KernelCI: A Growing Ecosystem
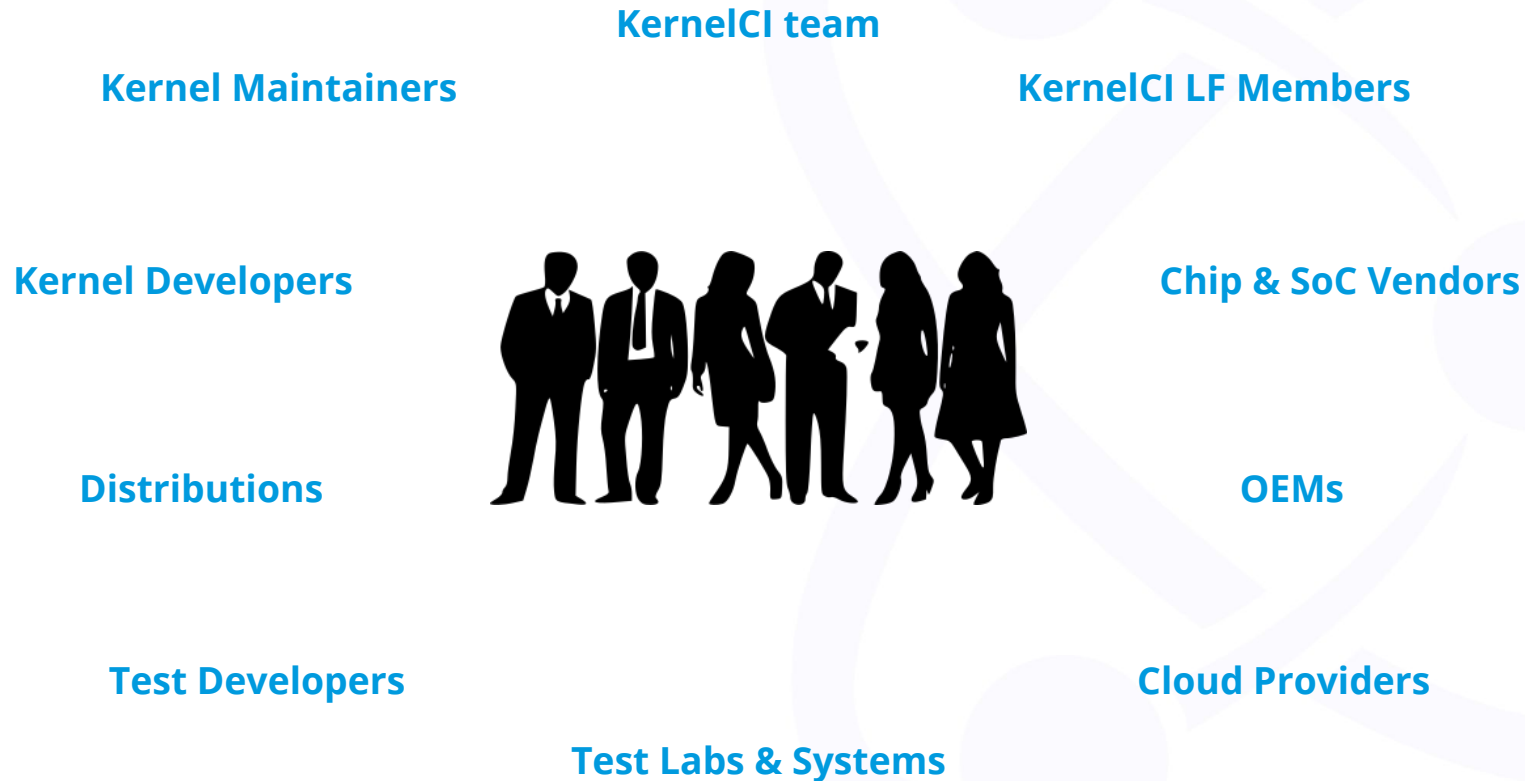
LPC 2020 - Testing & Fuzzing MC

Guillaume Tucker
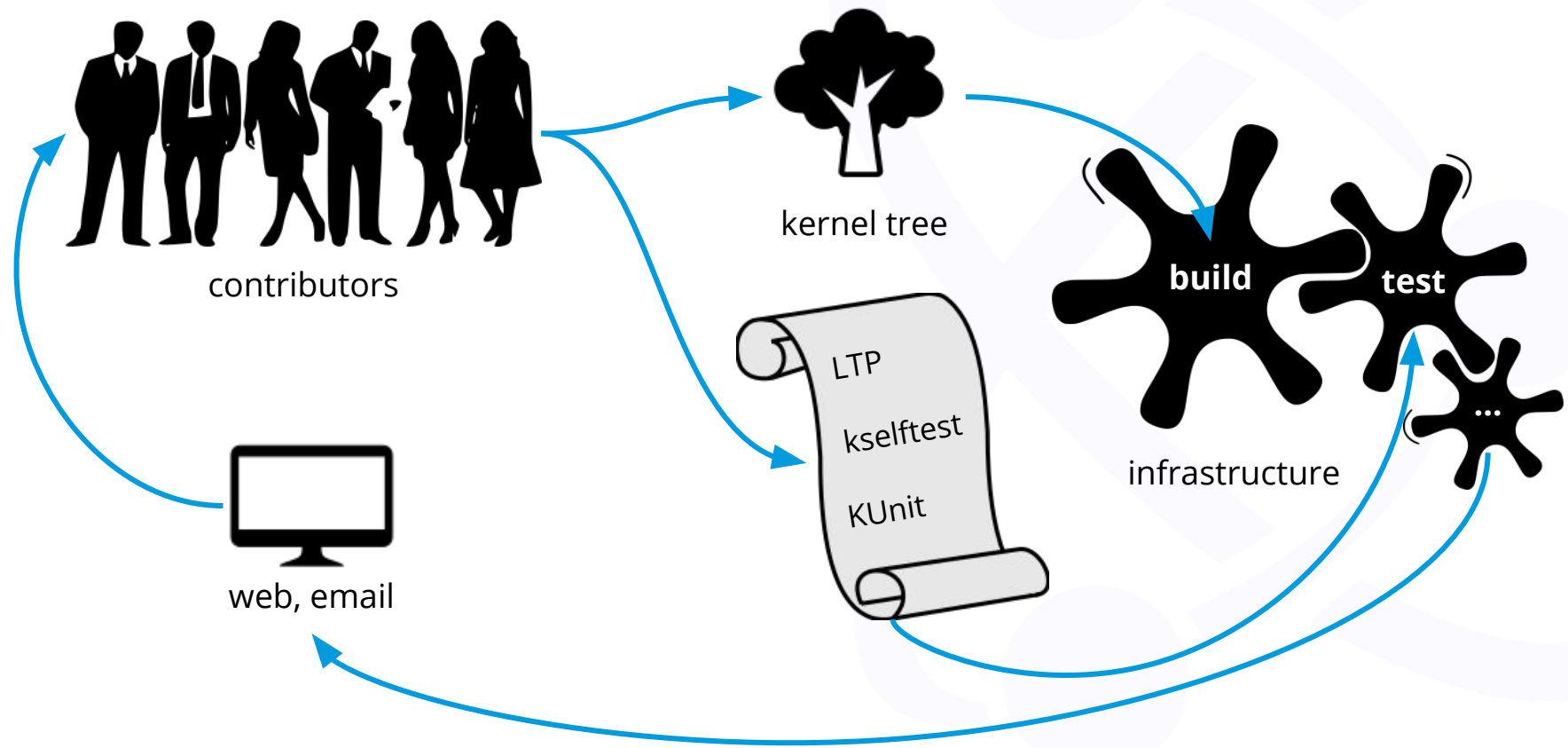**gtucker@collabora.com**

Linux Kernel Community

"It's a social project."

- Linus Torvalds (2017)

Ecosystem Contributors

KernelCI team

Kernel Maintainers

KernelCI LF Members

Kernel Developers

Chip & SoC Vendors

Distributions

OEMs

Test Developers

Cloud Providers

Test Labs & Systems

KernelCI

Test-Driven Workflow

contributors

kernel tree

LTP

kselftest

KUnit

web, email

build

test

...

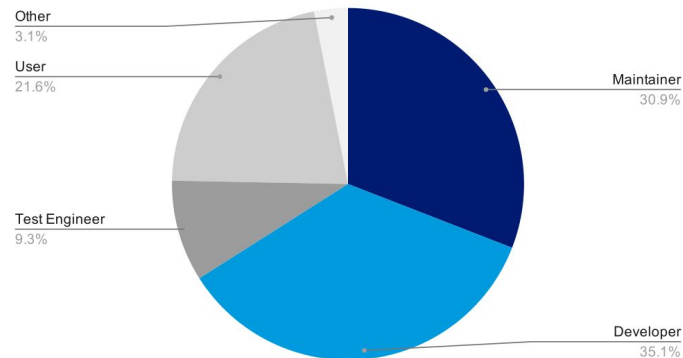infrastructure

KernelCI

- **One Linux kernel, one KernelCI**

- **No particular product**

- **Open Testing Philosophy**

  - **Shared hardware**

  - **Grouped results**
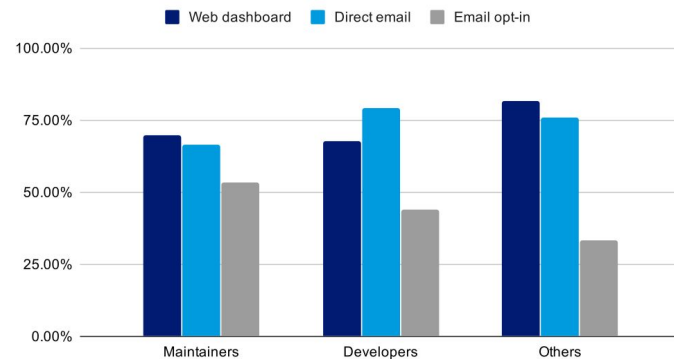
  - **Community-driven**

Community Survey Report[1]

- **Need to test patches**
  - Reports sent to authors
  - Early results in the loop

- **Extend long-running coverage**
  - Integration branches
  - Deeper, more thorough testing

- **Improve web dashboard**
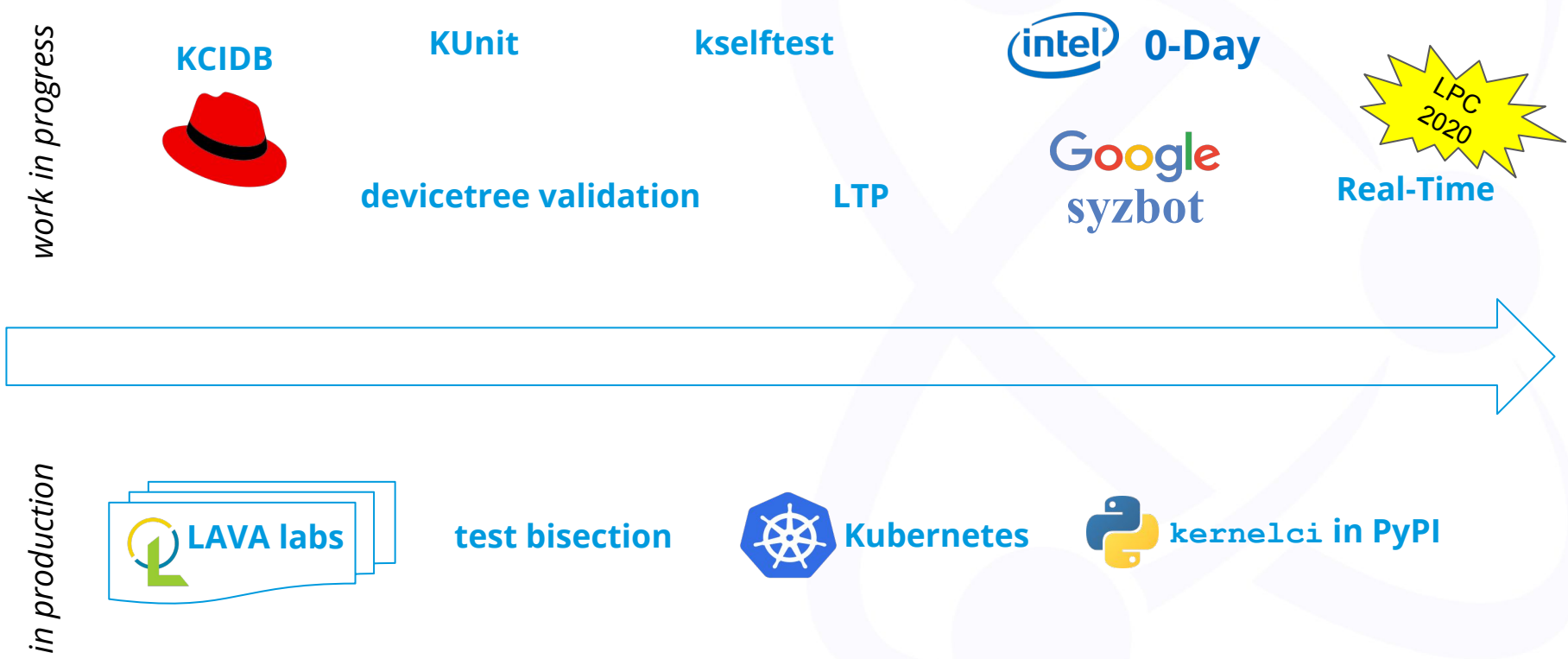 - User-defined queries
  - Further fine-tuning

[1] https://foundation.kernelci.org/blog/2020/07/09/kernelci-community-survey-report/

Role in Linux kernel community

Other
3.1%

User
21.6%

Maintainer
30.9%

Test Engineer
9.3%

Developer
35.1%

Reporting preferences

■ Web dashboard ■ Direct email ■ Email opt-in

100.00%

75.00%

50.00%

25.00%

0.00%

Maintainers   Developers   Others

Ecosystem Expansion in 2020

work in progress

KCIDB

KUnit

kselftest

intel 0-Day

devicetree validation

LTP

Google syzbot

LPC 2020

Real-Time

in production

LAVA labs

test bisection

Kubernetes

kernelci in PyPI

7

Over to you…

Pick one more thing you wish KernelCI would do:

A. Make it easy to add the tests I need

B. Send an email when my patch breaks something

C. Provide tools to debug issues and test fixes

Thank You!

Mailing list	GitHub	IRC
kernelci@groups.io	https://github.com/kernelci/	#kernelci
https://groups.io/g/kernelci	Project Board	on Freenode

Appendix

Core Infrastructure

- **Microsoft Azure and Google Cloud static VMs**
  - All static servers (kernelci.org, staging.kernelci.org, Jenkins runners)
  - May be used to host alternative instances as `*.kernelci.org`

- **Kubernetes**
  - Preemptible cloud builders donated via MS Azure and GCE
  - Initially for kernel builds, capacity greatly extended
  - Now preparing to run static analysis and virtualized tests

Native Test Infrastructure

- **LAVA labs**
  - BayLibre, Collabora, Pengutronix, Linaro, Theobrama, NXP, CIP
  - Individuals: broonie (ARM), clabbe (BayLibre)

- **Custom hardware labs**
  - Kevin Hilman (BayLibre Seattle), Bjorn Andersson (Qualcomm)

- **Static checks in Kubernetes (WIP)**
  - KUnit: Heidi Fahim (Google intern) / Brendan Higgins
  - Devicetree validation: Isaiah Duncan (Microsoft intern) / Sasha Levin

External Test Infrastructure

- **Facilitated by KCIDB**
  - Schema designed to combine results from many different sources
  - Includes all native KernelCI results

- **CKI (Red Hat)**
  - Already connected

- **0-Day (Intel)**
  - Initial talks

- **Syzbot (Google)**
  - Initial talks