## netCommons.eu

A classification of business and organizational models for community network infrastructures

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## Specific objectives



- O1.1 Mapping CNs providing a description of relevant CNs structure and organization to other WPs.
- O1.2 Provide **feedback and support** to CNs to **evolve** their **internal governance structures** to achieve resilience and sustainable growth.
- O1.3 Provide feedback and support to CNs to improve their advocacy capabilities to achieve higher external socio-economic impact.

## good governance tools



- Defining the commons
  - Extent/boundaries: (network, content, services, Internet, IX)
  - Characteristics (open/transparent, free/non-discrim access, neutral/tech+traffic)
- Stakeholders: citizens, volunteers, professionals, customers, public administration
- Communication tools
  - Website, lists, social media, face-to-face meetings
- Participation framework
  - Access => license (& deliberation process)
  - Legal entity
  - Collaboration agreements, universal deployment model (municipal ordinance)
- Network management and provisioning
  - Mapping, IP addressing and routing, device configuration, network monitoring, network crowdfunding
- Governance: conflict resolution, economic compensation
- Sustainability rules (8 Ostrom principles)
- Adaptability rules (5 Ostrom principles)

# Governance tools: for what decision?



- Allocation of resources
  - Monitoring eg spectrum, stat analytics
  - recruiting new participants (Sarantaporo seminars)
  - how to create a new node (ninux), what about local groups
- Conflict resolution, monitoring, sanction
  - Ostrom principles or special rules (guifi)
- Legal obligations: compliance vs commitment to lobbying
  - Responsibility (hadopi, freifunk), data retention
- Economic compensation agreements
  - Revenues reinvestment (Guifi)
  - Crowdfunding (Sarantaporo), fee payments, accounting transparency (FFDN)

## Structure



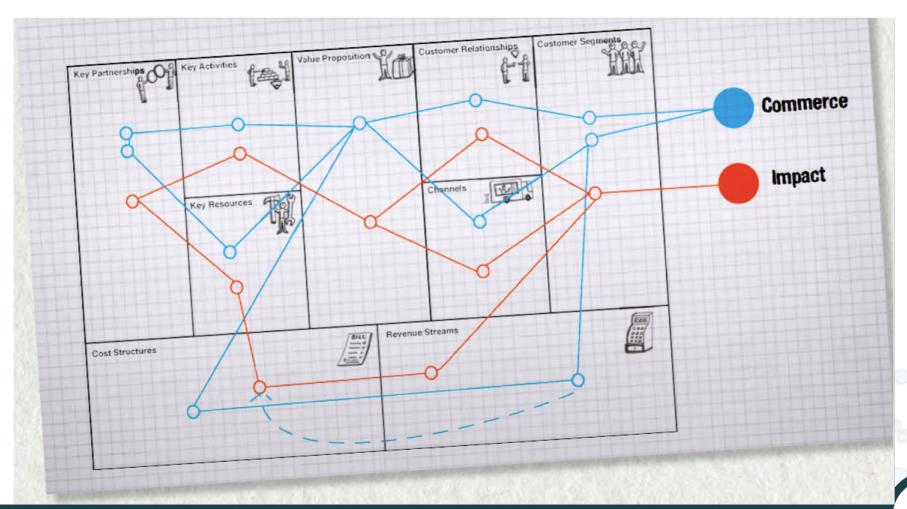
Report on the Governance Instruments and their Application to CNs (D1.3)

- A social-science perspective of CN
- Governance in the making: analysis and identification of governance tools in CNs
  - Collaborative research: aims and methodology
  - Case studies, inside and outside view
- Synthesis:
  - Patterns and anti-patterns
- Reengineering:
  - Opportunities for organizational improvements
- Monitoring and evaluation

# Recommendations and good practices



The outside model: canvas



## **Outside view**



#### Key Partners

Network of agents and partners that make the CN work: Regulation (permiss), Municipal (deploy), Gov (policy), Locations, Other infras, Libraries, Schools & Univs, Funders, Sponsors

### Key Activities

Most important things to make it work: Planning, Development, Coordination, Regulation,

Conflict resol.

#### Key Resources

Most important assets and resources: Tech: Hw, sw, svcs, Human: board, participants,

> Financial: contribs, Physical: office

#### Value Propositions

**Products & services** that give value:

Regional connecty,

Inet connectivity, Support to common services, Reduction of digital divide

Customer Relationships Relationships with specific participants/customers:

Agreements with volunteers, public adm, professionals, Investors, etc

#### Channels

How communicates with and reaches its customer segments: word of mouth, lists, meetings, partner orgs, social events

**Customer Segments** 

Groups of people or orgs the CN aims to reach and serve: Citizens, organizations, professionals, government

#### Cost Structure

Costs incurred to operate:

CAPEX, OPEX, Human re-

sources: coordination & support

#### Revenue Streams

Cash the CN generates from each customer segment:

Fees from participants, donations, projects

## Inside view (guifi.net)

Optional: No



Technical			Social Economics		Legal		Good practices	
Sanctioning regime	Intervention Protocols		Tickets management	Conflicts resolution	Documen- tation		Communi- cation	Regulations
Agreement for economic activities and for the Participation in the compensation system  Mandatory: If significant use of the CPR (the lack of participation in the compensation system has an impact on the sustainability) Optional: non-profit, investors, Gov.		Public administration agreements  Mandatory: Gov. if the contribution involves infrastructure Optional: Gov. without infrastructure		Collaboration agreements Mandatory: - Optional: Gov., volunteers, professionals		ments	Contractual agreements	
Network Commons license				Governing bodies by-laws			Ground rules	

Currently applicable legislation

Optional: No

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## **Inside view**



Technical			Social	Economics		Legal		Good practices
Conflicts resolution	Actions Interventions		Crowdsourcing (Accounting, compensation)	Coordination (Decisions)	Reporting (Shared info Documentation)		Communication Interaction	Procedures & Regulations
investment,crowdfunding, With o			ministration without e contribution		Specific Collaboration Internal participants		Agreements	
Ind. p	tion e)	Collective governance principles (by-laws)				Ground rules		
Socio-legal environment (applicable)								



#### **Kev Partners**

Regulatory (ARCEP), City councils & gov (policy), Others: Inet agents, Local institutions, Universities, Schools, squats, self-manned social centers, local community organizations

Coordination members. Infrastructure dev. lobbying, software & digital services dev. Public events Promotion of Inet policy & rights

Key Resources

Org: members, Human: board, Financial: volunteer contributions

Value Propositions

Defense values:

freedom of expression, neutrality. Inet knowledge dissemination, For members: Network management By members: Services: Inet access, DNS, hosting, email, VPN

Customer Relationships Customer Segments

Formal membership (volunteers), Mutual support

Channels

Digital: web, mailing lists, IM Social: f2f meetings, general assembly

Local communities Through members: Experts, citizens, social orgs, general public

Cost Structure

Contributed by volunteers Human resources: voluntary Revenue Streams

Voluntary resources and work



Fusolab 2.0, Soft Dev groups, Others: Gov (policy), Universities Public institutions	Net. planning,     Soft dev.,     Experimentation     Coordination  Key Resources  Tech: Hw, sw,     svcs (Map server),     Human: volunteers,     Financial: volunteer contrib,     Physical: contrib.		software entation vation, ally:	Customer Relationships  Informal member- ship (volunteers), Mutual support  Channels  Digital: web, IRC, IM Social: f2f meetings, word of mouth, ninux day	Experts (networking),  Desirable: Citizens, organizations, non-expert citizens, general public	
Cost Structure		Revenue Streams				
CAPEX and OPE Human	EX: contributed by volun resources: voluntary	teers	Voluntary resources and work			

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#### Key Partners

Local comm orgs, Technology providers (ICT), Service providers (VOIP, ISP), Umbrella orgs Global orgs.

#### Key Activities

Construction local net, Mgmt service by local coop, Inter-community coop Lobbying

Tech: Community cellular, antennas, license, Inet, VOIP svc, Human: Central & local staff. Financial: CAPEX natnl. office, investt local infra, operat. costs Physical: of-

#### Value Propositions

Ways to manage & operate own mobile operator. Local dev of apps for local needs. Reduction digital divide.

#### Customer Relationships Customer Segments

Installation radio base stations. Advice operation & maint. Integration VOIP Tech support

#### Channels

State promoters, Word of mouth, Media coverage, Links w/local orgs

Communities: Rural, marginalized indigenous. Without telecom coverage & high migration to USA. Communities w/200-7,000 inhabs in Oaxaca, Chiapas, Veracruz, Puebla.

Cost

CAPEX: 10,000 USD purchase & installation station. OPEX: operation staff 200 USD + VOIP calls + assistance 1 USD/user ++ Revenue Streams

Per member/month: 2 USD/member + incoming calls Per community: 2000 USD + 0.8 USD/user



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Key Partners	Key Activities	Value Propo	sitions	Customer Relationships	Customer Segments
All level govt, Local institutions, Community orgs, International orgs (ISOC, APC)	Training local trainers (barefoot eng), Deployment network, Summit for exchange & discussion  Key Resources Tech: WiFi equip, ants, spectrum Human: Staff DEF, barefoot eng, Financial: invest, Physical: locations	Mech fo & op of a Mgmt & Training & Reducti ital d	net infra, concept, & support, on dig- ivide	DEF-Communities followup, Advice, Community support  Channels  Links w/gov orgs, public events	Underserved communities, Barefoot eng, (Local orgs & Citizens)
Cost Structure CAPEX: e OPEX: In ment,		Per community: revenue from some mature Donations & per project: variable			



Key Partners	Mey Activities  Dev local network  Inet commons  Training & experim.  Lobbying	Network	k infra, provi-	Customer Relationships  Installation mesh net, Advice on net operation, Integration w/ISPs, Tech support, Community support	Citizens: interested in alternative networks and symmetric Internet connectivity
guifi.net Foundation City councils Universities	Key Resources  Tech: routers, ants,  Human: board,  trained vols,  Financial: invest,  Physical: locations	sion se dev. app & reducti		Channels  Word of mouth, guifilabs, links w/orgs, social events	
OPEX: In	odes, servers & routers et, rack, maint. equip- human (volunteers)		Revenue Str	Per member/month member + 2€ Interne Donations & per project	et tunnel

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Key Partners

Regulation (perm),
Municipal (deploy),
Gov (policy),
Locations
(tower,duct),
Open Access Nets,
Libraries,
Schools & Univs,
Funders,
Sponsors

Key Activities

Planning, Development, Coordination Inet commons, Regulation, Conflicts, Lobbying

Key Resources

Human: board, participants, Financial: contrib, Physical: office

Tech: Hw, sw, svcs,

Value Propositions

Regional connecty,
Inet connectivity,
Support to
common svcs,
Reduction digital divide

Customer Relationships Cust

Agreements with volunteers, public adm, professionals.

Tech & community support

Compensation tabs

Channels

Digital: forums,
SAX conference,
word of mouth,
guifilabs, links
w/orgs, social events

Customer Segments

Citizens, organizations, professionals, government

Cost Structure

CAPEX: servers & routers (backbone)

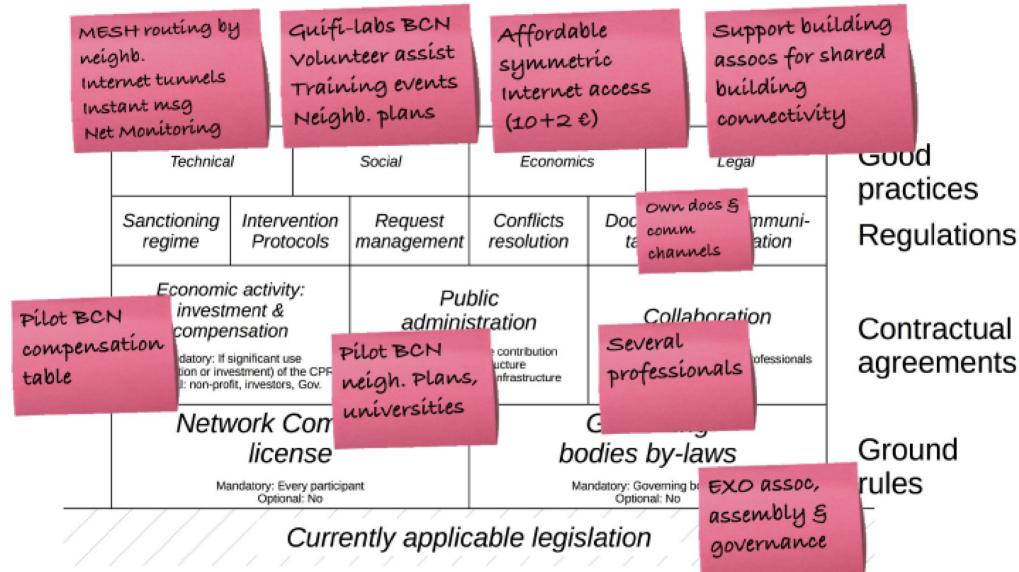
OPEX: common svcs, IX traffic

Human resources: coordination & support

Revenue Streams

Compensation fees from participants (professional & orgs) Donations & per project





## Organisational Patterns



Lessons from software design patterns, agile methods → Patterns for commons (Schuler, Bollier, Helfrich)

### → Patterns for network infra commons



#### **Design Patterns**

Patterns are higher-order designs, which occur repeatedly in object-oriented design. They have been formalized, and are generally considered a good development practice.



#### **Antipatterns**

Antipatterns describe common mistakes, errors, and people issues that can cause a software project to fail.



#### Refactoring

Refactoring is a disciplined technique for restructuring an existing body of code, altering its internal structure without changing its external behavior.



#### **UML**

Unified Modeling Language makes it possible to describe systems with words and pictures. Especially notable use case diagrams with their stick figures or the widely used class diagrams.

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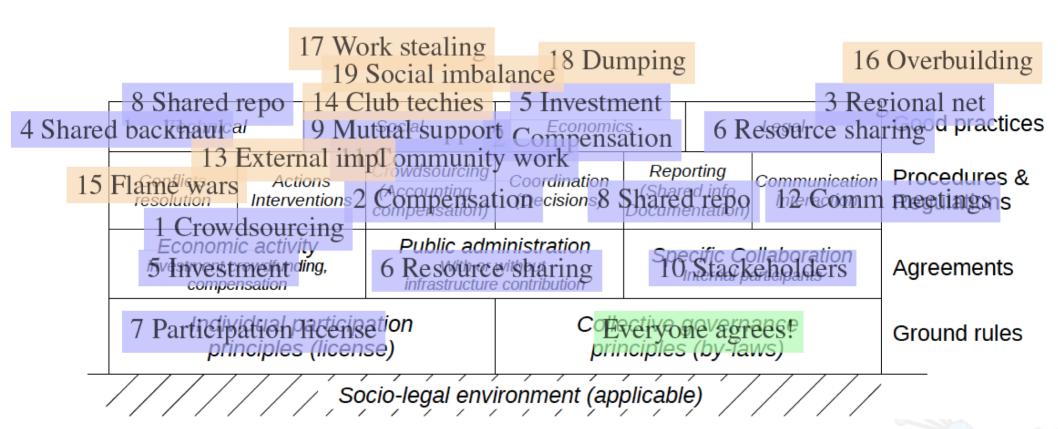
## **Patterns**



- 1 Crowdsourcing
- 2 Compensation
- 3 Regional net
- 4 Shared backhaul
- 5 Investment
- 6 Resource sharing
- 7 Participation license
- 8 Shared repo
- 9 Mutual support
- 10 Stackeholders
- 11 Community work
- 12 Comm meetings

- 13 External impl
- 14 Club techies
- 15 Flame wars
- 16 Overbuilding
- 17 Work stealing
- 18 Dumping
- 19 Social imbalance





## Reengineering



- Investment model for guifi.net, inspired by B4RN, somEnergia.
- Economic sustainability models for W4C in communities and formalization
- Regional network interconnection in Rhizomatica?
- Compensation system inside the eXO community in Barcelona
- Formalization of the ninux governance, valorisation of voluntary work and incentives.
- Increasing public accountability and more balanced participation of minorities in FDN and Tetaneutral communities (FFDN)
- If conditions favorable, support design and implementation of a federation of Zenzeleni-like CN > 10 communities in the region (dev. of governance model for each, regional backbone network interconn., provision of shared Internet connectivity)