Build systems, traceability and compliance

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LPC 2024 – Build System MC

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an open source of wisdom

Who is Arnout

Embedded software architect

Focus on Linux OS integration

Mind consultant since 2008

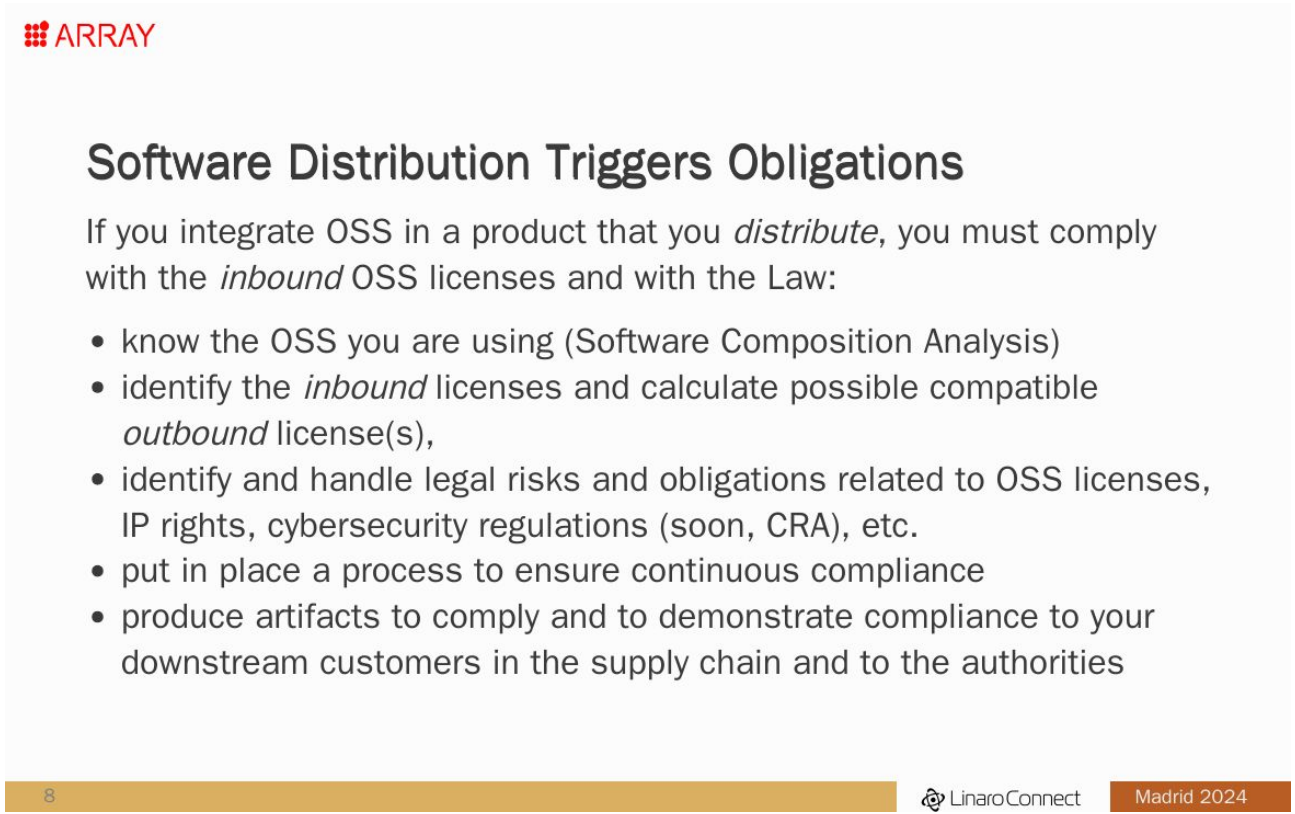
Worked for 40+ customers in multimedia, security, home automation, satellite, telecom, chips, ...

Buildroot maintainer (team of 5)

Agenda

- What is traceability and compliance and why do we need it?
- What can we (build systems) do to improve?

Compliance = knowing what is in the software you distribute



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More complex if you have a downstream

Current: produce an image → give to end user

Not sufficient if image is re-composed by downstream

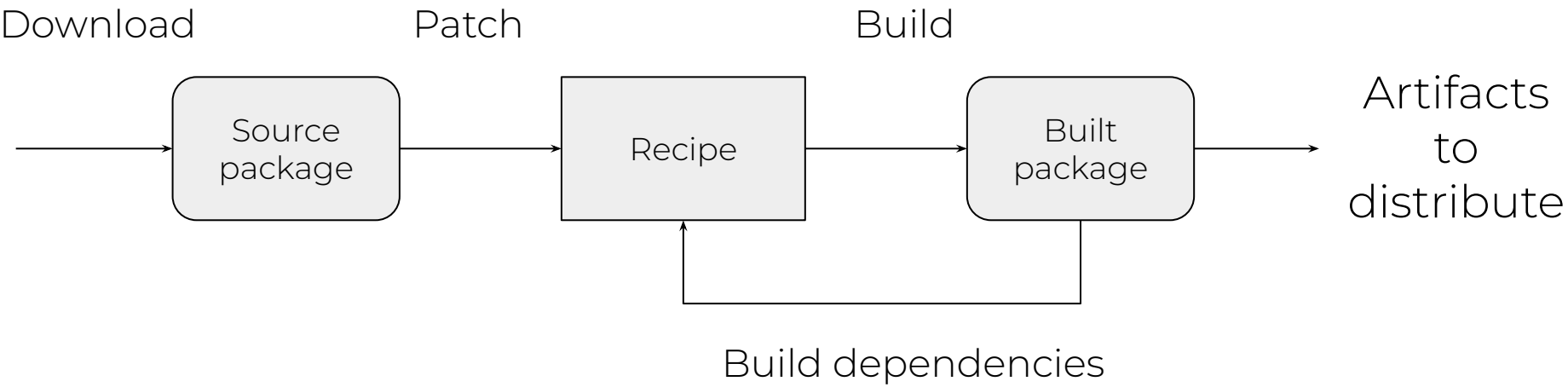
- **A** - Platform image to which downstream adds software
- **B** - Container image composed with others
- **C** - SDK to build appliance
- **D** - ...

Who sees one of the use cases above?

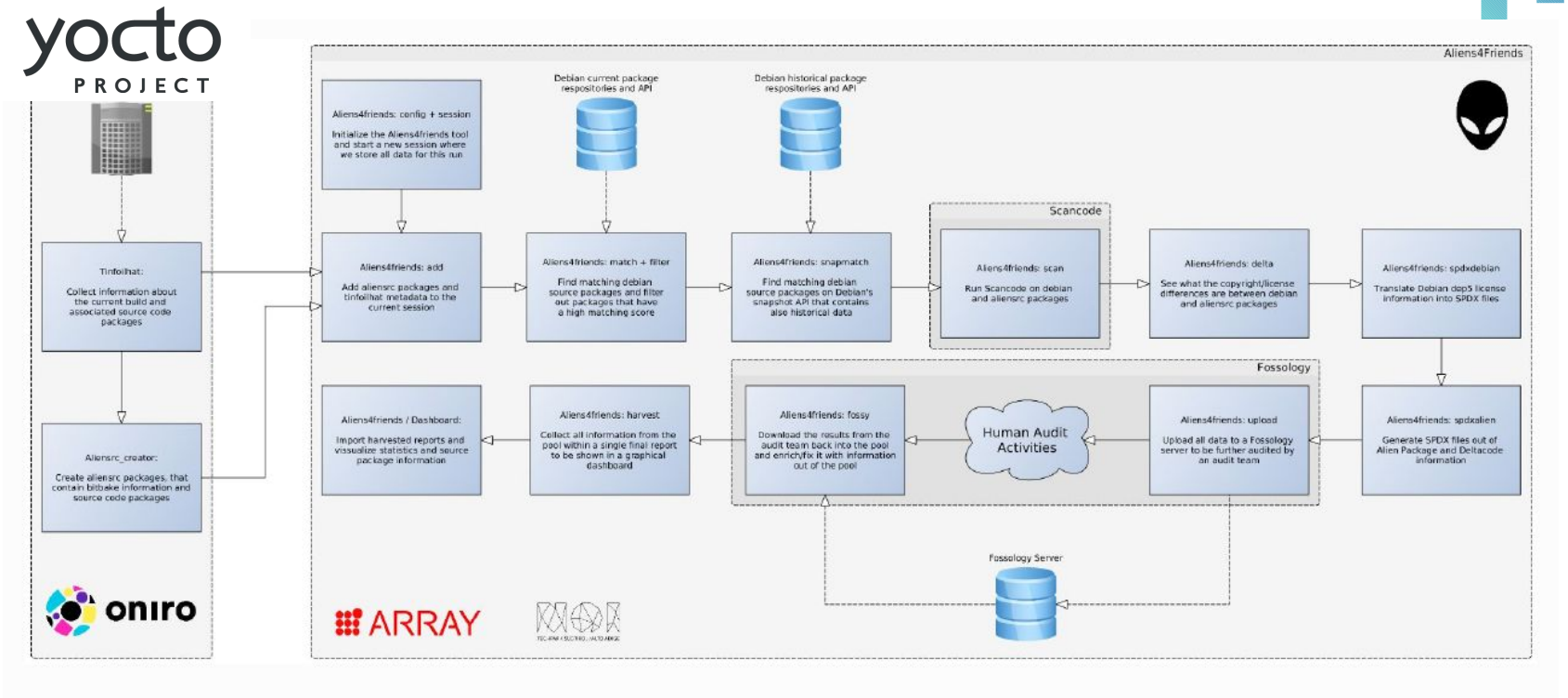
What does this mean concretely?

- Manifest that describes distributed components
- Decomposition
  - E.g. image consists of packages; package consist of files
- Provenance of each component
  - E.g. built from these sources
  - Sources downloaded from that URL at that time
  - Patched with these patches
- License of each component
  - License information is only accurate for source files
  - Concluded license needs some form of review
- Traceability of who concluded this

Build system terminology



Additional workflow on top of yocto for full compliance



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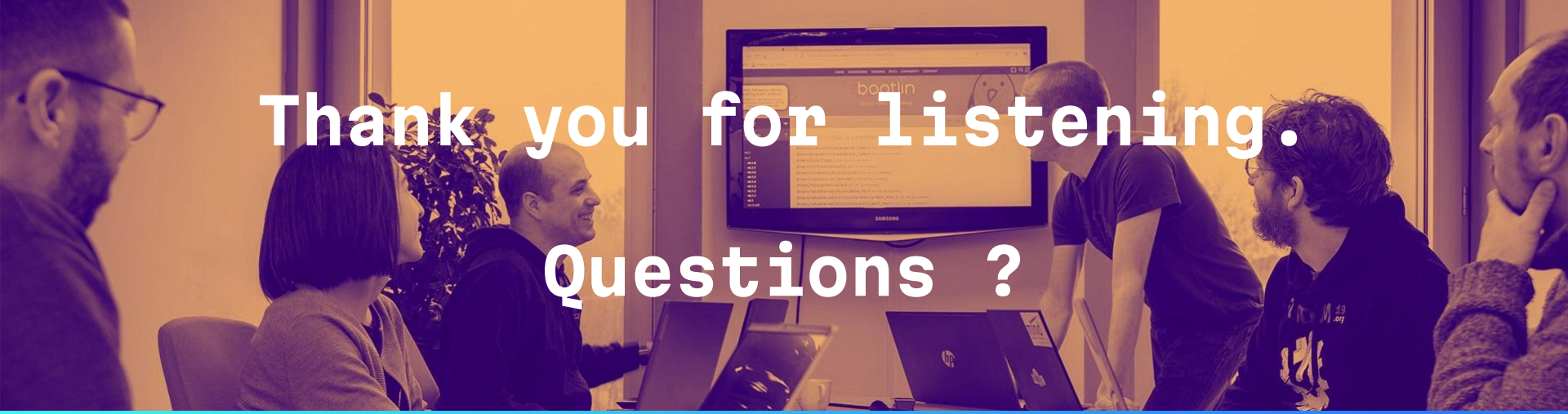
What can we do to improve the situation

- Collect per-file info
  - Every source file with its license
  - Every compiled / copied file with its (concluded) license
- Use upstream package's info directly
  - Instead of license info in recipe
  - E.g. cargo-spdx, reuse spdx
- Include per-file info in recipe
  - E.g. in SPDX or DEP5 or REUSE format
- Remove unused sources
  - To make concluded license more believable

What can we do to improve the situation



Thank you for listening.

Questions ?

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