

# Tech Day

## Home Network Registry Idea

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Today's Home Network & IoT implementation are disparate, **kind of scary** & need structure!



# The home network of the future should be safe, secure and **simple** to use!



# The home network should be reachable from the internet **seamlessly** and **securely**



Maybe even your car should be **connected** to your home network




because your home is bigger than your house



And the home network grows to include personal and **wearable** IoT, inside and outside the home...



Your home network both internal and external traffic should be secured using a **common** key 

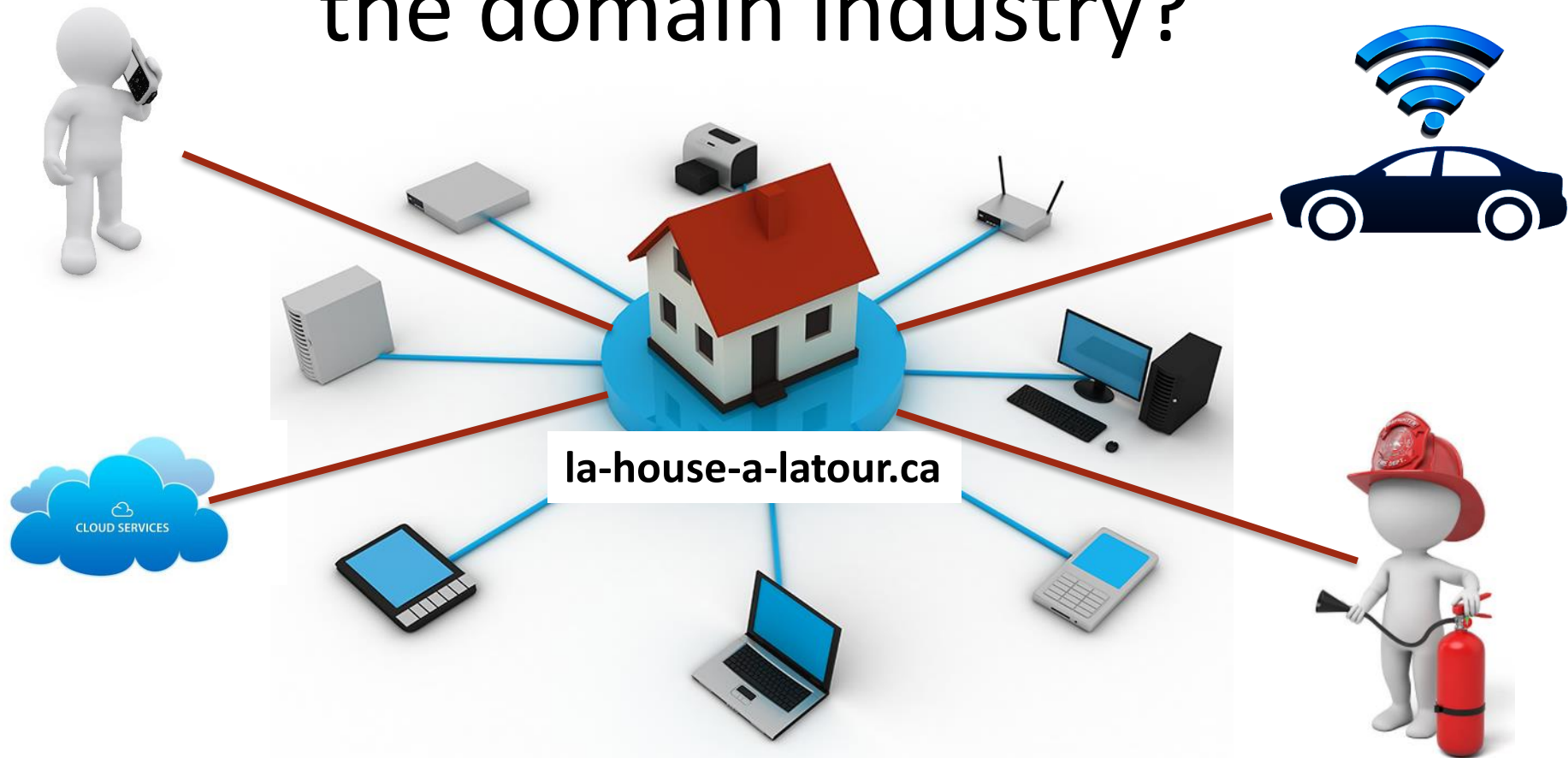


# Do I need to say more?





# Seriously, what does this bring to the domain industry?



## A domain name per household!!!

# Leveraging the chain of trust in **DNSSEC** and some **innovation** to create a secure home network platform



# home.arpa. draft-ietf-homenet-dot-14

**<<The naming mechanism needs to function without configuration from the user. While it may be possible for a name to be delegated by an ISP, homenets must also function in the absence of such a delegation.>>**

- Let's make delegated "home" domains function without user configuration!

# The focus is on Automation

## Registry Automation



+

## Home Network Automation



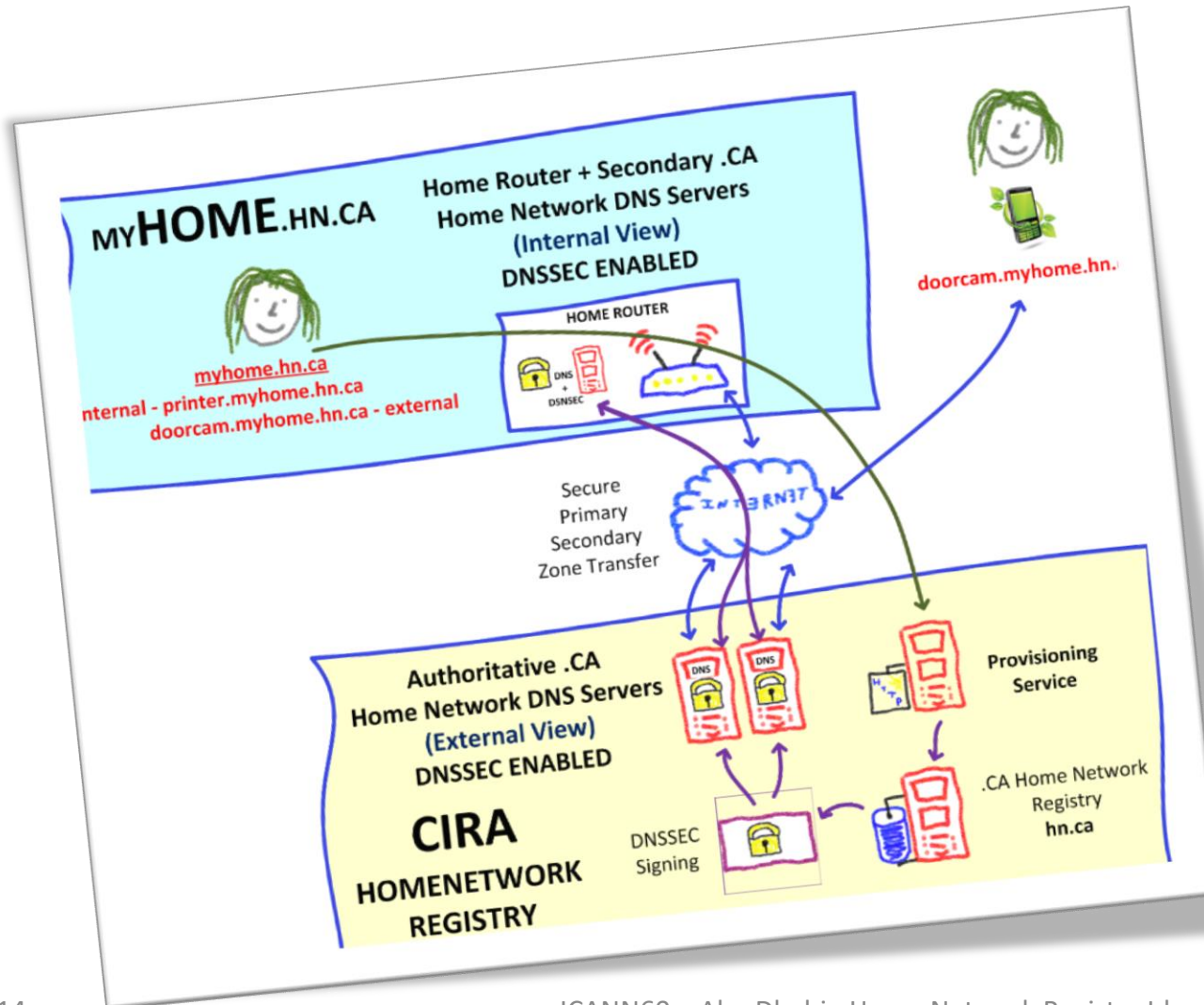
# Innovation

Your local ccTLD will provision your domain, sign it with DNSSEC and establish a secure chain of trust to your local home gateway, **magically** solve all your worries and keeping your online family safe 😊





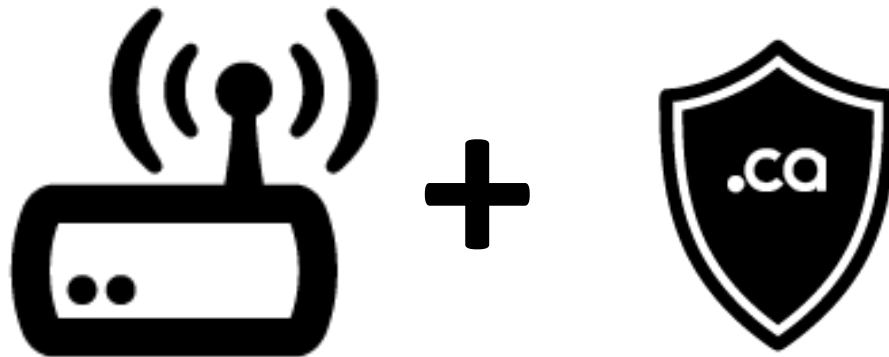
# Remember, it's an idea. So far it looks like this...



That's  
Supposed  
to be  
a napkin  
design  
😊

# Step 1

- When you buy a home gateway, it comes bundled with a .CA home network domain



RFID card  
(Code to activate  
provisioning and  
domain)

# Step 2

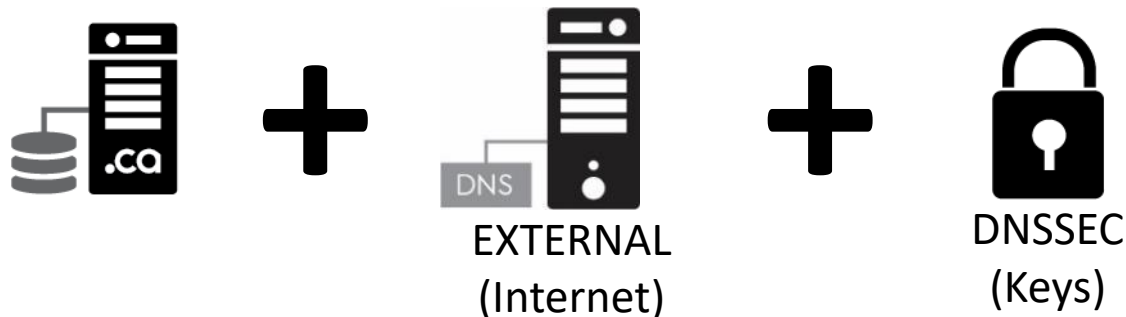
- Then you follow the provisioning instructions
  - Install & open the CIRA Home Gateway app
  - Turn on the Home Gateway
  - “TAP” your mobile to discover the home gateway
  - Pick a domain name
  - Enter the secret code (“TAP” RFID card)
  - Home Gateway ready for configuration



**la-house-a-latour.ca** +  **code**

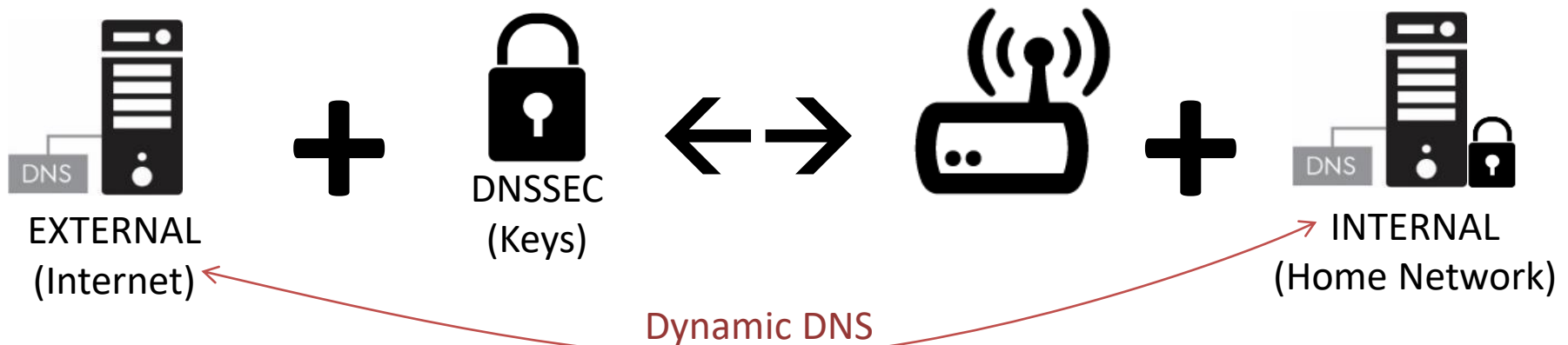
# Step 3

- Automated Backend Provisioning @ CIRA
  - CIRA creates the .CA domain name in the registry
  - CIRA signs the .CA domain with DNSSEC
  - CIRA is primary for the external DNS view of the .CA domain
  - CIRA provides secondary DNS to the .CA domain



# Step 4

- Automated Home Gateway provisioning
  - Establish secure connection to Home Gateway
  - Securely send private DNSSEC key to Home Gateway, setup internal DNS and DNSSEC
  - Configure Home Gateway for DNS integration with registry (à la dynamic DNS) for external services



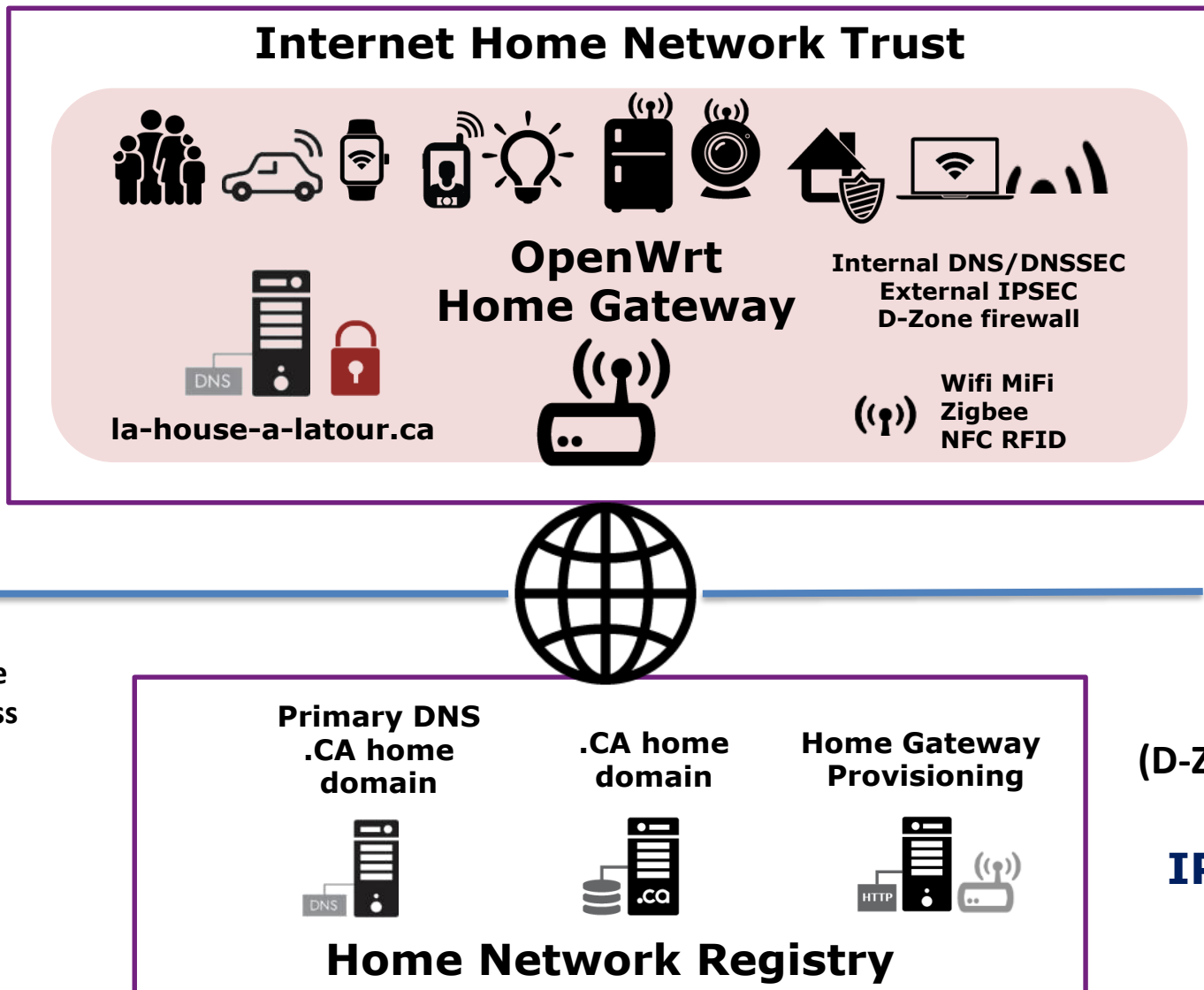


# Step 5

- Setup secure home network infrastructure
  - Using your trusted mobile & the app, “TAP” the Home Gateway to:
    - Learn the WIFI password
    - Get the IPsec password to VPN in your home network
  - Use your mobile and “TAP” all your IoT devices to add on your home WIFI network, easy peasy 😊



# High Level Architecture

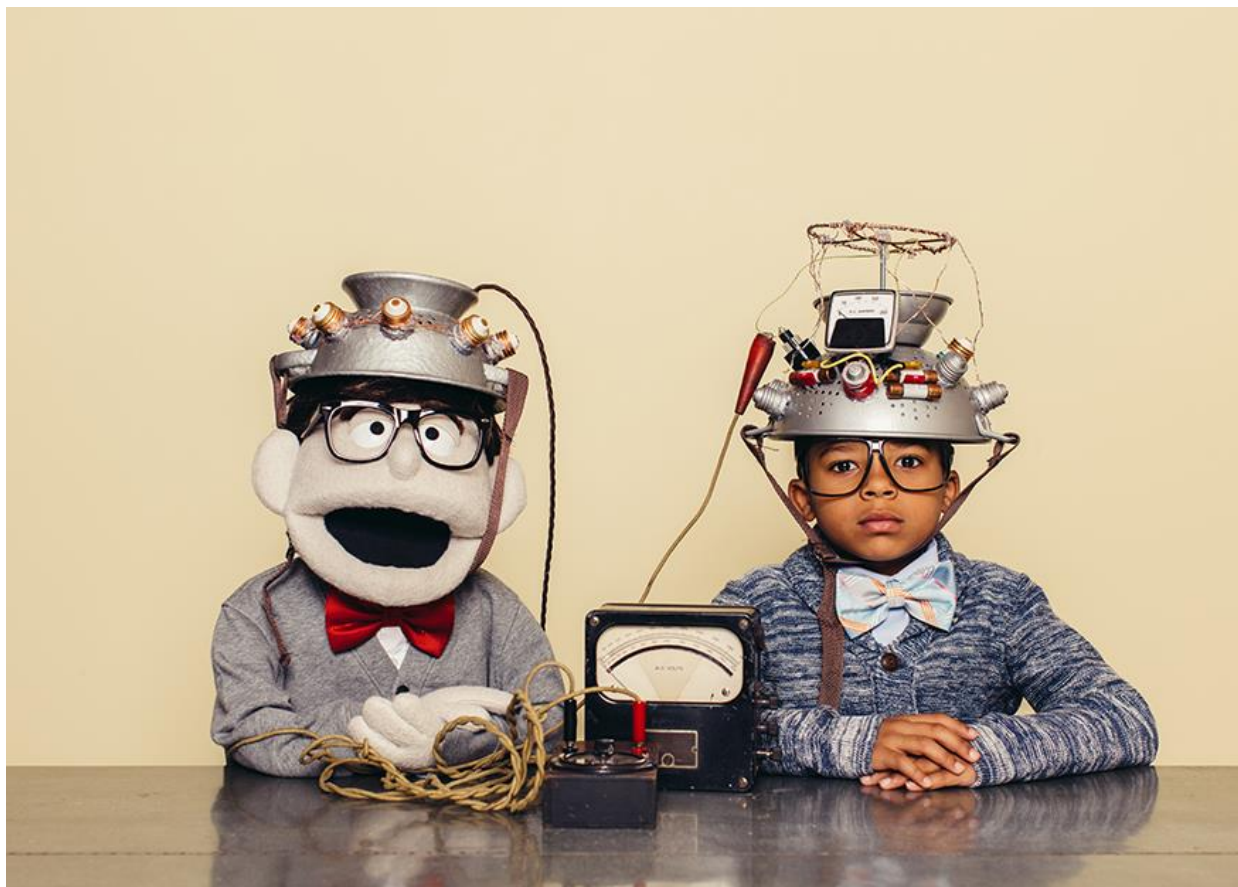


Remote Home Network Access (VPN IPsec)

IoT Cloud Services (D-Zone Firewall)

**IPv6 ONLY**

# What do you think?



## Want to help?

# Going forward, it's a journey!

- Motivation
  - Ensure long term ccTLD relevance in the future of IoT
- Proposing ccTLD to develop a solution
  - To keep the home network safe and secure
  - To create a secure **<internet home>** IoT environment
  - To leverage DNSSEC as an innovation platform to create a hub for “home trust”
  - That leverages the ccTLD registry expertise
  - To enhance OpenWRT with this functionality

# Next Steps

- Develop a Proof of Concept and prototype using .CZ Omnia
- Use public GitHub with functional specification and prototype software
- Research IETF Homenet DNS related drafts/RFC
- Opportunity:
  - Put .CA domains in the forefront as a trusted homenet domain name for personal `_HOME_` usage when end to end security is required
  - Sell CIRA Home Gateways



# The new <Internet Home>

[https://github.com/CIRALabs/Home-  
e-Network-Registry-Gateway](https://github.com/CIRALabs/Home-Network-Registry-Gateway)