

Community Networks

*the **guifi.net** experience*

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Outline

- 1 Community Networks
- 2 The guifi.net experience



Outline

- 1 Community Networks
 - Concept
 - Definition
 - Traits
 - Examples
- 2 The guifi.net experience



Community Networks - *Concept*

A model for deploying and operating computer networks where the network infrastructure is:

- build, maintained, operated and owned by communities of citizens
- **open** to *encourage participation*
- **neutral** and **free** to *fight discrimination*

Compared to current conventional telco model, CNs model is:

- fairer, more inclusive, more participative, more sustainable, etc.
- *and yes, more efficient!*



Community Networks - *Definition*

There isn't a consensual definition yet \Rightarrow by cases

Case 1, the Free Network Foundation freedoms:

- **Freedom 0: The freedom to participate in the network** *Anyone may join, use, and expand the network and must allow others to do the same*
- **Freedom 1: The freedom to keep and share data** *Participants are free to store data under their care without sacrificing their ability to publish it*
- **Freedom 2: The freedom to transmit data without interception** *Private communications remain unexamined from the time they enter the network until the time they reach their destination*
- **Freedom 3: The freedom to transmit data without interferences** *Communications remain unaltered and unabridged from the time they enter the network until the time they reach their destination*

Case 2, the fundamental principles of the guifi.net compact:

- *You have the freedom to use the network for any purpose as long as you don't harm the operation of the network itself, the rights of other users, or the principles of neutrality that allow contents and services to flow without deliberate interference.*
- *You have the right to understand the network and its components, and to share knowledge of its mechanisms and principles.*
- *You have the right to offer services and content to the network on your own terms.*
- *You have the right to join the network, and the obligation to extend this set of rights to anyone according to these same terms.*



Community Networks - *Traits*

Infrastructure is a *Common Pool Resource (CPR)*

- Economy
 - *Core resource*: the network infrastructure
 - *Fringe unit*: the connectivity
- Threats
 - *Congestion* (connectivity is subtractable)
 - *Free-rider* (they are intentionally non-excludable)

⇒ CNs must be protected ⇒ governance system needed

Suggested reading: E. Ostrom, *Governing the commons : the evolution of institutions for collective action*.
Cambridge University Press, Nov. 30, 1990

non-speculative access to the Infrastructure

- Financial compensation
- Transparency



Community Networks - *Examples*

Name	Main areas	Working nodes	Centralised registration?	Topology / Main DRPs	Free uplink?
guifi.net	Catalan Countries (single main cloud)	>25.000	guifi.net DB / CNML	Infrastructure / BGP + OSPF clouds	Yes (via proxies)
AWMN	Attica (single main cloud)	>2.400	WiND DB	Infrastructure / OLSR + BGP clouds	No (users share uplinks privately)
Freifunk	Almost every German city (isolated clouds per city)	3.000?	Somehow	MANET + P-t-P / OLSR	Yes
FunkFeuer	Viena, Graz, etc. (isolated clouds per city)	330	NodeDB (each cloud independent)	MANET + P-t-P / P-t-mP / OLSR	Yes (Public IPs)
wlanslovenija	Ljubljana, Maribor, etc. (all clouds VPN connected)	>150	Nodewatcher	MANET + P-t-P / OLSR	Yes

Table 1 : Some CNs. Main characteristics.



Outline

- 1 Community Networks
- 2 The guifi.net experience
 - Motivations
 - Achievements
 - Lessons learnt



guifi.net - *Motivations*

Motivations

- ① fight digital exclusion
- ② complementary telecommunication model
- ③ a proof-of-concept to transform society



guifi.net - Achievements 1/3

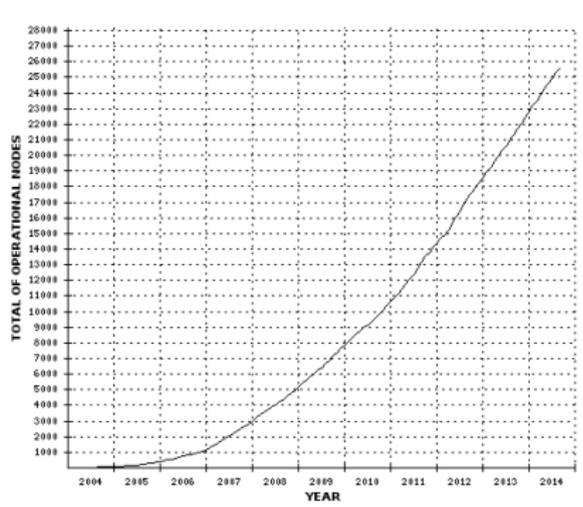
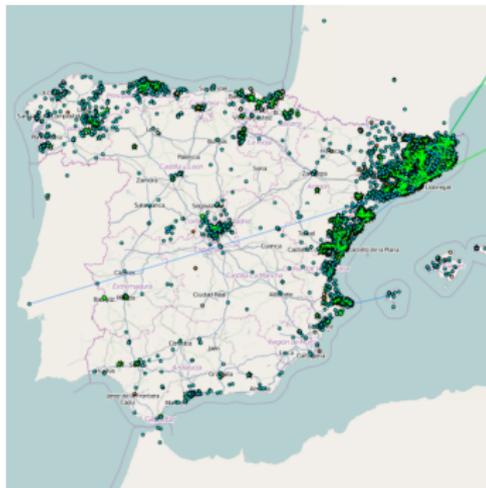


Figure 1 : guifi.net nodes and links. Iberian peninsula, September 2014 (left), nodes growth overt time (right).

- >25000 working nodes; growing 75 nodes/week
- >300 servers
- WiFi & Optical Fibre
- Individuals, Associations, Public Administrations (>200 Councils), ISPs (~20), self-providing corporations, etc.
- Network protected by a license¹

¹

<http://guifi.net/ca/XLON>. Mandatory to join the network. Keeps the network open, free and open.



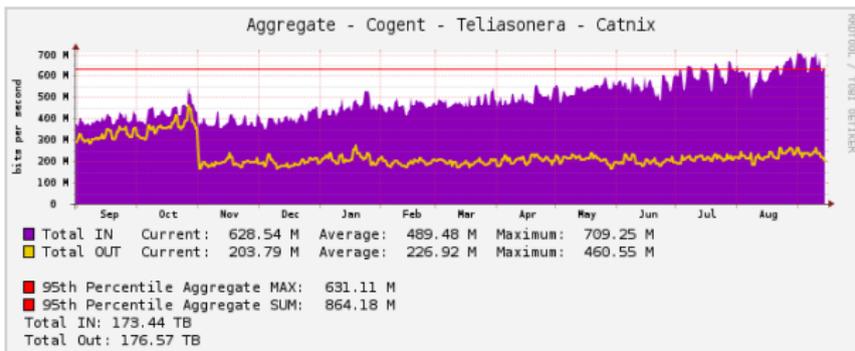
guifi.net - *Achievements 2/3*

Figure 2 : NOC's aggregated traffic (2 carriers + NIX) (Sep. 2013-Aug. 1014).

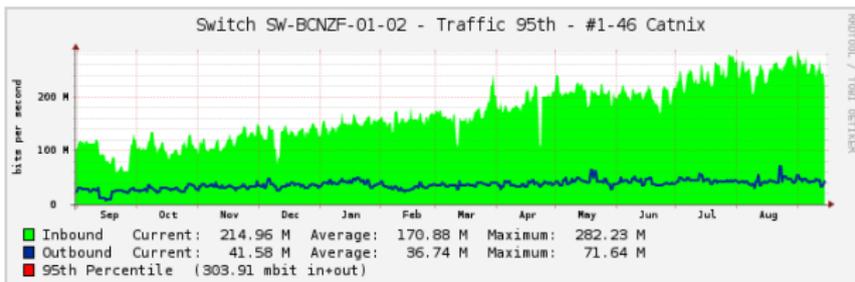


Figure 3 : NIX's traffic (Sep. 2013-Aug. 1014).

guifi.net - Achievements 3/3

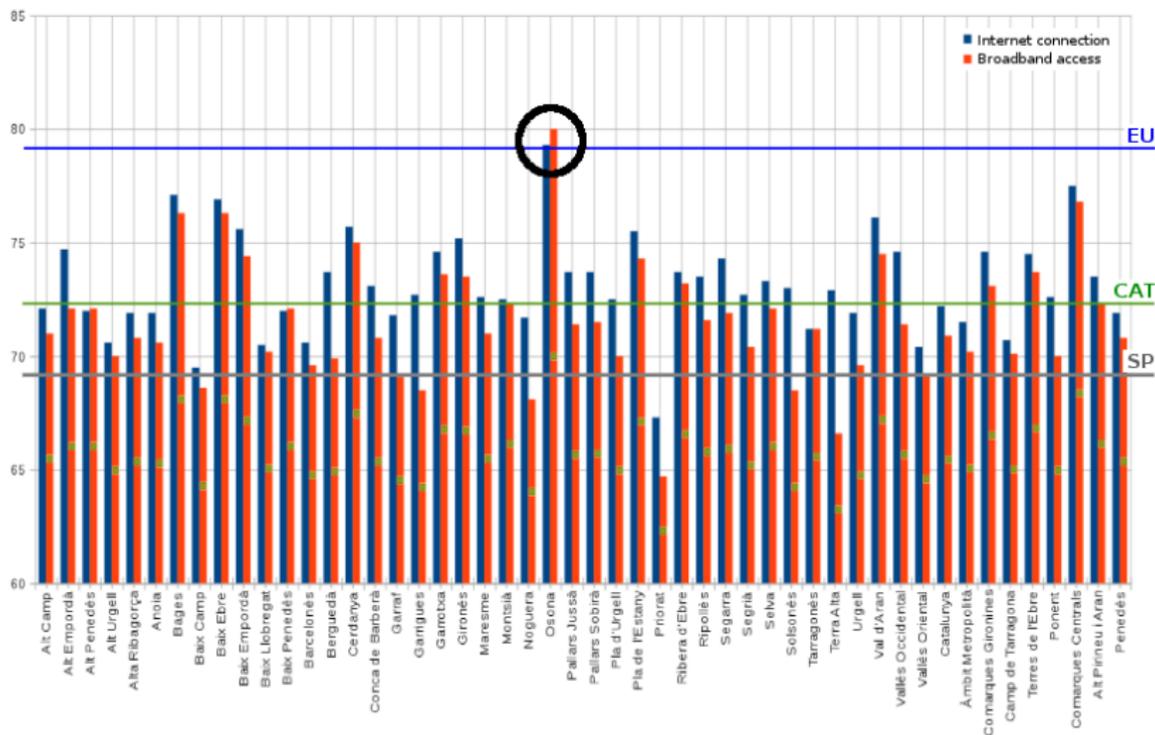


Figure 4 : Bars: Households Penetration of Bandwidth and Internet access in Catalonia per comarca (county). Lines: EU, Catalan and Spanish Internet access averages. Source: IDESCAT (2013).



guifi.net - *Lessons learnt (general recommendations)*

- licensed network → *legal certainty*
- sustainable ecosystem → *business are welcome*
- dissemination → *focus on the concept, don't be too tech, explain that it is a complementary initiative*
- tech agnostic → *don't focus on a specific tech, whatever is ok to connect people*
- make tech simple → *self-service*
- work in small iterations → *achieve tangible results ASAP to show in the next iteration*
- engagement → *every is needed, everybody can contribute since the very first day*
- knowledge transfer → *minimise dependencies*
- think globally, act locally → *the community of CNs*



guifi.net - *Lessons learnt (cooperation recommend.)*

- conception phase
 - understand locals needs → *don't simply export your solution*
 - practical examples of how a CNs can improve their life
 - already involve locals
- design phase
 - take as much factors as possible under consideration → *environmental conditions, power, legislation, products available, etc.*
 - iterative approach → *decreasing intervention; in three it they must be autonomous*
- execution phase
 - knowledge transfer is part of this phase
 - encourage the locals to get the hands as dirty AP, ASAP
 - be ready for unforeseen events → *multidisciplinary team*



Thank you for your attention.

Questions?

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