DotBots in the LAKE





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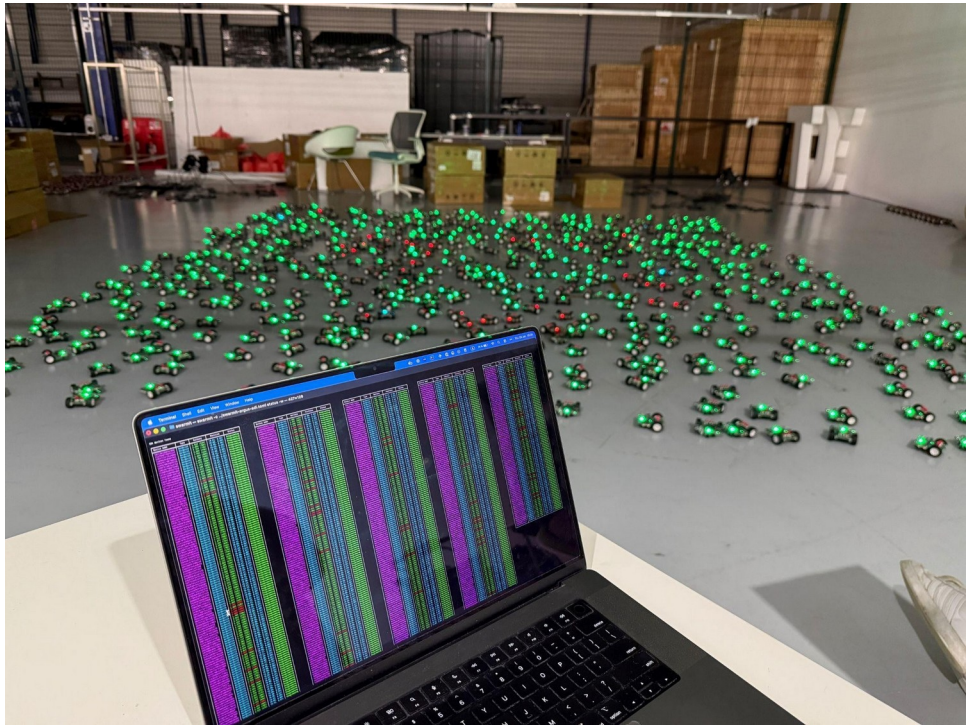
Context

We want to deploy IETF protocols to a testbed of (up to) 1,000 robots!

The

DotBot ➡️

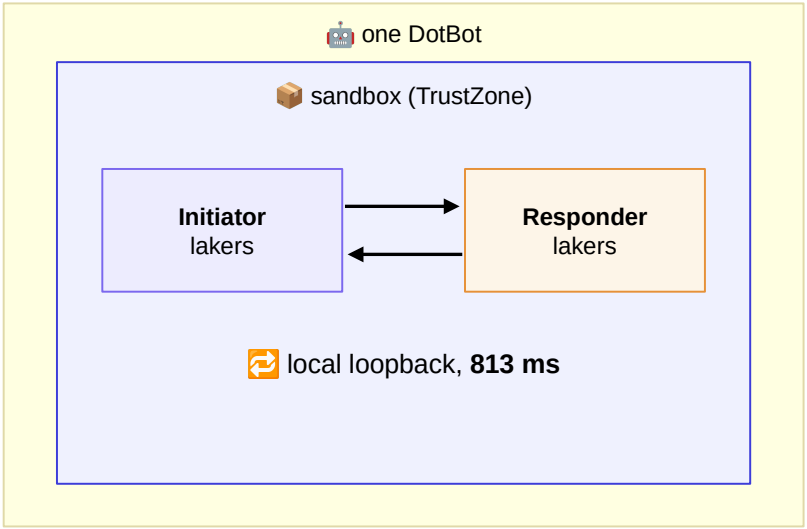
Testbed



https://pydotbot.readthedocs.io/en/latest

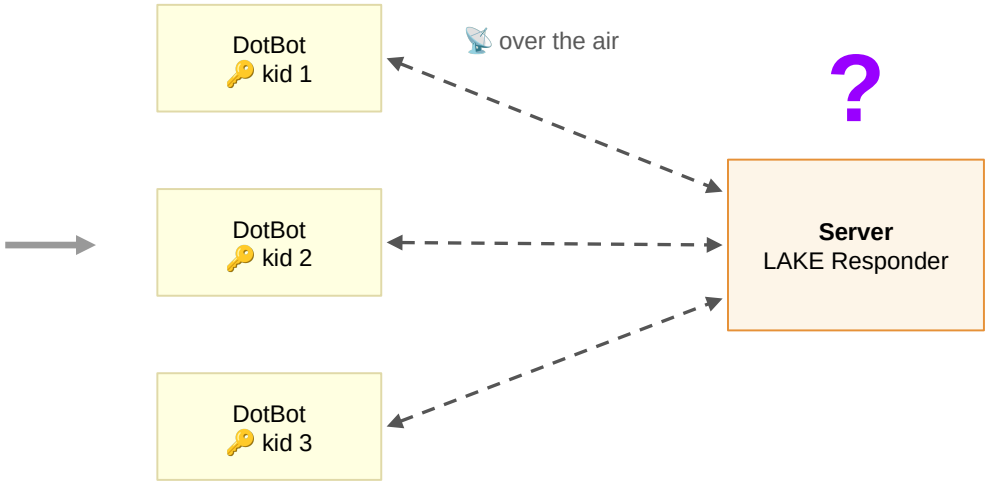
Problem

1️⃣ **IETF 126** (Vienna): LAKE on one DotBot

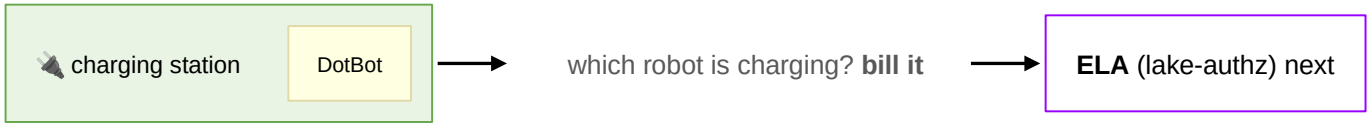


only locally, inside one robot's sandbox

2️⃣ **IETF 127** (now): the swarm

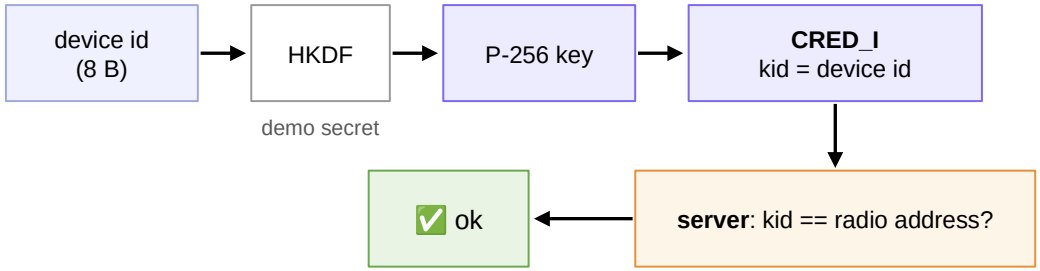


each robot, its own key, over the air, live?



Approach

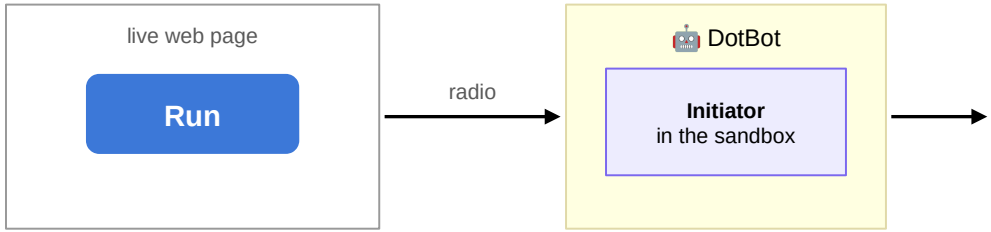
🟣 Per-robot identity



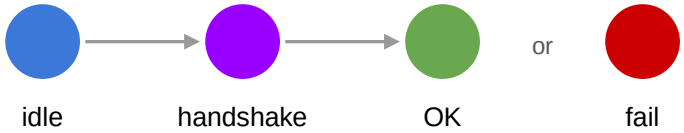

```
$ cargo add lakers
```

```
$ pip install lakers-python
```

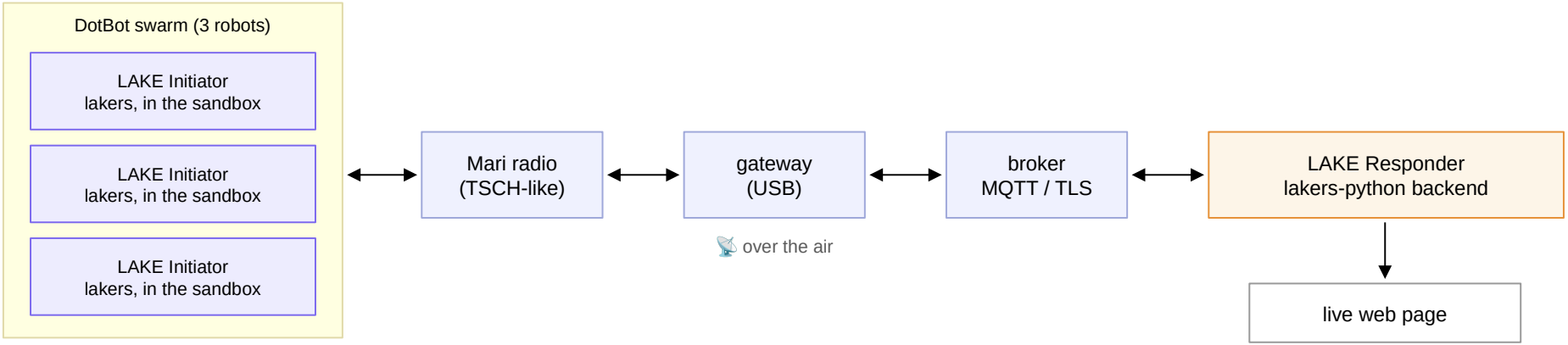
🟣 Run from the web page

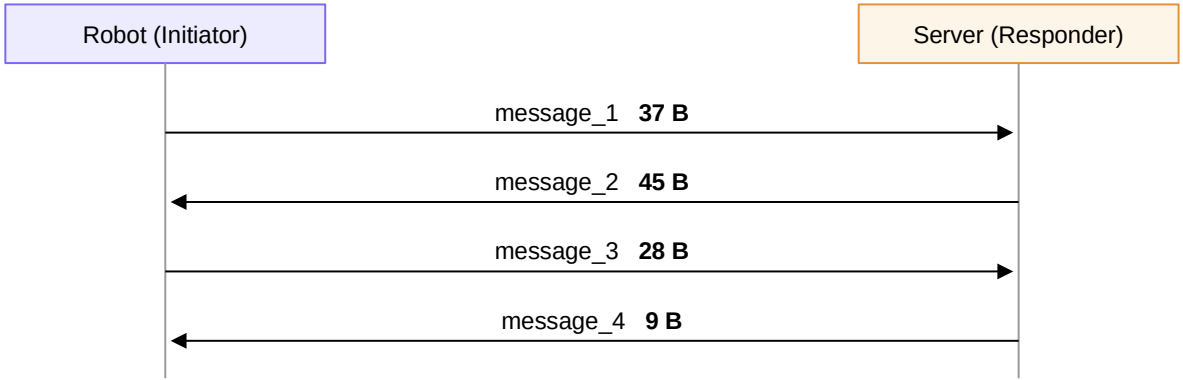


🟣 Robot LED



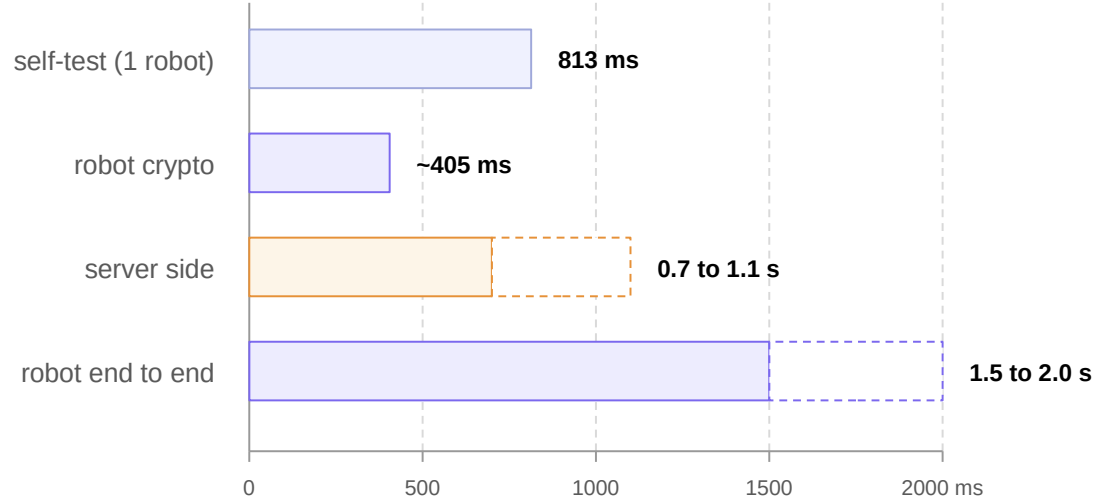
Architecture



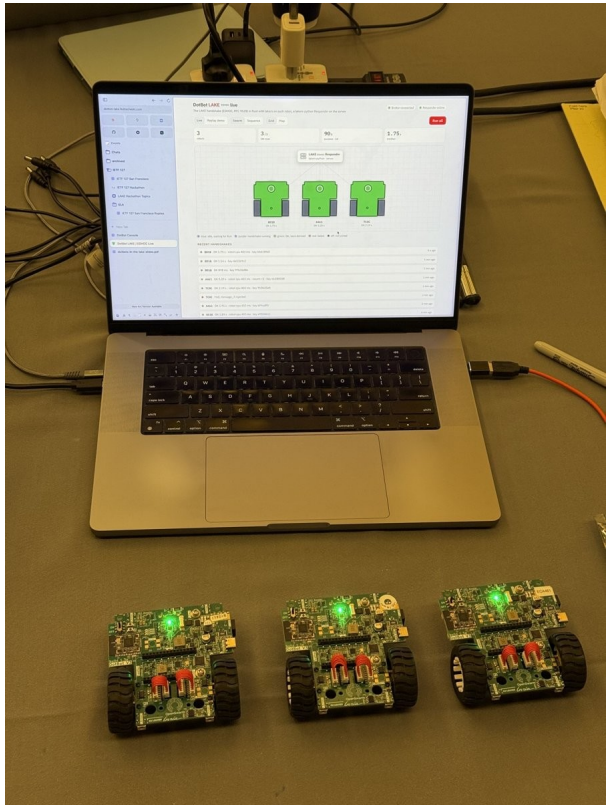


Results

✅ **Handshake time**, measured on DotBots

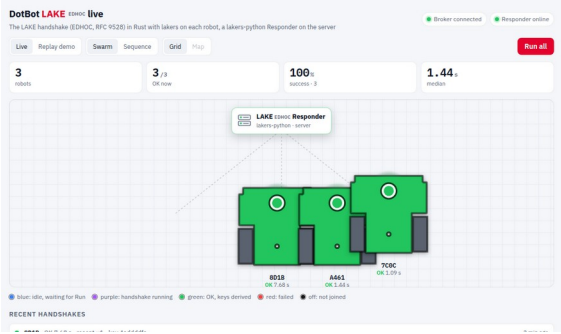


🔑 key derivation **96 ms**	🤖 **3 robots**	kid = radio address ✅	OTA flash **29 s** / 47 KB

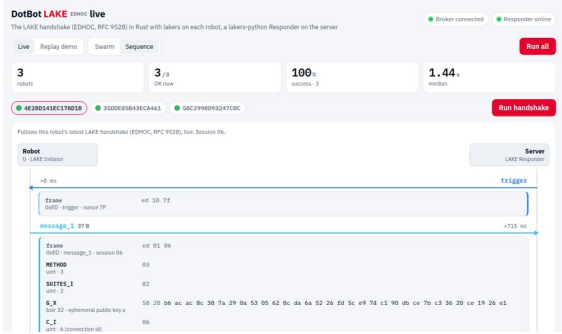


all numbers measured on DotBots, 15 Nov 2026

Live page



Swarm view (live, 3 robots)



Sequence view: all the bytes



Demo: replay, 5 simulated robots

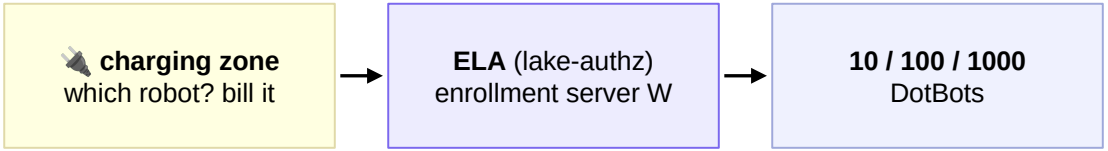
🟣 Press **Run**, watch the robots go purple, then green

try it live:
https://dotbot-lake.fedrecheski.com

Final

✅ **Conclusion**: LAKE runs **end to end** on a robot swarm, **over the air**, with **per-robot identity**, in **under 2 s**

🟣 Next steps



DotBots
pydotbot.readthedocs.io/en/latest

lakers
github.com/lake-rs/lakers

➡️ We are looking for funding! geovane.fedrecheski@inria.fr