

# guifi.net

Building a **COLLABORATIVE ECONOMY** over Networks held in **COMMON**

## Sustainability in guifi.net: Initial results of the implementation of the cost sharing system



IETF96 – IRTF GAIA

July 21<sup>st</sup> 2016

**guifi.net Foundation**

[fundacio@guifi.net](mailto:fundacio@guifi.net)

[roger.baig@guifi.net](mailto:roger.baig@guifi.net)



European  
Broadband  
Award  
2015

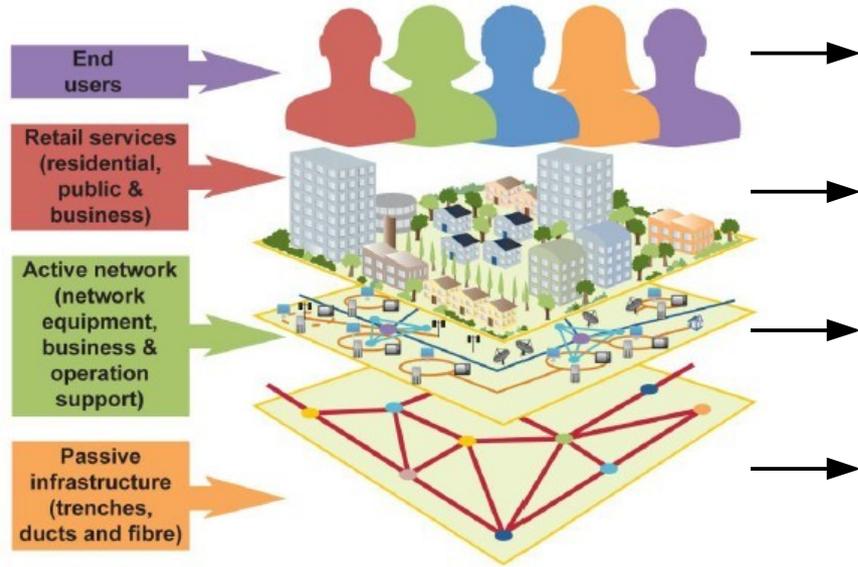
Innovative model of  
financing, business and  
investment category

- Introduction
  - Community Networks
  - Problem statement
  - Guifi.net response
- Theoretical framework
- guifi.net experience
- Conclusions

- Community Networks (CNs)
  - Community networks are networks built by citizens and organisations who pool their resources and coordinate their efforts to build network infrastructures
  - Traits: open, free, neutral
  - Examples: FreiFunk (Germany), FunkFeuer (Austria), wlan Slovenia, etc.
- Problem / challenge
  - Typically based on voluntary efforts and non-refundable contributions
    - How to make them **sustainable** and **scalable**?
- Guifi.net response
  - Enable **professional activity** and,
  - develop a set of tools to ensure the **reinvestment** of a fraction of the benefits of this professional activity
    - Agreement for economic activities and the participation in the compensation system
    - Compensation settlements
    - Revenue split and accounting

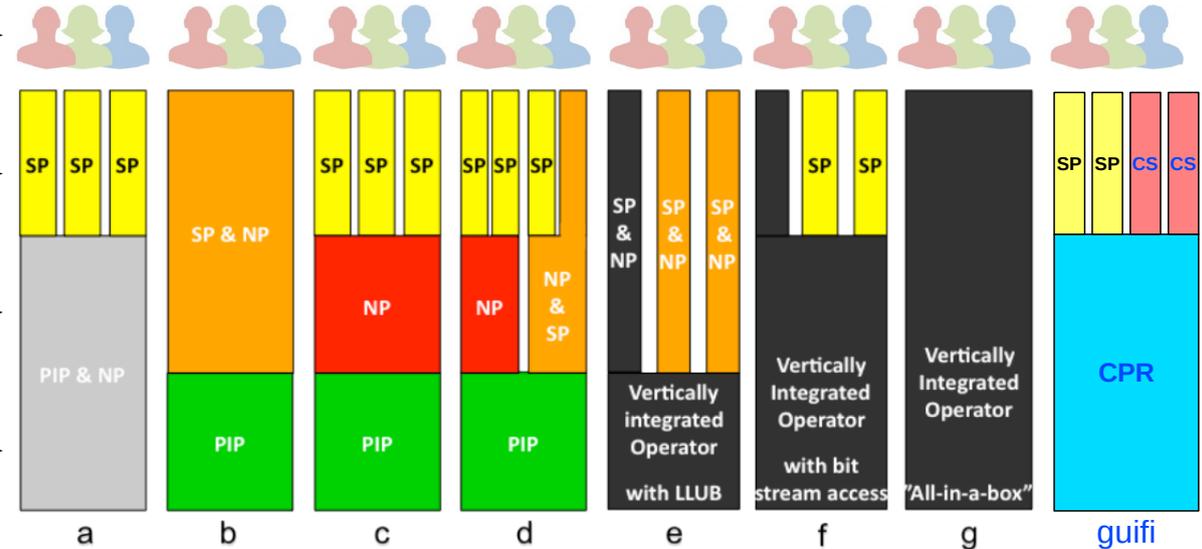
- Introduction
- Theoretical framework
  - Bringing the **commons** to the telecoms sector
- guifi.net experience
- Conclusions

# Access network layers



(Alcatel-Lucent)

# Supply chain models



PIP – Physical Infrastructure Provider  
 NP – Network Provider  
 SP – Service Provider  
 LLUB – Local Loop Unbundling

CPR – Common Pool Resource  
 CS – Community service

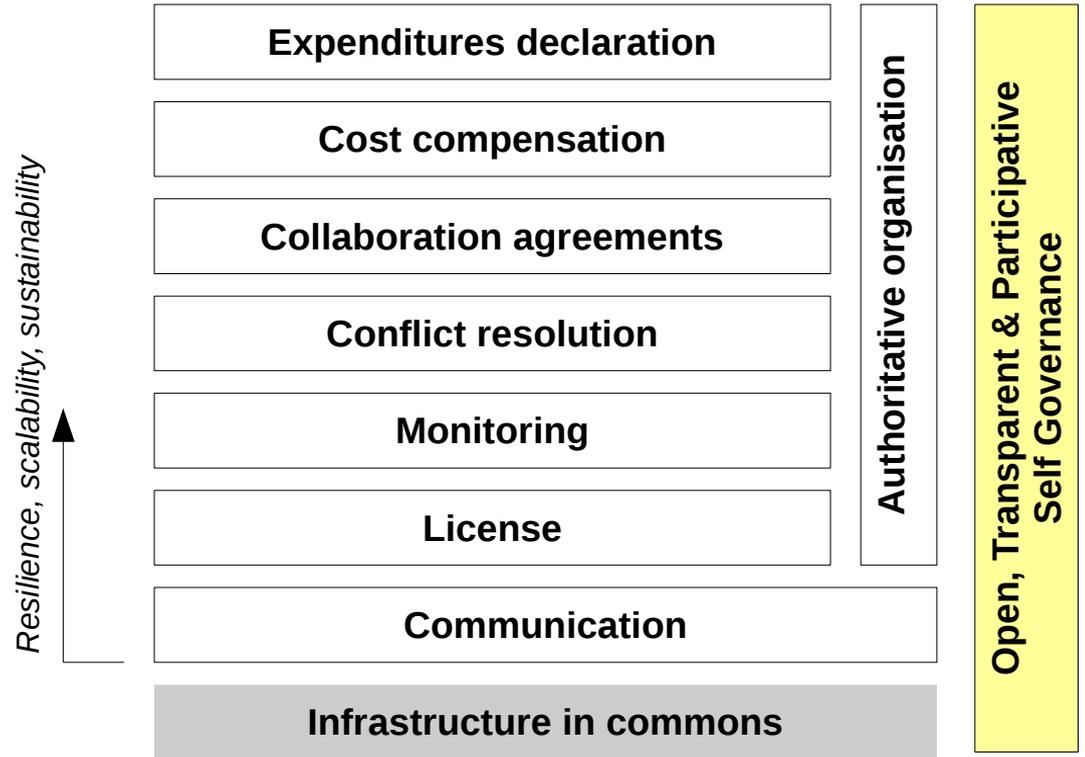
(Forzati 2010)

- Increases the efficiency (*better performance or wider coverage for the same investment*)
  - Stimulates cooperation
  - Prevents duplication of infrastructure/efforts
  - Facilitates economies of scale
- Maximises freedom choice
  - Coexistence of DIY and professional options
  - Equalises business opportunities
    - Lowers entry barriers
    - Expands the market
- Professional activity
  - Involves dependency on the infrastructure (to meet SLAs)
    - Reinvestment needed
- CNs principles-friendly

- CPR  $\implies$  **Depletion**
  - Well-known problem in other fields
    - E. Ostrom works, etc.

- Introduction
- Theoretical framework
- **guifi.net experience**
- Conclusions

- Sustainable by design
- Based on the commons collaborative economy
  - E. Ostrom (2009 Nobel Prize in Economics) principles
- Based on free market, but
  - Non-speculative
  - Fair trade
- A win-win ecosystem
  - Rises funding
  - enables economies of scale
- Accountable
- Implemented through
  - Written consensus rules (license)
  - Signed agreements



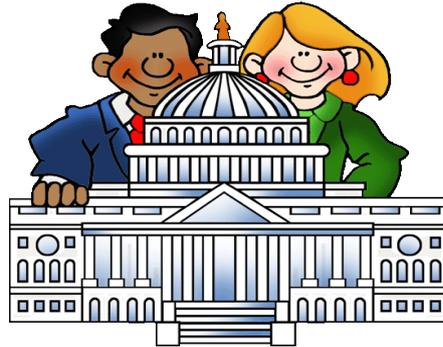
A Collaborative Economy with ...

# guifi.net

Network as a Commons



Smart Citizens (Volunteers)



Smart Governments

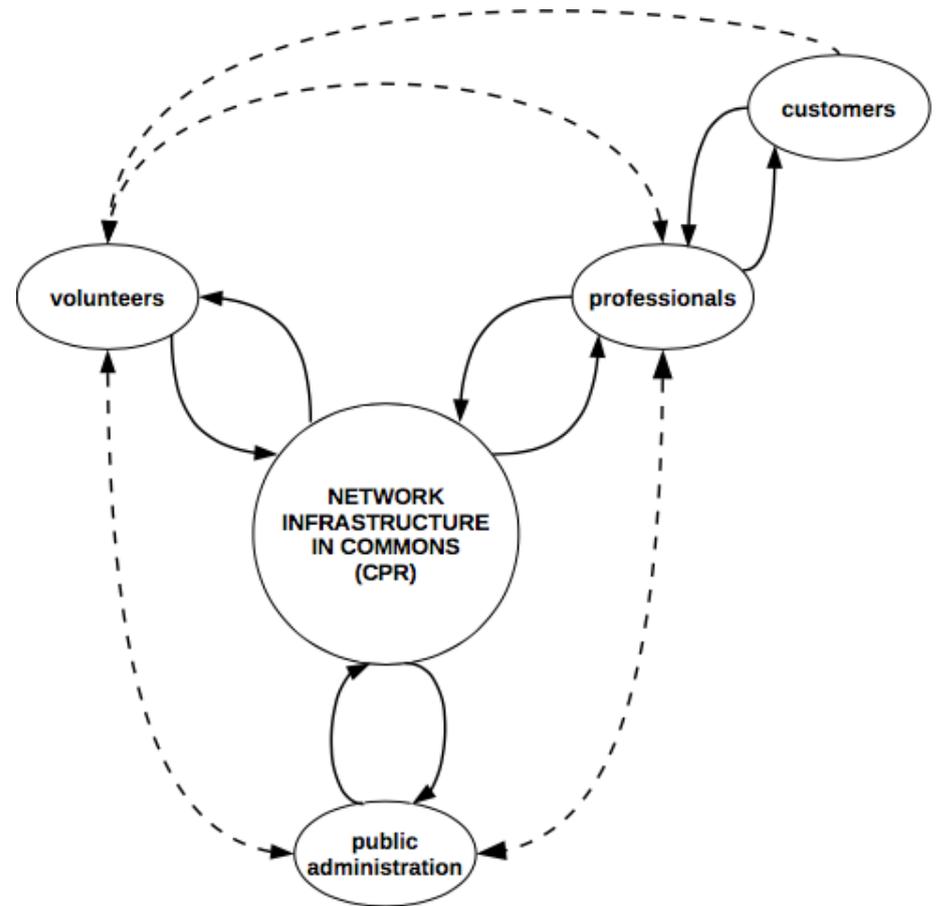


Smart SME's & Orgs

Ecosystem: Participants & Stakeholders



- Foundation
  - Common Pool Resource (CPR) Governance
- Public Administrations
  - Manage Public Domains
- Professionals
  - Provide services
  - Generate Income from customers
- Volunteers
  - Contribute to the CPR



- Expenditures declaration

- Public

- Criteria
- Information

- Economic compensation

- Balances

- Contributions
  - CAPEX
  - OPEX
- Resources usage
  - Bandwidth, # of fibre connections, ...

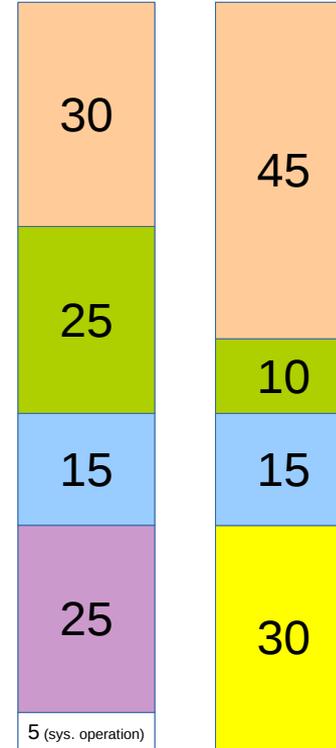
- Clear return of investment & fair business models

Totals mensuals per l'any 2014

Supplier	gen	feb	mar	abr	mai	jun	jul	ago	set	oct	nov	des	Total
59855-Gurbtec Telecom	2,688.55	461.91	3,286.92	2,999.42	487.58	3,409.20	15,462.74	1,500.42	10,562.02	9,230.01	4,134.68	8,735.37	62,958.81
61891-Priona.net	-	-	-	853.05	-	-	-	-	2,699.54	-	275.68	39.53	3,867.80
61722-Gaufix.net - Internet a l'abast de tothom	2,643.26	3,875.98	5,592.41	1,590.64	396.80	641.30	1,535.03	1,671.10	3,386.53	3,211.91	3,801.38	2,747.77	31,094.11
31251-http://www.setup.cat	326.70	36.30	238.04	477.11	84.38	113.84	75.64	369.84	-	-	-	-	1,721.85
71369-Ramon Roca	-	-	-	-	-	-	1,200.00	720.00	-	480.00	-	-	2,400.00
													102,042.57

Expenses & Contributions  
(e.g.: = 100€)

Resource Usage (%)



Compensation settlement  
To **Compensate** or to **Pay**

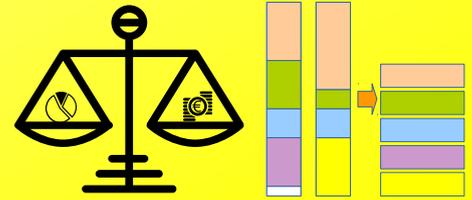


Orange Operator 30 - 45 = <b>-15€</b>
Green Operator 25 - 10 = <b>+15€</b>
Blue Operator 15 - 15 = <b>0€</b>
Installer/Maintainer 25 - 0 = <b>+25€</b>
Yellow Operator 0 - 30 = <b>-30€</b>
System operation 5 - 0 = <b>+5€</b>

$$\Sigma = 0$$

## Compensation tables

- Stablish the territorial compensation criteria
- Monthly periodicity



### Operadors/ Service providers @

#### Rights

- Voice and vote
- To receive compensations
- To make proposals

#### Duties

- To settle the compensations
- To provide the data to calculate the compensations

### Public Admin. or Investors

(optional)

#### Rights

- Voice i vote
- Quality vote & veto on issues related to benefits or administration of public resources

- To Make proposals

#### Duties

- To stick to criteria of
- non-discrimination & equality

### Fundació *guifi.net*

#### Rights

- Voice
- Quality vote & veto on issues related to the Commons

#### Duties

- To make proposals targeting the consensus
- Accounting
- Execute the compensations

Local Telecom



# Invoice

March 2016

Contribution to the Network as in Commons (Commons Pool Resource/CPR):

Deployment of Infrastructure.....	17,00 €
Maintenance.....	6,00 €
<b>Total Contribution.....</b>	<b>23,00 €</b>

Internet Service:

1 Gigabit Symmetric Internet Bandwidth over Fibre Optics	
Residential Use & Service Level (8h+8h, 8h/labour days).....	12,00 €
Tax (VAT) .....	2,52 €

**TOTAL: 37,52 €**

Commons Pool Resource (CPR)

**Governance**  
**Accounting**

CAPEX

OPEX

Local Telecom

PROFIT

CAPEX & OPEX

WiFi

Fibre

4 €

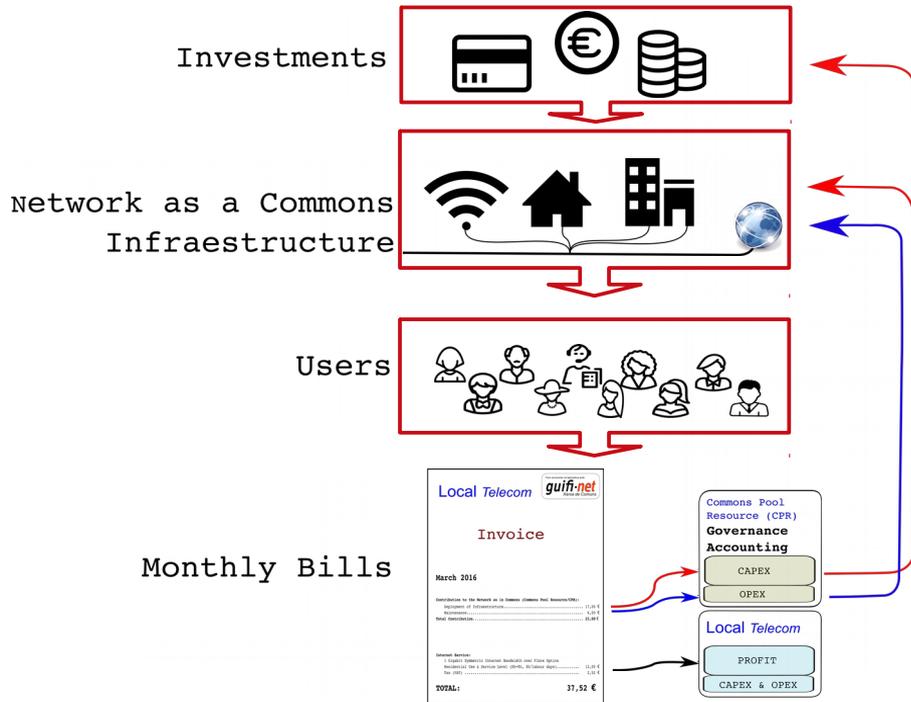
17 €

4 €

6 €

Unified billing system + Revenue split





- Acknowledgement of the investment
- Deployment of the network as a commons
- Connection of users
- Billing
- Bill split (parts):
  - Exploitation by the service provider
  - Infrastructure maintenance
  - Return of investment

## Quantitative

- Systematic collection of information:
  - Data sets available
    - Since Jan 2014
  - Implemented in 4 regions
    - More to come
- Example of data analysis:

Table	Year	Nodes acc.	Expen. EUR	Expen./ /node/ /month
Osona (from 01/14)	2014	8,356	51,569	0.51
	2015	8,978	49,779	0.46
Lluçanès (from 03/14)	2014	1,069	9,079	0.85
	2015	1,111	11,135	0.83
Bages Or. (from 6/14)	2014	423	17,179	5.80
	2015	536	8,849	1.37
Vallès Oriental (from 7/15)	2014	-	-	-
	2015	1,507	8,849	0.97

Yearly expenditure per compensation table

## Qualitative

- Effectiveness assessment of a given measure
- Identification of bad and good practices
- Detection of errors and frauds
- Settling of entrenched disputes
- Reactivation of investments
- strengthening collaborations
- Etc.

- Introduction
- Theoretical framework
- guifi.net experience
- **Conclusions**

- Guifi.net has successfully developed and implemented a solution to ensure **sustainability** and **scalability** beyond voluntary efforts and non-refundable contributions
- Based on
  - Enabling **professional activity** and,
  - developing a set of tools to ensure the **reinvestment** of a fraction of the benefits of this professional activity
- Respectful with CNs principles
- Increases the efficiency
  - Stimulates cooperation
  - Prevents duplication of infrastructure and efforts
  - Facilitates economies of scale
- Maximises freedom choice
  - Coexistence of DIY and professional options
  - Equalises business opportunities
- Produces
  - Qualitative and quantitative results

# guifi.net

Building a **COLLABORATIVE ECONOMY** over Networks held in **COMMON**

## Sustainability in guifi.net: Initial results of the implementation of the cost sharing system



IETF96 – IRTF GAIA

July 21<sup>st</sup> 2016

**guifi.net Foundation**

[fundacio@guifi.net](mailto:fundacio@guifi.net)

[roger.baig@guifi.net](mailto:roger.baig@guifi.net)



European  
Broadband  
Award  
2015

Innovative model of  
financing, business and  
investment category