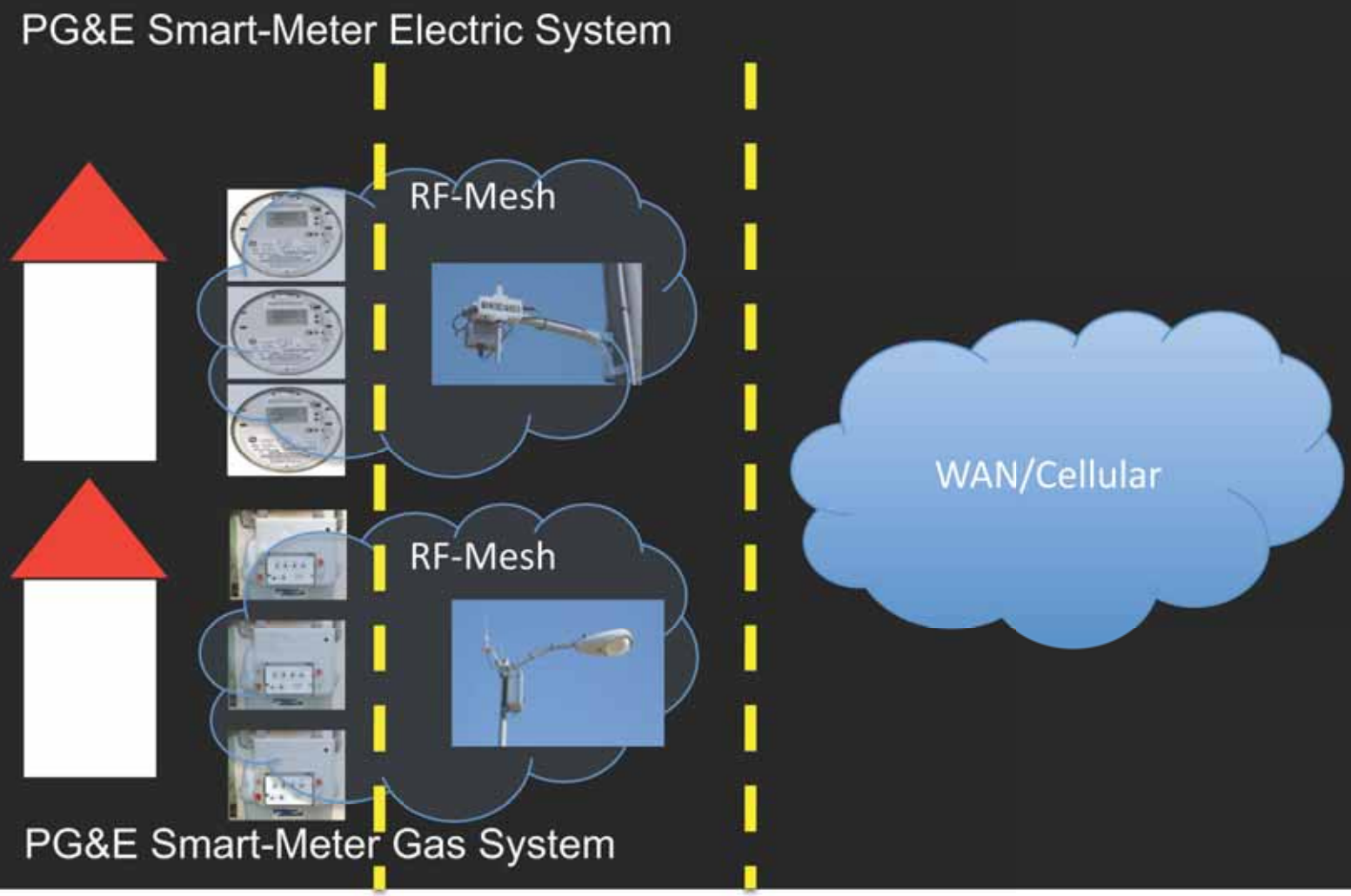
Communications for Residential Smart-Grid

Yiannis Yiakoumis

What SG means for the home?

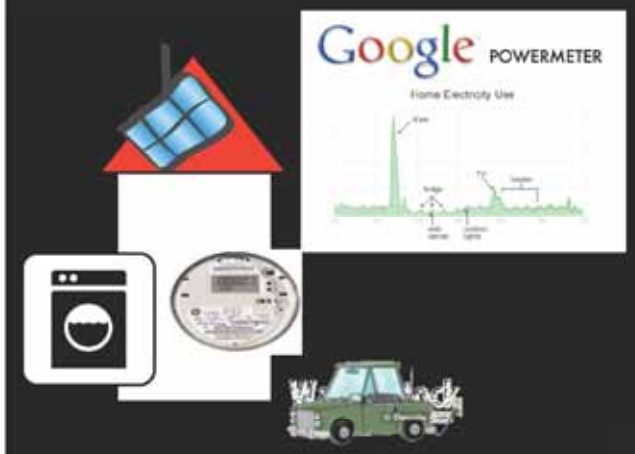
Smart Metering (First Wave Smart-Grid)



What SG means for the home?

Second Wave Home Smart-Grid?

(Load, Generation, DR, Load-balancing, Web-apps, Inventives)



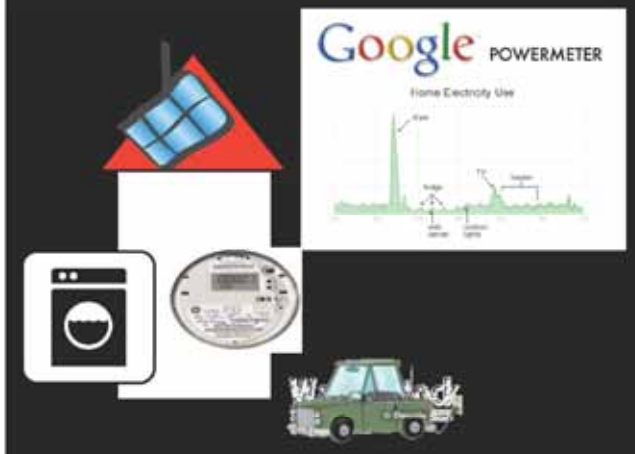
?

WAN/
Cellular

The "Smart-Grid Network"

Current Approach

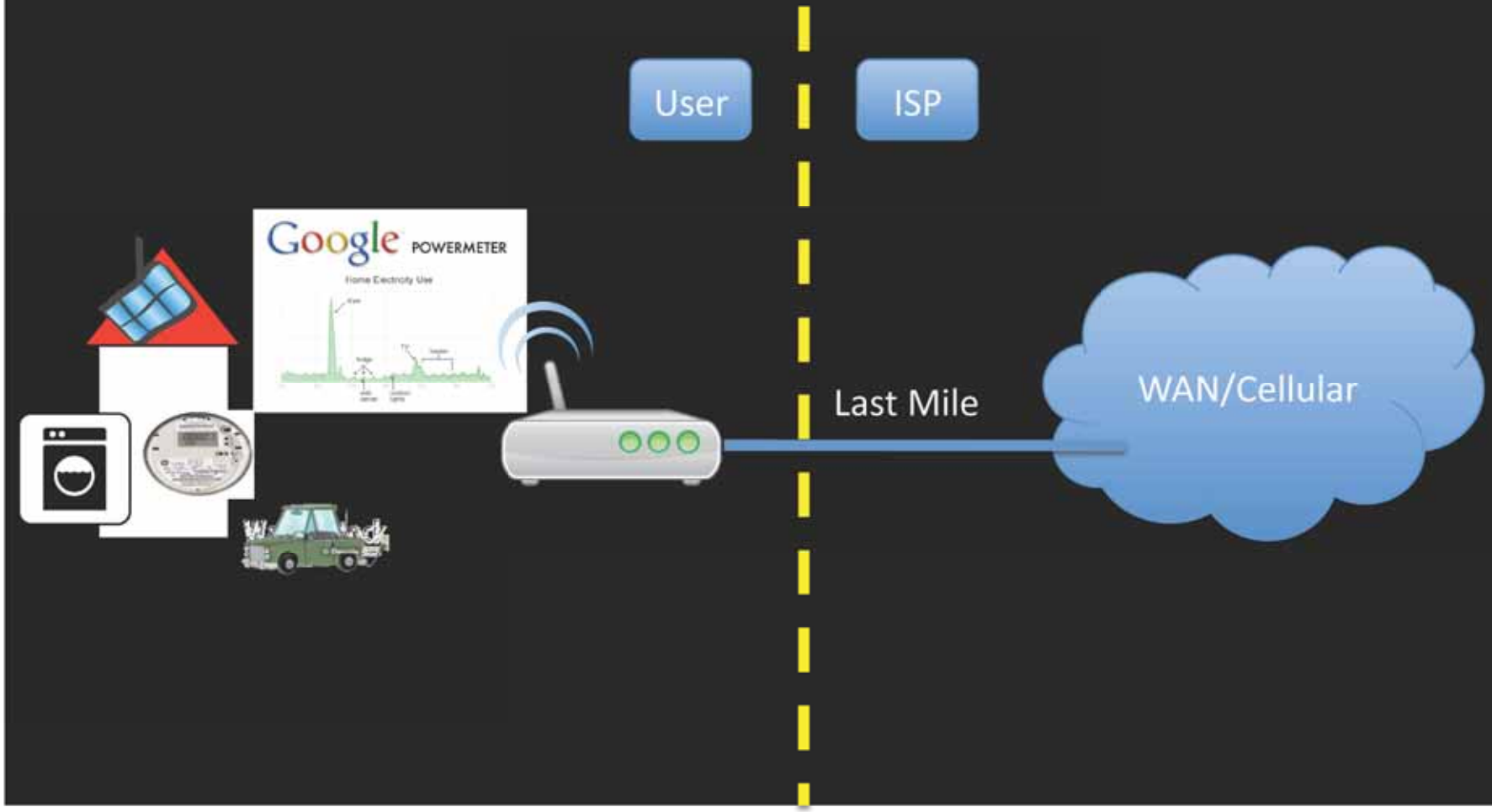
- Expensive to deploy and operate
- What about others (gas?)
- The Smart-Home is **more** than a utility extension



WAN/
Cellular

The Home Network (…with a few changes…)

Proposed Approach



The Home Network (…with a few changes…)

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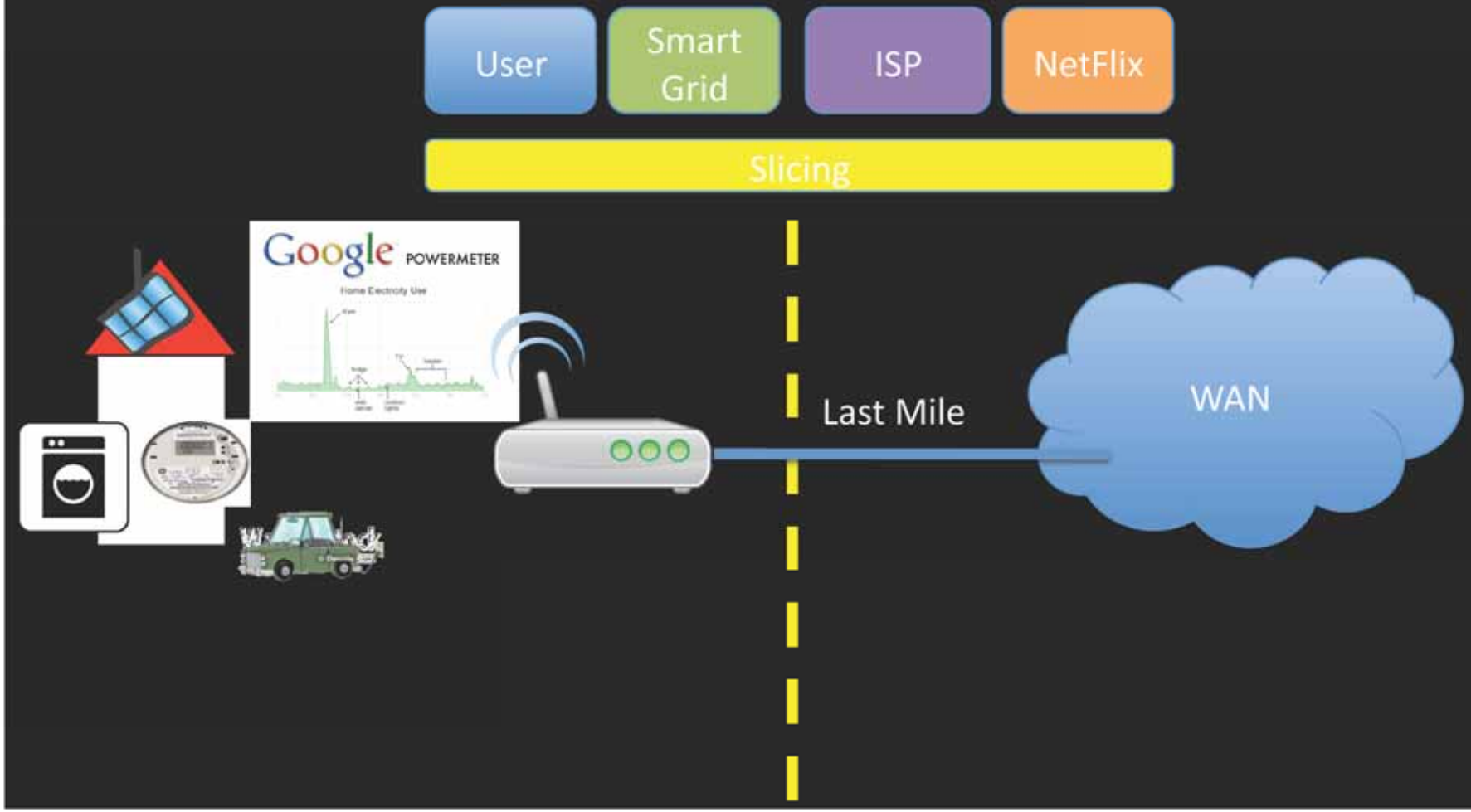

What needs to change?

Challenges, Misconceptions, Questions

- Infrastructure to and within the home needs to become **slicable** (ISP, Smart-Grid, Smart-Gas)
- Isolation between different **slices (traffic, bandwidth, …)**
- Each party gets low-level control of the infrastructure

What needs to change?

Challenges, Misconceptions, Questions

- What are the application needs? BW? Latency?
- IP, TCP, UDP, …?
- IPSec, VPN, MPLS, QoS,…
- UPnP,…

What needs to change?

Challenges, Misconceptions, Questions

- Security, Privacy, Complexity
- Flexible policies (Everyone can read smart-meter data, but none can upgrade the firmware)
- Who configures them?

thanks!