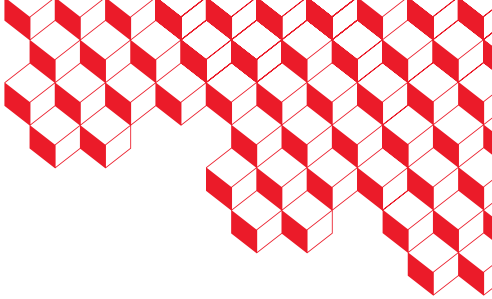
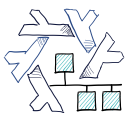


Why  EPNix?

Why do this to ourselves?

Rémi NICOLE

2026-04-20

Disclaimer

This presentation has a lot of opinions.

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These (bad) opinions are my own, and not necessarily those of my employer.

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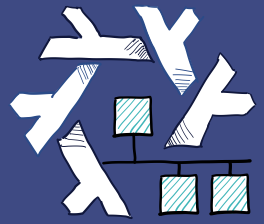
Or any of my colleagues, really.

1. What's

 EPNix?

EPNix goals

By using the **Nix** package manager and the **NixOS** Linux distribution,

EPNix enables:

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- Deploy **EPICS** IOCs

EPNix goals

By using the **Nix** package manager and the **NixOS** Linux distribution, **EPNix** enables:

- Building **EPICS** tops & support modules
- Manage **EPICS** dependencies
- Deploy **EPICS** IOCs
- Deploy other **EPICS**-related software:
  - Archiver Appliance,
  - The Phoebus stack, etc.

What are people saying about EPNix

I should try **NixOS** one day, I fear that I will like it…

— Ralph Lange (ITER)

"**EPNix**" ; at least the name is catchy.

— Simon Rose (ESS)

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**This is not an official endorsement*

2. Why, then?

Advantages

- Reproducible

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- Provides development shell
- Declarative configurations
  - Integration tests
  - Interactive tests
- Offline deployments
- Vendor-agnostic continuous integration
  - VM image building
  - ISO building
  - Docker container building
- Appliance-style image building
- Works for embedded
- Concerns separation
- Configuration rollbacks
- Atomic upgrades
- Multi-machine declaration
- Apache server
- Cache dependencies
- Archive build dependencies
- Build isolation
- Install multiple concurrent versions
- Infrastructure as code
- Single configuration repository
- SBOM generation
- Immutable package store
- Specialization support
- Configuration checking before application
- Sub-container declaration
- Per-user package installation
- Declarative disk partitioning with disko
- No dependency on the host Linux distribution
- Parallel builds
- Configure **everything**

Advantages

- Reproducible
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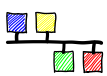
Who cares?

Human drawbacks

If you think about it, we adopted a technology:

- Not well known in the sysadmin community
- Completely unknown to the  **EPICS** community
- Completely unknown to our team
- Created and maintained by ~1 person

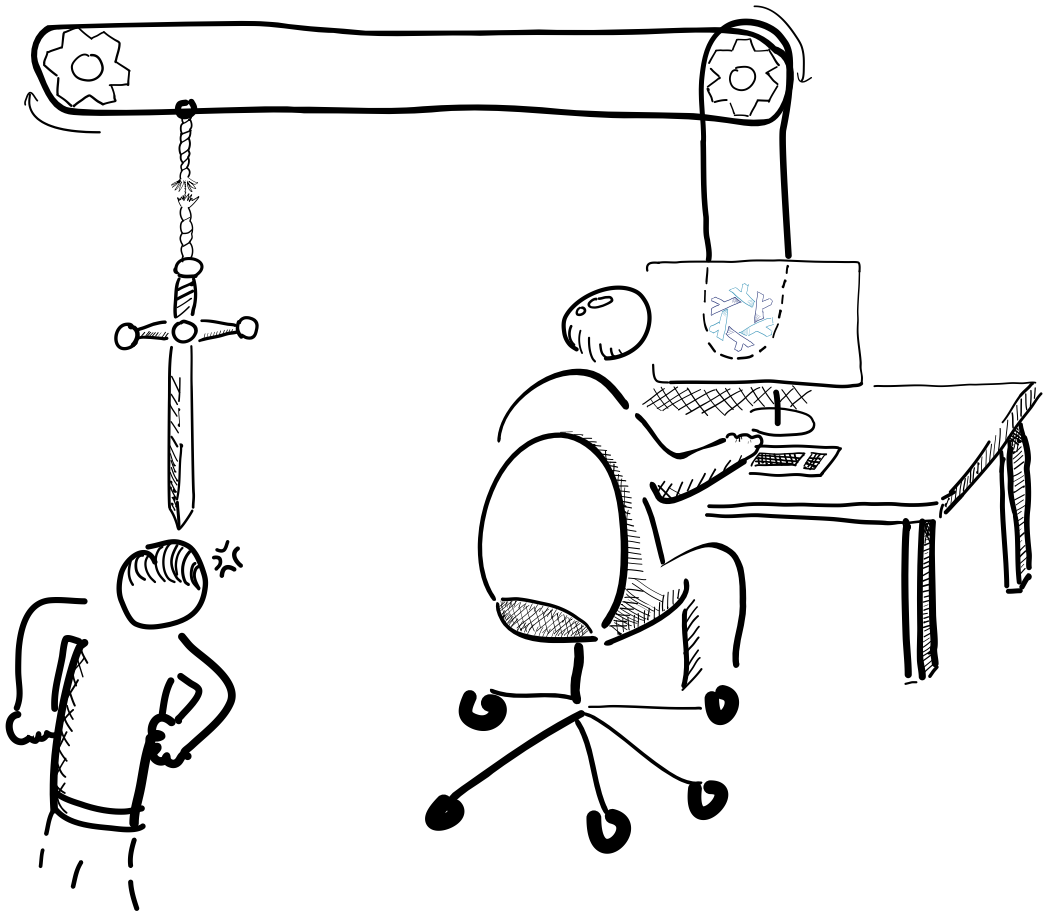
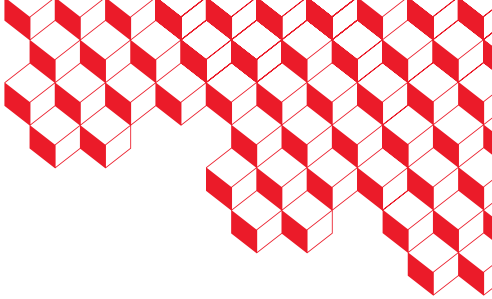


Figure 1: My manager watching me deploying something that only I understand

Who allowed  EPNix to exist in the first place?



EPNix: The HR factor (not the music band)

The **real**  **EPNix** presentation

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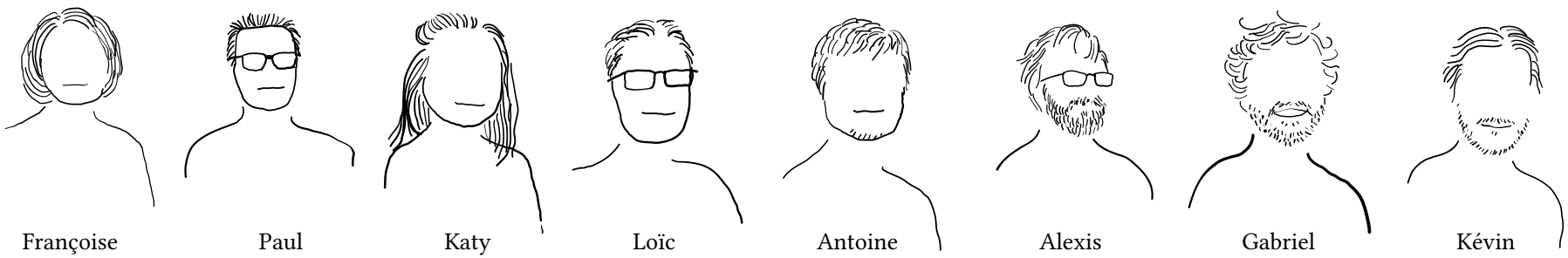
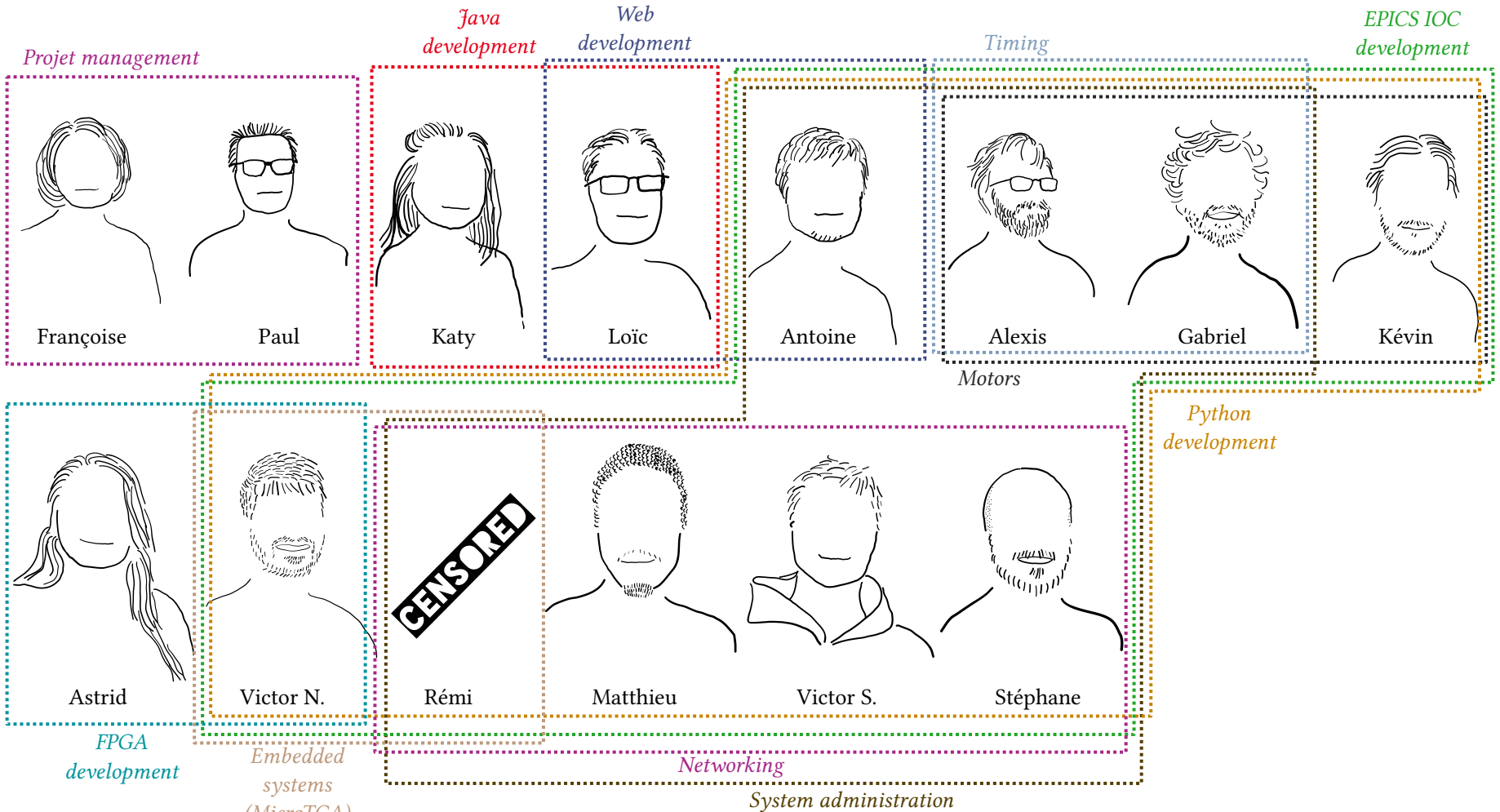
Rémi NICOLE (again)

2026-04-20

Our team


Françoise
Paul
Katy
Loïc
Antoine
Alexis
Gabriel
Kévin
Astrid
Victor N.
CENSORED
Matthieu
Victor S.
Stéphane

Our team


Projet management
Java development
Web development
Timing
EPICS IOC development
Françoise
Paul
Katy
Loïc
Antoine
Alexis
Gabriel
Kévin
Motors
Python development
Astrid
Victor N.
CENSORED
Rémi
Matthieu
Victor S.
Stéphane
FPGA development
Embedded systems (MicroTCA)
Networking
System administration

Our #1 goal:
Reduce maintenance

What really happened

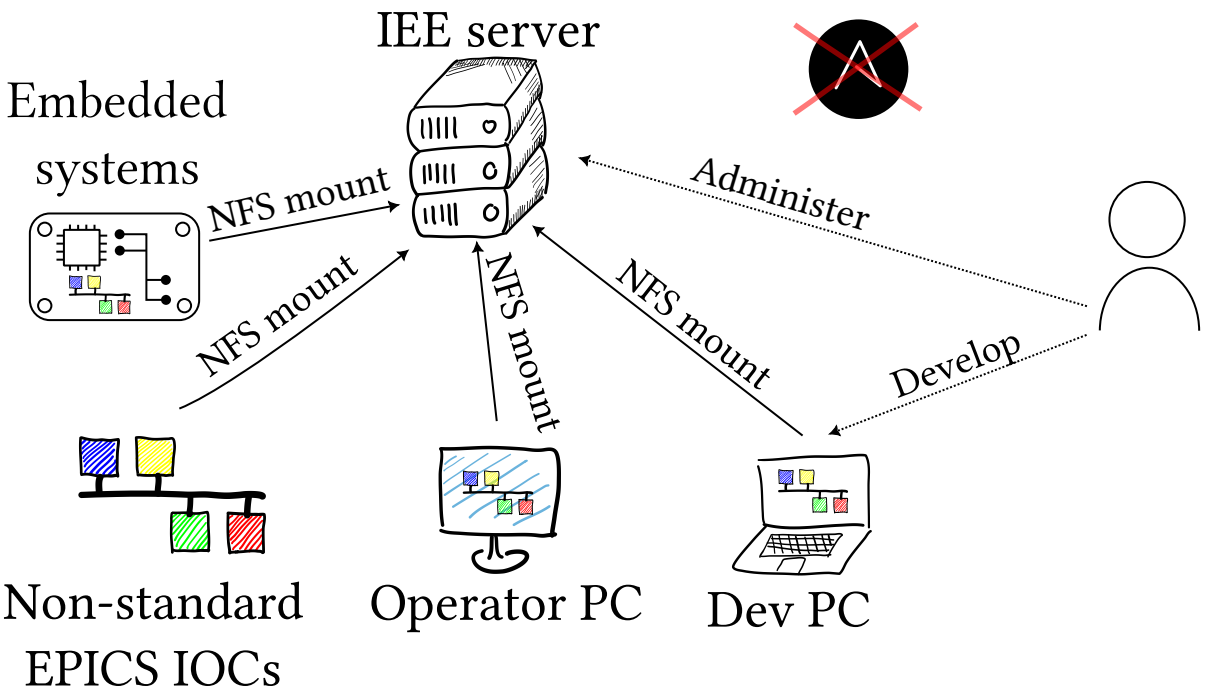


Figure 6: Our IEE architecture

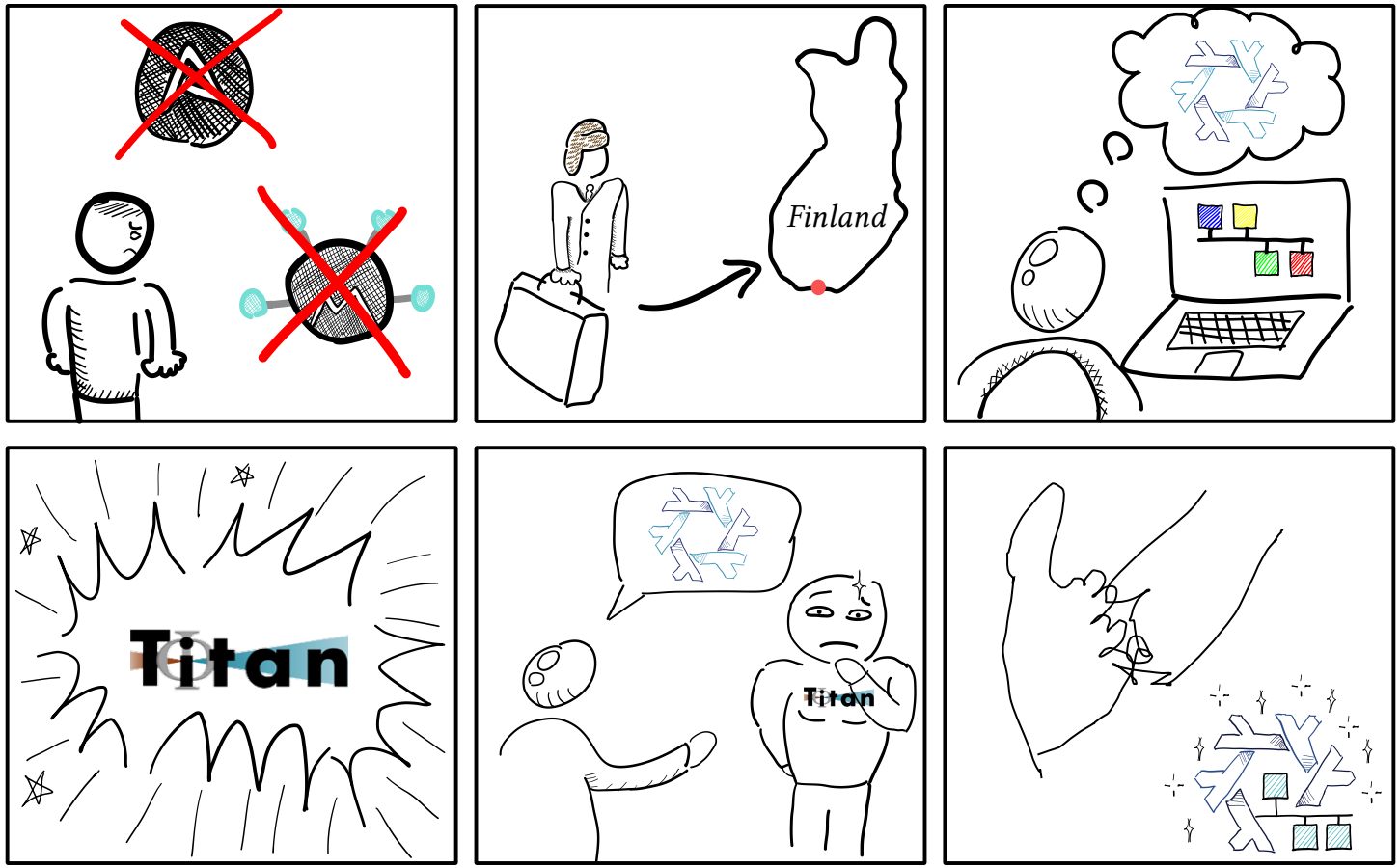


Figure 7: the origin story of **EPNix**

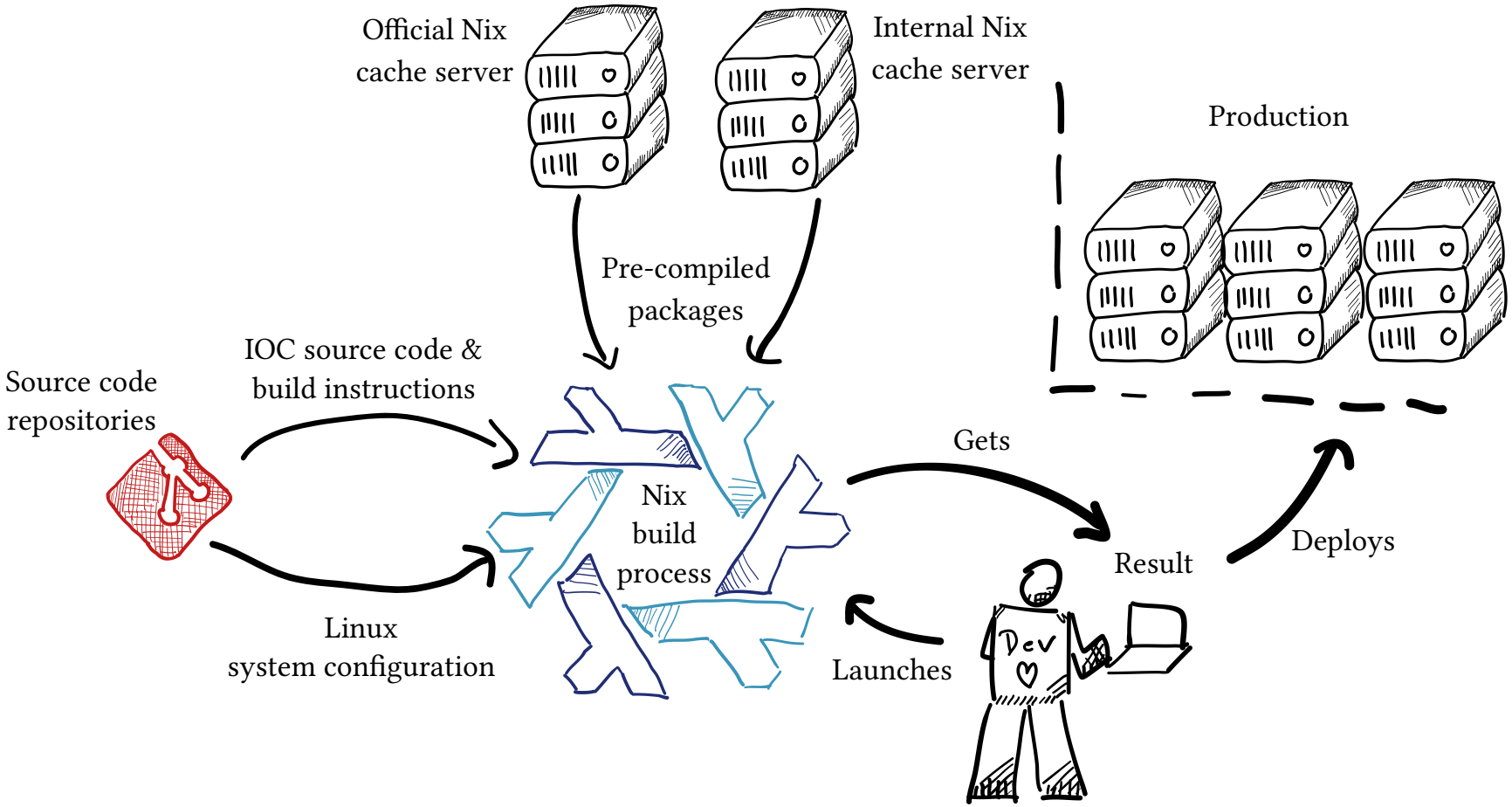


Figure 8: **EPNix**, briefly

3. Consequences

Onboarding colleagues

Takes much more time than expected.

- Especially because everyone is overbooked
- Creating tutorials, organizing workshops, etc., takes lots of time

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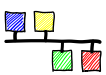
- **We can deploy to machines disconnected from the Internet**

Maintenance cost

Honestly pretty low:

- the  **EPICS** ecosystem moves pretty slowly
-
-
-
-

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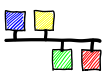
- the  **EPICS** ecosystem moves pretty slowly
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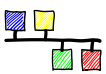
- the  **EPICS** ecosystem moves pretty slowly
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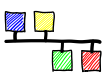
- the  **EPICS** ecosystem moves pretty slowly
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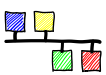
- the  **EPICS** ecosystem moves pretty slowly
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- I'm still basically the only maintainer

Projects using it

- IPHI / TITAN
- SARAF (only for some test bench MCS services)
- SEASON
- AGATA
- PIP2 (test bench)
- Lique4008

- High-Voltage-Engineering
- Dortmund University (old fork)

Some outside NixOS usage

- Some colleagues use or plan to use **NixOS** for their personal home servers.
- The French *interministerial digital department* (DINUM) plan on using **NixOS**

The Ralph slide

Only deploy  **EPNix** in critical parts of your project if you have substantial experience with  **Nix** and  **NixOS**.

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But you can use **EPNix** in non-critical parts, to try it out and get some experience.

- Declare developer environment
- Deploy services for test benches
- Do integration tests
- Create Docker images


User
NixOps
Hydra
NixServe
mkDerivation
NixOS
SystemManager
or nix-darwin
HomeManager
DevEnv or
DevShell or
nix shell
nix run
install