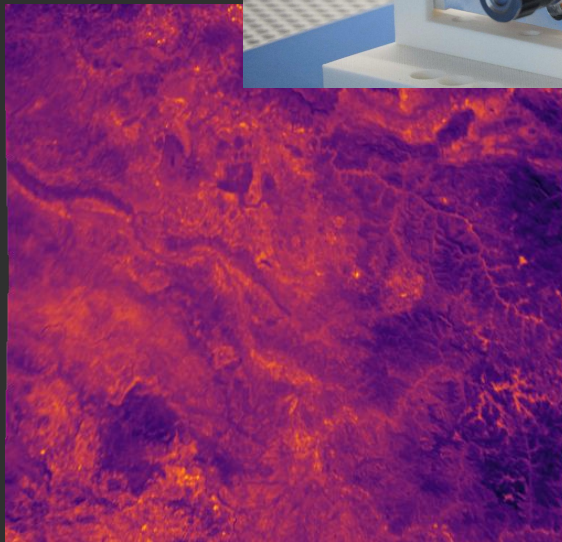
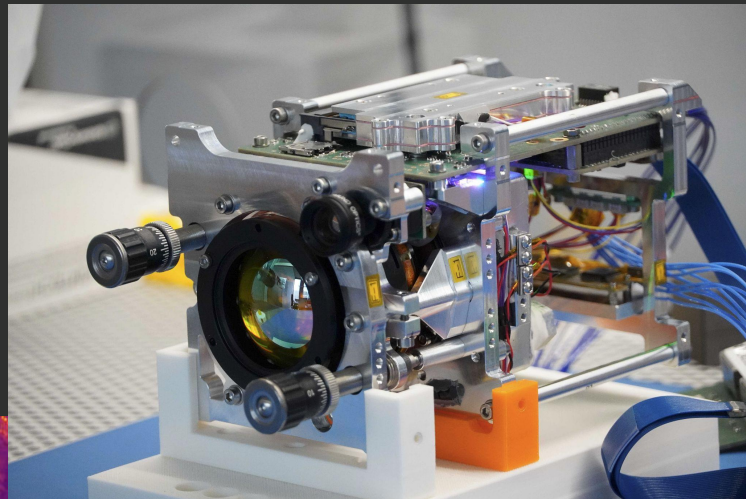


Nix - a space odyssey

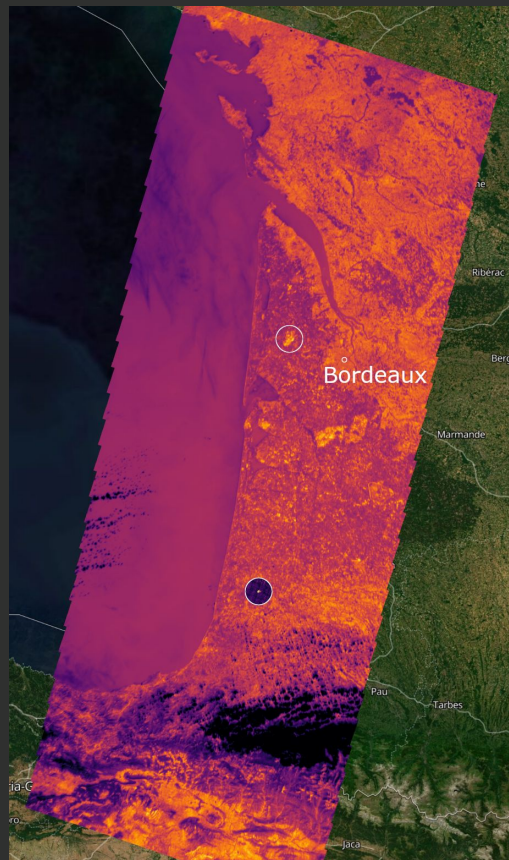
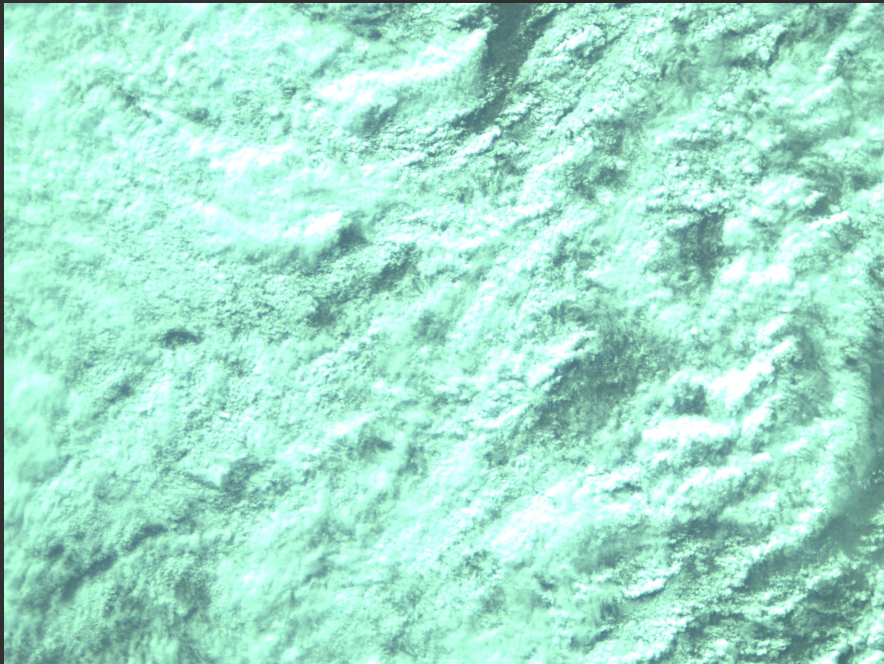
NixCon 2022

The context

- OroraTech
 - Wildfire detection and monitoring services
 - Design and deploy own satellite payloads



The context



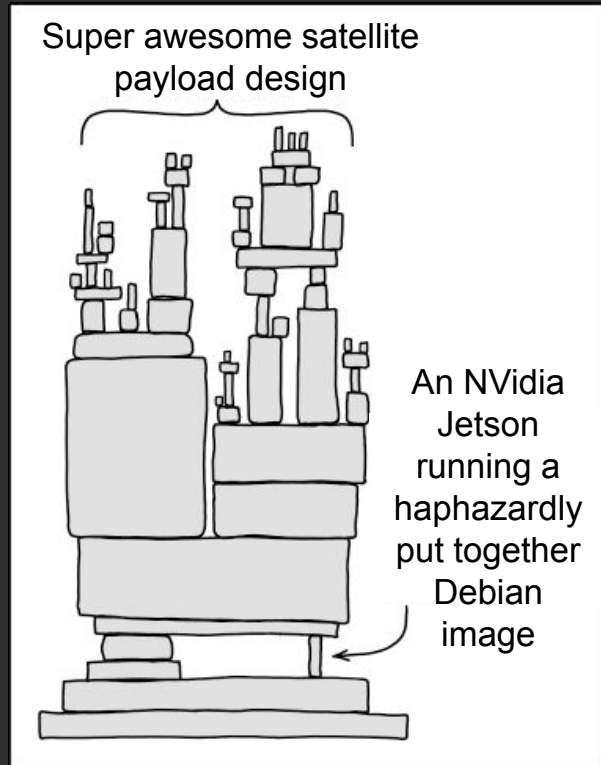
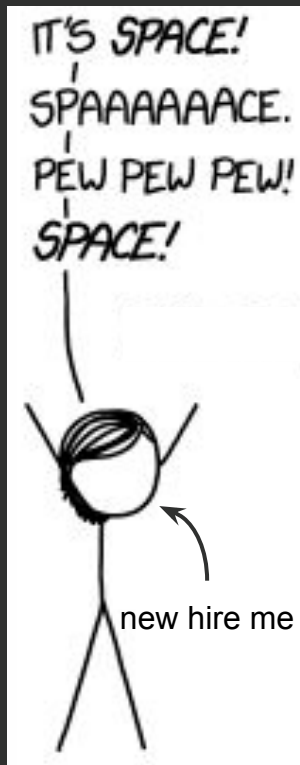
Images from [our FOREST-1 payload](#)



NixCon 2022
Nix - a space odyssey
github.com/kip93

The problem

- Be me
- Happy to get hired as Embedded Linux engineer
- Arrive to a massive undocumented Makefile debootstrap mess
- Software updates on the satellite are completely manual
- * cries in spanish *



Left picture based on [XKCD 2124 - Space mission hearing](#)

Right picture based on [XKCD 2347 - Dependency](#)

(CC BY-NC 2.5)

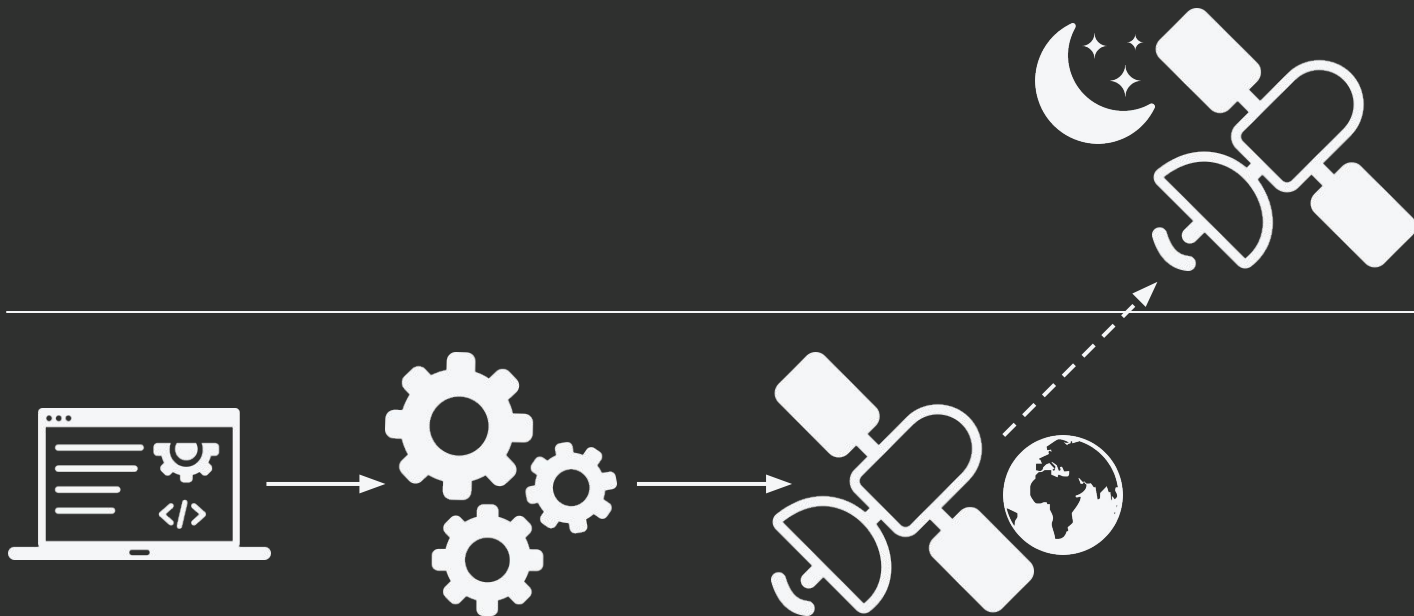


NixCon 2022

Nix - a space odyssey

github.com/kip93

The plan



The idea



Use Debian and manually update everything, and eventually irreversibly fuck up the entire thing



Use Debian + nix to build, test, and update the software more reliably, plus provide a rollback path



Use NixOS to not only manage software but also the configuration of the system



Use NixOS flakes to have a fully reproducible OS that we can thoroughly test on ground

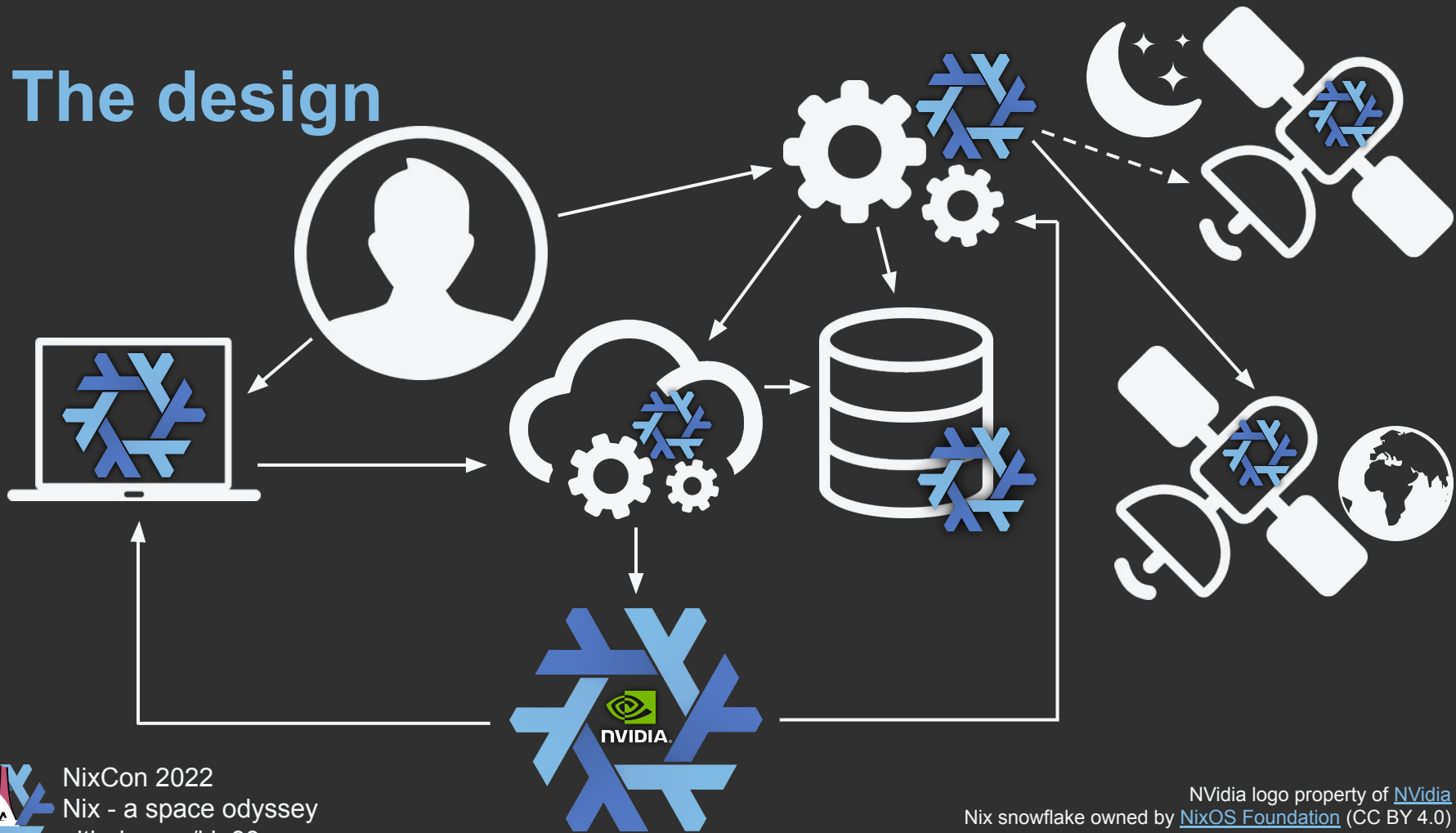


NixCon 2022

Nix - a space odyssey

github.com/kip93

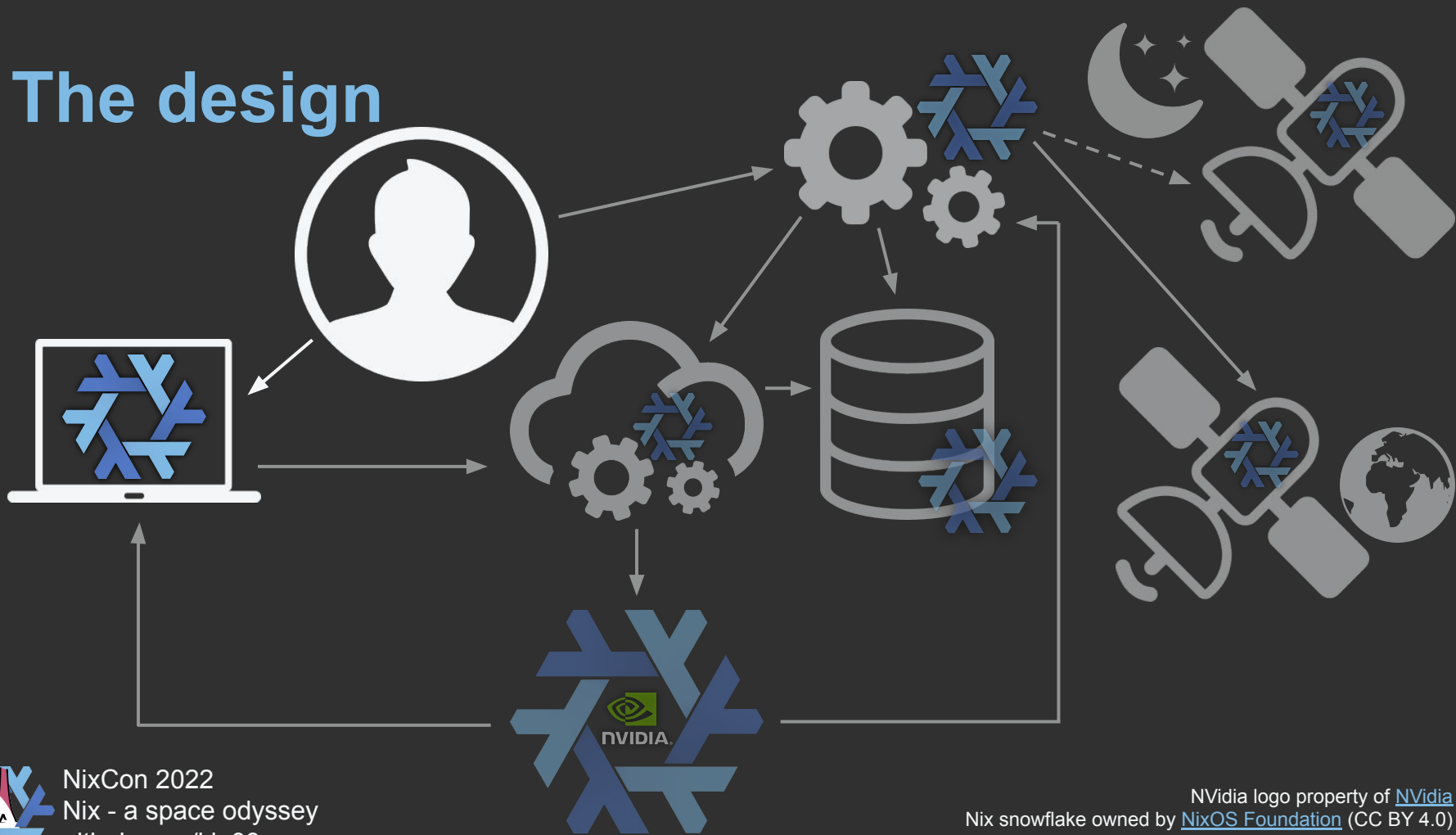
The design



NixCon 2022
Nix - a space odyssey
github.com/kip93

NVidia logo property of [NVidia](https://www.nvidia.com)
Nix snowflake owned by [NixOS Foundation](https://nixos.org) (CC BY 4.0)
All other icons freely available from [uxwing](https://uxwing.com)

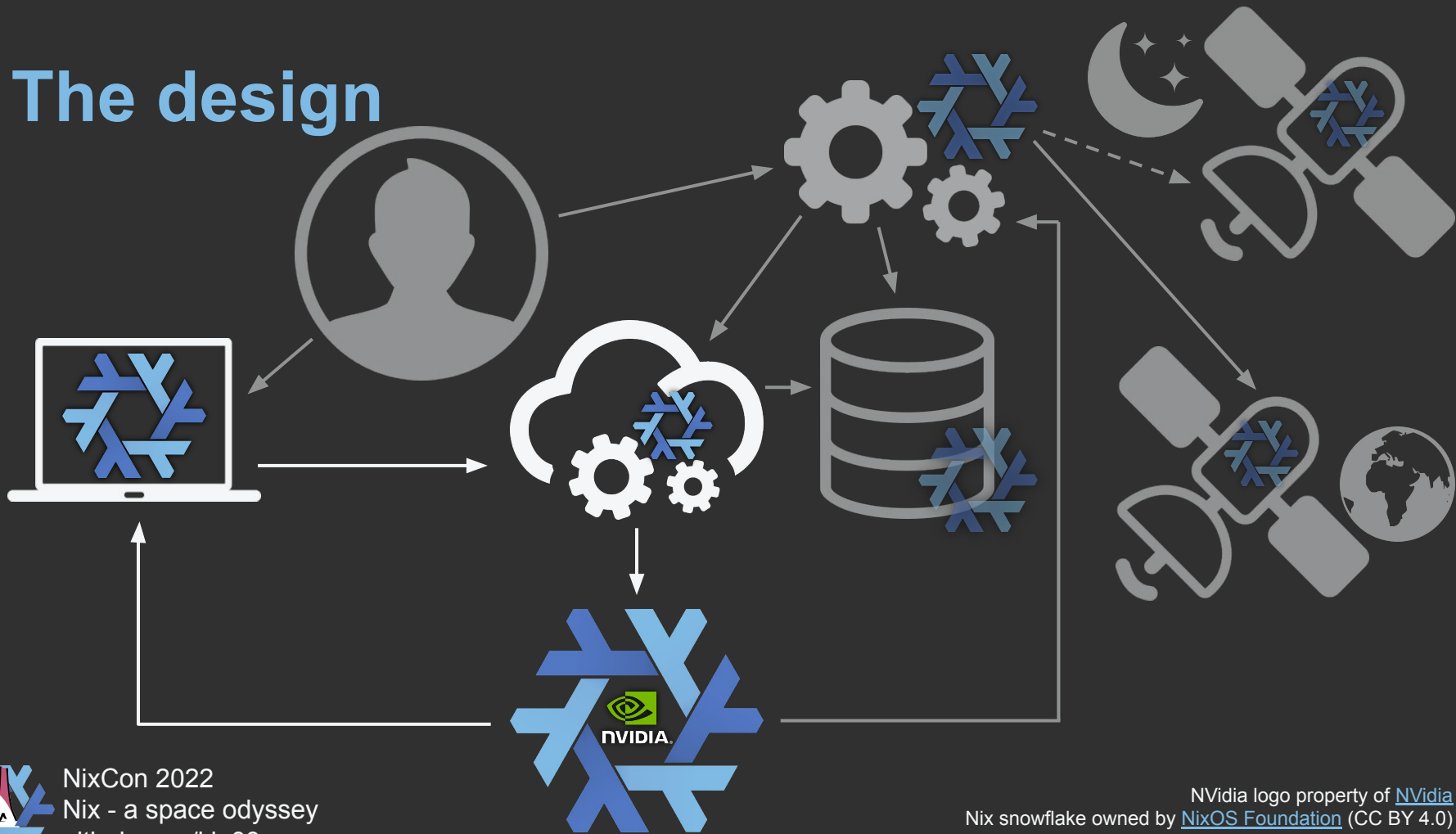
The design



NixCon 2022
Nix - a space odyssey
github.com/kip93

NVidia logo property of [NVidia](https://www.nvidia.com)
Nix snowflake owned by [NixOS Foundation](https://nixos.org) (CC BY 4.0)
All other icons freely available from [uxwing](https://uxwing.com)

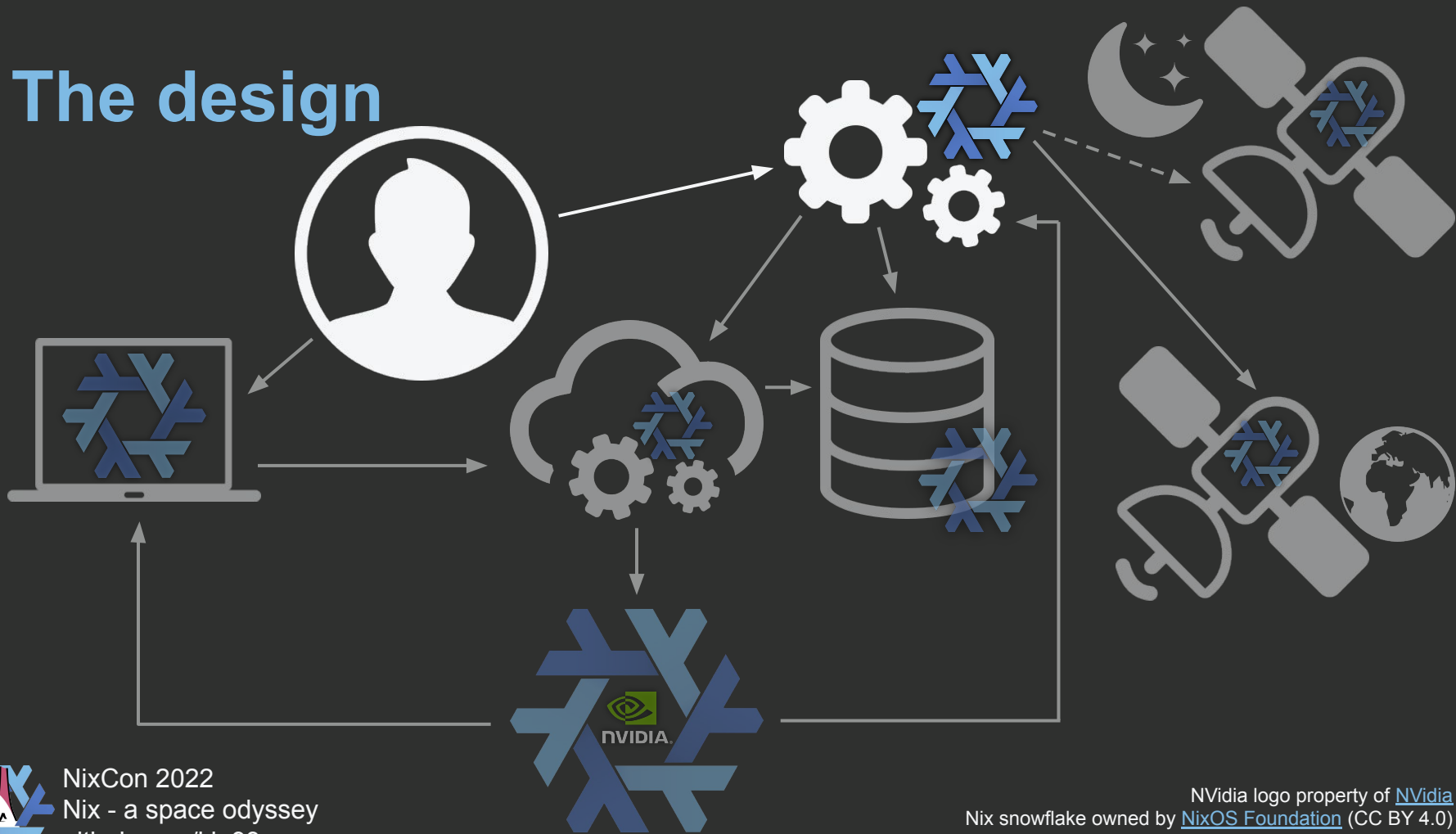
The design



NixCon 2022
Nix - a space odyssey
github.com/kip93

NVidia logo property of [NVidia](https://www.nvidia.com)
Nix snowflake owned by [NixOS Foundation](https://nixos.org) (CC BY 4.0)
All other icons freely available from [uxwing](https://uxwing.com)

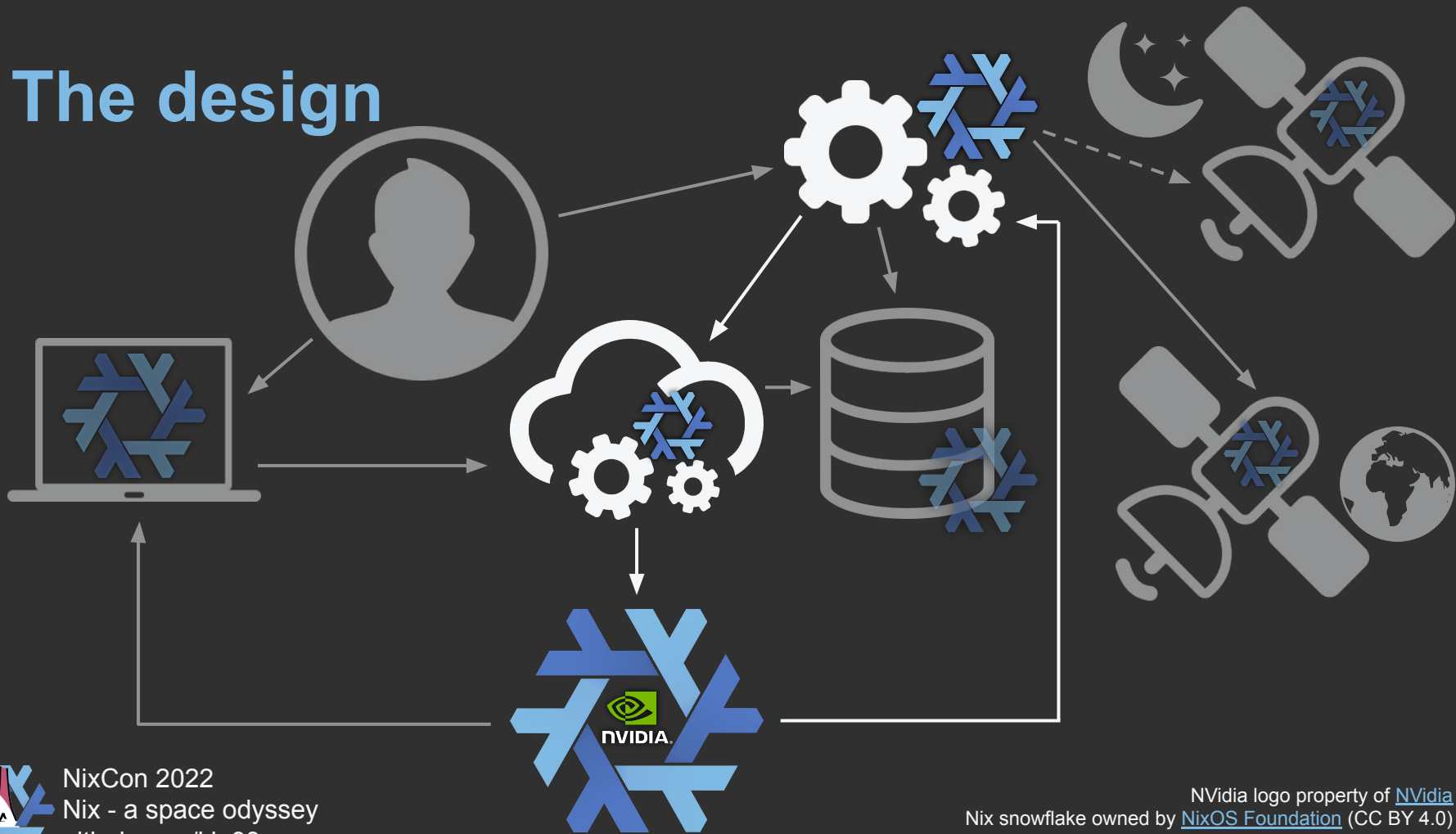
The design



NixCon 2022
Nix - a space odyssey
github.com/kip93

NVidia logo property of [NVidia](https://www.nvidia.com)
Nix snowflake owned by [NixOS Foundation](https://nixos.org) (CC BY 4.0)
All other icons freely available from [uxwing](https://uxwing.com)

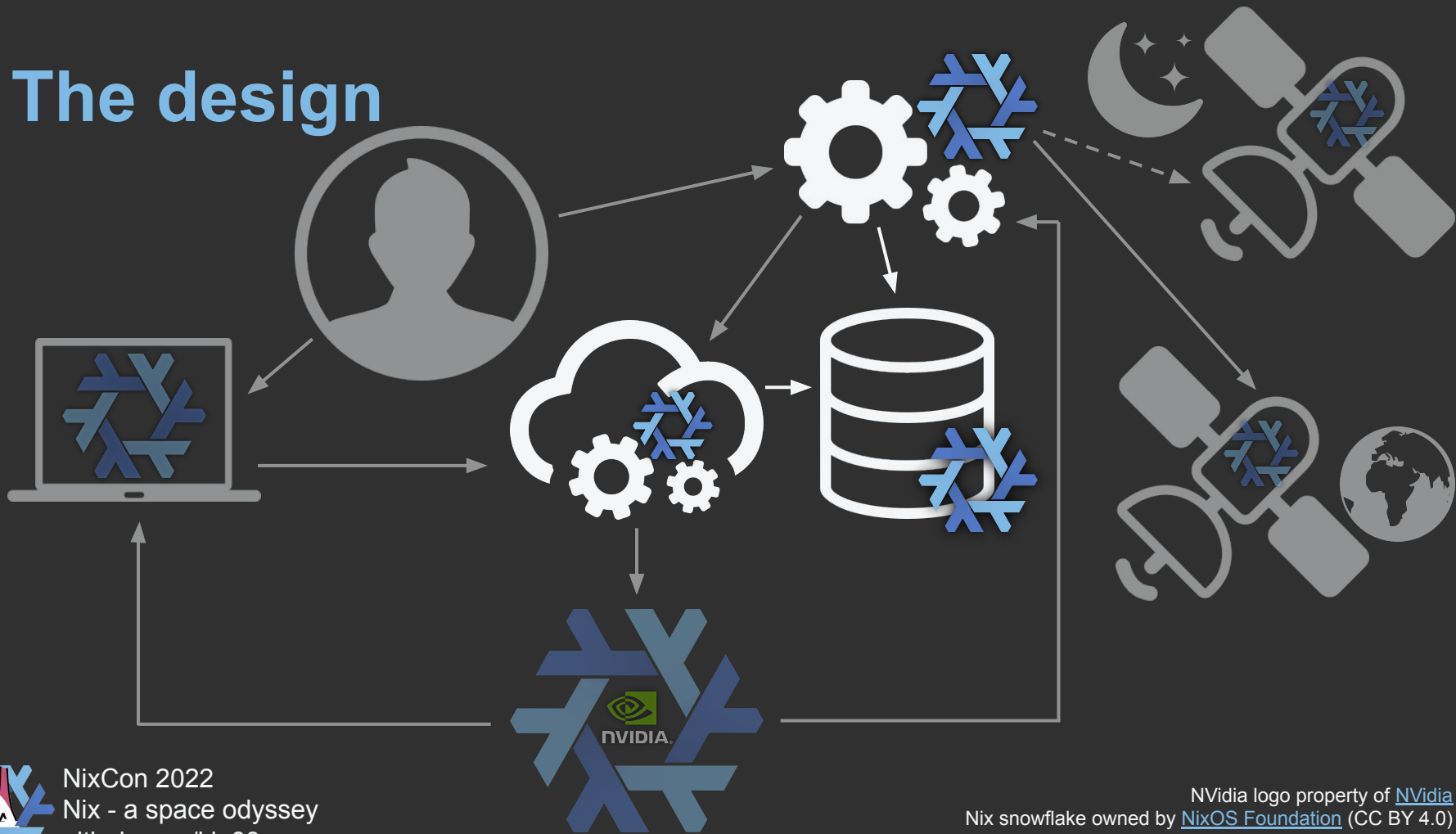
The design



NixCon 2022
Nix - a space odyssey
github.com/kip93

NVidia logo property of [NVidia](https://www.nvidia.com)
Nix snowflake owned by [NixOS Foundation](https://nixos.org) (CC BY 4.0)
All other icons freely available from [uxwing](https://uxwing.com)

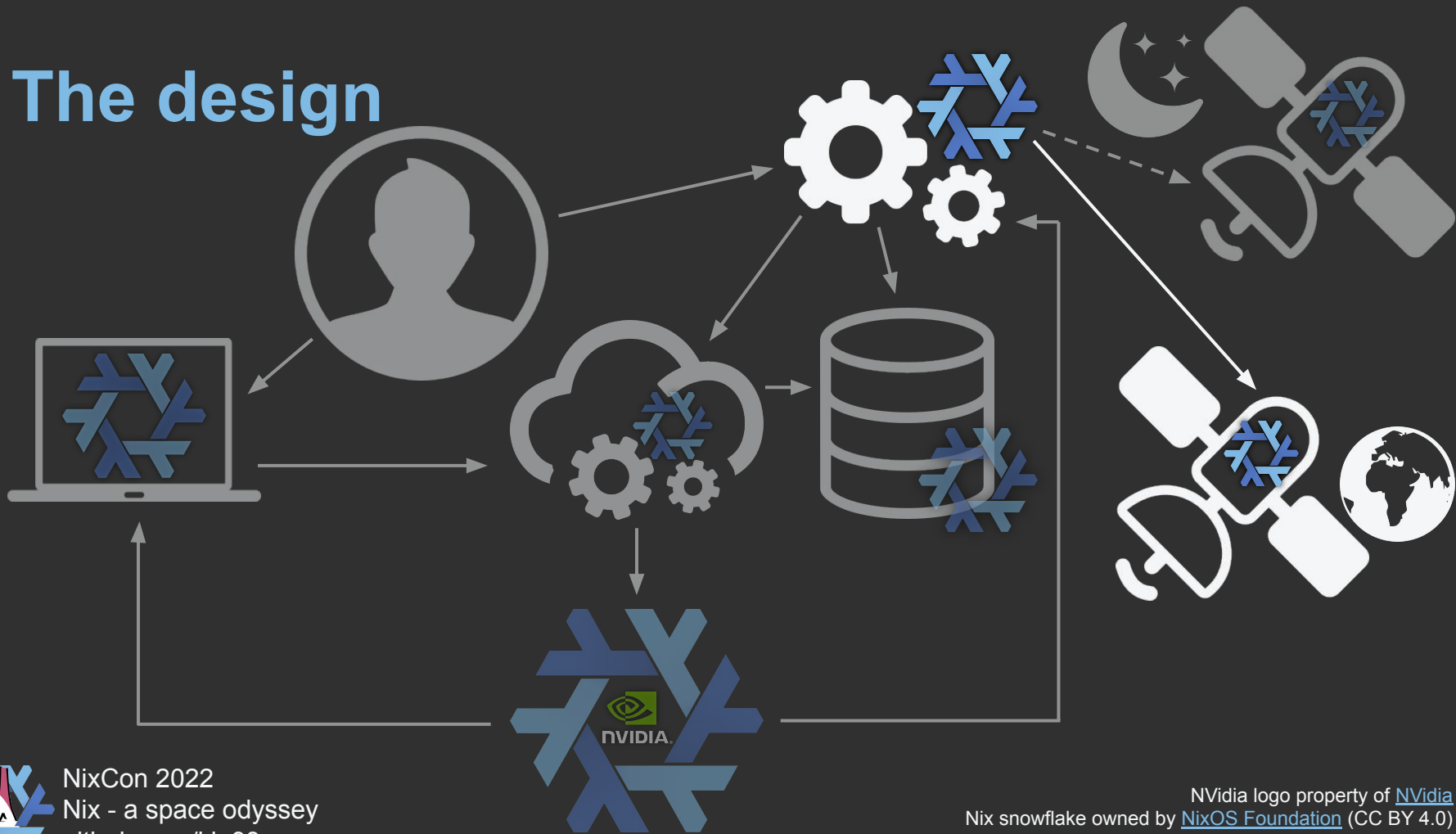
The design



NixCon 2022
Nix - a space odyssey
github.com/kip93

NVidia logo property of [NVidia](https://www.nvidia.com)
Nix snowflake owned by [NixOS Foundation](https://nixos.org) (CC BY 4.0)
All other icons freely available from [uxwing](https://uxwing.com)

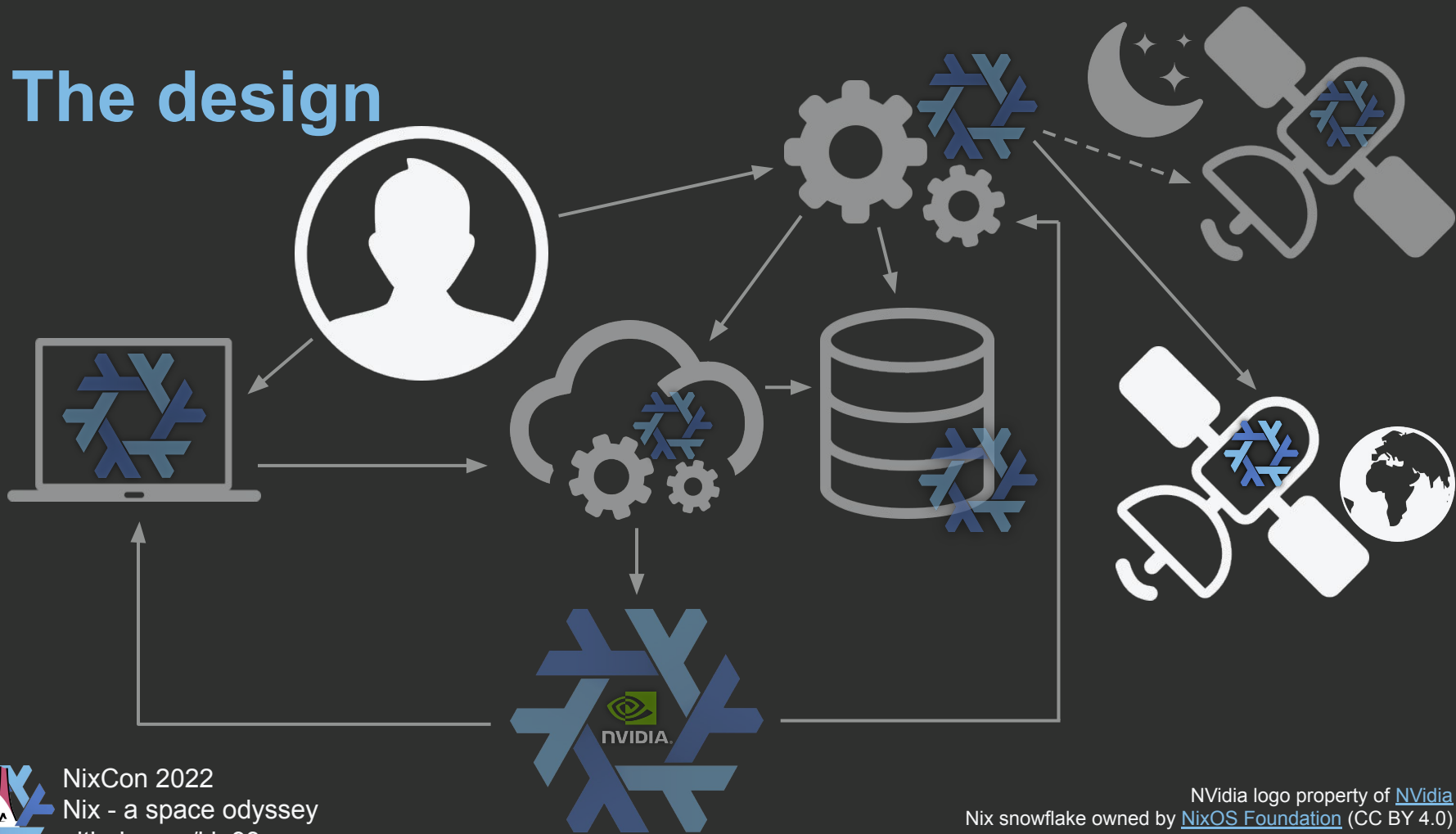
The design



NixCon 2022
Nix - a space odyssey
github.com/kip93

Nvidia logo property of [Nvidia](https://www.nvidia.com)
Nix snowflake owned by [NixOS Foundation](https://nixos.org) (CC BY 4.0)
All other icons freely available from [uxwing](https://uxwing.com)

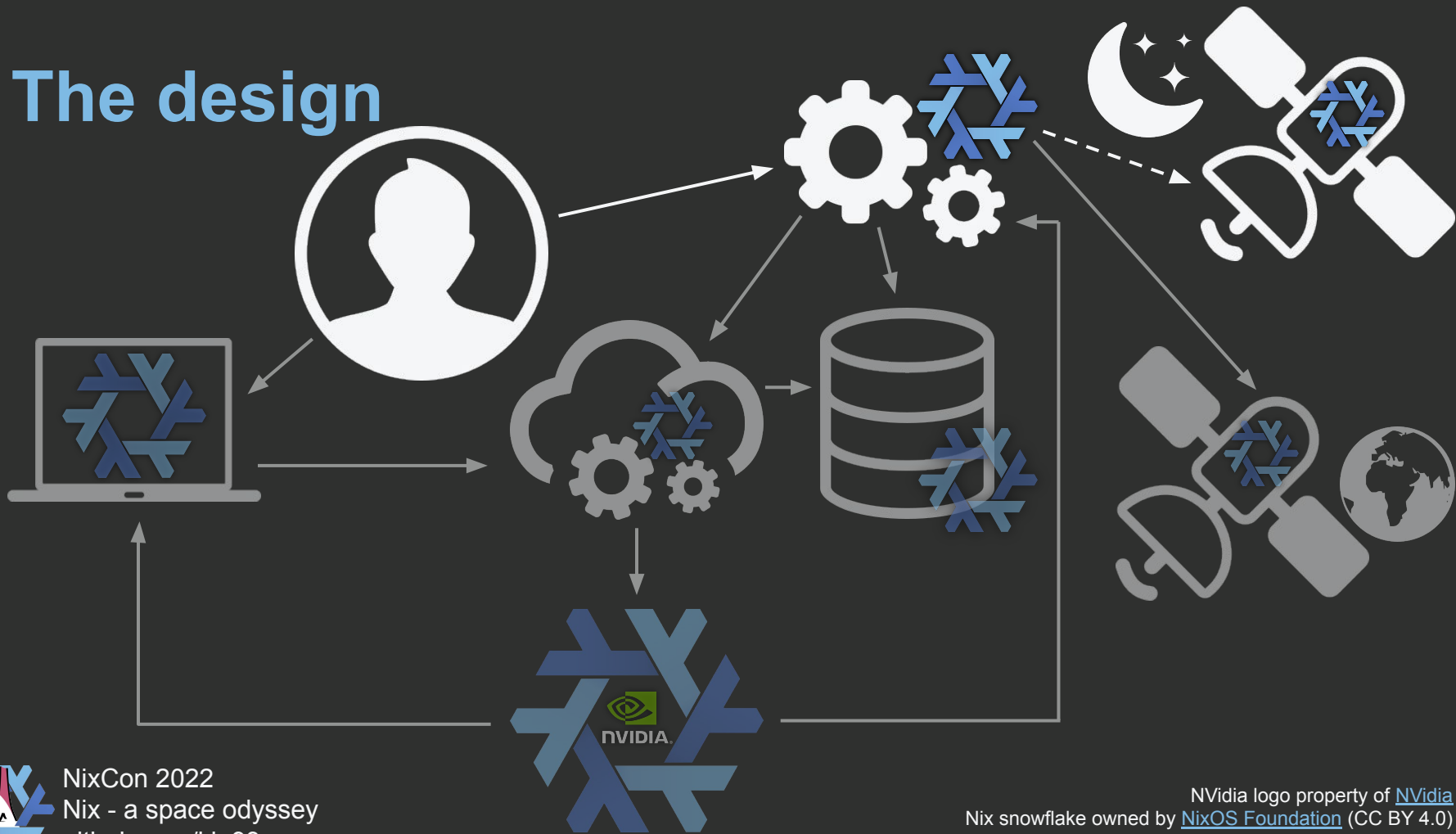
The design



NixCon 2022
Nix - a space odyssey
github.com/kip93

NVidia logo property of [NVidia](https://www.nvidia.com)
Nix snowflake owned by [NixOS Foundation](https://nixos.org) (CC BY 4.0)
All other icons freely available from [uxwing](https://uxwing.com)

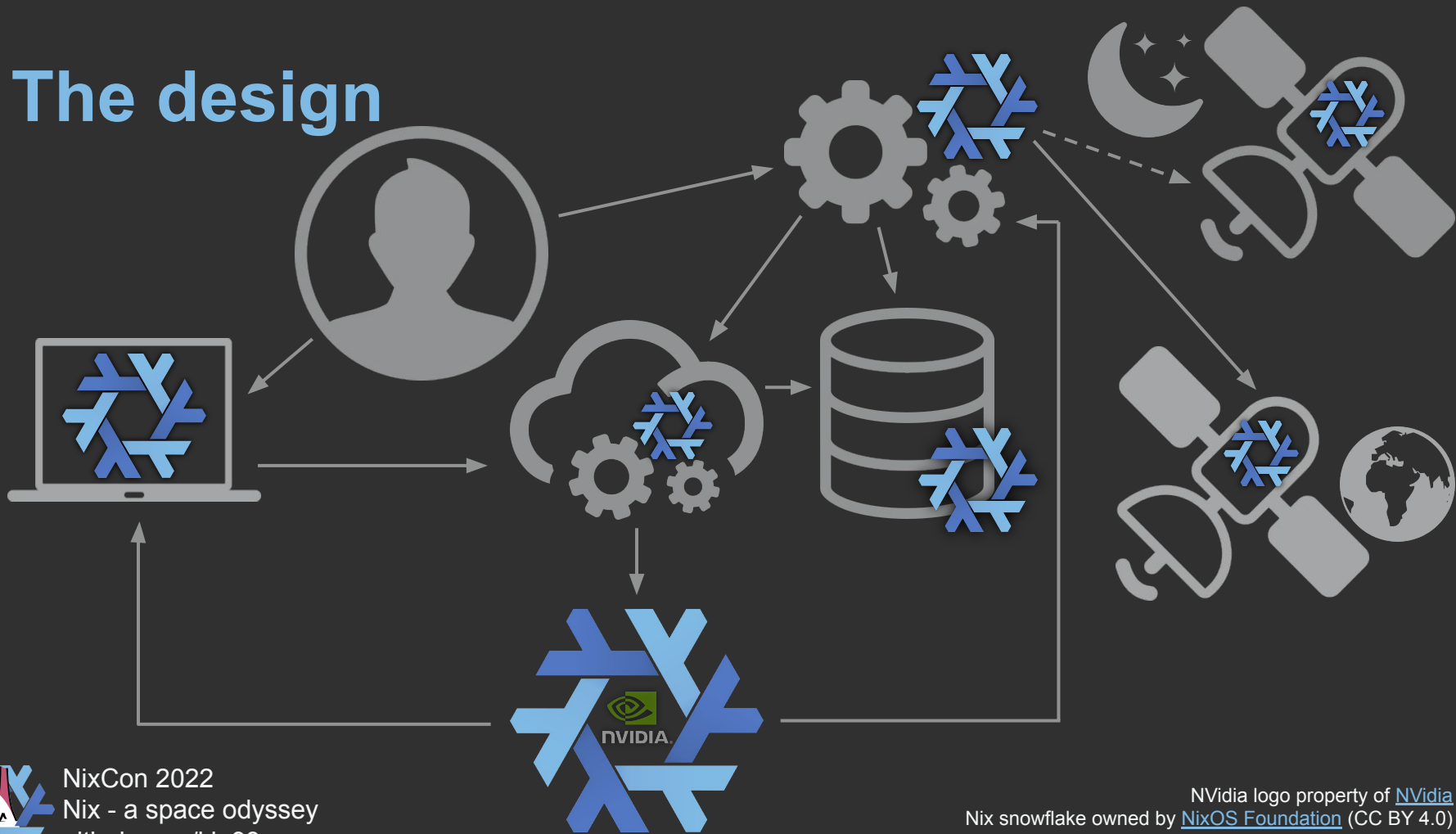
The design



NixCon 2022
Nix - a space odyssey
github.com/kip93

Nvidia logo property of [Nvidia](https://www.nvidia.com)
Nix snowflake owned by [NixOS Foundation](https://nixos.org) (CC BY 4.0)
All other icons freely available from [uxwing](https://uxwing.com)

The design



NixCon 2022
Nix - a space odyssey
github.com/kip93

NVidia logo property of [NVidia](https://www.nvidia.com)
Nix snowflake owned by [NixOS Foundation](https://nixos.org) (CC BY 4.0)
All other icons freely available from [uxwing](https://uxwing.com)

The takeaways

| | | |
|-----------------|---|-------------------------------|
| Reproducibility | → | Easier ground testing |
| | | Identical dev & CI processes |
| Remote builders | → | Transparent ARM build process |
| Cache | → | Speed up builds |
| Closures | → | Custom upload process |
| Generations | → | Reliability and confidence |



The Q&A

- Why does a satellite not fall down and crash?
- Which is your favourite dinosaur?
- What is the air-speed velocity of an unladen swallow?
- Did you see that ludicrous display last night?



The end

Thanks!

We're hiring! ⇒ ororatech.com/careers



NixCon 2022
Nix - a space odyssey
github.com/kip93