



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 internal & external traffic should be secure using a **common** key 



Seriously, what is this bringing 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



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



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



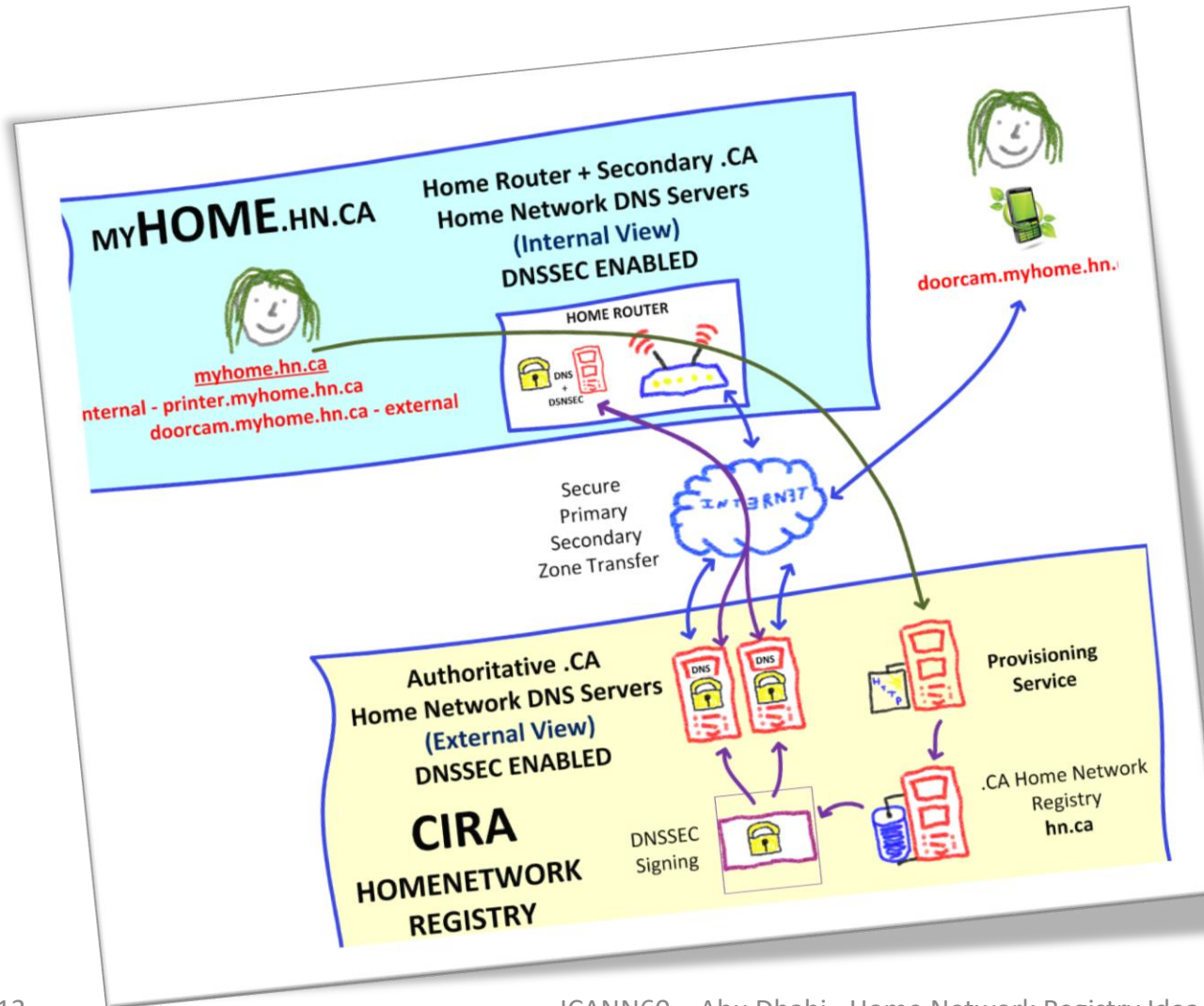
+

Home Network Automation



**glue and
some challenges**

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

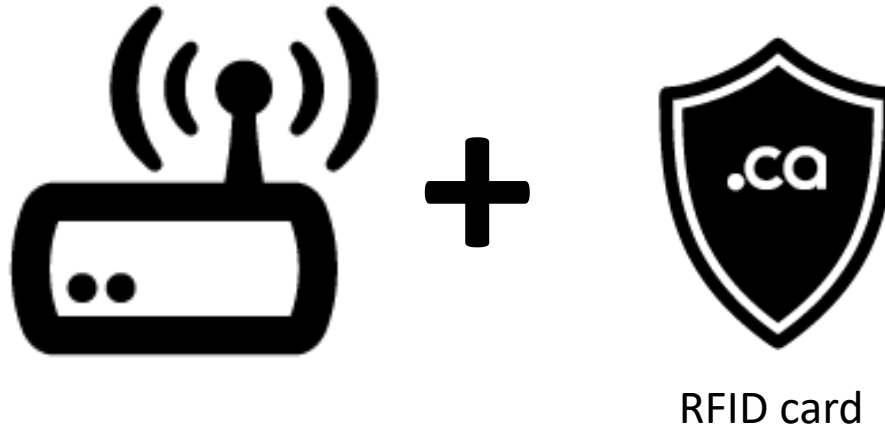


That's
Supposed
to be
a napkin
design




Step 1

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



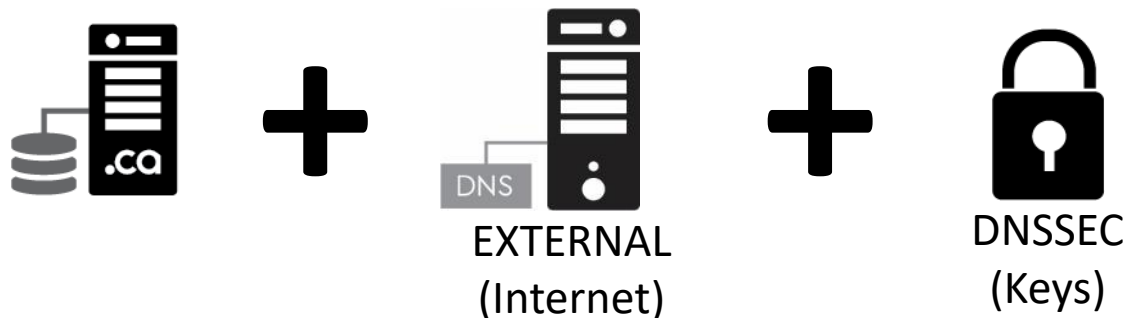
Step 2

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

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

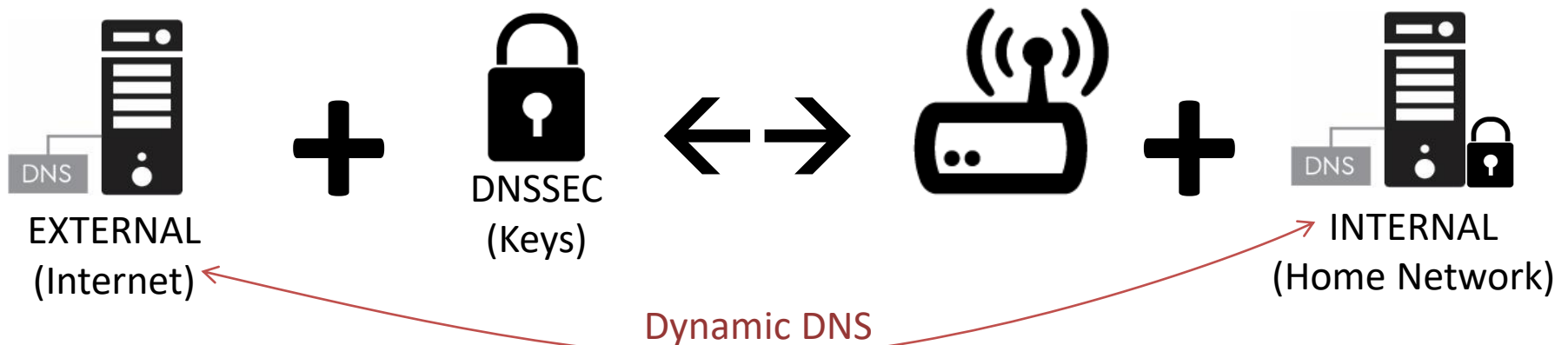
Step 3

- Automated System 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
 - 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

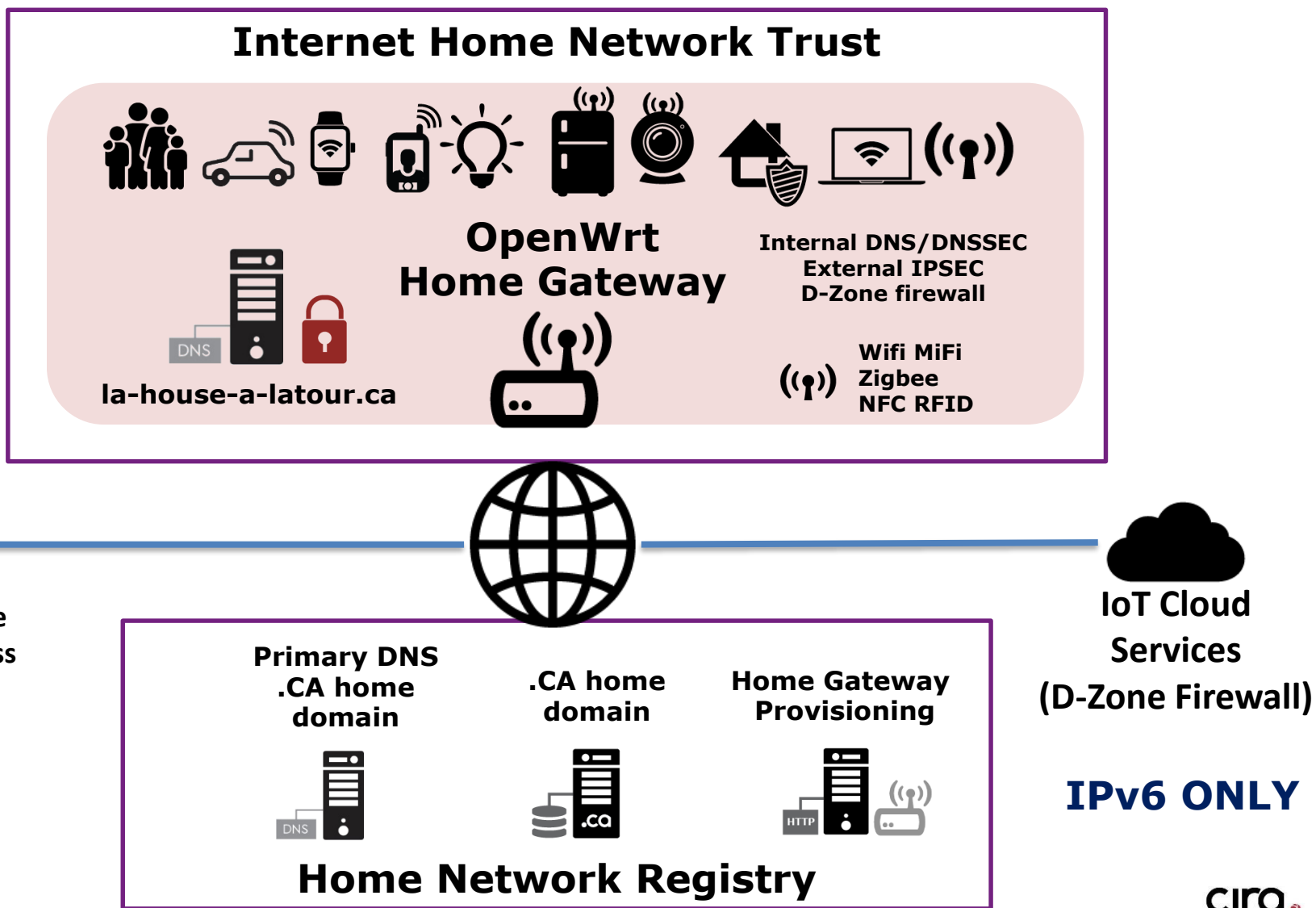


Step 5

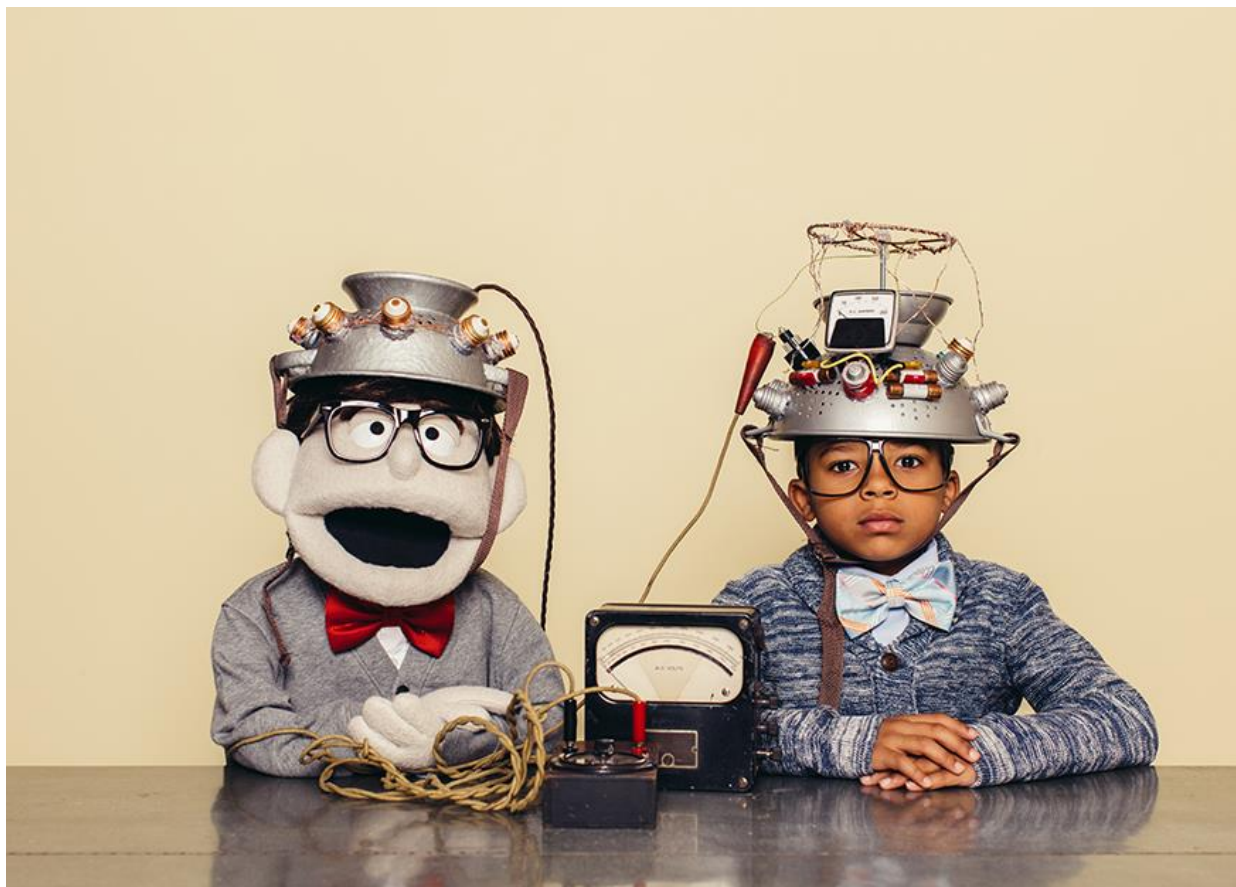
- Setup secure home network infrastructure
 - Using your trusted mobile & the app, “TAP” the home gateway to;
 - Learn the WIFI password
 - Get the IPsec password to VPN in your home network
 - Use your mobile and “TAP” all your IoT devices to add on your home WIFI network



High Level Architecture



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 sort of hub for “home trust”
 - To make the home network remotely accessible
 - That leverages the ccTLD registry expertise

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
- 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-Network-Registry-Gateway>