

Notes from Downstream

We are setting up
Have a seat, or come chat with us :)



00

Notes from Downstream

Lea Gray 「ultraviolet」

Jaiden Riordan 「nothingneko」

June Fish 「junefish」

Owen Zimmerman 「owensz」



Ultramarine in a nutshell.

Ultramarine is a distribution designed for a seamless desktop experience. We're based on Fedora, as we believe it's the most effective upstream to build these experiences. In addition to our own set of features, tools, and infrastructure, we modify Fedora's defaults to match our needs.

「ultraviolet」 In the past, Ultramarine has been branded as a “Fedora but better” distribution. While it may have gained us initial traction, looking back on it, I don't think it was the right way to sell Ultramarine. Ultramarine is its own experience and OS, and we're going to own it.

「owensz」 Dang, I guess it's time to update the website...

STATS

54.4k

Downloads since April '23

#53 Ranking

On Distrowatch

4

Desktop Editions

START DATE

JULY '21

LATEST RELEASE

40.2

Agenda

The reason why you are here.

「ultraviolet」 vtuber according to matthew miller
「nothingneko」 noted “unusual computer fiddler”
「owensz」 in a server room near you
「junefish」 just a fish

- 01 Our values and philosophy.
- 02 What's the point of all this?
- 03 It ain't is easy bein' downstream.
- 04 A stack of stacks.
- 05 A terrafying repository.
- 06 Working with thy neighbors.
- 07 Strange hardware.
- 08 Ultramarine and you.

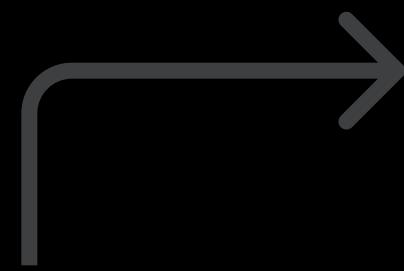
01

Our values and philosophy.

「**nothingneko**」 Ultramarine is built around a set of rules, and yes, “You shall use no other distros before Ultramarine” is one of them.



Ultramarine is



1

Pragmatic

Ultramarine works off the model of least resistance, always.

2

Progressive

Change is good for user and developer experience.

3

User Friendly

Allow users new and old to get up and running quickly.

4

Accessible

Developed by anyone, for any hardware.



02

What's the point of all this?

「ultraviolet」 or rather, where does the Ultramarine Linux desktop go from here



Our endpoints.

A progressive platform.

Developing around new technologies, ideas, creating an environment to experiment in.

IDEAS

Learning from the successes and failures of other platforms.

BEING A TRUE LAB

Incubating new ideas, experimenting, and implementing them.

TECHNOLOGY

Built on modern technologies, challenging the (broken) old ones.

A friendly Linux desktop.

Friendly in terms of community, contribution, and usage.

USAGE

A “just-works” experience, in getting started and getting to work.

COMMUNITY

A diverse and welcoming group of friends, users, and tinkerers.

CONTRIBUTING

Workflows that make it easy for anyone to build, and actually ship.

The base of tau.

Our concept for a next-generation Linux desktop experience.

RELATIONSHIP

Tau can be considered as a experimental derivative of Ultramarine.

WHAT EVEN IS IT?

What we believe a Linux desktop ought to be.

IMPORTANCE

Built on the idea of continuity and system-wide integration. (and a little playfulness)

03

It ain't is easy bein' downstream

「nothingneko」 Unlike Kermit, we can cope with our colourful existence.



Why Fedora?

Release Cadence

Fedora releases every 6 months, and each release is supported for a year, keeping in line with upstreams.

Quality

Fedora releases, and the software included in them, are reliably good. From software selection to the packages themselves, it's simply good.

Progressivism

Fedora adopts new technologies faster, and is often the first to implement them. This allows us to be at the forefront of the Linux ecosystem

Ecosystem's Choice

Lots of development happens on Fedora, from the kernel to systemd, Linux ecosystem developers choose Fedora.

Fedora is incredibly friendly.

Fedora is very easy to work with, they are always very kind, and make upstream and downstream contributions very easy.

Fedora's strongest factor is the people involved, we've had lovely and helpful conversations with so many people. From the devs in the Matrix chats, to Joseph (our rep?) and even Matthew himself. Fedora makes our lives easier.

「ultraviolet」 The people within Fedora have been some of the most nicest and caring people I've seen in FOSS. Not the “fake nice” you'll see in many projects.

EXAMPLES



THE “HI MATTHEW” CHIP

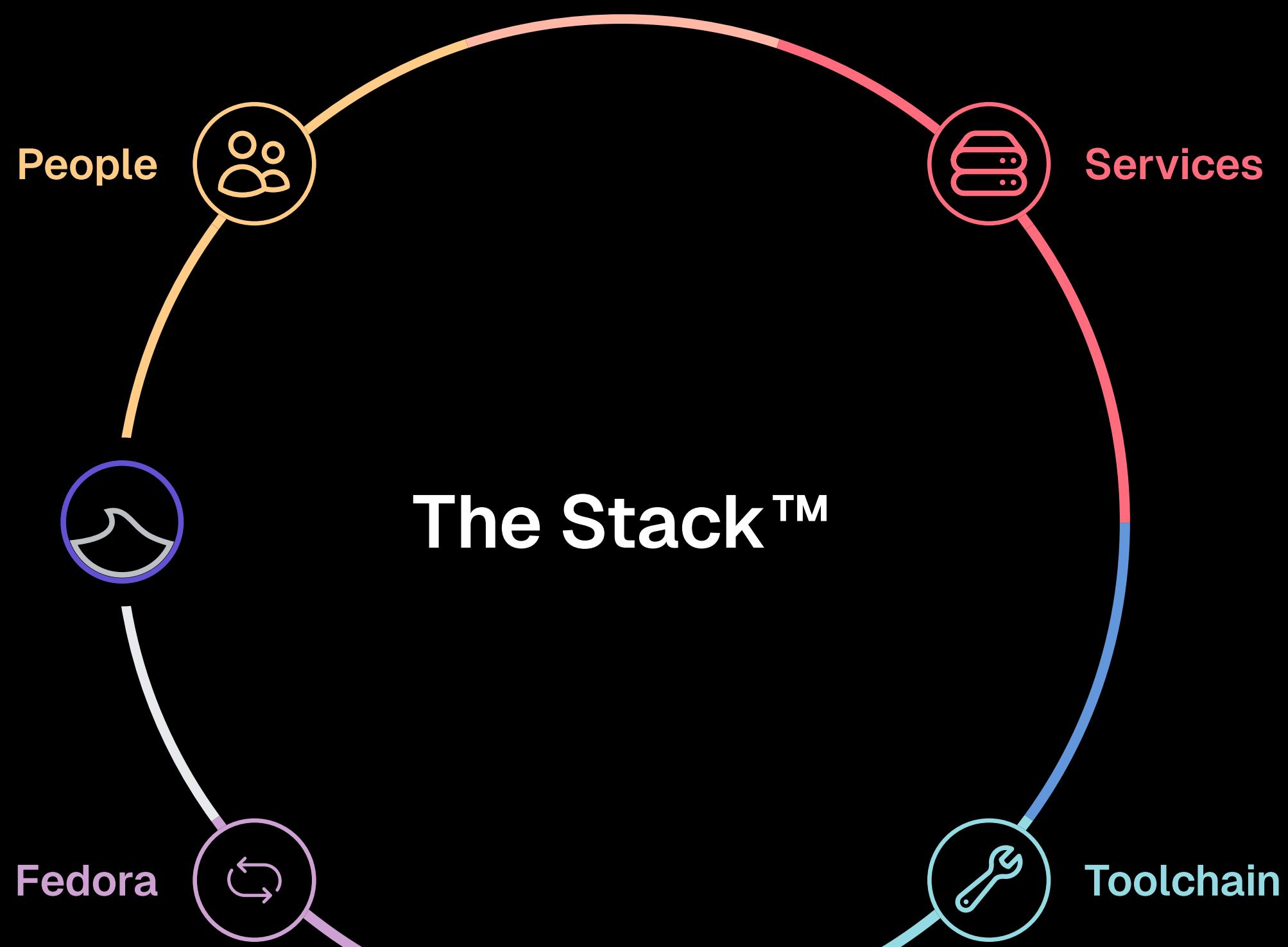
HI MATTHEW

04

A stack of stacks.

「ultraviolet」 no, we're not talking about money
「junefish」 they know that...





OVERVIEW

How we build.

Not just our programming languages and tools. Our stack includes all, from the community that hacks on Ultramarine, to the code we write, and everything in-between.

People

DISCORD

Where the community meets, builds, and plays.

We primarily use Discord for communication. We consider this space as the core of our community.

「[nothingneko](#)」 Discord brings in a different crowd than mailing lists and forums, a lot more casual, in a good way.

「[ultraviolet](#)」 yeah! that's something I noticed, Discord chats tend to be more dynamic, which means lots of interesting ideas tend to emerge, additionally things seem to get done quicker.

「[owensz](#)」 Every day I wake up, I'm excited to see what goes on in our Discord server.

STATS

600 +

Total users

200,000 +

Messages sent (in public channels)

1,858

Messages with “nya” or “meow”

OPENING DATE

3/25/2022



People

LINEAR

How we plan, track, and design the future.

We've started using Linear to track and plan our projects. As great as the tool is, our use-case is a bit unusual, so we had to hack it to make it work for us.

「[nothingneko](#)」 I've worked project management at bigger corporations, and I think the Linear Method is the only one that engineers don't hate. Linear is incredibly good software built around good ideas.

STATS

10

Linear projects

11

Active members

38

Issues tracked

SINCE

7/19/2024

Toolchain

ANDA & SUBATOMIC

Managing and distributing our packages our way.

Due to frustration with Fedora's toolchain, we decided to build tools that make it easier to build and distribute packages. Anda is our meta-build system, which supports Mock, and Subatomic is a repository server that handles repo management.

STATS

21

Repositories served by Subatomic

14,000 +

RPMs managed by Subatomic

960 +

Projects managed by Anda

SINCE

UM37

Toolchain

KATSU

An easier way to build operating system images.

For a while, we used Lorax to build images for Ultramarine Linux. However, as our needs changed, especially when we started supporting non-standard hardware, we found it necessary to build a new tool.

「[nothingneko](#)」 Before I worked on Ultramarine, I worked on `risiOS` which stuck pretty close to the Fedora toolchain. So as someone who used Lorax, Katsu is a lot easier to configure and can do a lot more.

「[owensz](#)」 The customizability and ease of use of Katsu continue to surprise me to this day.

STATS

16

Production images being built

348 +

GitHub workflow runs for Katsu

SINCE

UM39

Toolchain

RUST, GO, NIM, TS, VALA

The languages we use to build Ultramarine.

We use a lot of different languages for Ultramarine Linux. For example, Anda is written in Rust, Subatomic in Go, and various web services in TypeScript.

「[nothingneko](#)」 I really want to increase our usage of other languages, Rust has a bit higher barrier to entry and I think using other languages may make it a bit easier for people to contribute.

REPOSITORIES BY LANGUAGE



Services

INFRASTRUCTURE & REPOS

Serving... services and packages to end-users reliably.

We run quite a lot of services and infrastructure. Right now these are mainly to support contributor needs, but in the future, we expect to be serving more user-facing services. It's important that we get this right.

STATS

14 TB+

Data served in the past 30 days

20 +

Public facing services

4

3rd party package mirrors

Services

GITHUB ACTIONS

Building many packages without sacrificing cost and ease.

Ultramarine Linux used to build its packages on Koji. While Koji is a comprehensive feature wise, contributors and maintainers found it a burden to use and maintain. We decided to handle package builds in CI instead.

「[junefish](#)」 Packaging/building zed took up so much CPU and RAM we had to set up a CI runner on my home server because GitHub's weren't powerful enough.

STATS

57,000 +

All-time workflow calls for Terra

4,000 +

All-time workflow calls for Ultramarine

10

Unique workflows for packages

Why do we work with proprietary software?

Cost

Sometimes the FOSS solution costs much more. For example, GitHub provides us free runners.

Ease

FOSS isn't known for great UX. For example, Matrix has a deserved reputation of being buggy.

Accessibility

We use tools that are known by developers, even outside of FOSS, to make it easier to participate.

Pragmatism

We believe that FOSS is the endgame. However, we want to use the best tools to get there.

05

A terrafying repository.

「junefish」 blub



What is Terra?

A community driven RPM repo with a low barrier to entry for new contributors. Similar to AUR, contains many packages main repos do not, fairly simple to package for. But not exactly the same, all contributions are manually reviewed before they are merged. Terra contains binary packages (not source based). Generally, Terra feels like a middle ground between writing AUR packages for Arch and standard packages for Fedora.

「ultraviolet」 I would like to mention that Terra is also inspired by nixpkgs, specifically the monorepo like nature.

「nothingneko」 The monorepo is Terra's强suit honestly. I don't think we'd be able to maintain this many packages across multiple repos.

STATS

13.7k

“Unique visitors”

1000 +

Packages

30

Contributors

START DATE

OCT '22

Why am I here?

I started daily driving Linux with Arch. Coming from Arch, traditional RPM packaging felt very complicated, so I did not use Fedora for a while because of this. I tried packaging the “Terra-way” and realized it could be easier, converted me to Fedora then Ultramarine.

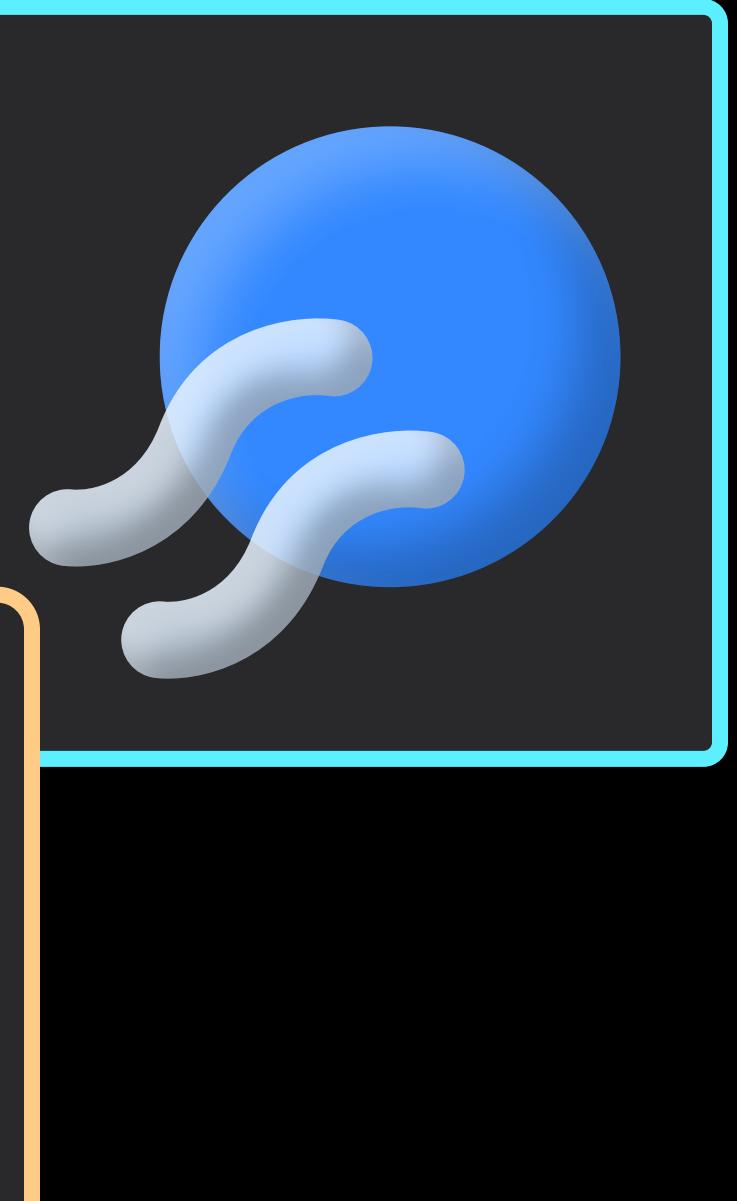


「**ultraviolet**」 My first foray into packaging was through Arch PKGBUILDs, which are much simpler than RPM spec files (albeit, much less powerful).

「**nothingneko**」 I started with Debian... RPM is significantly easier and can do so much more with a ton less work.

The “Terra way”

We use our own tool for building packages, Anda (our equivalent to Koji). GitHub for code-hosting/CI, monorepo similar to nixpkgs. Auto-updates with rhai scripts with some helpful templates.



「[owensz](#)」 As someone who doesn't work much on Terra, I find it a very convenient and friendly tool

06

Working with thy neighbors.

「owensz」 business business business



FOSS XR

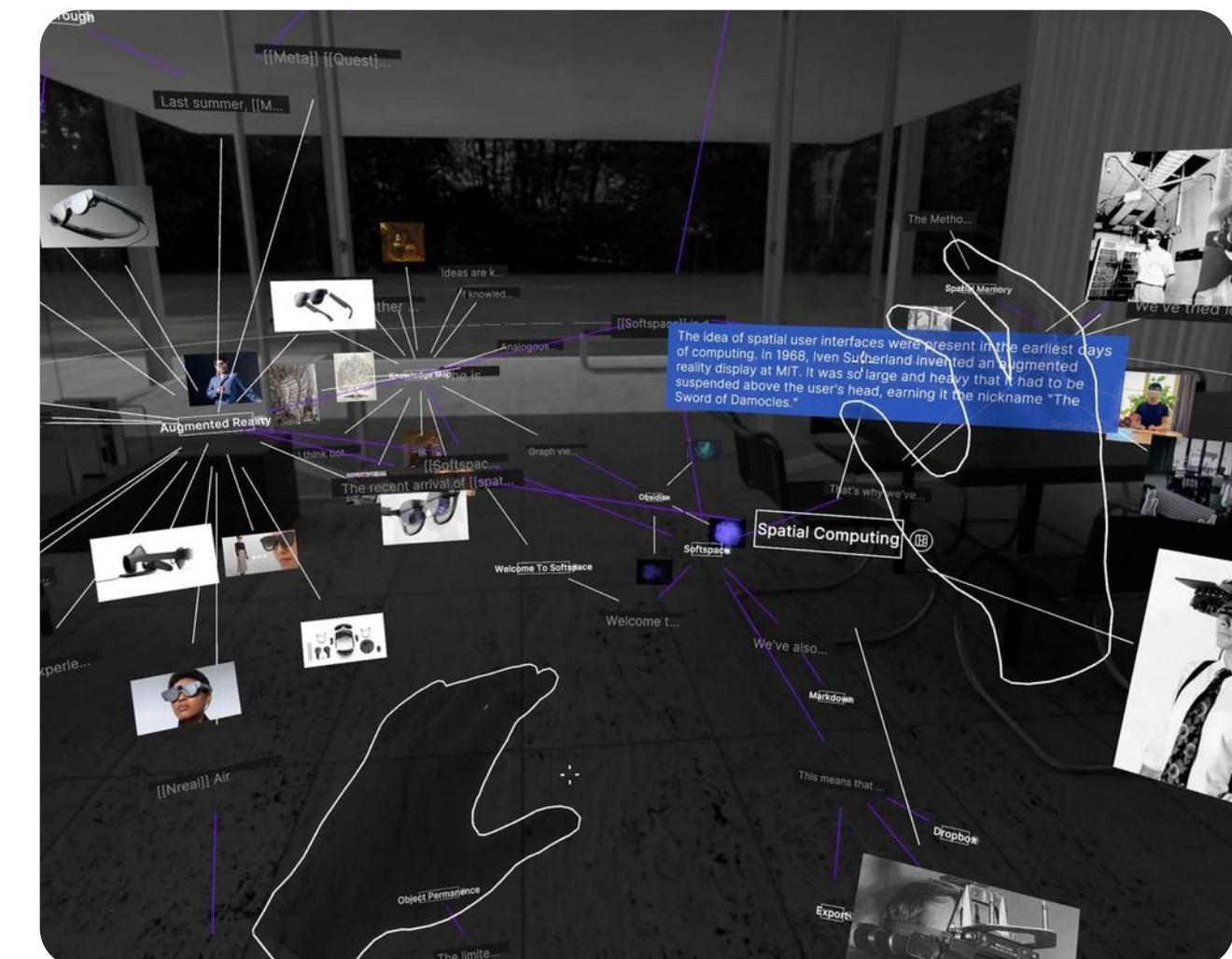
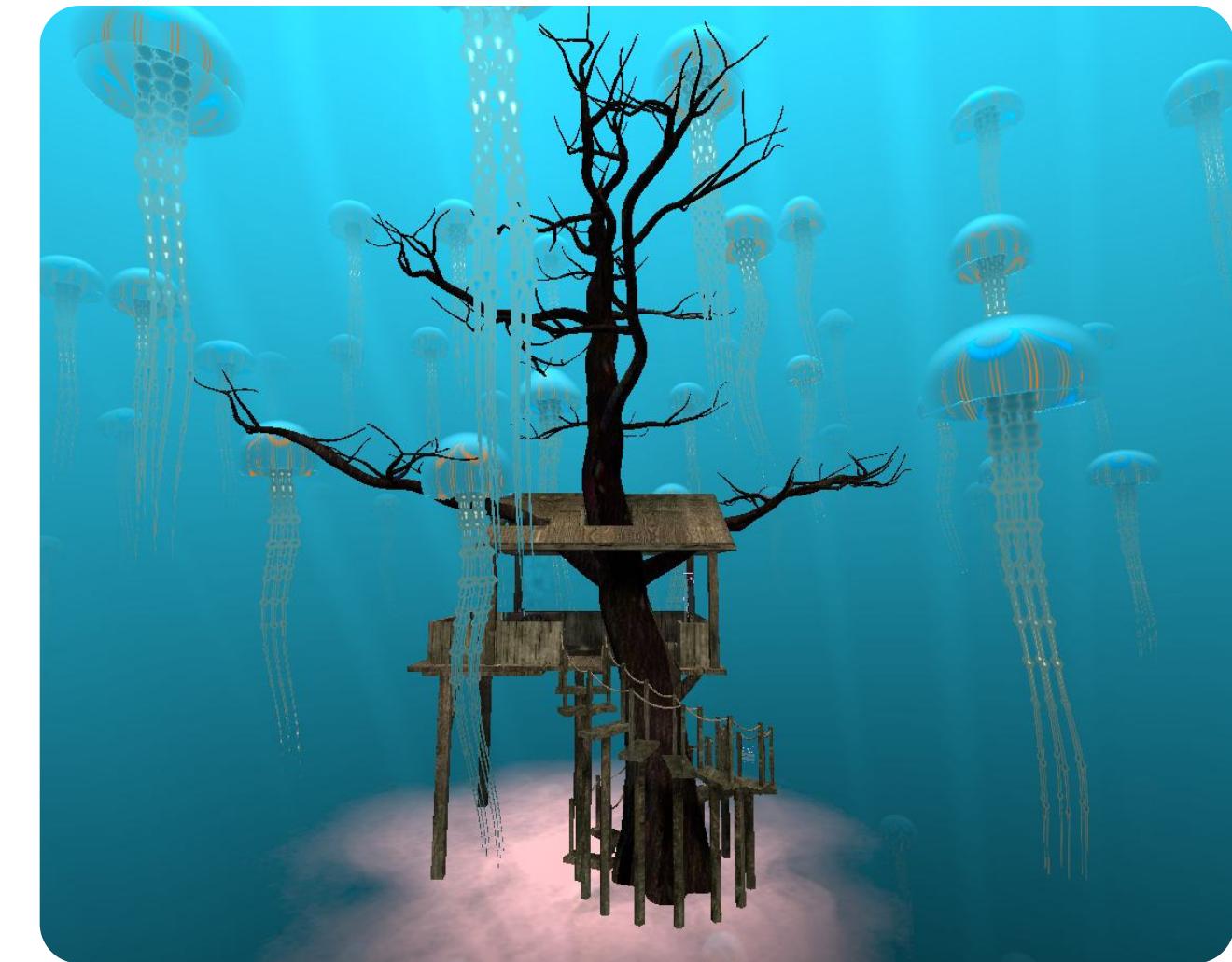
Why does (FOSS) XR matter?

Besides the applications for XR as a whole, the FOSS XR space is more important than ever. FOSS XR provides a much needed alternative to proprietary platforms, which heavily lock down their APIs and platforms, locking down most of its use cases before there are implemented use cases worth locking down.

「ultraviolet」 After playing with my Quest 2 for a while (with Meta's HorizonOS), I've noticed that... it feels like a children's toy in terms of functionality. I'm excited to see what XR could actually do, once these artificial limitations are removed.

「Nova」 Every compelling idea I can think of like spatial notifications or interactive diagrams of software and settings isn't possible or practical on any existing platform, there's just too many artificial limits!

EXAMPLES



FOSS XR

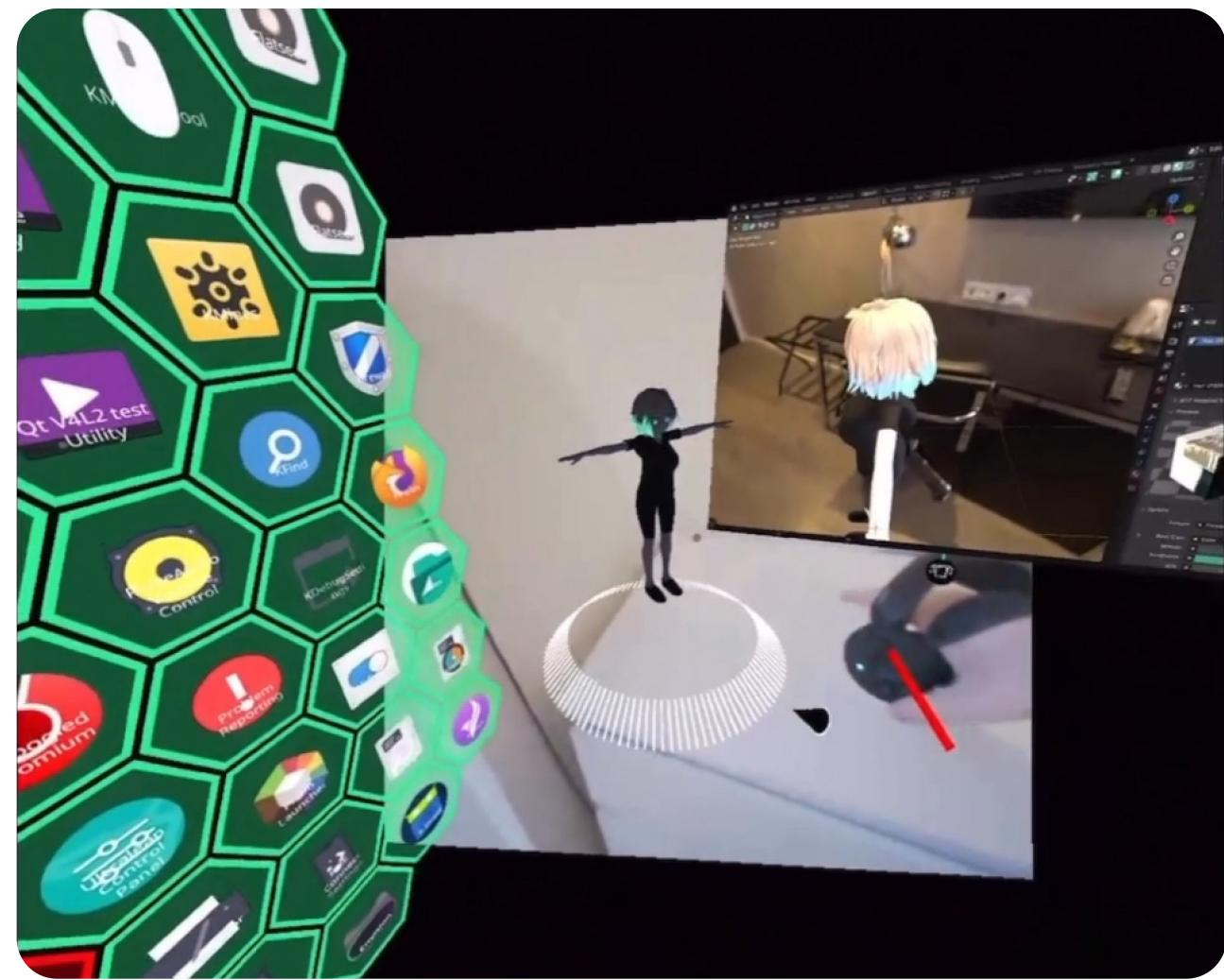
Bringing Stardust XR to more places.

Stardust XR is an open ecosystem and display server to make using all your 2D apps, immersive XR apps, and virtual objects together intuitive, accessible, and fun. We've been working with the project in order to build a variant of Ultramarine for XR devices, and ultimately, bring more people into the FOSS XR ecosystem.

「ultraviolet」 ~~The day I see Stardust shipped on a commercial headset is the day I regain faith in the XR industry.~~

「Nova」 So I decided to make an XR platform that didn't have those limits based on sandbox games and mental models and mind palaces and holograms, all in one space without having to compromise. Objects can actually interact with each other!

STARDUST IN ACTION



Raspberry Pi Foundation

Ultramarine flavoured pi(e).

We worked with the Raspberry Pi Foundation to enable Ultramarine Linux support in the Pi Foundation's official "Imager" application on desktop and Raspberry Pi firmware. We are the first Fedora-based Distribution to be included in here.

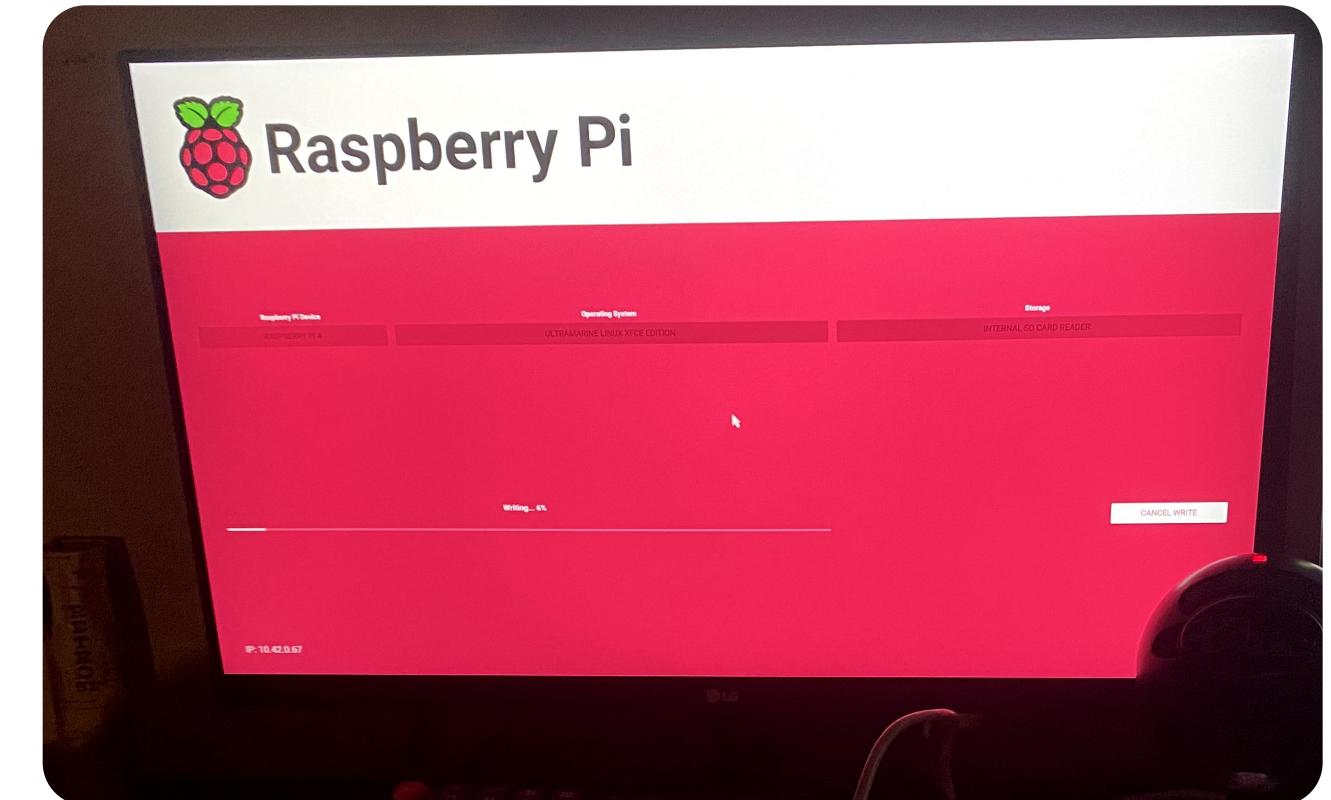
Technical details soon:)

「**junefish**」 I only realized the Pi 4 had a built-in recovery flasher in the firmware because of our Pi port. In hindsight it would have saved me a lot of time with past projects.

「**nothingneko**」 Raspberry Pi holds a really special place in my heart, and getting to work with Tom and then seeing our logo in the imager just lights me up.

ULTRAMARINE IN IMAGER

Back	Go back to main menu
 Ultramarine Linux Flagship Edition	Our default and most popular variant. Choose Flagship if you'd like a familiar and stylish experience. Released: 2024-05-22 Online - 2.9 GB download
 Ultramarine Linux KDE Edition	Our second most popular variant. Choose KDE if you'd like a simply customisable experience. Released: 2024-05-22 Online - 4.2 GB download
 Ultramarine Linux GNOME Edition	Elegant and Modern. Choose GNOME if you'd like a simple, unique experience.



ISSUE DATE

05/17/24

COMPATIBILITY

PI 4

Others

More than just two.

While we don't have the time to cover them all, we'd still like to mention our wonderful partners and neighbors here. From development and distribution partners to downstreams, we greatly appreciate what we've been able to do with each one of these.

THANK YOU :)



Chrultrabook



Universal Blue



Fedora



GNOME



Sodalite



Freedesktop



FOSStorrents

07

Strange hardware.

「owensz」 Linux users: Making it run on weird hardware since 1991



Chromebooks

Why Chromebooks?

Recently, Chromebooks have become very popular. They're seen as nothing more than cheap glorified browsing machines. However, you can do so much more with these devices if you have some spare time, turning them into low-cost, fun to use devices that can get (real) work done.

「**junefish**」 Chromebooks often go for cheaper prices than Windows PCs of similar specs on the used market!

「**owensz**」 Since getting a high-spec Chromebook, I now do almost all of my work on it. It's quite a fun experience, especially since I have a feeling of accomplishment every time I set up a new Chromebook

「**ultraviolet**」 My favorite aspect of Chromebooks is the diversity of forms. For example, my current favorite model, Krane, is a tablet style machine with a great display and stylus support. It's not just netbooks.

STATS

9 million tons CO₂e

Per year from premature Chromebook purchasing

50 million +

Active Chromebooks in schools

10 %

Of the PC market

START DATE

11/08/23

STATUS

IN PROGRESS

Chromebooks

What else is out there?

Coreboot

Turns your Chromebook into a standard, UEFI compatible laptop.

PRO

Allows for Windows or standard Linux.

CON

Risk of bricking.

PRO

No more Google!

CON

Requires modifying the device.

Crostini

Use a Linux environment inside ChromeOS.

PRO

Officially supported.

CON

Graphical app support is hit-or-miss.

PRO

Convenient.

CON

Limited resources and options.

Other Kernel trickery

Using the kernel partition as God- I mean Google intended.

PRO

No modification needed.

CON

Needs different builds per Chromebook.

PRO

No risk of bricking.

CON

It's hard to jam a kernel in a small space.

Chromebooks

Presenting Chromebook Edition!

Submarine

A bootloader in 14mb. All the pros of Kernel trickery, with none of the cons.

Userspace

Most distributions aren't well optimized, and leave things like the audio and keyboard broken.

A just-works experience

Other methods are complex to install. Simply flash, enable dev mode, and install like normal.

Chromebooks are the new ThinkPads

Chromebooks are arguably more open than modern ThinkPads.

「[nothingneko](#)」 somebody had to say it, now give us our hacker cred.

「[ultraviolet](#)」 oh no, time to go viral and piss off Twitter (again).

Raspberry Pi

Bringing Ultramarine to the most popular SBC.

Many people get into computer tinkering through Raspberry Pis, so this was an obvious target for us. People are always finding new and unique ways to use their Pis, and we wanted to help out as much as we could.

STATS

1st

Non-Debian distribution in imager

61 million

Raspberry Pis sold

44 %

Of professional SBC users prefer RPi

「**ultraviolet**」 honestly, I'm still shocked we were able to work with the foundation like that

「**nothingneko**」 I'm a big fan of the community around the Pi and am happy we can get into people's hands easier.

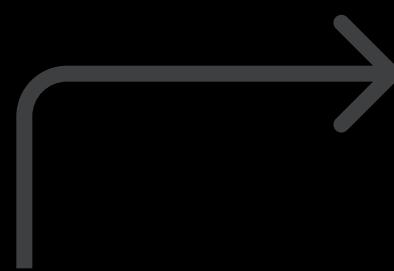
08

Ultramarine and you.

「ultraviolet」 the beginning of the end



How you can get involved.



1

Talk to us.

Feel free to catch us in-between talks or whenever you spot us. We'd love to hear your thoughts, ideas, feedback, and more.

2

Try Ultramarine.

If you have a spare machine (or Chromebook, we'd love to help you with that) you can try out Ultramarine. Bonus points for feedback and bug reports.

3

Join the community.

Even if you don't plan to use Ultramarine (for now), we'd love to have you around. Join our Discord (fyralabs.com/discord) or Matrix (fyralabs.com/matrix).

4

Contribute.

If you've been using Ultramarine and want to help out, reach out, we'll get you started. Even if you can't write code, we still want you!



Special thanks to...



Elly

CHULTRABOOK



Domi

CHULTRABOOK



Nova

STARDUST XR



Matthew

FEDORA



Joseph

FEDORA



Addison

HELIUM

Even more thanks to...

Fyra Labs

Our entire community <3

Fedora

For being an amazing upstream and inviting us here.

Chultrabook

For helping us make Chromebook edition possible.

Everyone else!

We wouldn't be here without a whole lotta people.

Questions?

Thank You

「owensz」 Find me after for Chromebook demos/more info

「nothingneko」 I have a Pi just look for the cat ears outside

A Fyra Labs Joint

© 2024

TYPE STYLES

Title

140 / 100%
Used for large display text.

Heading 1

64 / 120%
Used for larger main headings.

Heading 2

42 / 112%
Used for medium-sized main headings.

Heading 3

36 / 112%
Used for secondary or tertiary headings.

Heading 4

28 / 120%
Used for secondary or tertiary headings.

Heading 5

20 / 120%
Used for smaller content.

Subheading 1 + SUBHEADING 1 (ALL CAPS)

42 / 120%
A lighter-weight large heading, with an alternate in ALL CAPS.

Subheading 2 + SUBHEADING 2 (ALL CAPS)

28 / 120%
A lighter-weight medium-sized heading, with an alternate in ALL CAPS.

Subheading 3 + SUBHEADING 3 (ALL CAPS)

20 / 120%
A lighter-weight small heading, with an alternate in ALL CAPS.

Subheading 4 + SUBHEADING 4 (ALL CAPS)

16 / 132%
A lighter-weight tiny heading, with an alternate in ALL CAPS.

Paragraph 1

56 / 112%
Used for large bodies of text.

Paragraph 2

42 / 112%
Used for medium-sized bodies of text.

Paragraph 3

28 / 132%
Used for small bodies of text.

Note

16 / 140%
Used for supplementary information, details, or captions.

Value 1

140 / 100%
Used for large numbers or values.

Value 2

72 / 100%
Used for medium-sized numbers or values.