

How far can FOSS take you?

ORConf 2025

Advocated for silicon startups to use & contribute to open source tools

Two years ago I helped put an **open methodology** at the heart of a startup's engineering process

The startup **failed**

The startup **failed**, so was I wrong?

Weighing it Up

Reveals our secrets

Gives others a leg up

Wastes time

Makes it easier to leave

Weighing it Up

Reveals our secrets but many problems aren't unique

Gives others a leg up so others can help you

Wastes time but docs and unit tests help you too

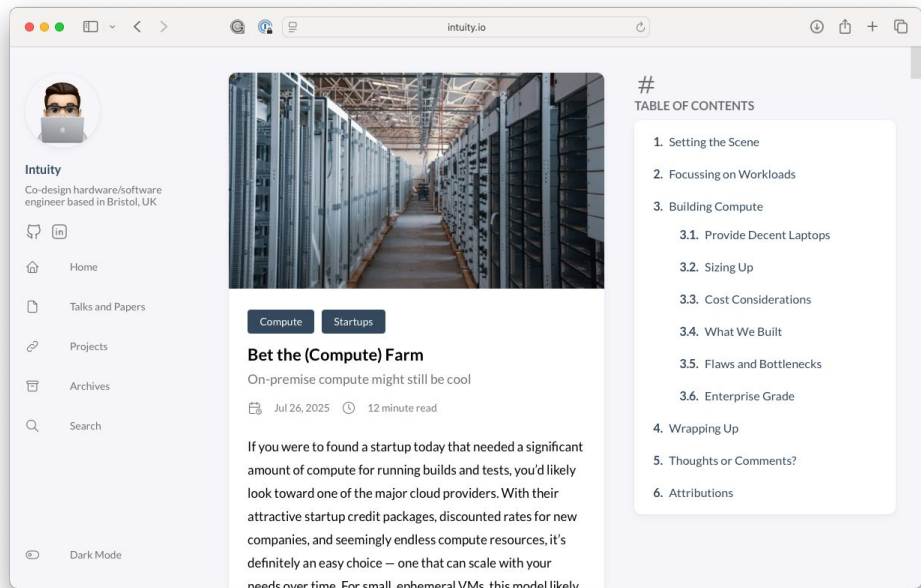
Makes it easier to leave or motivates you to stay

So what did I learn?

1. Infrastructure and Compute

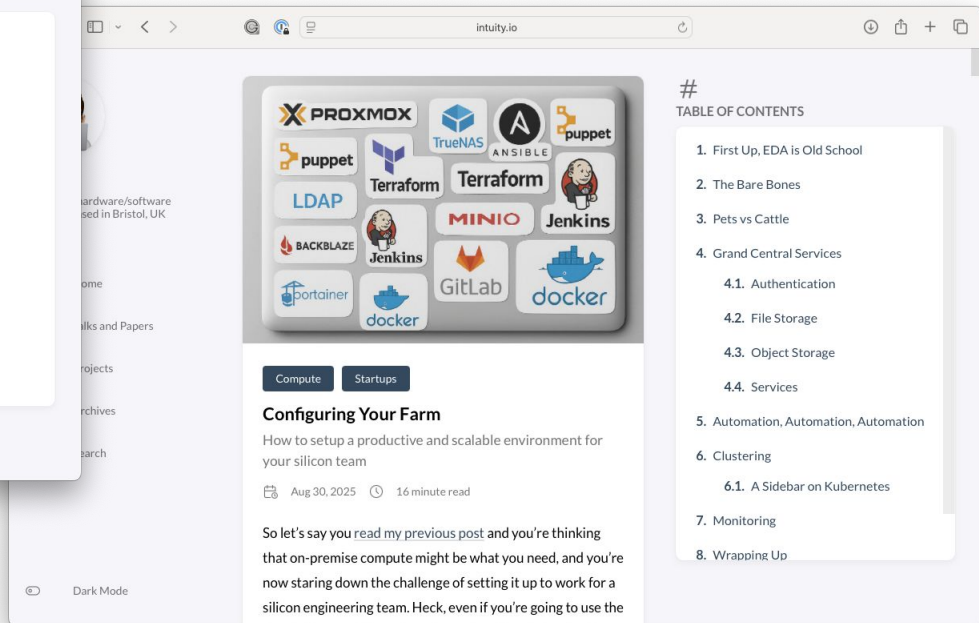
- Complex projects require careful setup
- Understanding that infrastructure is equally flow and compute
- Spend wisely, cloud costs ramp up *fast*
- Use infrastructure-as-code (Ansible/Puppet/Terraform)
- The best computer is **the one you have with you**

1. Infrastructure and Compute



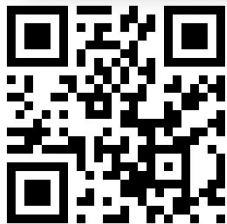
The screenshot shows the Intuity.io website. On the left is a sidebar with a profile picture of a man with glasses, the name 'Intuity', and the bio 'Co-design hardware/software engineer based in Bristol, UK'. Below this are links for Home, Talks and Papers, Projects, Archives, and Search. The main content area features a large image of server racks and the article title 'Bet the (Compute) Farm' with a subtitle 'On-premise compute might still be cool'. The article is dated 'Jul 26, 2025' and has a '12 minute read' indicator. A 'Compute' button is visible. A 'TABLE OF CONTENTS' sidebar on the right lists the following sections:

- 1. Setting the Scene
- 2. Focussing on Workloads
- 3. Building Compute
 - 3.1. Provide Decent Laptops
 - 3.2. Sizing Up
 - 3.3. Cost Considerations
 - 3.4. What We Built
 - 3.5. Flaws and Bottlenecks
 - 3.6. Enterprise Grade
- 4. Wrapping Up
- 5. Thoughts or Comments?
- 6. Attributions



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- 1. First Up, EDA is Old School
- 2. The Bare Bones
- 3. Pets vs Cattle
- 4. Grand Central Services
 - 4.1. Authentication
 - 4.2. File Storage
 - 4.3. Object Storage
 - 4.4. Services
- 5. Automation, Automation, Automation
- 6. Clustering
 - 6.1. A Sidebar on Kubernetes
- 7. Monitoring
- 8. Wrapping Up



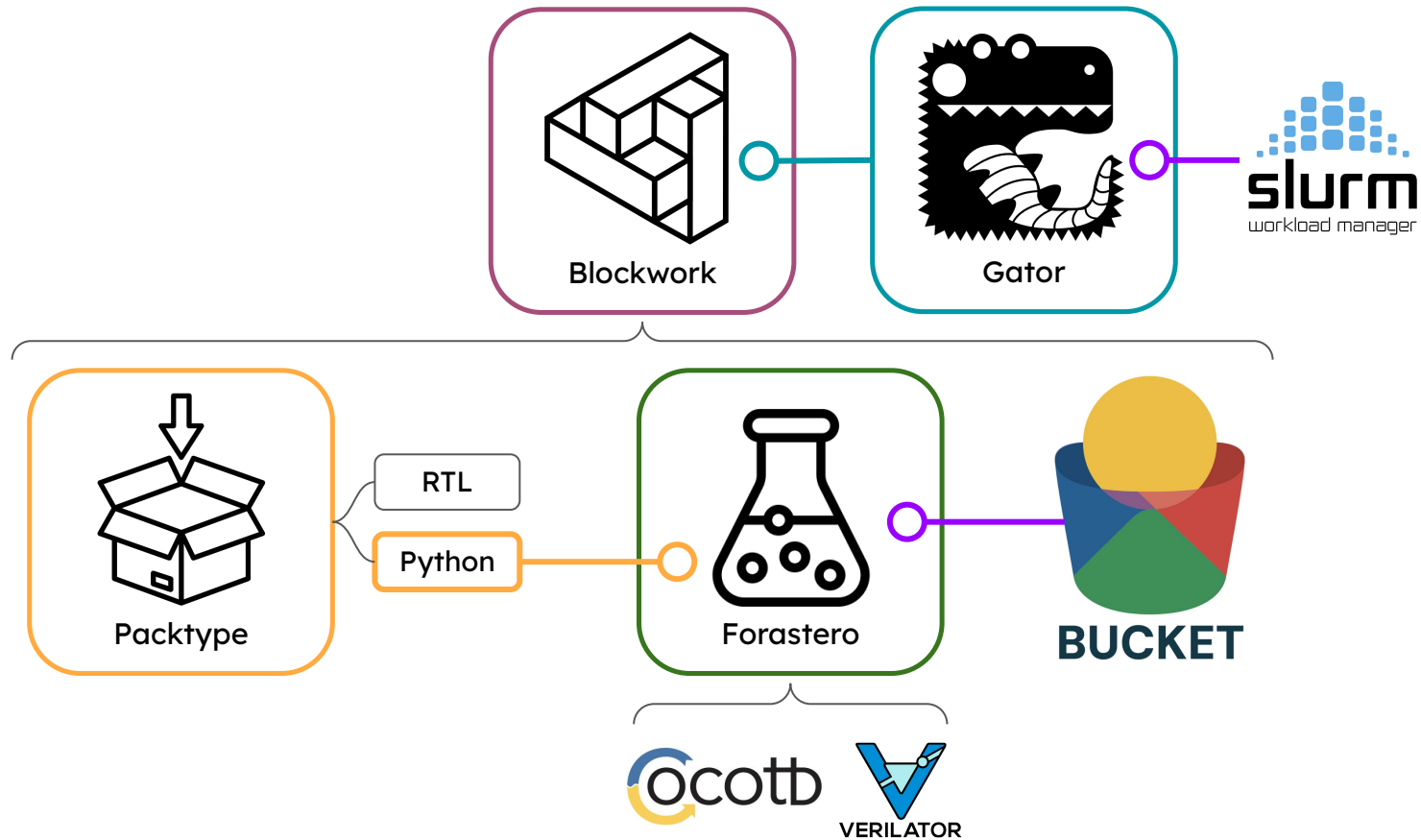
intuitio.io

2. Keep Tools Focussed



2. Keep Tools Focussed





3. The Flow is Incomplete

- Icarus, Verilator, cocotb, GTKWave, Surfer, Yosys, Sby, ... are amazing
- What to use for CDC, RDC, DFT (BIST), ...?
- Make your flows modular using Edalize, Bazel, ...
- Fix rough edges and share them

Wrapping Up

- Open tools and methodologies will get you *a long way*
- What now? **FRACTILE**
- Building AI inference accelerators using **open tools and flows**
 - *apytypes, bazel, **bucket**, cocotb, constrainedrandom, **gator**, gtkwave, icarus, **packtype**, slang, surfer, verilator, yosys*



intuitivity.io



fractile.ai