From Manual to Cloud-Based Production

The Ultimate Guide to Starting and Running Your Internal 3D Printing Model Shop

stratasys | GRAB**CAD** SHOP

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When was the last time you processed a new work order and thought, "Wow, that was easy?"

It's probably no secret to you that running an internal shop and managing orders isn't always a walk in the park — there are frustrations and inefficiencies for you, the shop operator, and for the engineers and designers who order from you.

Those challenges can take many forms, but the bottom line is this: the current (typical) workflow for internal shops is too manual.

It falls to you to manually track, upload and manage new orders to completion, and more often than not, that process is likely spread across a bunch of disparate tools that don't work (or work well) together. And your expertise is in printing — not managing inefficient processes and communication.

Let's Look at the Process a **Typical New Order Follows**

1. An engineer or designer emails you a file for printing. Their email may include some of the details you need (like the quantity they need or the color), but it's also probably lacking many of the things you need to know to complete the job.

2. You reply to the email asking for additional details, and a back-and-forth ensues until you get all the information you're looking for. This part of the process is manual, likely involves time delays, and it's unique to each requestor.

3. You offer a best-guess estimate on time and cost, without really knowing for sure — because all of your other existing orders are spread out across dozens of email threads and disparate tools.

4. Then the process goes, for the most part, dark. The engineer or designer has no way to track the status of their order except to email you again for a manual update. At that point, you likely have to run to the machines, find the one printing that particular order, and re-estimate how long it will take from there. When the job is done, it's on you to, again, manually contact the requestor and let them know it's ready.

A process like that doesn't exactly scream ease and efficiency. It adds unnecessary stress to your job. And it makes every day harder and less productive than it can be.

- General order management is manual and quickly becomes messy and unmanageable as your orders scale.

- Manually estimating the time and cost for each job takes up unnecessary time.

- Information and requirements for each job end up spread out and disconnected between multiple tools, systems, and communication channels. How do you know where the most accurate and up-to-date information is?

- Without a standard order form or process, engineers and designers define their own requirements — meaning you have to translate and make sense of each request, which adds time and room for errors and miscommunication.

- Keeping track of the status of each job, and relaying that information to the requestor, is challenging when information is spread across multiple systems and tools.
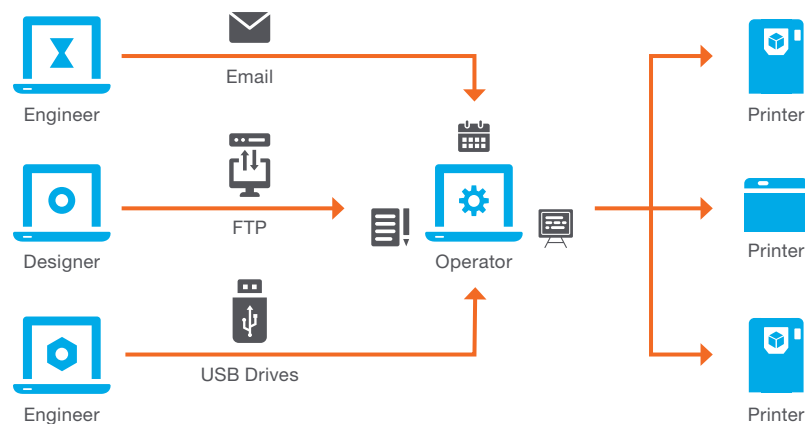
It's All About
the Bottom Line

We estimated all the waste this process causes and, for the average shop of one operator and about ten engineers and designers, as much as $15,000 and 10-20% of the operator's time gets wasted on inefficient order management.

When you look at all the pains, challenges and waste inherent in the typical shop management process, it's obvious there has to be a better way. **And that's where an internal work order management solution comes into play — a solution like GrabCAD Shop™.**

In a typical new order process, **$15,000 and 10-20%** of the operator's time gets wasted.

This guide offers everything you need to know about our cloud-based production management software, GrabCAD Shop, as well as how to start and run your own internal shop, including:

1. How GrabCAD Shop benefits internal 3D printing model shops, university and high school shops and commercial shops.

2. Info on how to prepare for and get started with your own internal shop.

3. A detailed tutorial on how to set up a new shop as well as best practices for starting and running it.

4. Tips and next steps for putting your new shop to work.
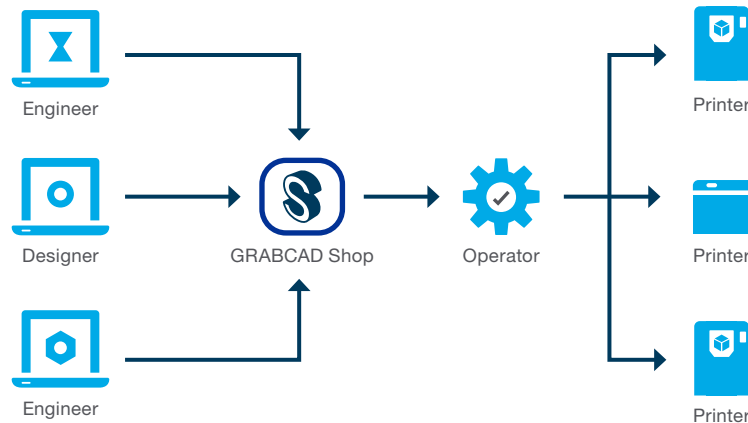
What Is GrabCAD Shop?

GrabCAD® Shop is a secure, cloud-based portal where many users (e.g., engineers, designers, students, etc.) can submit files to an internal model shop in a simple, universally-consistent method. It is a license and subscription-based pricing model.

Why 3D Printing Shops Need GrabCAD Shop

- With orders and requests coming from departments across the organization, you need a cleaner, more streamlined way to keep track, manage and even segregate all the requests on your plate.

- Engineers and designers across departments need a standardized way to get you all the information you need to complete their jobs.

- You need an organized, central system where orders can be tied together by department or project — that way engineers and designers can view the status of each part of the project and you can charge all costs back to their department and budget.

- GrabCAD Shop is almost completely ready right out of the box, so you spend less time setting up. Other print order management solutions are custom-built, and they take a lot more time and money to get up and running.

Why University and High School 3D Print Shops Need GrabCAD Shop

- With orders and requests coming from students across classes and departments, you need a less manual way to manage waves of job requests as they come in and notify students when their jobs are finished.

- A standardized order process ensures each student provides you with all the information you need, so you can spend less time going back and forth and get their project done faster.

- A centralized and organized system means you can easily keep track of where requests come from — by class, by project, or by department. This makes it easier to charge costs back to the department or professor.

- Set students up quickly. GrabCAD Shop is almost completely ready, right out of the box, so you spend less time with administrative tasks.

Why Commercial Shops Need GrabCAD Shop

- A standardized order process means you can spend less time going back and forth with customers and more time producing money-making jobs.

- By offering customers easy access to information like the technology, machines, and materials you have available, you can automatically filter out jobs and customers you can't serve.

- With production management software, customers can pop in and get updates on the status of a given job at any time — meaning you don't have to interrupt work to manually check on statuses or communicate them to customers.

- Other print order management solutions are custom-built and may take a lot more time and money to get up and running. GrabCAD Shop comes ready to use right out of the box, so you spend less time setting up.

Getting Started
With GrabCAD Shop

Implementing a work order management solution like GrabCAD Shop means you can streamline your 3D printing workflow. But before we get into the nitty gritty how-to of setting up your internal shop, there's a lot you need to think about up front.

In this section, we cover everything you need to think about and prepare for in order to shift your order management process to new production management software.

Thinking About Your Machines

To Do: List out all of your machines, the model and type of technology, and how many you have of each. Then have this information at the ready when you begin setting up your internal shop.

The first thing you need to think about is your machines. When you set up your shop later on, you'll note all the technologies and machines you have available in your physical shop, so it's important to have all of that information handy and ready to go beforehand. While Stratasys® machines are pre-populated in GrabCAD Shop, any other machines will need to be added separately.

Ask yourself questions like:

- What technology do you have available in the shop right now?

- Which machines are doing that work? How many of them do you have?

- How quickly can your machines print small, medium and large jobs?

- If you're planning to purchase more printers, what equipment (and in what quantity) will you buy?

The driving force behind auditing your machines like this is to help you create better, more accurate estimates of how many jobs your shop can manage at a given time, the type and size of the jobs you can handle, and how long jobs will realistically take to complete.

Implementing a work order management solution like GrabCAD Shop means you can streamline your 3D printing workflow.

Thinking About Your Staff and Customers

To Do: Keep a running list of everyone who will need access to each shop you plan to set up, along with their role and which user group they'll be a part of.

The first thing you need to think about is your machines. When you set up your shop later on, you'll note all the technologies and machines you have available in your physical shop, so it's important to have all of that information handy and ready to go beforehand. While Stratasys® machines are pre-populated in GrabCAD Shop, any other machines will need to be added separately.

- **Operator:** The Operator is typically the shop owner or manager, and they're in charge of managing and planning orders, as well as communicating time and cost estimates (and status updates) to those who request jobs. You can make additional members of your shop team operators, allowing them to edit and update jobs in the shop, as well as designate users as operators for one shop and requestors for another.

- **Requestor:** These are the engineers, designers, students, and anyone else who requests jobs from your shop. Requestors are able to log in and submit new jobs, view order status, and access the chat feature to share additional details, ask questions, and reply to any of your questions.

Before you dive into 3D printing shop management software, it's important to have these roles mapped out to ensure everyone who needs access to each shop (in one way or another) is added as a user to the new system.

When you add users to your shop, they need to be assigned to a specific user group (e.g., the marketing team or ENG3001). So it's important to think through groups that make sense for your shop's requestors and who will fall into each group.

Thinking About Your Time and Cost Estimates

To Do: Map out time estimates for small, medium and large printing jobs, along with per unit cost estimates for each type of material you offer.

Approaching time and cost estimates individually for each job that comes in is one of the biggest efficiency and productivity killers for the average 3D printing shop.

When you set standard time and cost benchmarks, you can provide both customers and team members with the most accurate time estimates and price quotes, without bringing your own work to a screeching halt with each new order. That's why it's important to think about how you'll standardize and routinize these estimates long before you start setting up your product management software.

To start, write out all of the materials you currently offer. Note what they cost you to acquire and (if different) what you'll charge customers and requestors per unit of each material. You can also include cost estimates for the time you and your team spend working on a job. With this information, it's easy to build out standard price quotes based on the type and amount of material a job requires.

For planning and setting customer expectations, you'll also want to map out how long particular jobs will take. You can split out time estimates by job size, material and printer. For example, how long will it take a PolyJet™ printer to finish an average-sized job?

Preparing Your Data for the Transition

To Do: Map out and back up your existing tools, files, and processes to create one, central source of truth. List out existing orders in progress, with details and the most up-to-date status.

In addition to people and printers, you'll also need to take a look at your existing process. That way, you can be sure all orders and processes are accounted for and nothing gets lost or forgotten in the transition.

To start, list out every tool and system you currently use to manage orders and communicate with customers. This might include:

- Email, Slack and any other communication channels

- Microsoft Excel, SharePoint, Google Sheets or however you track orders

- Any software you use to plan and schedule jobs for each machine

- Potential test projects, new courses or other projects that can be used as a test for the new shop

Once you have the whole process outlined, with the tools for each step, create a composite document of all of the existing orders you have in progress. Include the order details, the requestor or main contact for the project, the time and cost estimates that were agreed upon, when the job is scheduled for printing and the most current status. Wherever you bring this information together (Microsoft Excel or Google Sheets will usually do the trick), be sure to **back it up**.

Keep in mind, getting people to switch from a system they know to something new can be an uphill battle. For that reason, we advise shop owners to deploy the new shop gradually — beginning with engineers and designers who haven't become accustomed to the old way of doing things.

Steps and Best Practices for
Setting Up Your New Shop

Step 1: Set Up Your Shop

To start, you'll work with our team to set up a new company account with GrabCAD. We'll need to know three pieces of information:

- Your company name

- The email address(es) of all admins

- Your preferred URL prefix** (this prefix can be anything you choose, but once you give it to us, it's set in stone. This becomes part of the secure URL — **"urlprefix".shop.grabcad.com** — your operators and requestors will use to access the shop.

Once your account is established, you can log in by going to "urlprefix".shop.grabcad.com to manage admin-related settings like users, licenses, groups, access control and more. This is called the GrabCAD Admin Console.
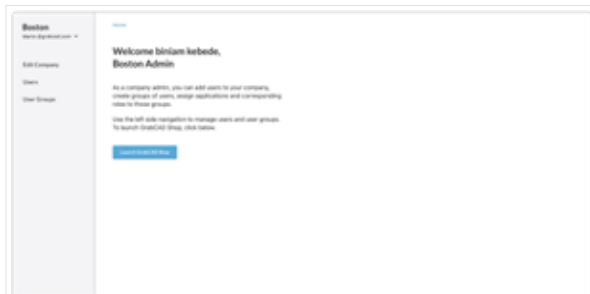
To continue setting up your shop, go to the Admin Console and click on the blue **Launch GrabCAD Shop** button (Figure 1).

From the Shop dashboard, click on the blue **Create New Shop** (Figure 2) button then fill in the following information:

- Shop name

- Default currency

- Preferred units

- Time zone

- Shop image

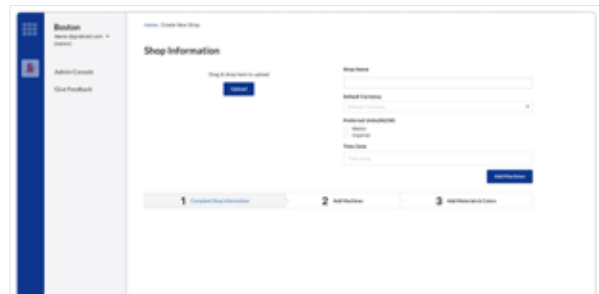Once you've uploaded your image and filled in all the necessary information, click the **Add Machines** button.

Figure 1

Figure 2

**URL Prefix is only available for commercial customers. Trial customers will not receive a personalized URL Prefix

Steps and Best Practices for Setting Up Your New Shop
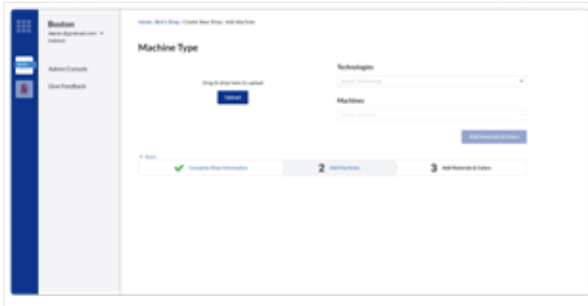## (continued)

Figure 3

Figure 4

Step 2: Add Available Machines and Materials

In this step, you'll add all the technologies, machines, materials and colors that you have available in your physical shop. These will limit the options requestors have to choose from when they create new orders.

First, choose the appropriate technology and machine from each of the dropdown menus (you can add Stratasys machines and other third-party machines). Then click on **Add Materials & Colors** (Figure 3).

From there, you'll choose the material-color combinations available for the selected technology and machine type. You'll repeat this process for each unique machine type in your shop.

Note: If you have multiple machines of the same type, you only need to set them up once, as one machine type in your GrabCAD Shop.

When you've added all the materials and colors available, click the **Finish** button. From there, you can click on **Add Machine** to repeat the same process for any other machine types you have in your shop (Figure 4).

Steps and Best Practices for
Setting Up Your New Shop
(continued)

Step 3: Add Users and User Groups to Your Shop and Give Them Access

Now that you have a shop and machines to run it, it's time to add the users who can access and use the shop. Go back to your Admin Console and select **User Groups** from the right-hand menu. This is where you'll create scalable groups to make it easier to manage your users at scale.

Click to add a **New User Group**. Give the group a name, add any and all Shops they need access to, and then select their role (Requestor or Operator).

If you've already added users, you can select all of the existing users you want to add to that group from there. Then click the blue **Submit** button (Figure 5).

Note: You can create users and group them or create groups and assign new or existing users to them. Either way works.

You'll add users by their email address, which you can do individually or in bulk. If you need to add many users, you can also copy and paste their emails from Microsoft Excel, Google Sheets or anywhere they're compiled. Choose the User Group you want to add these users to, then click the **Add Users** button (Figure 6).

Note: Don't forget to add yourself and give yourself access as both an operator and a requestor. This is important for the final step.
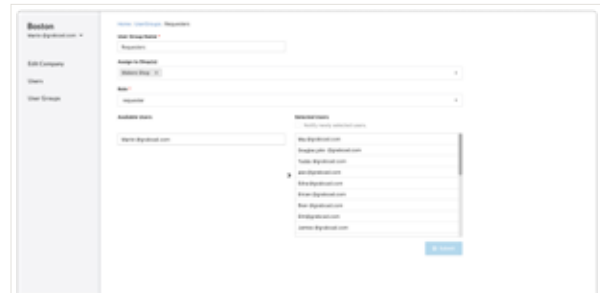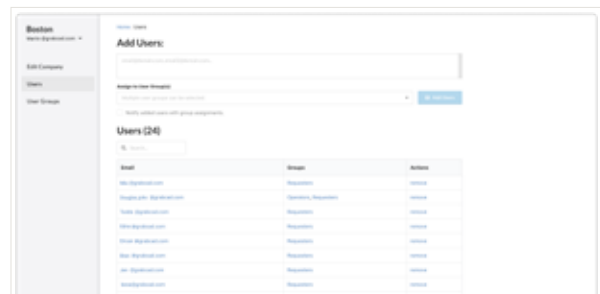

Figure 5

Figure 6

Steps and Best Practices for
Setting Up Your New Shop
(continued)

Step 4: Try It Out for Yourself
(As Both the Requestor and the Operator)

Technically, you're done setting up your new Shop after step 3, but we always advise that you spend a few more minutes trying out the system for yourself — as both the operator and the requestor — so you can get a feel for what both roles see and experience.

Once you've made yourself a user account that's designated as a requestor, you'll be able to log in as that role. When you log in as a requestor, you'll be able to see and click on the blue **New Order** button (Figure 7).

- Upload a file to be printed and fill out the project name. Select the technology, material, and color from the dropdown menus (these will show only the options you added when setting up the shop).

- You can add any notes on finishing or specific requests, include a project code to identify the project, and choose the date you need the project by. The project code can be anything, including a budget code, department code, or a course number.

- When you're ready, click on **Create Order**.

Now, log in to your user account that's designated as the Operator and click on the order you just created.

From here, you can try out:

- Adding a comment or responding with the chat feature on the far right

- Changing and updating the order status

- Updating the due date and prices

When you're finished, click on the **Done** button (Figure 8).

Figure 7

Figure 8

Best Practices for
Setting Up Your Shop

While you're setting up your new internal shop, there are a handful of best practices you'll want to keep in mind to ensure your shop becomes as easy to use and hassle-free as possible.

To start, list out every tool and system you currently use to manage orders and communicate with customers. This might include:

- Be thoughtful about your shop image. While it's easy to underestimate the importance of this small piece, the shop image is the first thing users will see when they log into GrabCAD Shop. By putting a little extra thought into the image you choose, you can ensure a more seamless experience for users and a higher likelihood that members of multiple shops will submit orders to the right one.

- Don't forget to add yourself to a user group. When you set up a new shop, you're the admin but aren't automatically a user, operator or requestor for each shop you create. That's why it's important to remember to add yourself to a user group and give yourself permissions as both an operator and a requestor.

- Take advantage of user groups right away. If you aren't adding a ton of users to your shop to begin with, you might think you don't need user groups. But they're much quicker to set up when your shop's user base is small, and they make scaling your shop a whole lot simpler when you start to add more users. Simply assign each new user to an existing group and they'll have all the permissions and roles of that group.

- Create a brief how-to resource for users. We designed GrabCAD Shop to be really user-friendly and intuitive for operators, admins, and requestors alike. That said, it can be helpful to give new users and requestors a quick how-to resource to get them up and running more quickly and seamlessly.

Best Practices for
Running Your Shop

Once you're set up and ready to start taking orders, there are also a few best practices that can help ensure smooth print order processing and management over the long haul.

- Use the chat feature. Communication is the number one key to an easy and satisfactory order management process — for both sides. That's why we recommend using the chat feature to make sure everyone is always in the loop and keep communication centralized in one accessible location. Whenever a message is sent in the chat, the user will receive an email notification so they'll never miss a message.

- Schedule responsibly. You've gone through the process of thinking out your equipment, your staff, and your reasonable timelines. Now, it's your job to schedule jobs responsibly so engineers and designers are happy, and your team isn't overworked. As a rule of thumb, it's usually best to overestimate how long a job will take and then deliver it earlier than expected.

- Be honest with quotes. And never change the cost without communicating with the engineer or designer. No one likes a bait-and-switch. To ensure the best working relationship between yourself, your team, and the designers and engineers who request jobs, do your best to be upfront, honest, and communicative about pricing.

- Be disciplined about adding and updating order statuses. One of the key benefits of using a work order management software like GrabCAD Shop is that it eliminates email back-and-forth and requests for status updates, but only if you're disciplined about actually updating that status in the order.

- Delegate and don't micromanage. 3D print management software like GrabCAD Shop gives you back a lot of time to focus on printing. But as your shop grows, it's important to understand how to delegate without micromanaging your team. It's easy to delegate on a project-by-project basis or even assign an entire shop to another operator.

Inviting the Public to Your Shop

Now that you're all set up, you're ready to start spending a whole lot less time and energy managing print orders — and a whole lot more focusing on your actual job.

Moving forward, here are a few of the ways you begin growing your shop, whether by boosting adoption within your organization or something else entirely.

Educating Customers on Using Your Shop

We touched on this in our best practices section, but it's worth diving into further here. After all, if there's one thing that can stop adoption of new systems in its tracks, it's when the users don't know how to use it.

Whether they use the shop infrequently or every week, designers, engineers and students can all benefit from a little education on how the new shop works and makes their lives easier.

At a minimum, here's what we recommend including in your educational materials:

- A brief explanation of why the system is changing and the benefits the new GrabCAD Shop offers customers

- The complete secure URL for users to bookmark

- A step-by-step walkthrough of how to place a new order

- Details around the shops you offer, including who should order from them and the type of printing jobs each is built for

- An explanation of how to log in and check order statuses, plus how and when to use the chat feature

Asking for Customer Feedback

Customer feedback is the holy grail for making it easier to improve, grow, and keep customers coming back to your print shop. But there's one thing many shop owners (and business owners) generally forget about — you have to ask for that feedback.

The best way to ensure gathering customer feedback doesn't fall through the cracks is to build it into your order management process. Here are a few ideas for how to do that:

- Make a habit of sending a customer feedback survey using the chat feature. As soon as an order's status flips to "Completed," ask for feedback. You can even simplify things by asking one question directly in the comments themselves.

- Send out feedback request emails at regular intervals. Since you have the email of all your customers in GrabCAD Shop, you can easily automate a customer feedback request email to go out every "X" number of months.

Streamline Your Shop's Order Management and Processing
With GrabCAD Shop

At the end of the day, you're a 3D printing expert, not an order management or job communication pro.

Implementing a production management solution like GrabCAD Shop means you can streamline which aspects of your job. You can handle more jobs, communicate seamlessly with engineers and designers and spend less time in Excel, email and whiteboards. Isn't that the dream?

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