



prplMesh

open source Wi-Fi mesh

Solving home Wi-Fi



Frederik Van Bogaert
Mind

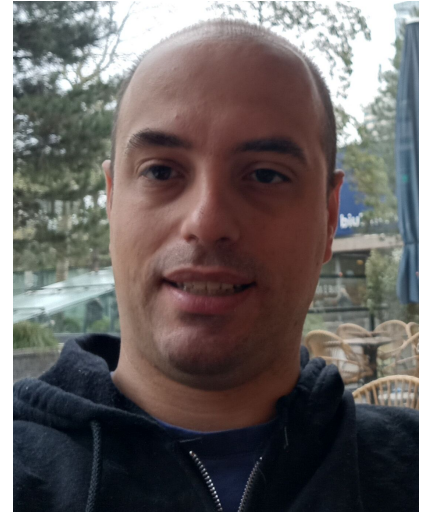


Based on prior presentations by Arnout Vandecappelle, Mind



Who is Frederik Van Bogaert?

- Embedded software developer
- Project manager
- Mind consultant since 2013
- PM for prpl Foundation since 2020
- *firstname.lastname@mind.be*



What is the prpl Foundation?

- Who's who of the telecom industry
- Sponsoring development of router firmware
 - prplOS, based on openWrt
 - prplMesh
 - Life Cycle Management
 - app-store infrastructure
- Security
- Collaboration with Broadband Forum
 - Data models (collab)
 - Remote management

The prpl Foundation is an open-source, community-driven, collaborative, non-profit foundation that strives to enable the security and interoperability of embedded devices.



What is prplMesh?

- IEEE1905.1 stack
- Based on open sourced Intel code
- Fully functional Easymesh implementation
 - Both Agent and Controller roles supported (individual or combined)
 - Extensive API standardized in collaboration with Broadband Forum
 - Tested daily on Wi-Fi Alliance spec test beds
 - Passes Easymesh R2 certification
 - parts of R3 and R4 also supported
- <https://gitlab.com/prpl-foundation/prplmesh/prplMesh>

What is Easymesh?

- Wi-Fi Alliance standard
- Also called Multi-AP
- Meant to simplify Wi-Fi management
- Network discovery, Onboarding, Configuration, Metrics

Wi-Fi CERTIFIED EasyMesh™:
Smart, extended coverage home Wi-Fi®



What is prplMesh?

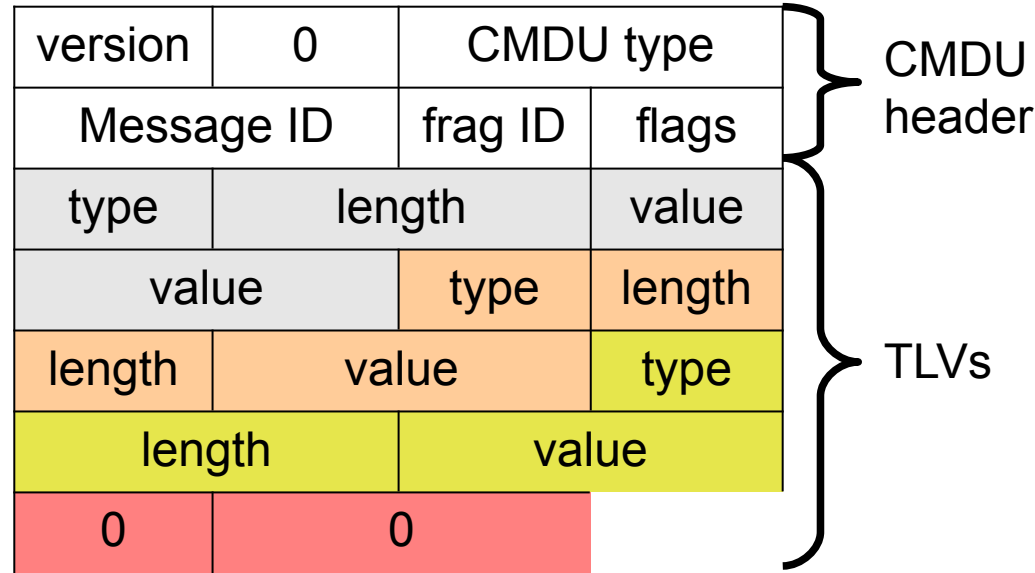
- Portable to the openWrt, prplOS and RDK-B router operating systems
 - Dependency on a software bus (ubus or rbus; dbus support possible)
 - Needs good Wi-Fi drivers
 - only a few are "good enough" for prplMesh
 - Most hardware is not compatible :-)
 - We hope to spur innovation in open source Wi-Fi chipset drivers
 - Proprietary drivers also still supported (for now)
- Strong focus on code review, CI with automated tests

Why develop prplMesh?

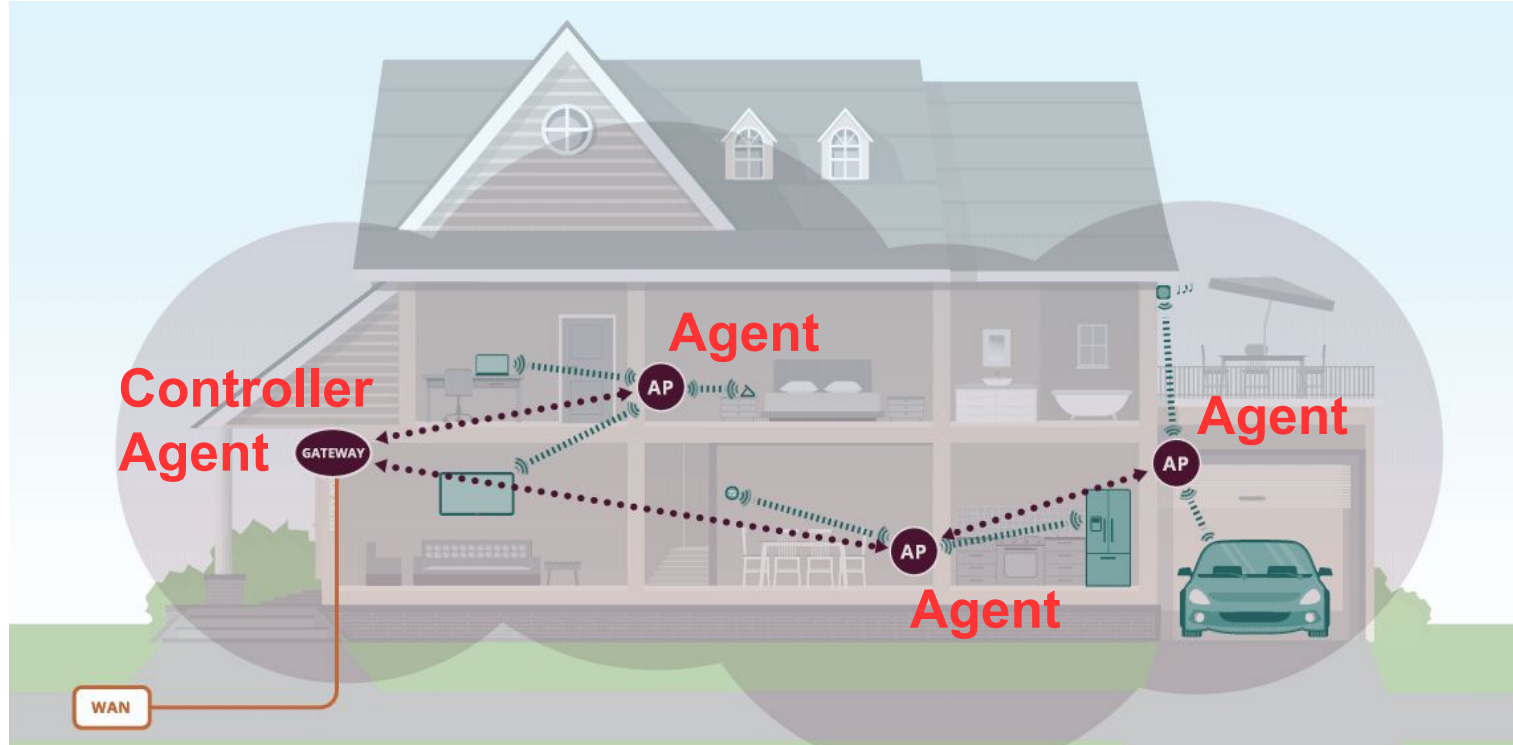
- Community of operators coming together to develop a single solution
- Independence from SoC vendors
- Stress test for wireless drivers
- Encourage development of open source Wi-Fi drivers
 - Based on cfg80211 and nl80211
 - prpl's Low Level API group
- Encourage development of a common API for Easymesh
 - remote management
 - network diagnostics
 - router "apps" to configure Wi-Fi

What is Easymesh?

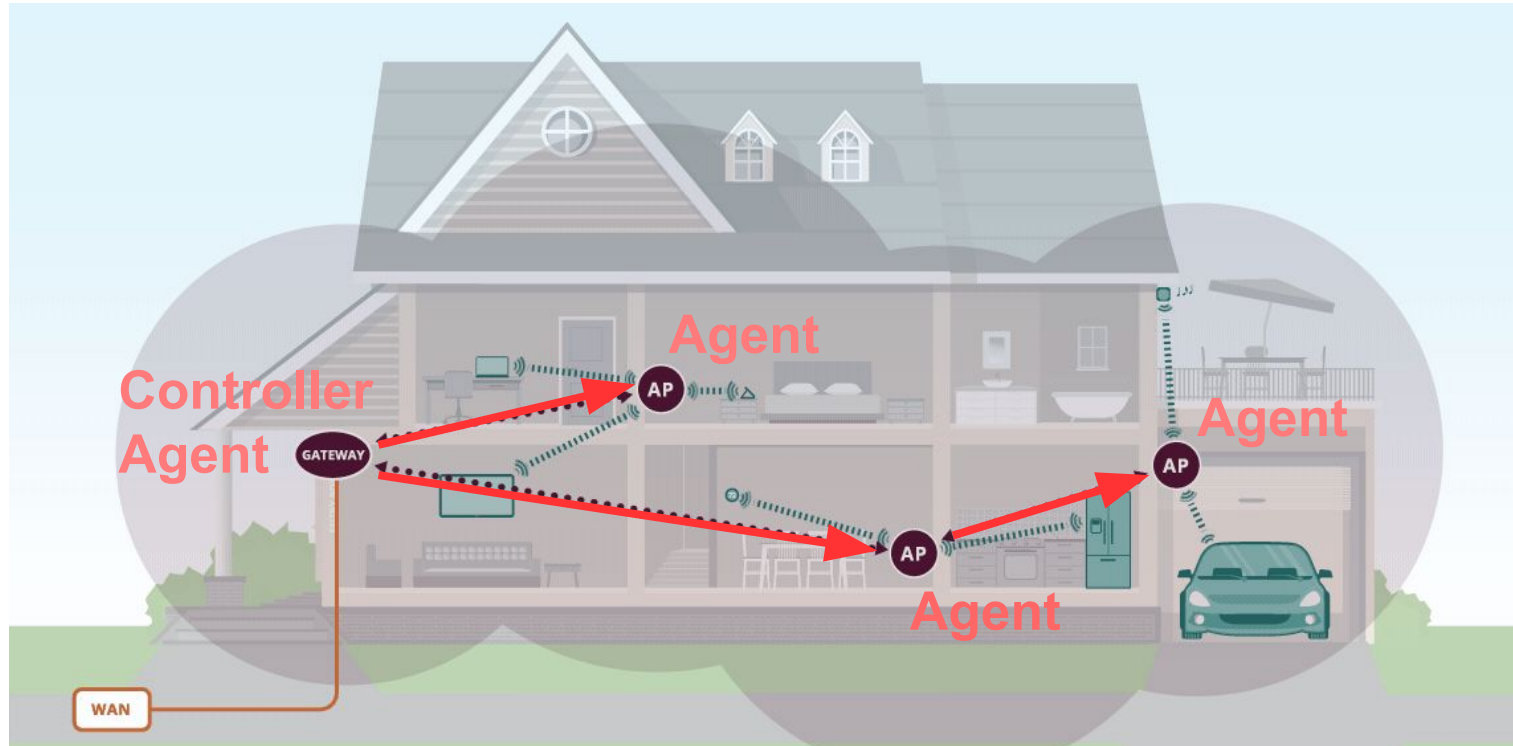
- Based on IEEE1905.1
 - L2 based protocol
 - Very extensible
 - fixed multicast address
 - device “AL MAC” address



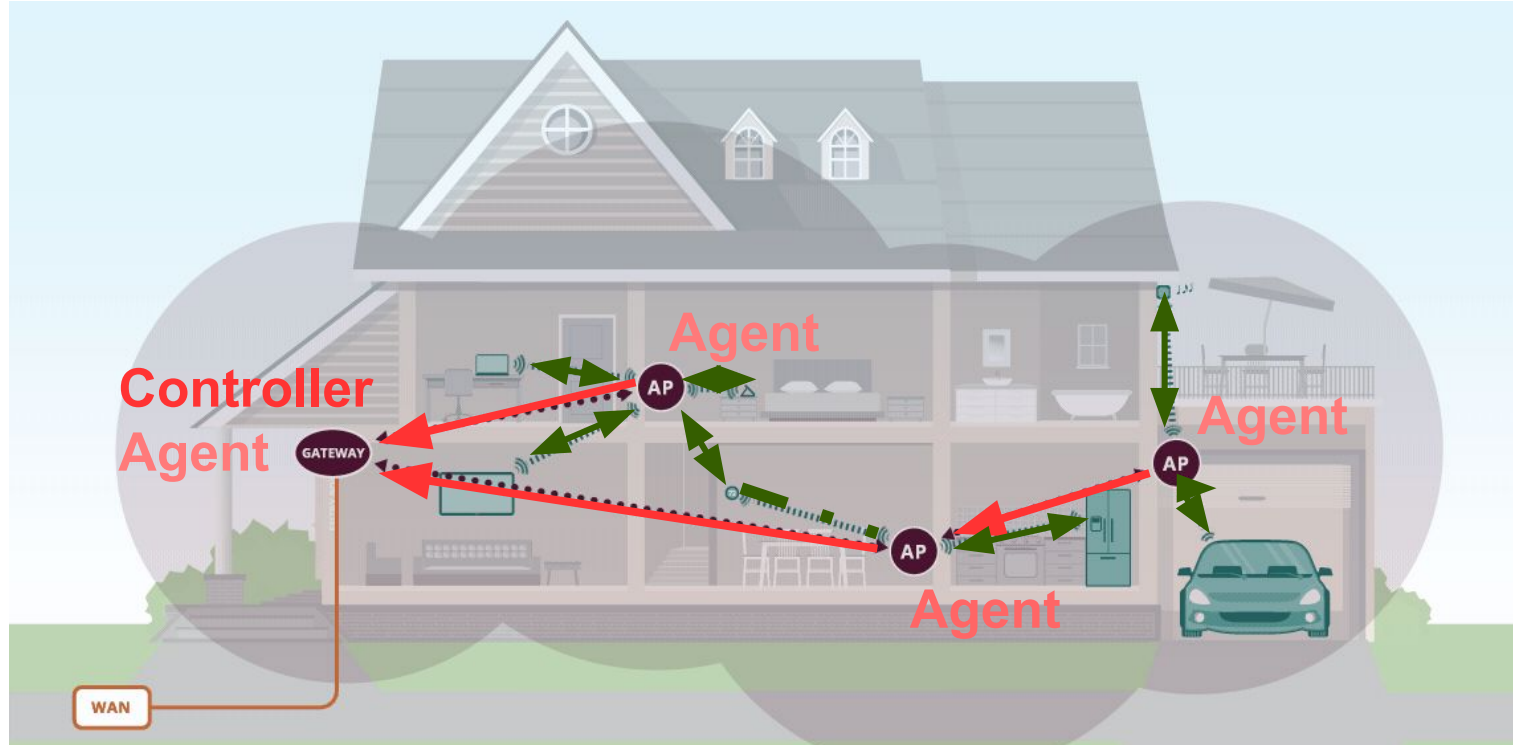
WFA Easymesh architecture



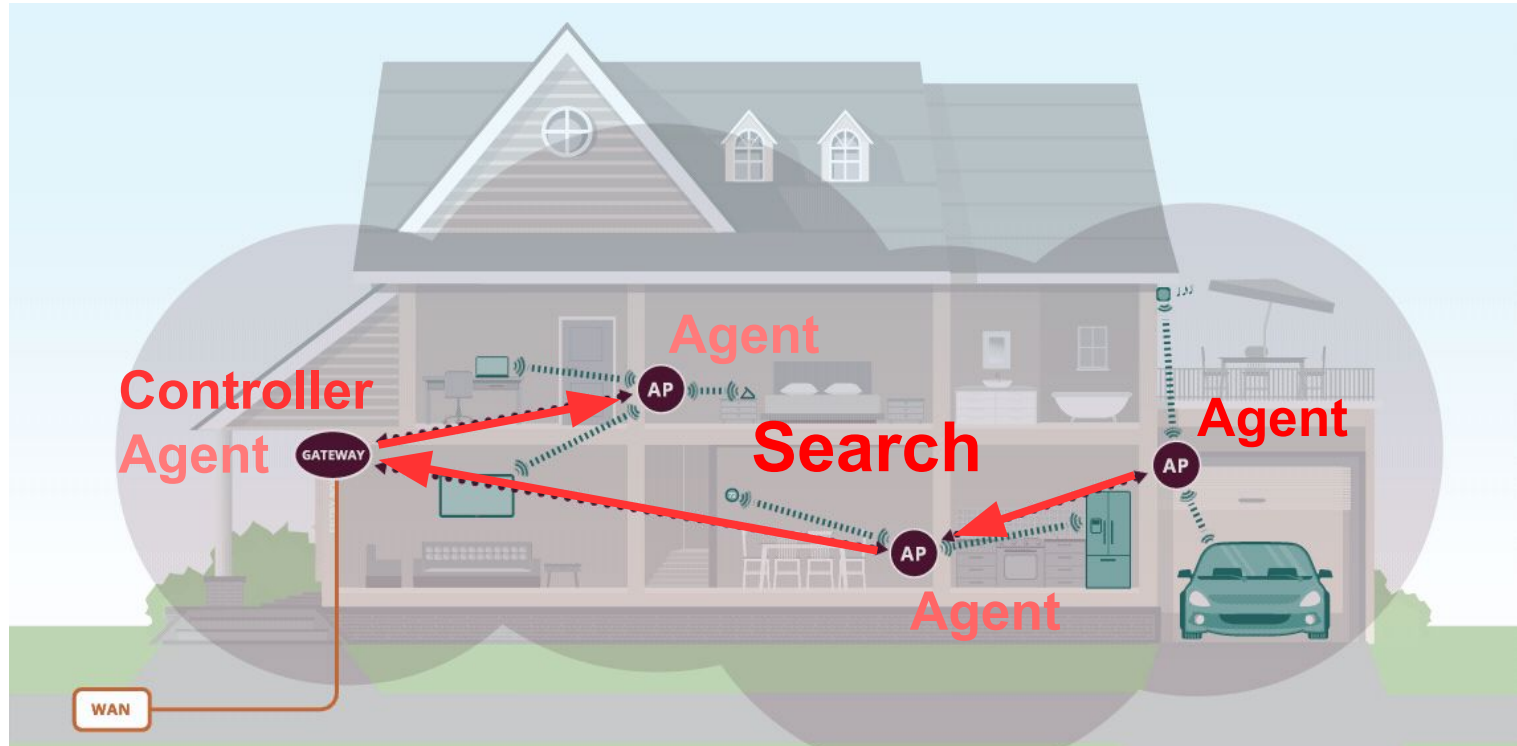
WFA Easymesh Discovery



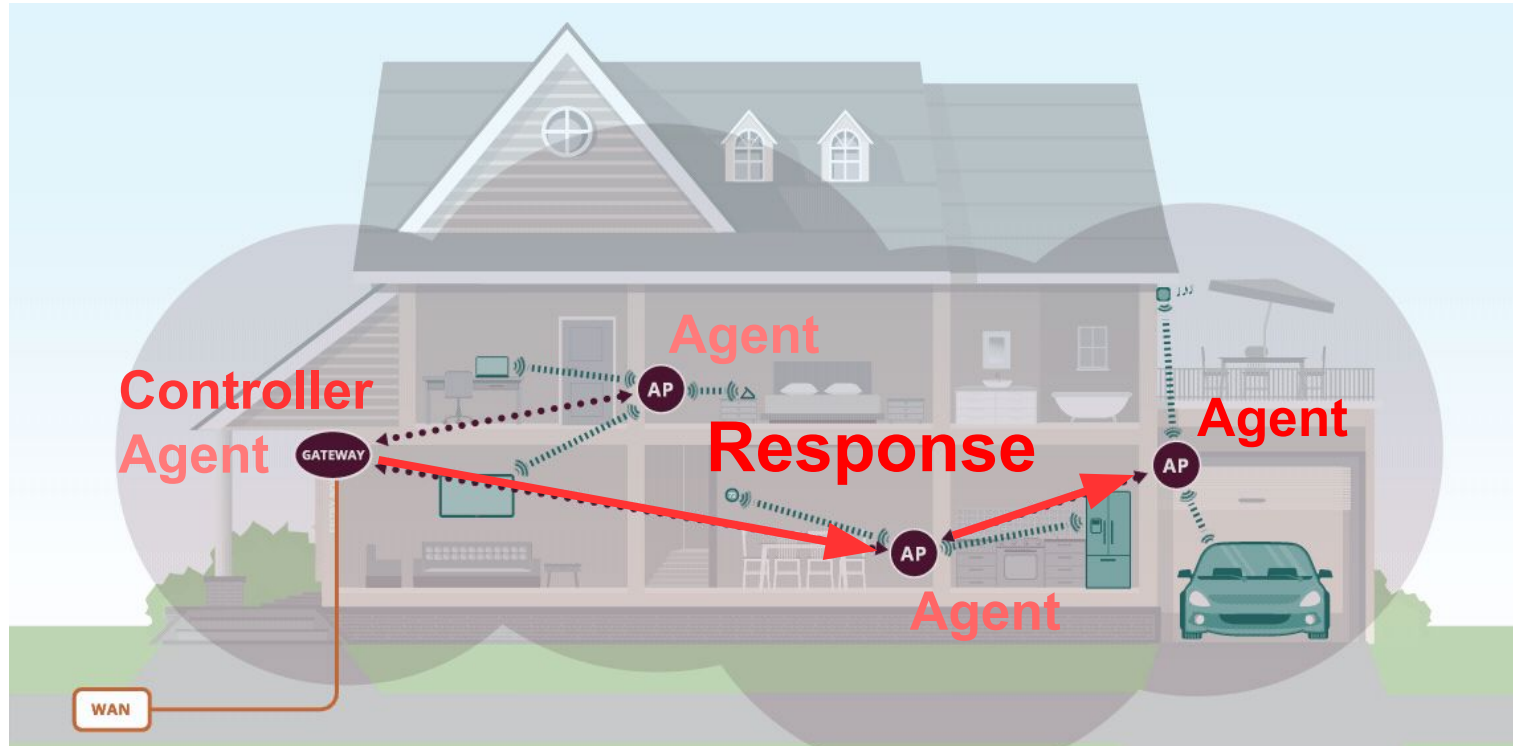
WFA Easymesh Metrics



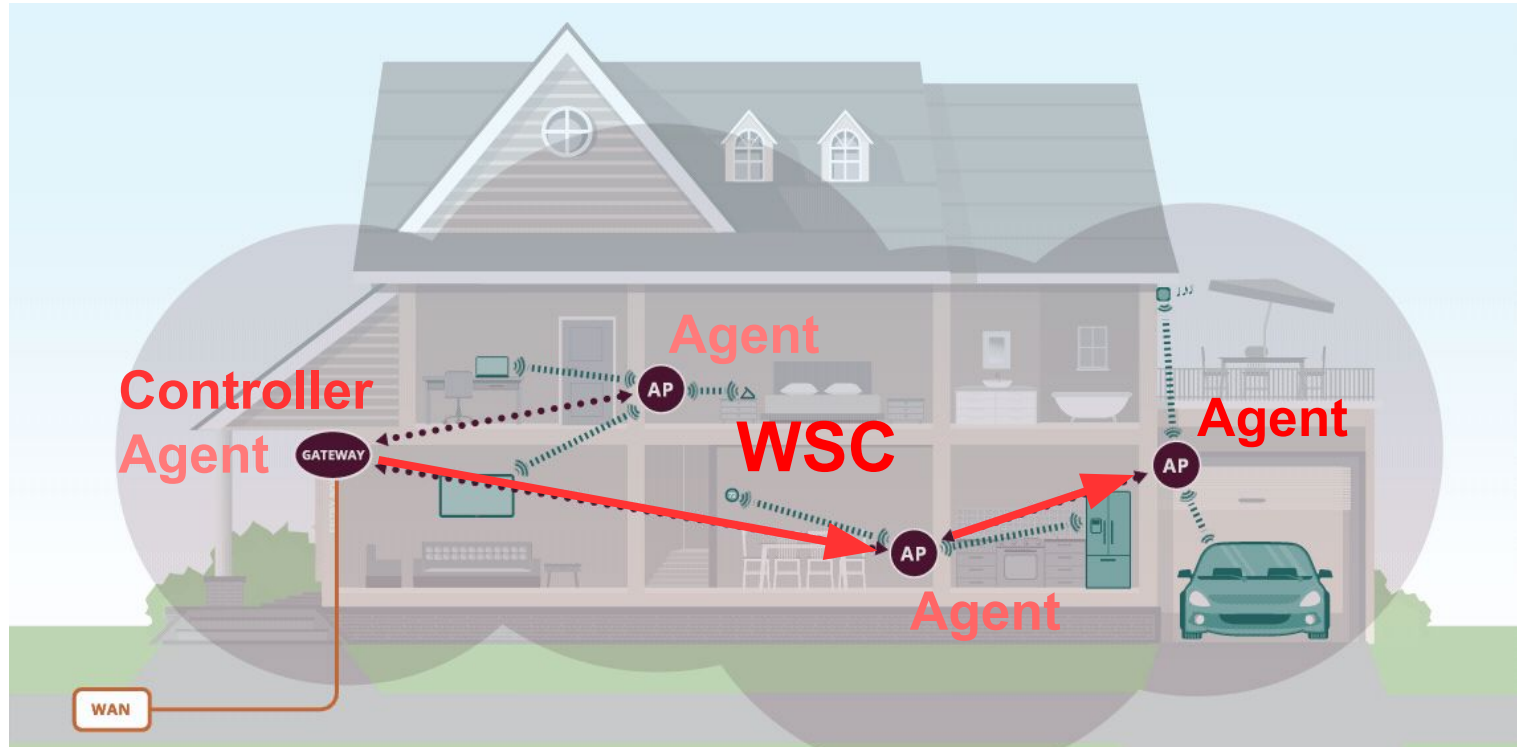
WFA Easymesh Onboarding



WFA Easymesh Onboarding



WFA Easymesh Onboarding



Conclusions

- Wi-Fi networks are getting smarter
- Open source is critical for vendor independence
- There are open ecosystems out there, even where you might not expect it
 - <https://gitlab.com/prpl-foundation>
- You can make good money developing open source code
 - We're hiring!



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an open source of wisdom