshape was created: Whenever a new person is added to a design team, he or she can instantly get started. The moment they are assigned to a design project, contractors or employees can dive right into CAD and data management, on all of their computers, phones, and tablets. The project manager just opens Onshape's admin page and types in the new person's email address.

In 30 seconds, that new team member is ready to CAD!
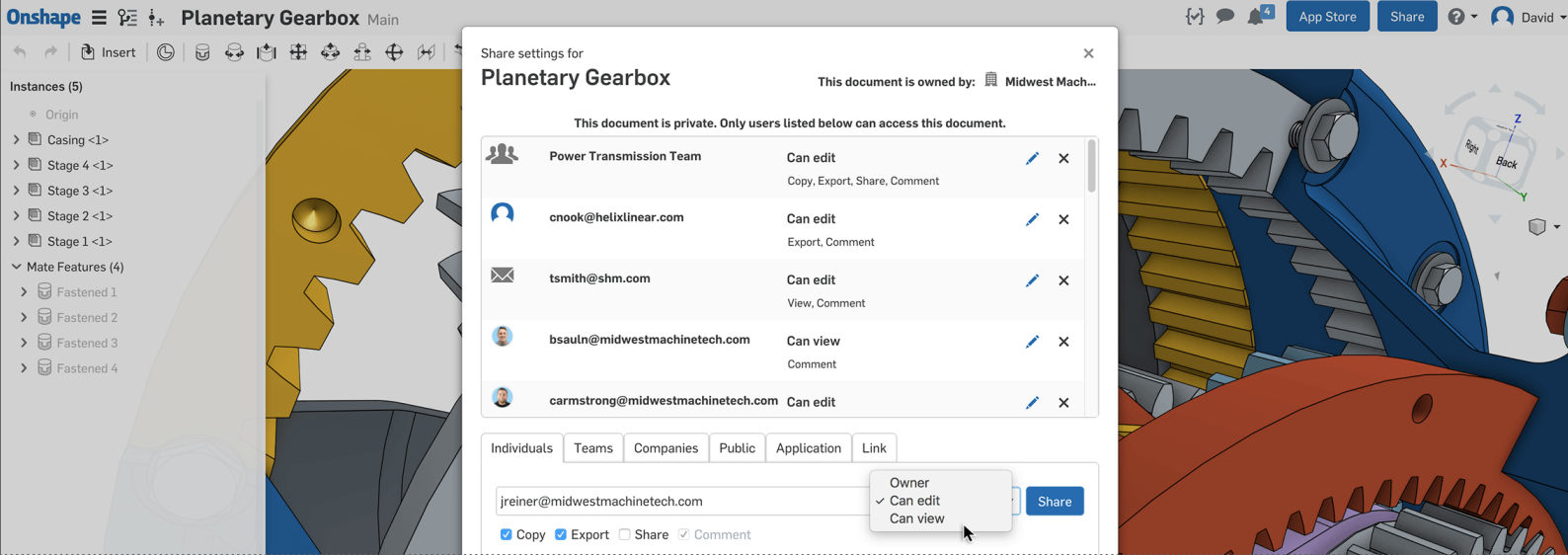
Real-Time Deployment & Access

Traditional CAD's Way (The Old Way) of Adding New Team Members

To fully appreciate the massive amount of time saved with Onshape's real-time CAD deployment, consider the traditional way of adding new CAD users to a team.

The first step in provisioning a new computer with installed CAD software is determining if you need another license code. Do you have fixed licenses or floating licenses, which allow multiple users to share? If it's floating licenses, are there going to be enough licenses to go around now that your team is larger? If you need to buy a new license code, you have to place a purchase order that could take days or weeks, depending on your Value Added Reseller (VAR).

Once you have the codes, you have to get the software installed, which can take several hours (and that's just for one device!) Once the software is installed, you're not done. You now have to copy your files on there. Optimistically, if you have all your codes, you might be able to do this in a day.

But all that's when you're adding a new team member onsite. What happens when your contractor in Omaha or your colleague in Buenos Aires needs CAD and PDM software and files? It's even more complicated, costs more money, and takes more time.

The beauty of Onshape is that everyone gets immediate access to the full CAD and data management system and their CAD data with no licenses, codes, installs, file copies or VARs getting in the way.

You know what else it doesn't have? Waiting.
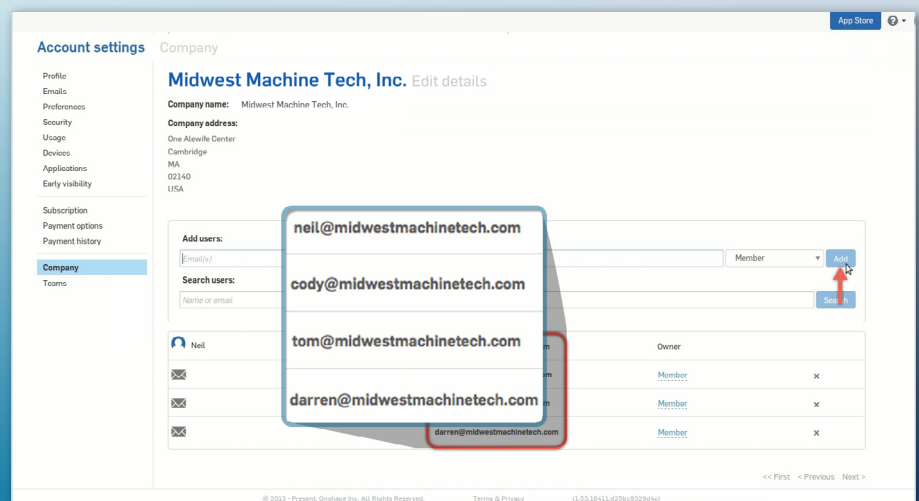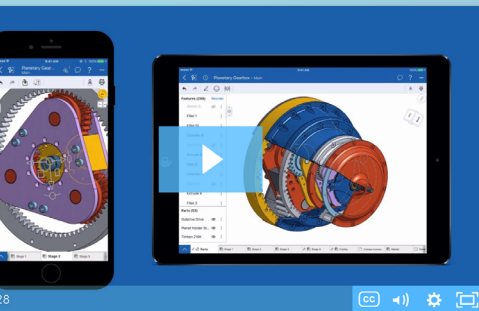
Real-Time Deployment & Access

What Happens When It's Time to Say Goodbye?

For understandable reasons, managers often focus heavily on the beginning of a job and what it takes to make their deadlines and deliver quality results. But what about the end of the project? What's the best practice for saying goodbye to temporary team members?

With traditional CAD and PDM, there are multiple copies of files spread amongst multiple computers. Everytime you share a CAD file, you create uncontrolled copies of your intellectual property (IP). Once you click "send" on an email or upload a file to a partner's FTP site, there's no way to call it back. There's no way to know if your data gets deleted when the project ends.

Onshape has no files and no copies. Your CAD system and CAD data live in the same central place in the cloud, meaning you'll always have only one version of the truth. And because there is only one version, you'll always know where it is – and can control who can view or edit it.

QUICKLY ADD OR REMOVE TEAM MEMBERS

On your Onshape Companies admin page, you can instantly deprovision team members as quickly as you added them. When the project is over, you can remove their access to CAD data and software, reducing the chances of an inadvertent security leak. All you do is click the "X" next to the same email address you entered when you added the member to the team.

Learn more about Real-Time CAD Deployment & Access

WATCH THIS VIDEO

Advantages of
Full-Cloud CAD

2
Real-Time Data Management

Real-time deployment is a powerful tool. But once a design team gets instant access to their CAD system and CAD data, what do they do with it?

With full-cloud Onshape, which runs in a web browser or a mobile app (iOS or Android), when anyone, anywhere makes an edit, everyone, everywhere can instantly see it.

Contrast this with file-based CAD and PDM systems, which only update when people check in copies of files and then others recopy the data to their own computers. Copies create confusion. You're always wondering if the design you're working on is really the latest version.
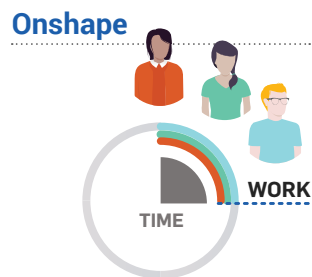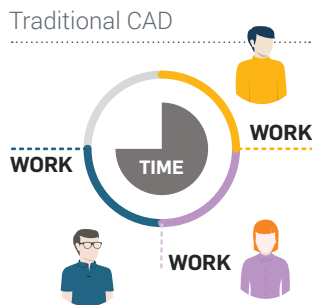
Onshape's lock-free simultaneous editing ensures:

- Easy collaboration even when teams are spread across multiple sites in multiple countries

- There will be no worries about overwriting each other's work

- That fast-moving design teams work in parallel (multiple people at the same time) instead of serially (one person at a time)

Traditional CAD

WORK

WORK   TIME

WORK

Onshape

TIME   WORK

Cutting out all that dead time – the waiting, the copying, the syncing, the worrying – makes everyone on the team less stressed and more likely to explore new ideas. That's time for innovation versus rushing just to get things done.

2:02

Learn more about
Real-Time Data Management

Watch this Video

Advantages of Full-Cloud CAD

3

Real-Time Analytics & Controls

As more companies move to Agile Design, CAD users are working faster with powerful new tools. But what about the executives and managers who are responsible for keeping design projects on time and on budget?

With file-based, desktop-installed CAD systems, they currently have no way to see what their design teams are doing in real time.

One product manager told us he has to <u>wait weeks</u> for a progress report, which is <u>already out-of-date</u> by the time it is delivered. This results in a lot of guess work in estimating product release schedules and making budget decisions. **When your company is banking on the success of a new product launch, who wants to depend on guesses?**

Looking at Onshape's complete [Edit History](#), managers can get an immediate progress update – seeing every change to the model (adding a fillet, moving an assembly, deleting a part, etc.) and know who made which edit and when.

Executives can not only monitor the productivity of their employees, but of their contractors and vendors as well. For companies with more complex needs, the Onshape [Enterprise Plan](#) will soon include chart-based analytics on CAD activity by project, by person, by location, and for the first time, you can get a real-time aggregate feed of updates across all your design teams and all your projects.

Real-Time Analytics & Controls

Tighter Access Control of Your Data

Every Onshape user already can tightly control team activity and help protect their IP by setting, changing or revoking an individual's access permissions at any time.

For larger companies and organizations, Onshape's [Enterprise Plan](#) will soon offer the ability to set company-wide policies for access control based on roles ("Administrator," "Engineer," "Vendor," etc.).

For example, a project manager might set a rule that anyone assigned to the role of Designer can edit a model, but they cannot export or share anything. That's added security and control over the design process. If the manager knows that the team can't share a model outside the company, that ensures the project won't go out to bid without prior authorization.

That manager might set up another rule that whenever a model meets his approval, the design team automatically gets permission to export. No need for the team to ask for permission – it just happens in real time.

Learn more about
Real-Time Analytics & Controls

WATCH THIS VIDEO

Real-Time Analytics & Controls

Quicker Recoveries From Mistakes

Onshape is the only CAD system in the world with a complete history of each transaction, making every member of a design team more accountable and aware of their colleagues' contributions.

In addition to a real-time snapshot of who's doing what, Onshape's Edit History allows you to view or restore your model to any prior stage or version of the design. This saves a tremendous amount of time when comparing design iterations and makes it easier and faster to recover from mistakes.

Consider it your "Unlimited Undo."
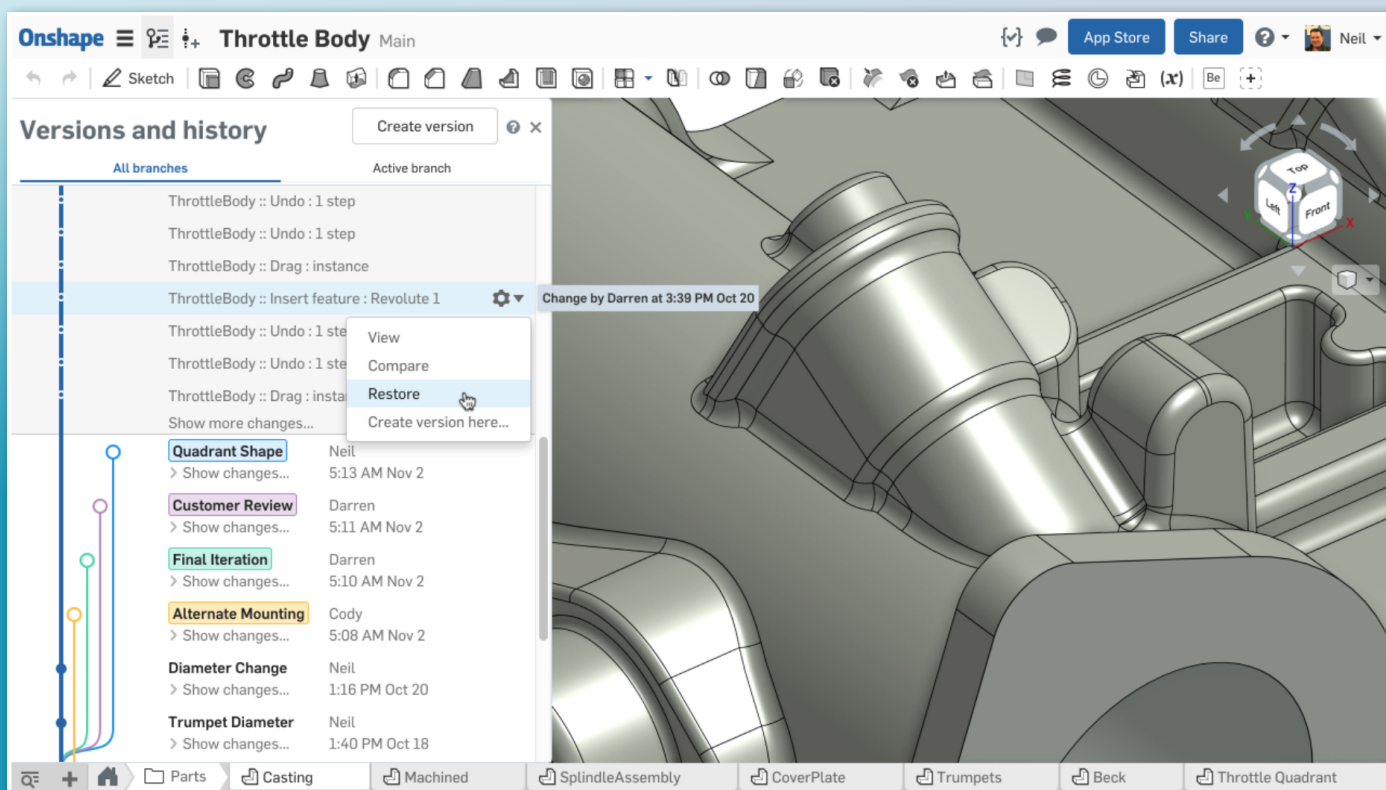
Design Productivity:
Full-Cloud CAD vs. Traditional CAD

"An Easy Choice"

In a recent research study of 231 companies by Aberdeen Group, analysts concluded that the many benefits of cloud-based CAD "*make it an easy choice for large-scale enterprise companies as well as smaller companies that are looking to use Agile Methodology to accelerate their development processes.*"

"*Companies using a cloud solution are able to easily collaborate, stay agile, and have real-time visibility into their entire operations*," the report concludes. "*In these capabilities, companies can differentiate themselves from their competition by putting out quality, timely products.*"

Companies using Cloud-based CAD solutions are:

2x	More likely to have real-time visibility into the status of all processes and data
43%	More likely to share and integrate data across departments
73%	More likely to have a direct line of communication between upstream and downstream departments
47%	More likely to have a fully integrated view of all customer information
48%	More likely to have the ability to quickly change business solutions to react to business changes

as compared to non-users.

Source: *The Ease of Agile Development in Cloud-Based CAD, December 2016, Aberdeen Group*

Read the full
Aberdeen Group report

DOWNLOAD NOW

EVALUATING FULL-CLOUD CAD FOR YOUR COMPANY

At every stage of a CAD project – launching a team, increasing or decreasing staff, internal and external collaboration, responding to deadlines, working with vendors and deprovisioning – Onshape can help your company become more agile!

Find out specifically how your company can benefit from full-cloud CAD with a customized Agile Design Demo.

SIGN UP

Onshape