



2021 BLENDER FOUNDATION ANNUAL REPORT

blender.org

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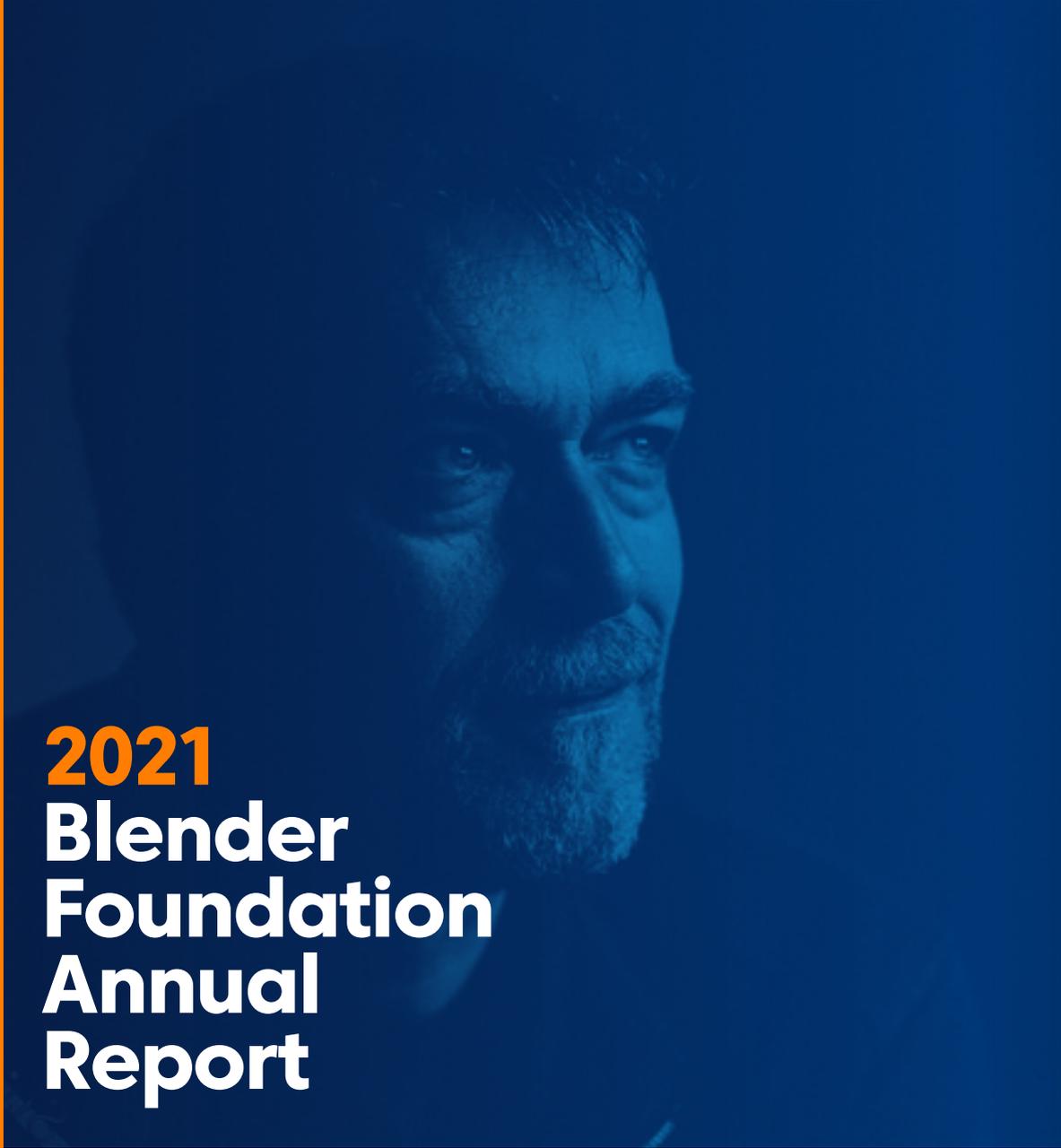
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Content

4	Introduction by the chairman
6	The freedom to create
12	The Blender organization
18	Web infrastructure
20	Module teams for core blender development
24	Offices
26	Projects
34	People
37	The development team
46	Quality
48	Industry relations
50	Finances
54	Blender by the numbers 2021



2021 Blender Foundation Annual Report

Introduction by the chairman

We had all hoped that 2021 would be the year of reopening society. Instead we went from lockdown to lockdown, with periods of relaxation. Looking back to '21 it almost feels like a year to forget. Yet, many things have happened which will be memorized in this report. And let's not forget the absolute highlight: Blender finally got its historic 3.0 release on 3 December 2021.

If there's one good thing I want to take from last year, it's Blender's ongoing positive reception. Wherever we looked, we found encouragement. The community of Blender contributors grew, the industry support for Blender grew - and best of all - the industry became part of the community. The impact of the Blender project on people's lives is truly humbling.

Blender is at the center of the open source movement within the media industry. We will be taking an active role here and helping to shape the future of media creation in the coming decade. Not because we can, but because we truly care. We only have one interest to defend: the rights of developers and artists to enjoy open and free access to 3D technology.

I would like to end with special thanks to everyone who made Blender even more awesome and successful. Thanks for being around! And sorry for the late report, we've been busy in 2022!

Ton Roosendaal

Amsterdam. 10-11-2022

The freedom to create

By Ton Roosendaal

If one thing would define me, it's the insatiable curiosity and desire to study and master 3D creation in the widest sense. Whether as an artist, developer, or producer, I'm fascinated by anything to do with the field. For me, '3D' is the ultimate blend of creativity and technology. It's like magic.

This is the core of my personal motivation, one I wish to share as widely as possible.

The Blender mission:

Get the world's best 3D CG technology in the hands of artists as free/open source software, and make amazing things with it.

To elaborate:

- Provide access to the world's best 3D CG technology and make amazing things with it.
- Use and contribute to Free/Open Source software and Free Culture
- Change reality, have an impact, make a difference

A mission means the organization's purpose; it's core DNA. A mission is where we are, it's what we do every day. To prevent a mission drifting, a longer term goal can be defined - the 'vision'. For Blender, this thinking can be encapsulated in the following tagline:

“The freedom to create”

Blender 2.92

The 2.92 version was released in February 2021. Blender now offers a completely new workflow for editing meshes, new physics simulation methods, faster Cycles rendering, better compositing with Eevee, and much more.



User story “Wolf Walkers”

The makers of Wolfwalkers, Cartoon Saloon, might well be the most famous 2D animation studio around — especially with Wolfwalkers’ Oscar and Golden Globe nominations. In this blender.org User Story, Eimhin McNamara, a key figure in Wolfwalkers’ production, talks about how Blender helped shape the film.



<https://www.blender.org/user-stories/2d-isnt-dead-it-just-became-something-different-using-blender-for-wolfwalkers/>

The Blender vision:

Everyone should be free to create 3D CG content, with free technical and creative production means and free access to markets.

To further explore this vision, this freedom has three key aspects:
The ‘freedom to create’ means:

- **Freedom to deploy production software.**
This is the blender.org project itself, developing Blender as a Free Software (GNU GPL) 3D creation tool. Blender is free to use, for any purpose, forever. It’s why the Blender Foundation exists.
- **Freedom to apply creative resources.**
For an aspiring artist or studio, access to creative resources and production knowledge are equally important - free to be used for any purpose as well. It’s why the Blender Institute was originally founded, to contribute to Free Culture by means of Blender Open Movies and other Creative Commons projects.
- **Freedom to participate in the market.**
For creative people, all over the world, it’s a pressing topic. Neither the new streaming giants (Netflix, Disney), the game markets (Steam, App Store) or the platform economy (Youtube, Patreon) is solving this really. What’s the benefit of having all the tools and resources, and no way to get a decent living? While we don’t have all the answers, this is something we’re committed to exploring further.

Finally, the core values for everyone involved with Blender are:

Core values:

- We care (passion)
- We share (community)
- We work together (openness)
- We have a story (vision)

The first three values are straightforward. They simply state who we are, and what motivates us.

The fourth value - “*story*” - is my personal favorite. “*Story*” means you have something to tell. It’s an attitude as well as a motivation. It’s about the drive to make

story

a difference, to stand out, to have an impact, to not be afraid to fail, to experiment, to dare, to not follow the masses, to try and retry, to make amazing things happen and sometimes fail miserably.

The story of Blender is like that - a true story that can be told over and over, which started over 25 years ago with a Dutch guy who had an idea, and gave it a go.

The Blender organization

The Blender project is a huge success, but with success comes a certain responsibility. Many people and organizations now depend on Blender.

This is why we must build a stable organization in which Blender's future is secured for the long term. Sustainability also requires establishing a board of directors in order to oversee day-to-day management, as well as adding a supervisory board for annual meetings.

Currently the Blender organization consists of three entities:

- **Blender Foundation**, the public benefit organization with a goal to support Blender as free/open source project.
- **Blender Institute**, the corporation that functions as a working company for the Foundation (hiring employees, offices).
- **Blender Studio**, the corporation hiring artists to make open movies and share assets and production knowledge.

The IP made by the corporations is being transferred to the Foundation by default. Currently, the Institute and Studio's ownership is in the hands of the Foundation chairman Ton Roosendaal. In 2021, the Blender Institute formally registered COO Francesco Siddi as second board member. As announced in 2019, within three to five years the Foundation chairman and Institute director will migrate his responsibilities to a new team, step down and move to an advisory function. Due to circumstances (health, pandemic) this process has been delayed for 2 years. There is also a strong motive to structure work on

Blender in a way that it remains true to its core values. In other words, a public, open, community based project providing independent facilities to everyone, everywhere, at blender.org.

The Blender organization does not wish to sell either products or services, which means it isn't in competition with its community of users. This allows for a flourishing ecosystem of creatives and businesses to develop around the Blender organization.

The Institute's sole focus remains to act as the "working company" of Blender Foundation. By the end of 2023 (for tax reasons not sooner), ownership of the Institute's shares will be transferred to the Foundation, making the Foundation+Institute a powerful combination. All intellectual property and funds will remain in the Foundation (keeping it low risk and safe) and all



Cycles X

In April it was exactly 10 years since Cycles was announced. In the past decade Cycles has developed into a full-fledged production renderer, used by many artists and studios.

However some decisions made in the past were holding back performance and making it difficult to maintain the code.

To address that, Sergey Sharybin and Brecht Van Lommel started a research project named CyclesX, with the aim to refresh the architecture and prepare it for the next 10 years. Rather than finding quick fixes or optimizations that solve only part of the problem, the architecture has been redesigned as a whole.

CyclesX was released with much acclaim in December, as part of the Blender 3.0 release.

Blender now fully OSS compliant

One of Blender’s long-standing issues was that a lot of the libraries it depends on, are scattered around the web. What happens if the servers are down? Or if the library version needed for an old version of Blender vanishes from their backup?

Add to this that some of those libraries have licenses that require Blender to either host a copy of the source code, or to provide an “offer for source”. For years, third parties distributing Blender had simply trusted Blender to keep this in check — either by making sure the links to other projects are working or that there are local copies hanging around.

To solve this once and for all, Blender 2.93 source code will be distributed with all the libraries used for that version.

For incremental versions and LTS updates only the main Blender source code package will be distributed.

corporate activities and liabilities will be outsourced to the Institute. The main income model for the Foundation+Institute is donations, using the Development Fund.

Blender Studio will further explore open source pipeline and content development. It will also challenge the market as an independent production company providing free/open content, funded by Blender Studio subscriptions.

Mid term goals:

- Become a sustainable, future proof organization dedicated to realizing Blender’s mission.
- Secure Blender’s original spirit, and the legacy of its founder.
- Become an innovative organization driven by curiosity, and the desire to excel at creative/technical projects.





Become an innovative organization driven by curiosity, and the desire to excel at creative/technical projects

one mission

Blender Foundation

To build a free and open source complete 3D creation pipeline for artists and small teams; by a publicly managed project on blender.org

Blender Institute

Build a sustainable organization to support Blender Foundation in its mission. This includes managing offices, facilities, websites, events, workshops - conducting and coordinating research, development projects and product design.

Free technology

Blender Studio

Support the foundation's mission by validating and stressing Blender in a production environment, by producing community funded animated film or other 3D media projects and sharing the entire production process.

Free creativity



Web infrastructure

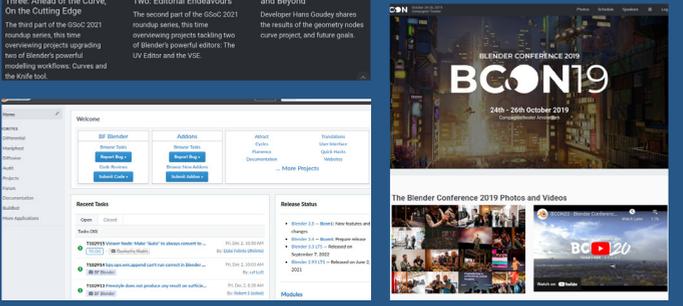
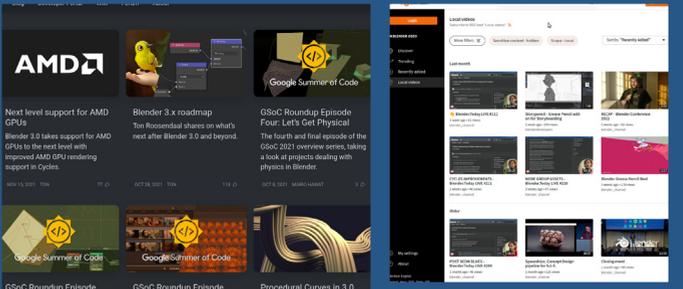
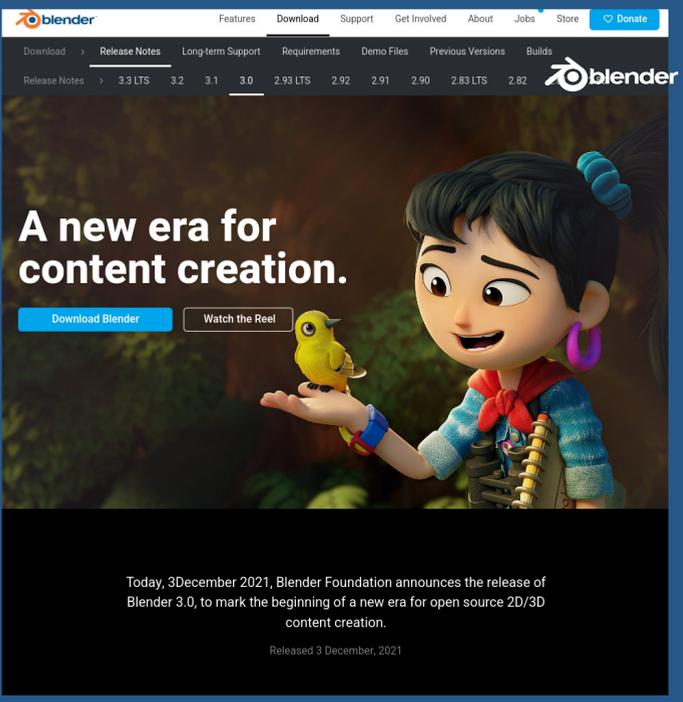
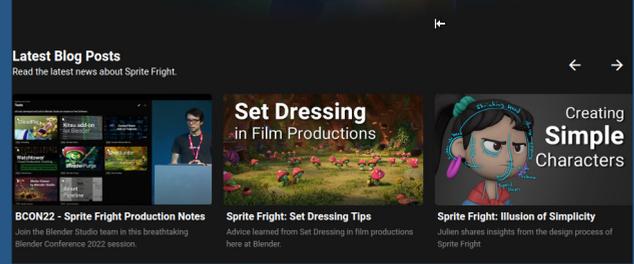
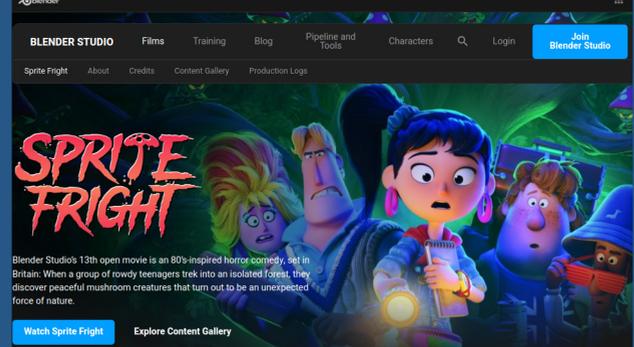
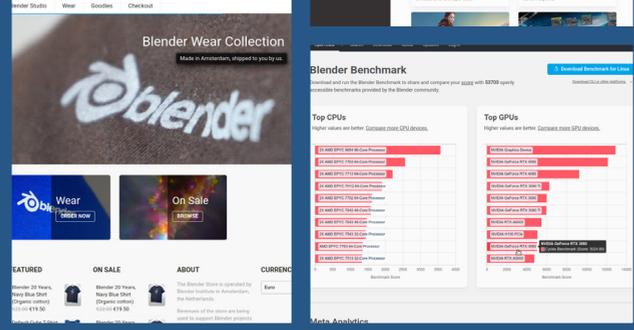
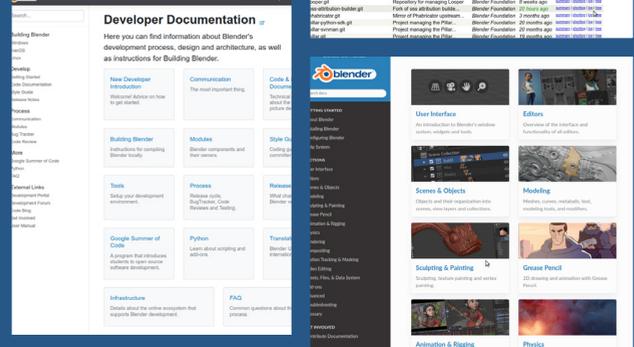
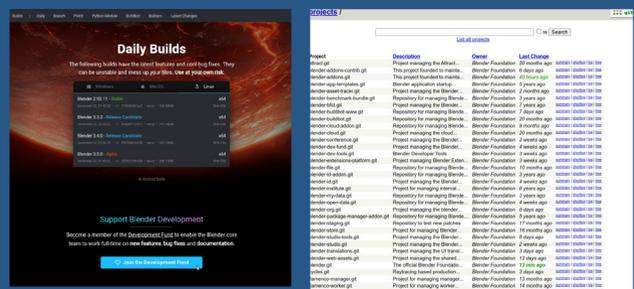
Blender Foundation follows a policy to remain independent for core web services and infrastructure, and to use free/open source software there as much as possible. Currently about a dozen of websites are actively used, which are being hosted in a dedicated server rack in an Amsterdam datacenter, with a direct connection to the internet backbone (thanks XS4all for the sponsoring!).

Work has been done in 2021 to unify the looks and feel of all websites of the Blender organization. This will continue in 2022. Currently, the actively maintained websites for Blender are:

- www.blender.org - the main portal
- developer.blender.org - projects website for developers
- builder.blender.org - daily builds, also for testing and branches
- docs.blender.org - official documentation project
- wiki.blender.org - developer documentation
- code.blender.org - developer's blog
- git.blender.org - the git repositories
- devtalk.blender.org - discussions for module teams
- lists.blender.org - mailing list server
- download.blender.org - Blender releases and demo files
- opendata.blender.org - open data benchmarking
- cloud.blender.org - the studio's sharing website
- conference.blender.org - Blender conference talks and photos
- store.blender.org - the official store
- video.blender.org - a federated website for all important videos

Managed independently: [Blender.chat](https://blender.chat), [Blender.community](https://blender.community)

the main portal
projects website for developers
daily builds, also for testing and branches
official documentation project
developer documentation
developer's blog
the git repositories
discussions for module teams
mailing list server
Blender releases and demo files
open data benchmarking
the studio's sharing website
Blender conference talks and photos
the official store
a federated website for all important videos



lists.blender.org Mailing Lists

Welcome!

below is a listing of all the public mailing lists on lists.blender.org. Click on a list name to get more information about the list, or to subscribe, unsubscribe, and change the references on your subscription. To visit the general information page for an unadvertised list, open a URL similar to this one, but with a '?' and the list name appended. list administrators, you can visit the [list admin overview page](#) to find the management interface for your list.

If you are having trouble using the lists, please contact mailman@blender.org.

List	Description
#anim3d	Discussion list to assist animation developers
#blender-cvs	All commit messages on Blender's source code repository
#blender-pr	non-photo-realistic rendering discussion.
#codereview	BF-blender code review
#blender-devs	BF-blender developers
#cycles	Discussion list to assist Cycles render engine developers
#docsboard	Blender Documentation Project
#docsboard-es-cvs	Traducción al español de la documentación de Blender
#docsboard-svn	Svn commits for Blender's documentation project.
#extensions-cvs	BF-extensions (scripts and plugins) commits log (see https://svn.blender.org/svnroot/bf-extensions/)
#funboard	Discuss Blender's functionality.
#general	[no description available]

Module teams for core Blender development

Blender is growing fast. With the success of the Blender Development Fund and industry support, it's important to make sure that the blender.org project organization remains future proof. Numerous activities around Blender are now performed by full-time employees or people working remotely on a grant. Together, they are responsible for core development projects, including improving code quality, documentation, developer operations, and support. All very important, but how do these efforts relate to work done by other (voluntary) contributors?

In the last months of 2020, the Blender Institute crew tackled our growing plans (and pains). An expanding team means a need for operations management, coordinators, and human resources specialists. We also need to define developer roles such as principal engineers, seniors, and product designers. Finally, we need to define how projects are organized overall.

We reviewed popular development organizational styles, but felt that none of them provided the right direction for Blender. We should not emulate a software company. We believe there is one aspect of Blender we should never give up on:

As we all know, communities are messy, noisy and disorganized. It takes much energy to get an online community moving in a chosen direction, to reach consensus and encourage effective collaboration. Worse, open source communities often bleed top talent because the best feel dragged down to the level of the group as a whole, including beginners. That's the main criticism on community-driven projects. How do you combine the

quest for excellence with a public project accessible to everyone?

Luckily we already had an answer: the module team organization we've used for almost 20 years. It just needed an upgrade.

Let's divide Blender tasks into three categories:

Operational, Tactical and **Strategic**.

Operational: bug triaging, onboarding, documentation, website development, testing, communication, facility management, administration.

Tactical: well-defined short term development projects, work that culminates in releases, student projects, maintenance and code upgrades, wrapping up unfinished features, making Blender releases.

Strategic: general roadmaps, product designs, industry relationships, research, mission critical software projects, keeping top talent on board.

Blender is a community effort.

The Blender organization can be held responsible for all operational aspects, facilitating the blender.org project, and welcoming contributions from the community. In these roles we currently employ several people, including a DevOps engineer and forum moderators.

Developers hired by Blender Institute will be assigned to specific strategic projects. These usually have only one goal: translating innovative designs into MVPs (minimum viable products), then handing them over to the module teams as quickly as possible.

Geometry Nodes

Blender's Geometry Nodes is a procedural modeling system. It allows you to alter the geometry of an object as well as make other modifications with node-based functions. Nodes are essentially visual programming blocks that contain structured data, and that transform inputs into outputs based on parameters.

By implementing this system, Blender not only unleashed unexpected creativity in thousands of artists, it also offered another reason for the industry to consider using Blender, especially for efficiently managing massive sets or game environments.



This makes the modules teams on Blender.org the “*tactical teams*” in Blender. That’s where the real open source dynamic kicks in. This is where the actual magic happens. It’s public, sometimes messy and noisy, but often incredibly rewarding and surprisingly effective. Good examples are work contributed in the areas of Grease Pencil and Geometry Nodes.

Strategic contributions to Blender can also be provided by other organizations or teams. This is already happening. For example, NVIDIA and Tangent Animation assigned engineers to help integrate Pixar’s USD into Blender.

Obviously it’s the Blender Foundation’s task to frequently present and discuss strategic roadmaps for Blender, and to make sure the module teams are aligned.

How modules work

Modules are largely free to organize themselves, though each type of module might require different management styles or procedures. Some modules will be more difficult to join (Cycles & Rendering), other modules might be stricter in terms of accepting patches (e.g. the Core Blender module).

Within a module there are two roles; the “**owners**” and the “**members**”.

The main rules for modules are:

- Module owners are empowered to commit code.
 - Module owners decide together as a consensus (unanimous).
 - Module members need an owner to accept or review their work.
 - Modules only use public blender.org platforms (code & communication)
- Blender module teams should be as large as reasonable. If they grow too big, they can split up. Technical Artists (TAs) must also be included among each module’s members

Module teams are responsible for issues in their own code (the module) but should feel free to move open issues onto a to-do list-do list to deal with later. Module Owners are held accountable: their role implies they accept responsibility.

Modules can expect wide-ranging support from the Blender organization, both for operational tasks but also for Development Fund grants (to retain essential people).

You can read more about how the module organization works in

the Blender Wiki.

Offices

Blender Headquarters

In 2018, Blender moved from its humble office in central Amsterdam to more spacious premises in the north of the city, a location better suited to this rapidly growing organization. The 800m² space contains offices, a big canteen, and meeting rooms for gatherings, strategic core Blender projects and workshops. At the end of 2020 Blender extended its contract for the office for a further 5 years. It also leased an additional 400m² which will be available in January 2022, facilitating the organization's future growth. This office houses the entire Blender ecosystem: the Blender Foundation, the Blender Institute and Blender Studio.

Development Projects

2021 was a busy and exciting year. We've delivered the second LTS release and Blender 3.0, which includes a lot of new development. This year also marks the 10th anniversary of Cycles with the spectacular Cycles X release.

There has been more emphasis on the modules as a way for everyone in the development community to get involved. Combined with the Blender HQ project teams, this helped to bootstrap new and existing initiatives while making sure they are maintained in the long run.



Projects

Asset browser and pose library

The asset browser project dates back to 2016 (when it was called asset management). Over the years and multiple iterations, its goals narrowed. But since February, the project has been rebooted with a broader set of goals.

For years the Blender Studio has needed a robust pose library system for its animation projects. Sprite Fright provided the perfect opportunity to address this while also helping the asset browser project.

The pose library and Materials were the first target for the asset browser project. It has been completely integrated in both the viewport and animation editors, and helped focus the asset browser project in time for Blender 3.0.

Library overrides

The old animation proxy system was finally replaced by library overrides. As part of this process, the development cycle aimed at finishing rigging syncing, and wrap up the system's final documentation. Sprite Fright was the first Open Movie to use the library overrides system. This helped to stress test support for multiple animated instances of the same character.

Geometry Nodes

The first official release of Geometry Nodes happened with Blender 2.92 in 2021. That release brought in more than 30 nodes to cover the initial set dressing use cases.

Later with 2.93, twenty new geometry nodes were introduced. These include the long-awaited mesh primitives, plus more advanced scattering, procedural modeling options, and a new texture based pipeline. A brand-new spreadsheet was added to help debug complex node trees. Besides, the project added usability improvements such as attribute search and error messages.

A few sprints were also dedicated to design and prototyping, helping to prepare the ground for future projects. This included collection nodes, re-validation of the hair nodes design and node tools.

In late June a Nodes workshop took place at the Blender HQ in Amsterdam. The goal of that workshop was to map out the future of the Geometry Nodes and simulation systems. Besides formalizing some design decisions for the projects, a lot was done in regard to the solvers design. The biggest inconclusive topic took most time though: resulting in launching the very powerful 'attribute' and 'field' metaphors in nodes.

<https://code.blender.org/2021/08/attributes-and-fields/>

Blender 2.93 LTS (june)

This second LTS version was released in June. A total of 22 new nodes were added to the Geometry Nodes editor expanding the attribute system. Improvements were added for sampling textures, support for volume data, usability, mesh primitives, Cycles support for attributes, and of course much more.



Vulkan

The drawing backend has been further prepared to use Vulkan. This abstraction of the drawing API will allow Blender to use more modern libraries for drawing. Which also helps make Eevee memory more efficient.

It's worth noting that there are no immediate performance boosts expected from Vulkan's integration. However, it will help make Blender future proof and ready for vendor-specific platforms.

Grease Pencil

The 2D drawing tools in Blender got a big improvement with the recently added Line Arts. The emphasis this year was on new Line Art modifiers, storyboarding, I/O, better bézier editing and features for 2D/2.5D animation feature films.

Blender 2.93 LTS

The first Long-term Support pilot was a success with 13 versions in one year, and hundreds of ported fixes. Downloads were in the hundreds of thousands. The second LTS was released in April, had 7 versions in 2021 to a total of 232 commits ported over.

Blender 2.83 LTS will be maintained for another year, while 2.93 LTS will be maintained for two years. The long-term stable releases will receive fixes for high priority bugs and regressions, besides drivers compatibility updates.

Blender will also challenge the market as an independent production company providing free/open content, funded by Blender Studio subscriptions.

User Story: Ubisoft Raving Rabbids

Between January 2020 and March 2021, Ubisoft Animation Studio (and two partner studios) worked on a 70 minute special episode of the TV series Rabbids Invasion. This episode was released at the end of the summer on France Television and on Netflix worldwide in 2022. Blender was used for most of the production stages, from previz to animation and rendering.

The challenge – apart from using Blender in this kind of big production – was to offer the movie director a very flexible previz environment so that he and the artists could concentrate on the quality and unleash their creativity.

<https://www.blender.org/user-stories/blender-and-the-rabbids/>



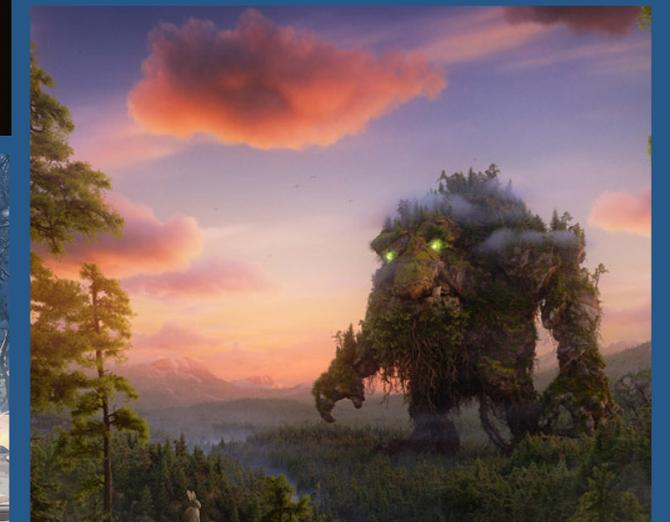
Blenderartists.org

Thanks to friendly and focused mentoring and management, this largest online Blender community site has evolved into the-place-to-go for people who want to learn and share Blender artwork. Blenderartists.org now is truly artist-centric, with stunning art pieces being shared every day.



artwork 2021

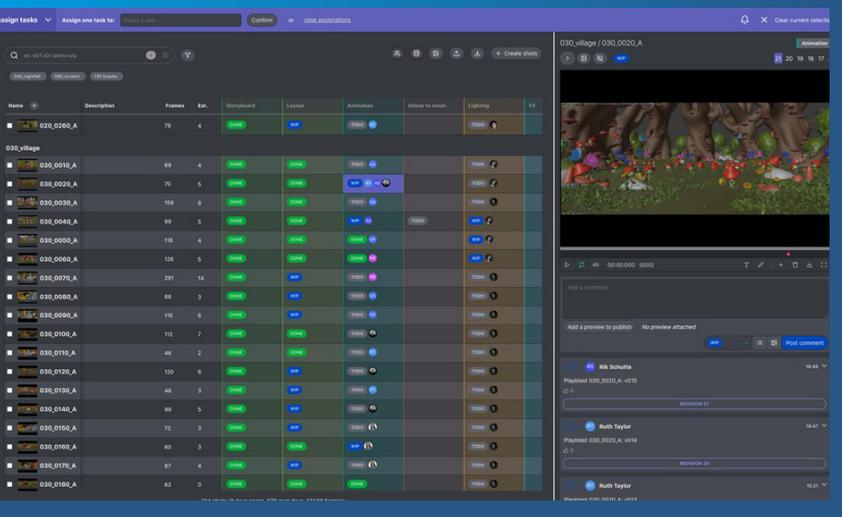
Blendernation article
by Bart Veldhuizen, 31-12-2021



Kitsu, production tracking

In 2021, the Blender Studio decided to adopt and support the independent free/open source Kitsu production management project, and use it internally for shot tracking and task management. Kitsu is becoming the leading FOSS production management program nowadays.

<https://studio.blender.org/blog/the-blender-studio-pipeline/>



Cycles development

The 10th anniversary of Cycles was on April 23rd. To celebrate, Brecht Van Lommel and Sergey Sharybin worked together since January on a full redesign of the Cycles rendering engine, nicknamed CyclesX.

The render system now uses micro-kernels from the ground up, is much better compatible with different CPU and GPU types, is better scalable, and gives a much better real-time and interactive performance. Special thanks goes to our industry partners from AMD, Nvidia, Intel and Apple - for helping out with implementation of this new render engine.

Also through industry support, Cycles saw big improvements in its render API thanks to a dedicated developer working closely with Facebook. Following that, the Blender project hired a new senior rendering engineer to help the Cycles team.



Universal Scene Description importer

NVIDIA is involved in bringing USD support to Blender. Developer Michael Kowalski is working directly with the rest of the Blender development team in order to make this happen.

The focus was on USD importing. As the exporter code was already in place, this seemed like the obvious place to start. Michael's work was incorporated into the Blender 3.0 release.

Blender 3.0

The Blender development team worked towards a Blender 3.0 release in Q3 2021. As always when it comes to major releases, the team takes the time to revise some of Blender's design choices and introduce big solutions to existing issues.

Other projects

Topics that didn't make it in 2021, but were being considered, or made a start with:

- Independent physics clock in viewports
- Mesh editing optimization
- Brush manager for painting and sculpting
- Snapping improvements
- Real time viewport compositor
- Collections settings for persistent I/O and baking
- Restrictive overrides
- Collection nodes
- Dynamic particles

People

As Blender scales up, the organization seeks to attract experts with complementary skill sets to join the team, as well as redefining existing roles.

This means attracting experts with complementary skill sets to join the team and management - as well as redefining existing roles.

Leadership

CEO AND FOUNDER

Ton Roosendaal



Spearheading the organization is Ton Roosendaal, original creator of the Blender software. His focus is on securing the future of Blender.

COO

Francesco Siddi



Francesco acts as the CEO's right hand, involved with all business and strategic topics. He also heads up Blender Studio and manages web based projects such as Flamenco, Blender Cloud, Kitsu and Open Data.

Operational team

FINANCIAL MANAGER

Anja Vugts-Verstappen



Anja has worked as financial manager and bookkeeper for Blender since the beginning. She is especially well known for managing the e-store and conference back office.

OPERATIONS MANAGER

Bram Kranendonk

(UNTIL OCTOBER '21)



Day to day coordination of all operations at Blender, including bookkeeping, purchasing, office management, human resources and payroll.

DEVOPS ENGINEER

James Monteath

(UNTIL AUGUST '21)



"Developer Operations" involves maintaining the technical infrastructure, and helping the developers' technical needs by automating tedious tasks.

COMMUNICATIONS MANAGER

Pablo Vazquez



For several years now, Pablo is hosting a frequent live stream about Blender development and other blender.org activities. He is the main editor of blender.org, including release logs. He loves to travel around the world as a Blender evangelist, which he hopes to pick up again next year.

Operational team

HEAD OF COPY

Christian Bunyan

(UNTIL OCTOBER '21)



Christian is the main editor of Blender Cloud content, but the Studio borrows him frequently to the Institute for other writing jobs.

WEB DESIGNER

Michael Newbon

(UNTIL DECEMBER '21)



As graphics and web designer, Mike mainly works for the Studio on Blender Cloud. One or two days a week he contributes as designer to general Blender tasks.

BACKEND WEB DEVELOPER

Anna Sirota



Blender's back-end developer is responsible for services such as the Blender Store, Development Fund and Blender Studio.

WEB ADMINISTRATOR

Dan McGrath



CANADA

Blender has a dedicated rack in a datacenter, to run all blender.org websites on. Dan keeps our web services sane and safe. He is a specialist in networking infrastructure, which he manages remotely for the Blender offices too.

The development team

Developers

The Development team now has a development coordinator and the developers roles have been redefined, spanning in seniority from junior developer to regular, senior and principal developers. Most of these developers work contracted by Blender, either from their homes or in-house at Blender's Amsterdam offices. They collaborate with the global Blender community online, constantly moving Blender forward.

Definition of roles in the development team

Within the development team, Blender makes a distinction between four different kinds of developers: principal, senior, regular and junior developers. The full diagram of the main developers' roles, including for remote positions, have been shared online for further feedback.

The four main developers' roles can, in short, be characterized by:

Principal Developer

A developer working autonomously, contributing to engineering or product design to solve strategic needs and proposing and reviewing designs to improve Blender as a whole.

Senior Developer

A developer contributes as tactical team lead (coordinator, product manager, lead engineer, etc.) to projects, coaching junior and regular developers by working closely together, reviewing their code and giving them feedback.

Regular Developer

A developer participating as a tactical developer, being supervised by seniors, contributing by coming up with designs to improve their own work.

Junior Developer

A developer contributing to projects as an operational assistant, being supervised by regulars and seniors.

Overall Coordination

DEVELOPMENT COORDINATOR

Dalai Felinto



Connecting the different parts and supporting the scale up process of Blender, Dalai worked overall planning and communication, specifically for the team in the Amsterdam HQ. He acts as the product manager of the Geometry Nodes project to try new approaches to team work with design (and remote) collaboration for the strategic projects.

DEVELOPER

Thomas Dinges

(STARTED OCTOBER 2021)



GERMANY

Thomas has been an active contributor to Blender during his high school and student years since 2010. He was hired this year to help coordinate the online community of developers, including onboarding new developers.

DEVELOPER

Brecht Van Lommel



Brecht had a chance to give its baby-project, Cycles, a complete revamp this year. He led the old and new project and coordinated the growing industry contributions to Cycles.

DEVELOPER

Sergey Sharybin



Sergey teamed up with Brecht for CyclesX. He also continued supporting OpenData and acted as the go-to person for all the server and network needs of the Blender facility, both as infrastructure designer and hands-on operator.

Principal Developers

DEVELOPER

Campbell Barton



AUSTRALIA

Working from Australia, Blender's top committer (734 commits in 2021) focused on improving mesh performance with multi-threading transform code and BMesh operator optimizations. Besides helping the asset browser project.

DEVELOPER

Clément Foucault



FRANCE

EEVEE lead developer Clément started a massive rewrite of EEVEE. This is an ongoing effort to support real-time compositor, render passes and advanced screen space global illumination and modern techniques such as better volumetric and hardware ray-tracing

Senior Developers

DEVELOPER

Jeroen Bakker



Jeroen manages the LTS releases, and drawing and GPU code. In 2021 he also worked on the Asset Browser (caching), on Library Override performance, and speeding up drawing in the Image editor.

DEVELOPER

Sybren Stüvel



Sybren coordinates the Animation (and rigging) Module, still one of the busiest modules in Blender. He also takes part in the USD project, Asset Browser (Pose library), the Flamenco render manager, and worked on Linux performance for Blender.

Regular Developers

DEVELOPER

Bastien Montagne



Bastien continued working on the library override system (the old proxies were deprecated in 2021). He also contributed to Outliner view improvements, Translation i18, and Link/Append code needed for Library Overrides and Asset Browser.

DEVELOPER

Pablo Dobarro

(UNTIL SEPTEMBER '21)



SPAIN

Pablo contributed to the sculpting features in Blender such as better ways to handle masks and face sets. He is passionate about achieving feature parity for professional sculpting workflows.

DEVELOPER

JACQUES LUCKE



GERMANY

Working from Berlin, Jacques is the tech lead in the geometry nodes project, bringing modeling nodes into Blender.

DEVELOPER

Hans Goudey



USA

Hans is a core member of the Geometry Nodes project, adding Curves support for geometry nodes in Blender 3.0.

Regular Developers

REGULAR DEVELOPER

Julian Eisel



Julian's main project was working on the Asset Browser project, a fresh re-scoped take on Asset Management. It was finished in time for Blender 3.0, making it one of the highlights of the release.

REGULAR DEVELOPER

Sebastián Barschkis

(UNTIL OCTOBER '21)



Thanks to him Blender has improved fire, smoke and water using the Mantaflow engine. Sebastián also took on the MacOS platform support.

REGULAR DEVELOPER

Sebastian Parborg



Working as a bridge between the Blender Studio and the development team Sebastian helped with numerous bug fixes, line-art drawing optimisation and Video Sequencer improvements.

REGULAR DEVELOPER

Kévin Dietrich

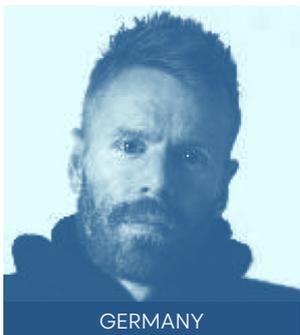


Kevin worked on Cycles optimizations, Alembic streaming, GPU OpenSubdiv for viewport and integrating Geometry Nodes attributes with Eevee.

Bug Triaging Team

DEVELOPER

Philipp Oeser



GERMANY

Philipp was responsible for coordinating the bug triaging team, leading by example with his hands-on approach as one of the triagers.

DEVELOPER

Germano Cavalcante

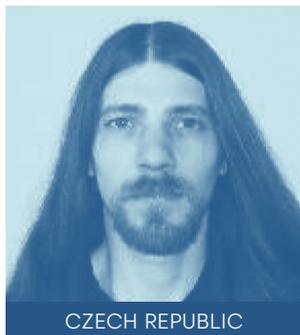


BRAZIL

Germano conciliated his contributions to the mesh optimization project with helping the bug triaging team.

DEVELOPER

RICHARD ANTALÍK



CZECH REPUBLIC

Richard went back to split his time between bug triaging and the Video Sequencer Editor where he redesigned the media transform, and implemented a more robust disk cache.

DEVELOPER

Robert Gützkow

(UNTIL FEBRUAR 21)



USA

Robert contributed to the bug triaging team until stepping aside to finish his degree.

DEVELOPER

Falk David

(UNTIL MAY '21)



AUSTRIA

Falk brought his expertise on grease pencil to the triaging team, helping this and other areas.

DEVELOPER

Pratik Borhade



INDIA

Pratik was involved on the tracker and applied for the Google Summer of Code when he was quickly pounced by the bug triaging team.



Grease Pencil

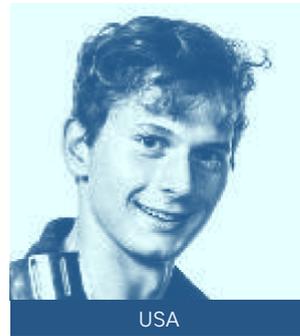
Blenders annotation tool evolved into a full-featured 2d drawing mode, allowing to draw on planes or surfaces freely. This hybrid 2d/3d sketching proved to be fantastic for concept artists and storyboarders. Finally story artists can draw and edit complete sequences freely without the need of saving out images and importing them in video editors. And it's all 3D, so you can move cameras around and use 3D references efficiently.

This feature is - still quite surprisingly - one of the main use cases for large animation studios to start using Blender.

General Support

COORDINATOR

Aaron Carlisle



USA

Aaron contributed to User Manual enhancements and is coordinator of the Blender documentation efforts.

Grant Recipients

(SHORT GRANT)

DEVELOPER

Wayde Moss

(UNTIL AUGUST '21)



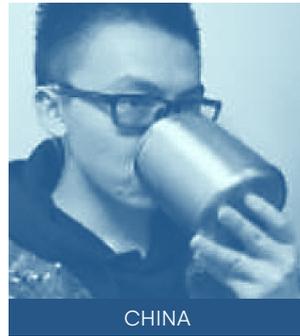
USA

As part of the reboot of the animation module, Wayde received a grant to help with animation bug fixing. He contributed several important improvements to the NLA editor.

DEVELOPER

Yiming Wu

(UNTIL AUGUST '21)



CHINA

Aside from bug fixing and support, Yiming added the LineArt feature as a GPencil modifier.

(SHORT GRANT)

DEVELOPER

PETER KIM

(UNTIL NOVEMBER '21)



JAPAN

Peter picked up the OpenXR integration project working on VR navigation as well as VR inputs support.

Maya and the Three

Maya and the Three is a computer-animated fantasy television series created by Jorge R. Gutiérrez and produced by Tangent Animation; 300 artists were using Blender for nearly the entire production. The nine-episode series premiered on

Netflix on October 22, 2021. This massive project was a milestone achievement for Blender artists. It's sad that shortly after finishing the series, Tangent Animation had to shut down, due to movie contracts not being signed.



Sprite Fright

This Blender Studio production was released at Halloween 2021. The artists making the short film again pushed all limits in Blender, by using the daily build, each day again. Written and directed by Pixar veteran Matthew Luhn, it also became an exercise in realizing world-class story telling.



Quality

An important driver for Blender is the continuous improvement of quality within the Blender software and development process.

DevOps

In summer of 2020, Blender hired a DevOps Engineer. The DevOps Engineer improves the development environment by implementing and managing the automation of (developers) tasks, including testing and building, delivery and deployment. Achievements range from new build-bot supporting patch building, automatic daily deployment for 3rd party stores - like steam and snapcraft to support for multiple versions of user manual developed concurrently.

Monthly Code Quality Day

The Blender project has existed for more than 20 years. During this time, its codebase has grown organically, with a healthy mix of refactors, brand-new code, and core parts that have survived the journey. Nevertheless, there are some outdated sections that, while functional, would benefit from an upgrade.

Sometimes technical debts start for the best of reasons. But when left unresolved for too long they can seriously impact the long term sustainability of the project, the cross-module pollination, and overall stability/quality. To help mitigate these issues, the Code Quality Day project began earlier this year, resulting in a regular opportunity to address technical debts. As well as helping the software to scale, the Code Quality Day aims to make Blender more welcoming for new developers.

More information:

<https://code.blender.org/2020/11/code-quality-day/>

Industry relations

New development fund members

After Amazon and Facebook signing up as Patron members late 2020, in 2021 we saw Adobe and Apple signing up. With all top level members renewing, we can show a very impressive line-up of corporate members of the development fund. All of these contribute to support core Blender development, on topics that benefit everyone.

Another big milestone was Canonical offering Enterprise Support for Blender professionals. Canonical agrees on building and maintaining their own Blender services organization, based on their trusted Ubuntu Advanced platform. Revenues from the services will be partially shared with Blender, then invested in core Blender development and public support for LTS releases.

Industry contributions to Blender

Members of the Blender Development Fund are actively involved in Blender development itself. Notable examples are:

- Nvidia

Nvidia has assigned two full time developers Blender Cycles rendering and USD.

- Facebook

Facebook works with the team on essential improvements in Cycles rendering, released end 2021.

- Intel

Intel involved us their GPU team from scratch, including early access to hardware. Intel assigned Blender a dedicated developer on to work on rendering and optimization.

- AMD

AMD assigned a small team of engineers to upgrade Blender Cycles from OpenCL to HIP,

and recently increased support to work on Vulkan and USD support.

- Ubisoft

Two engineers worked on pipeline tools for their animation studio, Ubisoft released an early prototype for collaborative data sharing in Blender.

- Amazon

An Amazon employee is an active member of our animation module team, participating in regular meetings and doing QA reviews.

- Microsoft

Microsoft has been working on the Cycles render engine, contributing patches.

- Apple

Apple assigned four engineers on making Blender fully ready to support the Metal API for drawing and rendering (first Cycles, but also the entire UI and viewports).

Other industry involvement with Blender:

- Pixar

Pixar actively supports Renderman for Blender, as one of the three DCCs they officially support (the others are Maya and Houdini).

- BlenderBIM

An independent community of developers and architects manage the free/open source Blender-BIM project, which uses the IfcOpenShell, the open source IFC toolkit and geometry engine. Thanks to this project, the CAD industry is increasingly eyeing Blender.

- Adobe

Adobe created and released a bridge to connect Substance with Blender.





Finances

Income	2020		2021	
Epic Mega Grant	330,888 €	24%	334,609 €	14%
Dev. Fund Patron	272,482 €	20%	899,707 €	38%
Dev. Fund Corporate	207,168 €	15%	314,546 €	13%
Dev. fund Individuals	321,242 €	23%	363,921 €	16%
CGcookie, Blendermarket share	81,617 €	6%	126,502 €	5%
Google summer of Code	4,942 €	0%	2,648 €	0%
Other Large Donations	142,448 €	10%	148,486 €	6%
Converting Crypto donations	0 €	0%	116,600 €	5%
Generic Small Donations	15,289 €	1%	34,877 €	1%
	1,376,076 €	100%	2,341,896 €	100%

Expenses	2020		2021	
Developer Salaries Staff	554,853 €	40.3%	640,786 €	27.4%
Remote Developer Staff	181,180 €	13.2%	348,335 €	14.9%
Developer Grants	129,445 €	9.4%	239,221 €	10.2%
CEO/Chairman Salary *	55,188 €	4.0%	75,264 €	3.2%
Developers Overhead **	188,036 €	13.7%	250,496 €	10.7%
Blender Studio ***	0 €	0.0%	72,000 €	3.1%
Accommodation & Events	16,646 €	1.2%	0 €	0.0%
Blender Conference Contribution	0 €	0.0%	0 €	0.0%
Travel costs	1,055 €	0.1%	0 €	0.0%
Blender.org Costs ****	91,189 €	6.6%	105,895 €	4.5%
Siggraph booth	0 €	0.0%	0 €	0.0%
Transaction fees	21,954 €	1.6%	27,626 €	1.2%
Various cost	3,374 €	0.2%	5,910 €	0.3%
Accounting cost	8,155 €	0.6%	12,363 €	0.5%
Reservation for coming years	125,000 €	9.1%	564,000 €	24.1%
	1,376,075 €	100%	2,341,896 €	100%

* This is 70% of the CEO's total wage, the other 30% is being paid by Blender Studio.

** Insurances, employer taxes, wage administration, office rent and costs, computers, financial manager, system admin

*** Blender Studio gets costs covered for their full-time Blender developer, part time backend web developer and graphics designer. In 2020 these expenses were quite lower, and were posted in a different item.

**** Website admin, back-end/frontend development, design, content, support, project coordination and infrastructure



Blender 3.0

This iconic new version was released on 3 December 2021. The biggest highlights were the complete new rendering engine Cycles X, and a new and powerful asset browser/viewer. With Blender 3.0, a period of 5 years work on the 2.8 series - which got a lot of new artists into Blender - got a wrap.

Growth of Development Fund in 2021

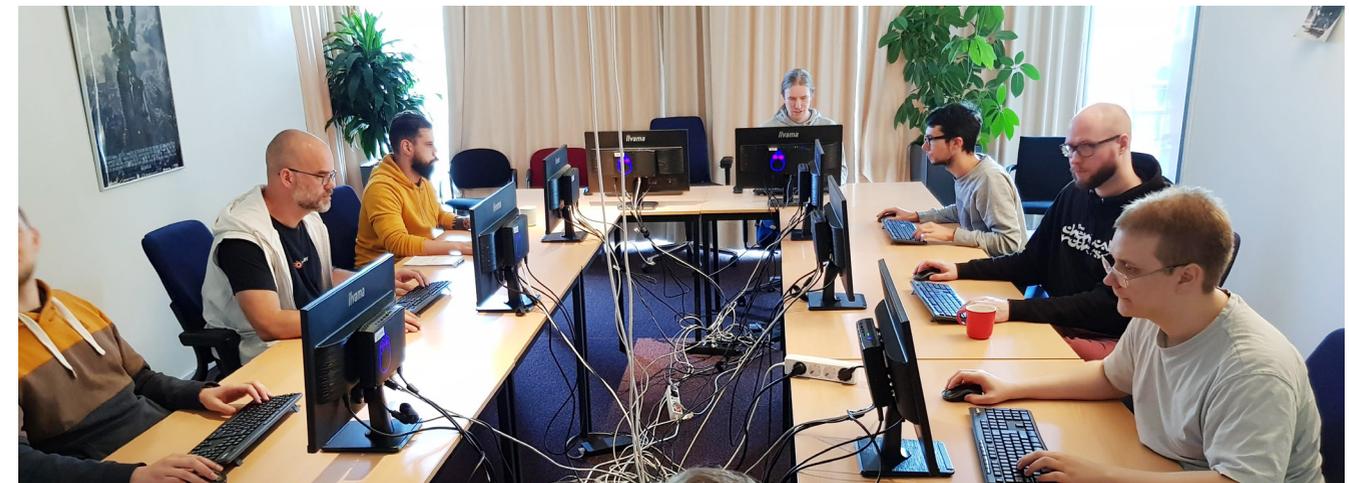
The Development Fund has seen a significant increase in income, with new parties joining. The Patron members (including Epic Mega Grant) make up of 52% of the donation income now. It's an action point for 2022 to run a campaign to increase awareness in the community that individual donations matter, to keep the organization independently funded.

Reservation

The reservation for 2022 (and later) is 24% of the total income. This was planned to be 12.8% (two months of cash flow). It is higher because of less travel and less events, and because of a reservation for animation development in 2022.

Blender Studio

Income and expenses for Blender Studio (film projects, Blender Cloud content) have not been included in this overview or in this report. The studio is a separate corporate entity and - although the studio contributes to Blender's mission - it's funded entirely independently by Cloud subscribers. The studio pays its share in facilities and services to Blender Institute.



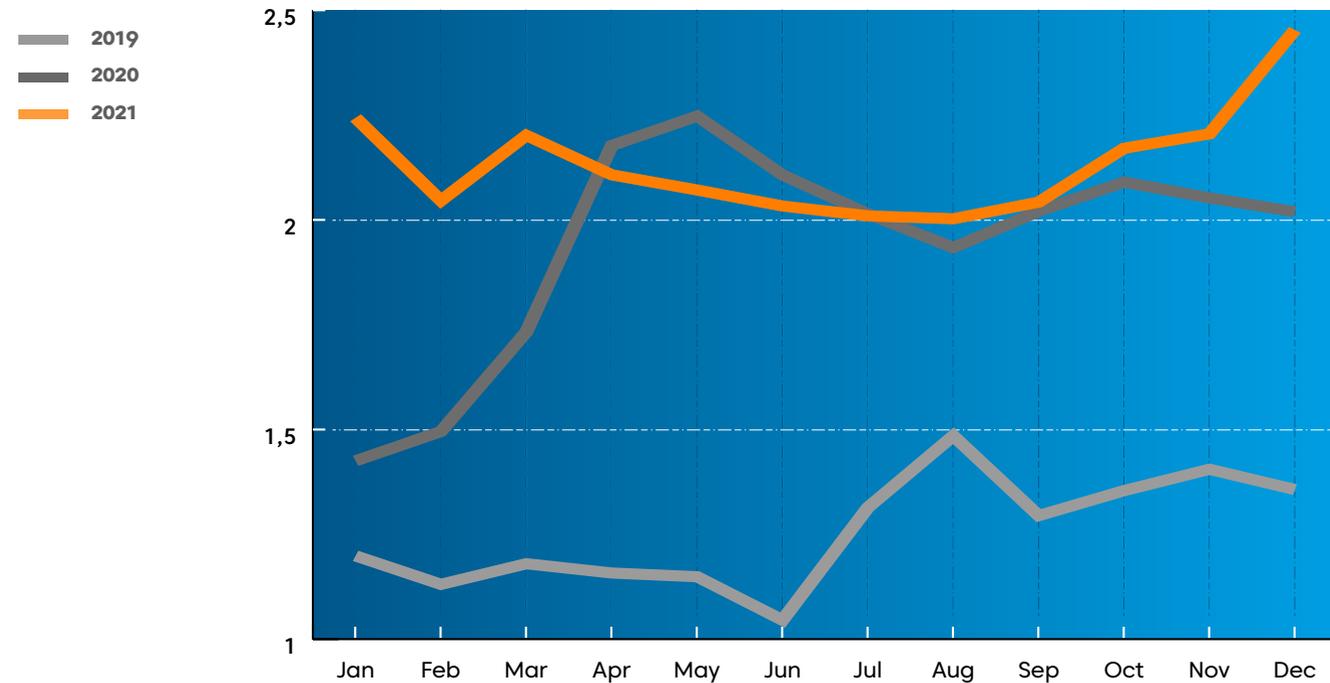
Blender by the numbers 2021

Compared to the growth we witnessed between 2019 and 2020, in 2021 the pace was more moderate.

Blender.org

The blender.org website and several of its subdomains have received a combined 26M unique visitors. That is a 13% increase from last year (23M), with over 2M visitors per month.

Monthly unique visitors on blender.org (millions)



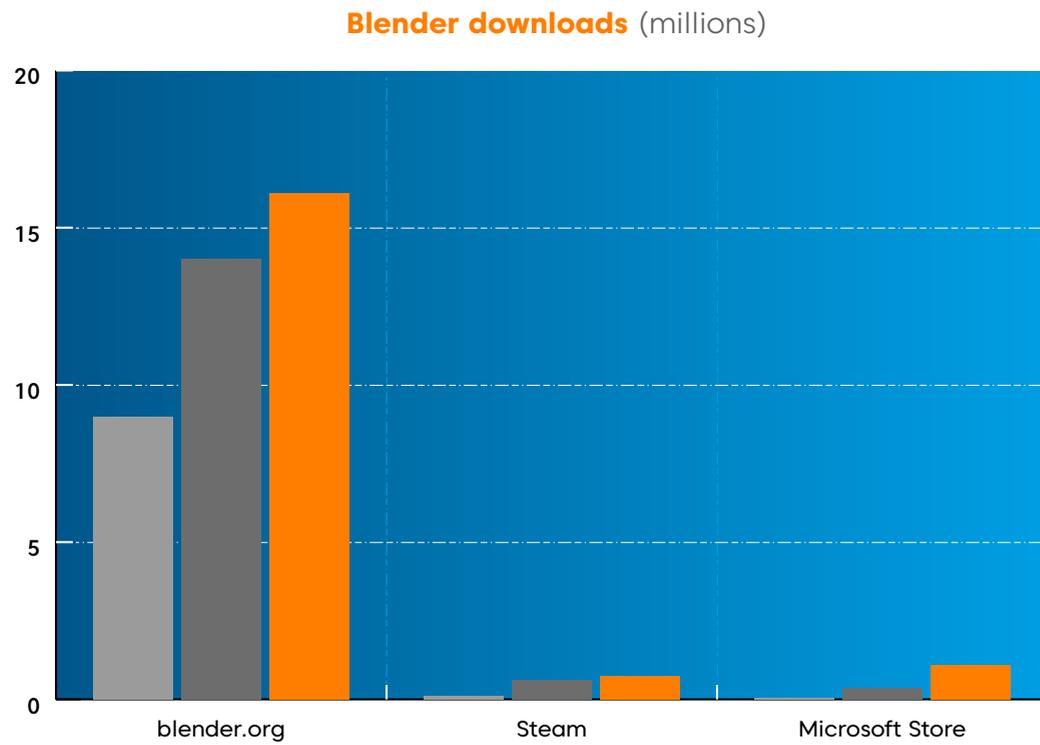
Over half of the visitors come from 10 countries. While the USA keeps the top spot, the amount of visitors has slightly decreased, with several other countries rising up: India (up 2%), China (up 94%) and Russia (up 26%).

Country	Users	Users Percentage	Growth from 2020
United States	4,033,937	18.14%	-0.65%
India	1,592,900	7.16%	2.25%
China	1,236,378	5.56%	94.43%
Russia	1,032,876	4.65%	26.68%
United Kingdom	915,247	4.12%	-4.44%
Germany	887,171	3.99%	6.36%
Japan	708,050	3.18%	10.18%
Brazil	689,523	3.10%	-1.87%
France	610,079	2.74%	4.29%
Canada	585,539	2.63%	-0.44%
Other	9,944,373	44.72%	
Total	22,236,073		

Blender Downloads

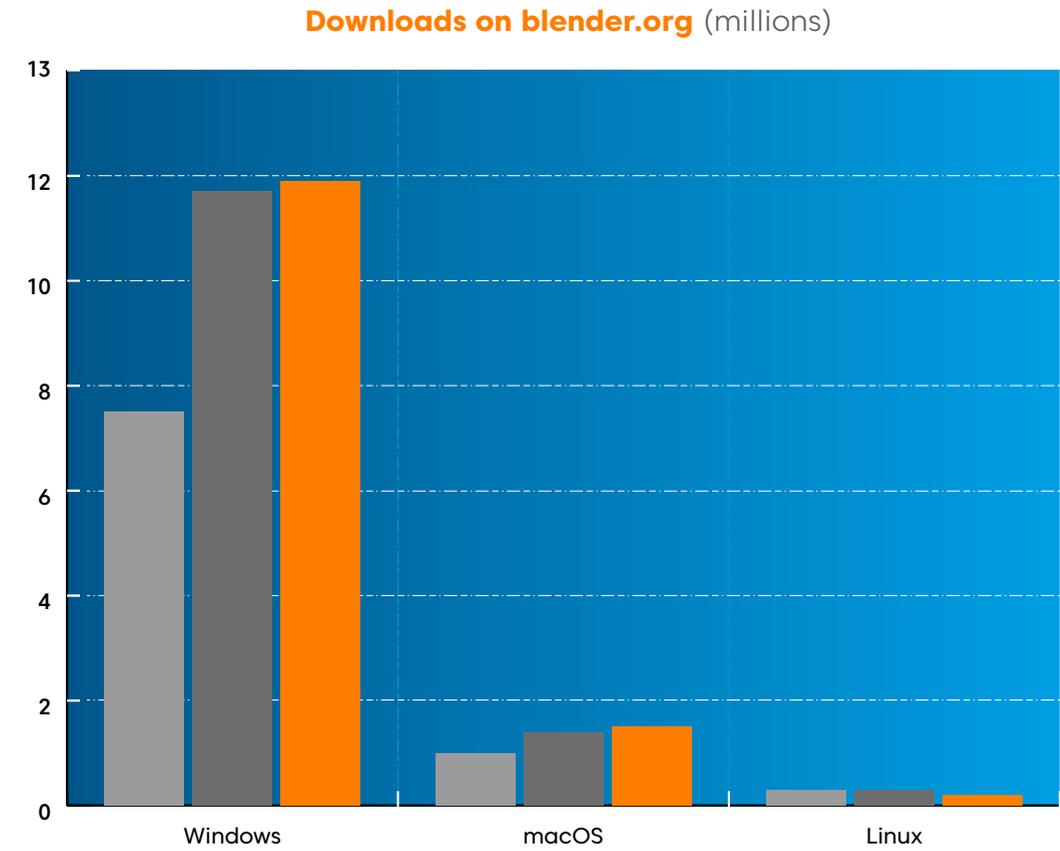
During 2021, Blender has been downloaded over 16M times from blender.org, plus another 2M times from other sources (Microsoft Store, Steam and Snap). This is a 20% increase compared to 2020.

2019
2020
2021



Distribution across operating systems remains largely unchanged, except for some minor growth on macOS.

2019
2020
2021

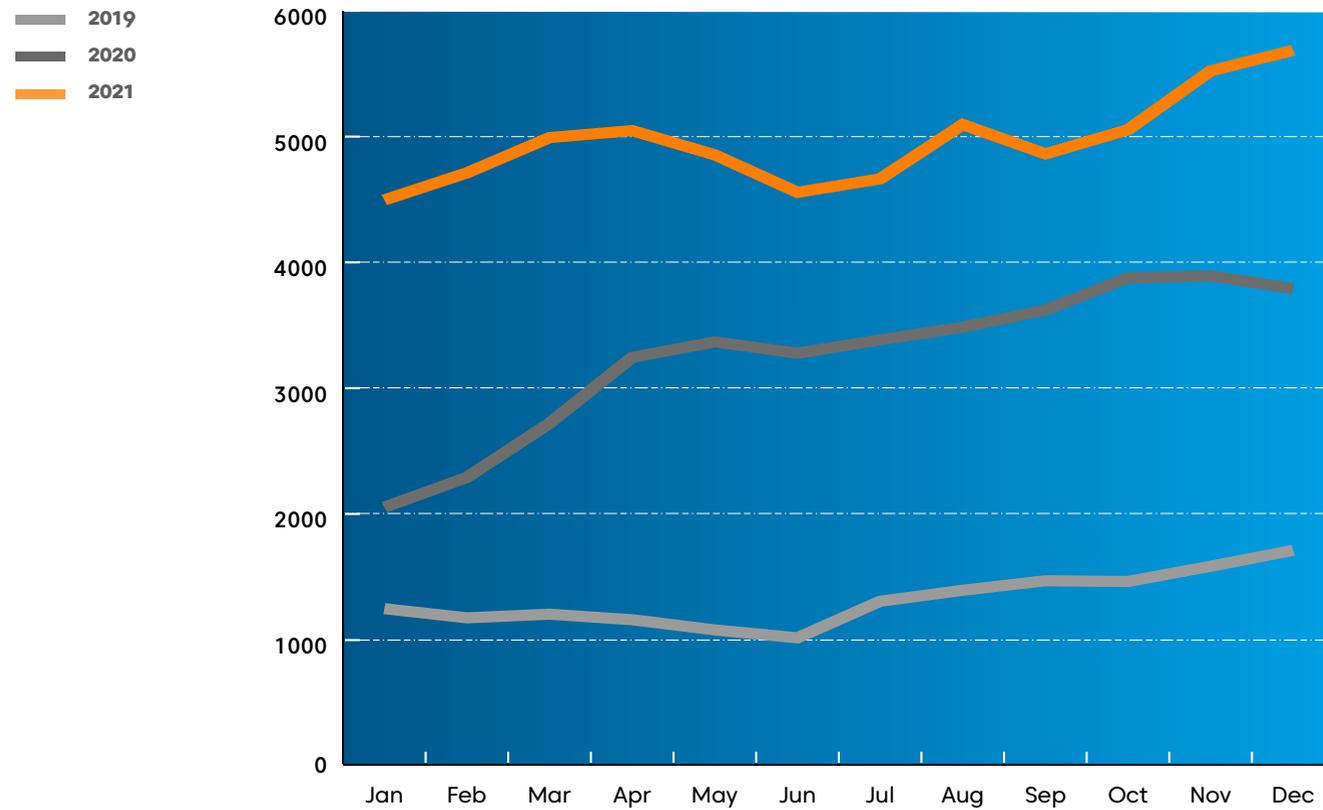


Steam

Steam remains a popular distribution outlet for Blender, with over 4000 concurrent users running it at all time. Because of this, Blender was one of the top 200 applications running on steam.

Blender keeps being available through Long Term Support (LTS) releases, with Blender 2.83 LTS being installed over 93k times on through the Microsoft Store (compared to the regular release being installed over 500k times).

Concurrent users on Steam



Blender is...

Blender's biggest strength and biggest asset is its massive user community. Used by millions of people nowadays, the software found its way in the hearts of many people.

Alongside the Blender 3.0 release, a video was produced with short 2-minute messages from a diverse collection of people, explaining what Blender is for them.



<https://www.youtube.com/watch?v=rJ48-SYY1sQ>

Blender Development Fund

Individual subscriptions to the Blender Development Fund have shown minimal growth compared to 2020. It is worth noting that in average the amount of membership cancelled during the year has decreased by around 10%.

Dev Fund new memberships 2020 vs 2021

