Macroeconomic Mechanisms in Community Network Clouds

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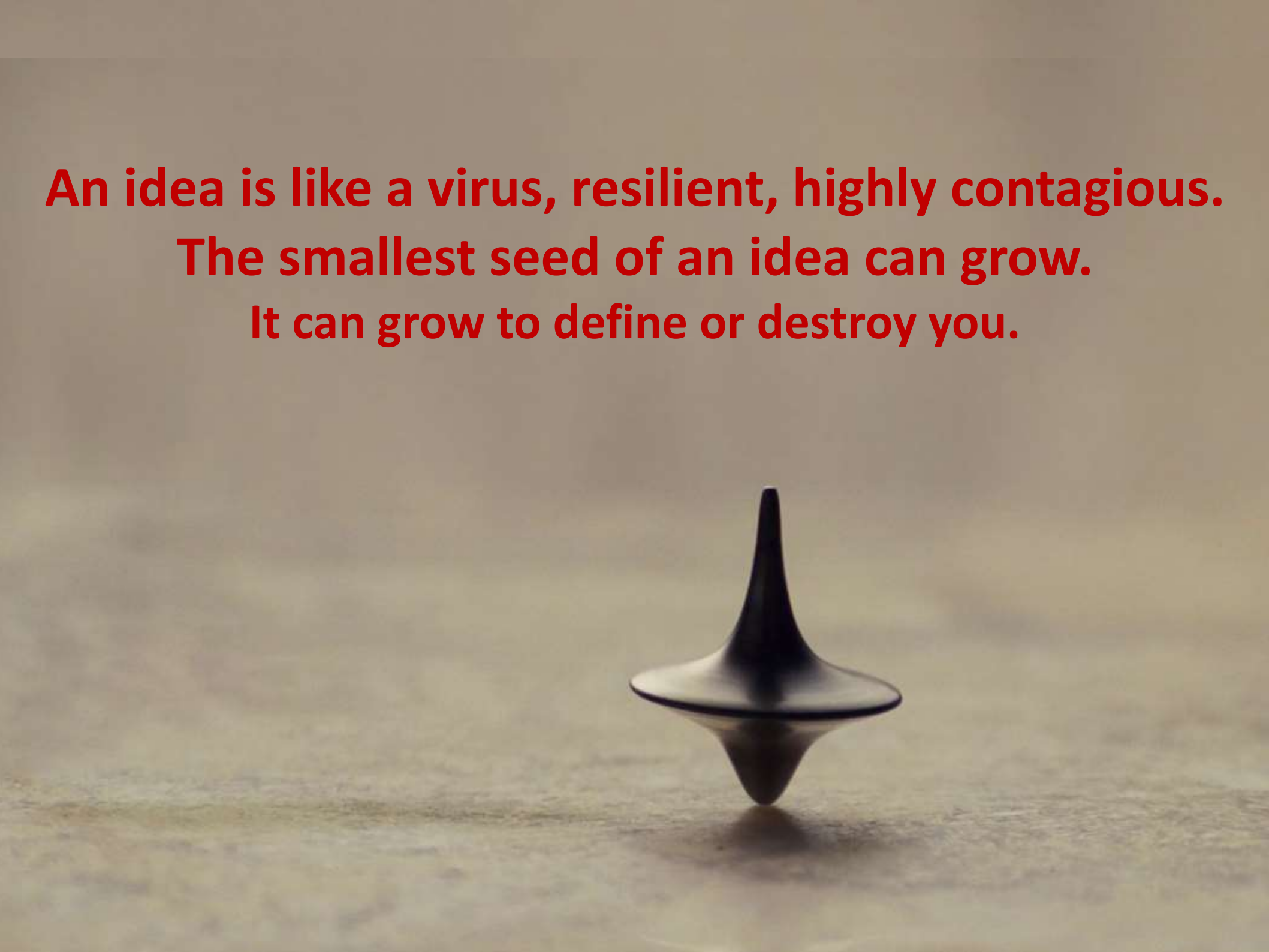
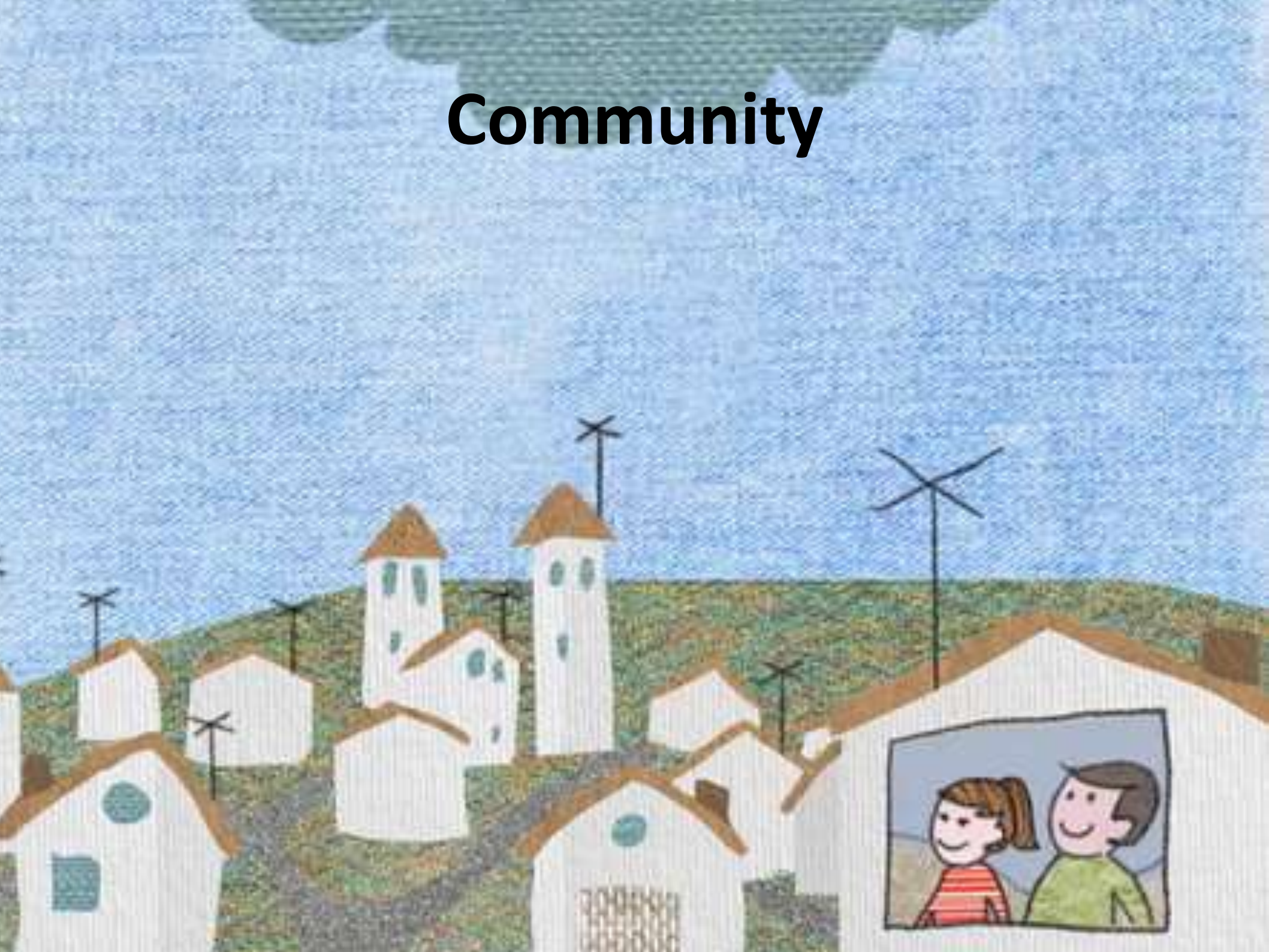
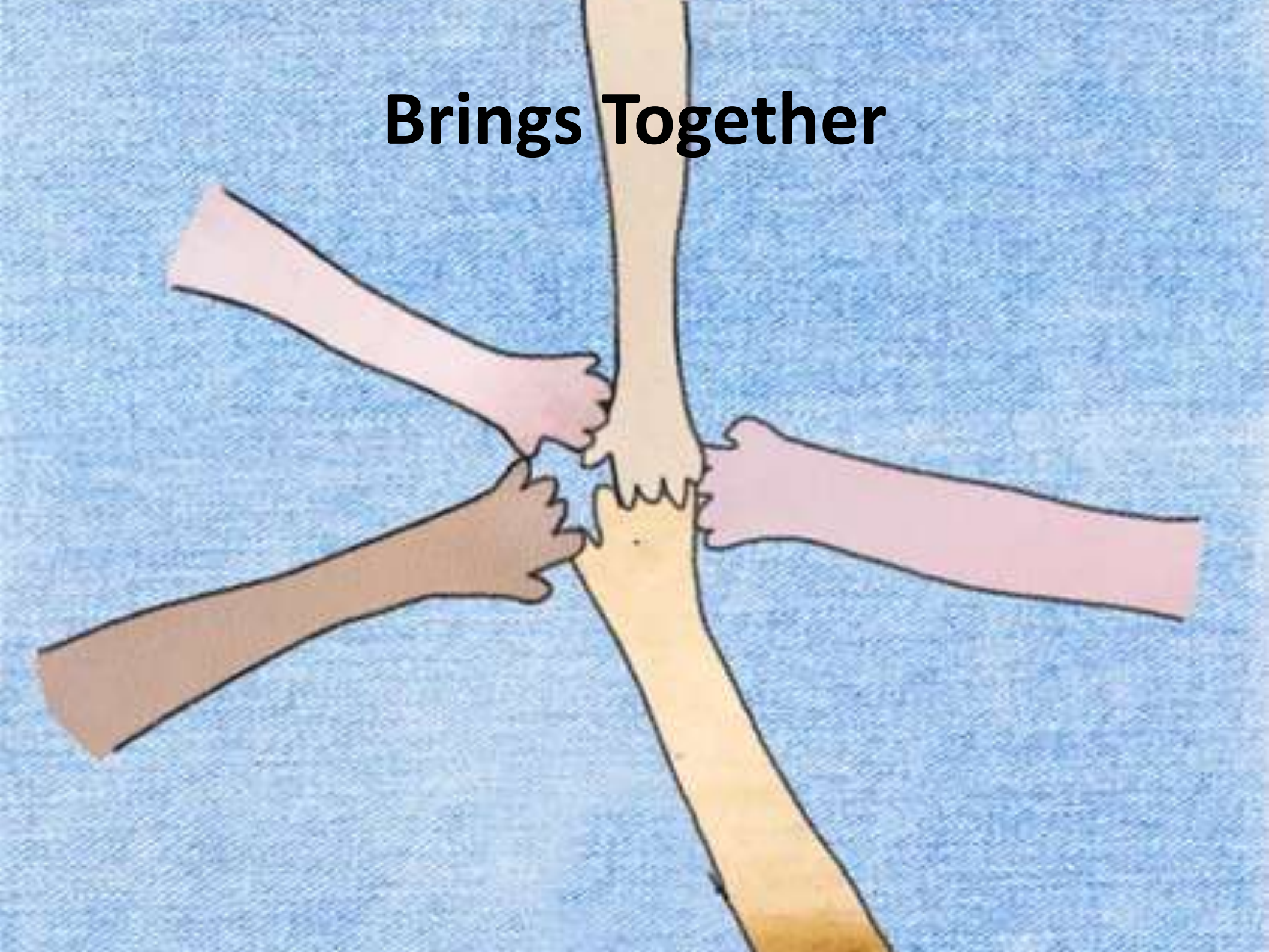
An idea is like a virus, resilient, highly contagious.
The smallest seed of an idea can grow.
It can grow to define or destroy you.



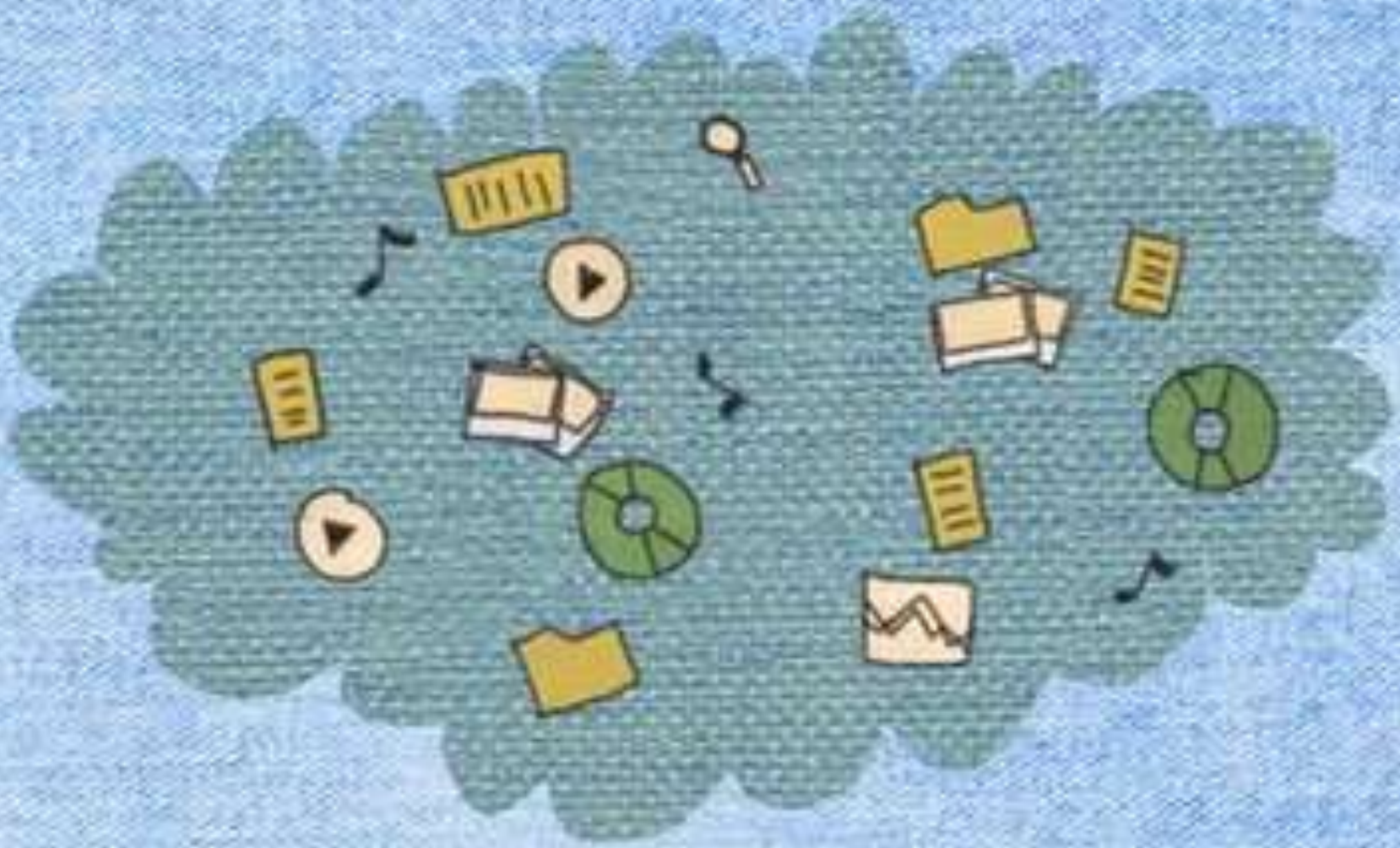
Community



Brings Together



Cloud



Community Networks

What's this? A cooperative development of a network

Where: Local, community (city, region, area)

Who: You, and your neighbors, …

"Don't buy the network, be the network!"

Scalable, self-organized and decentralized IP networks and services built and operated by citizens for citizens

But what services are in the network?

What do you use it for?

freifunk.net

guifi·net

FUNKFEUER FREE NET

AWMN

ninux.org

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Community Clouds

The vision of cloud-based services in community networks

We are talking about a *specific community cloud*:

- built in community network
- hosted on community-owned computing and communication resources
- providing services of local interest

Cooperative deployment and maintenance of clouds by citizens for citizens

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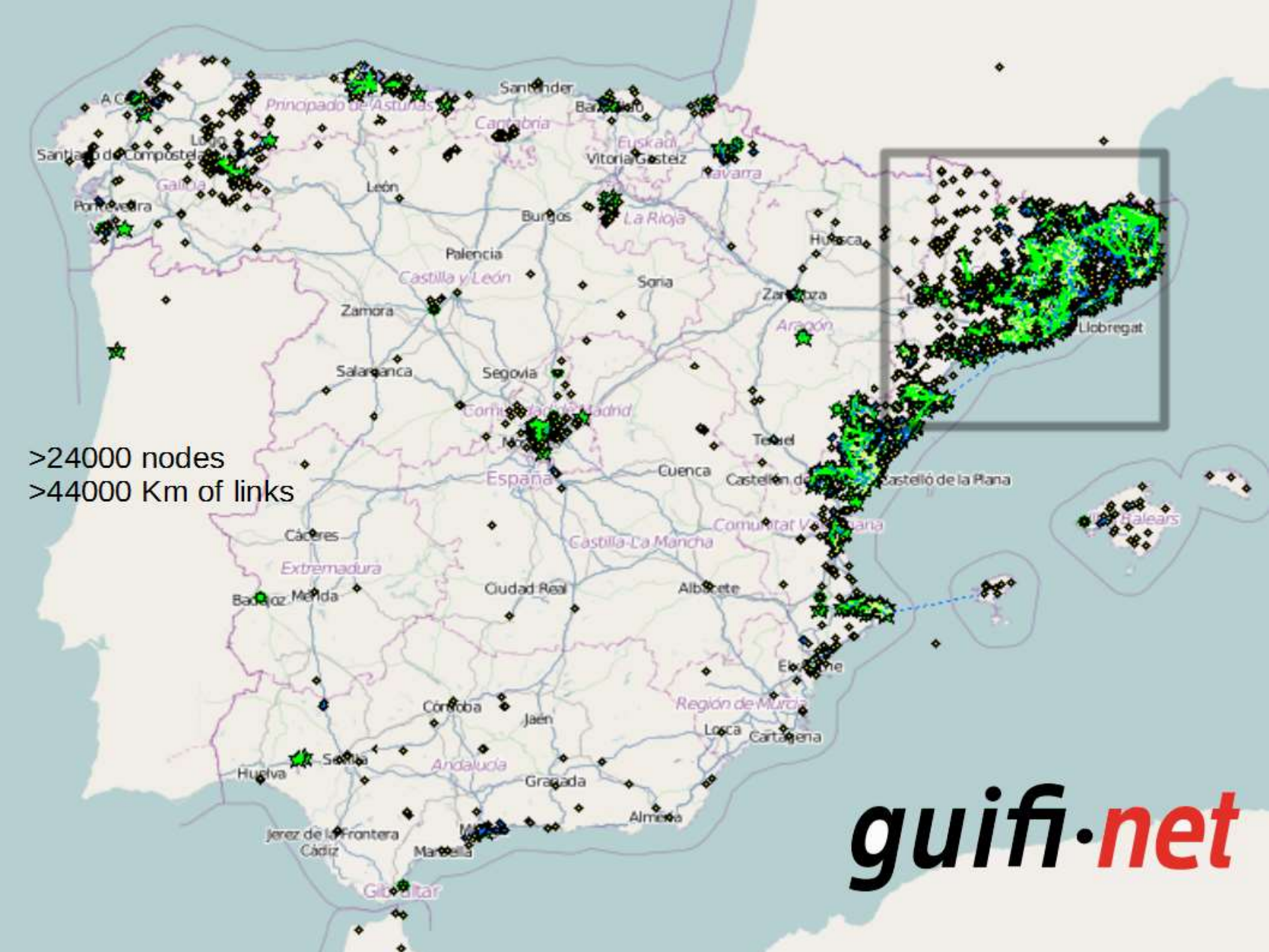
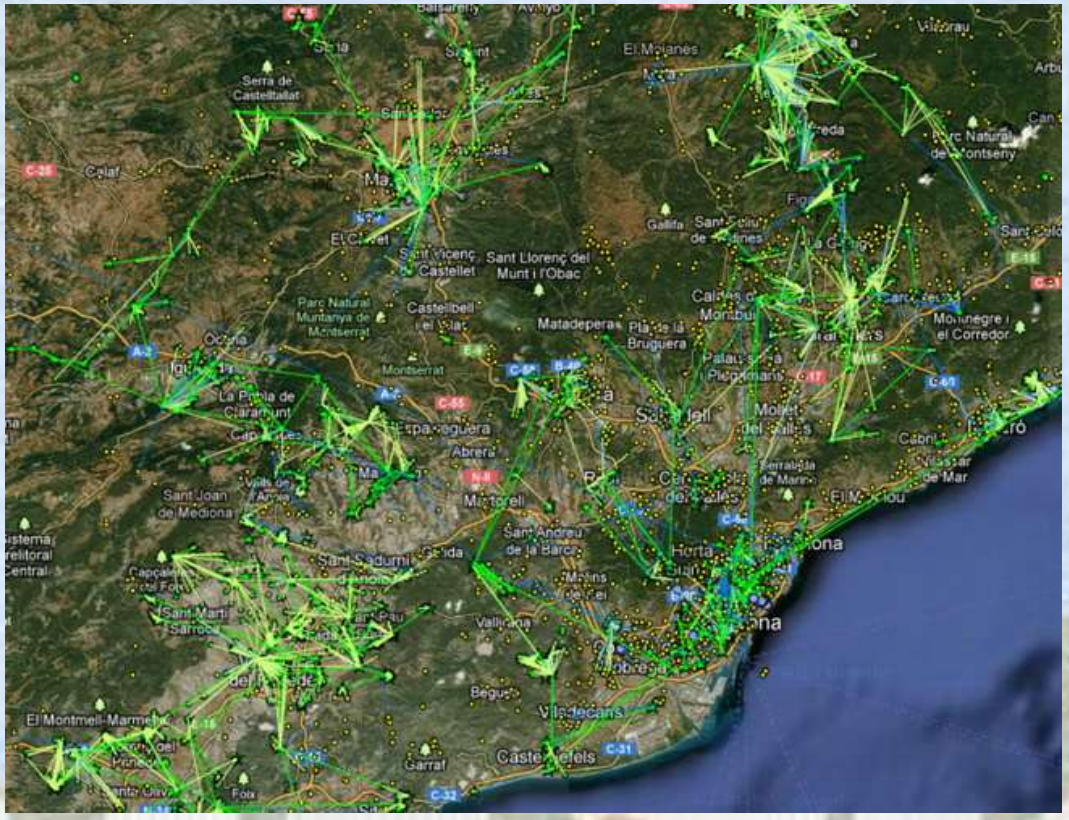
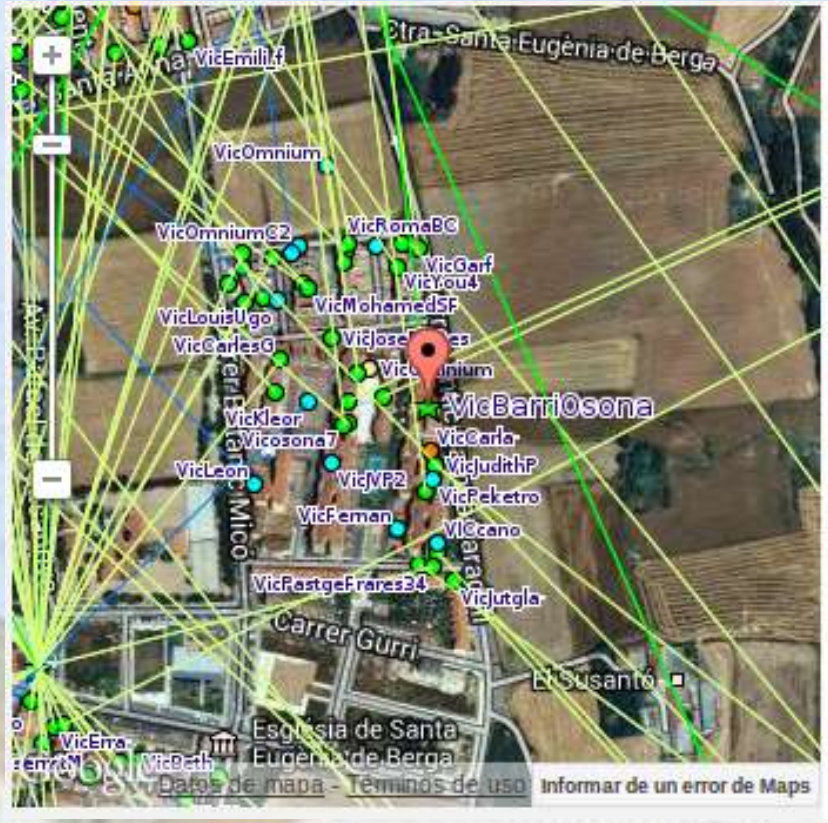

>24000 nodes
>44000 Km of links
Santander
Principado de Asturias
Cantabria
Euskadi
Vitoria-Gasteiz
Navarra
La Rioja
León
Burgos
Palencia
Castilla y León
Soria
Zamora
Salamanca
Segovia
Aragón
Llobregat
Teruel
Cuenca
Castelló de la Plana
Illes Balears
Cáceres
Extremadura
Castilla-La Mancha
Badajoz
Mérida
Ciudad Real
Albacete
Región de Murcia
Córdoba
Jaén
Lorca
Cartagena
Huelva
Andalucía
Granada
Almería
Jerez de la Frontera
Cádiz
Gibraltar
guifi·net

guifi·net





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Hardware in Community Cloud

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For People, By People

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MACROECONOMIC MECHANISMS

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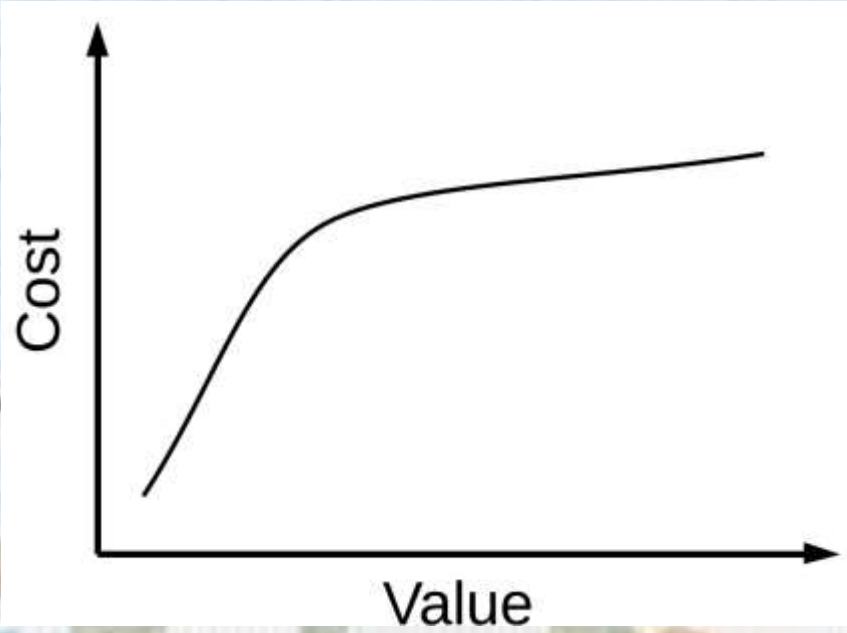
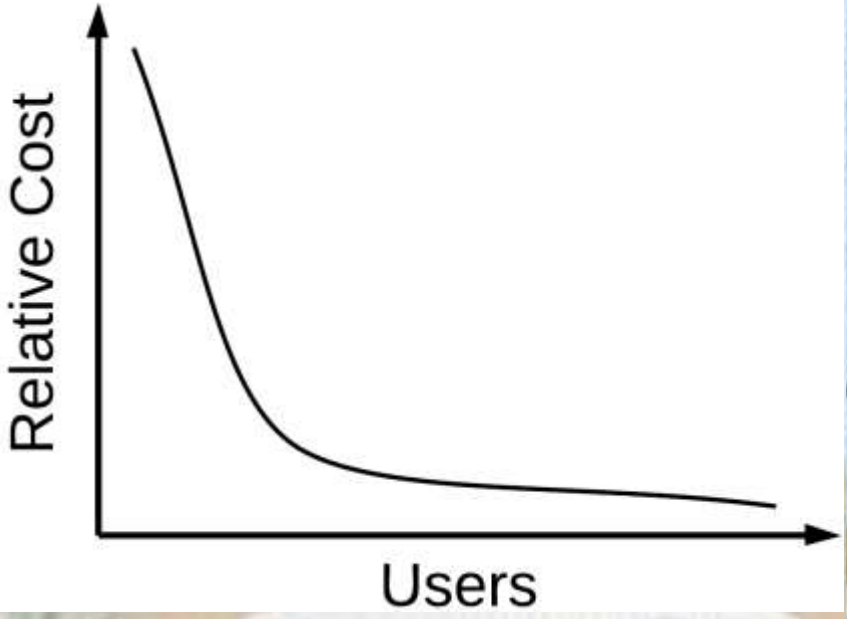
Cost Value Relationship





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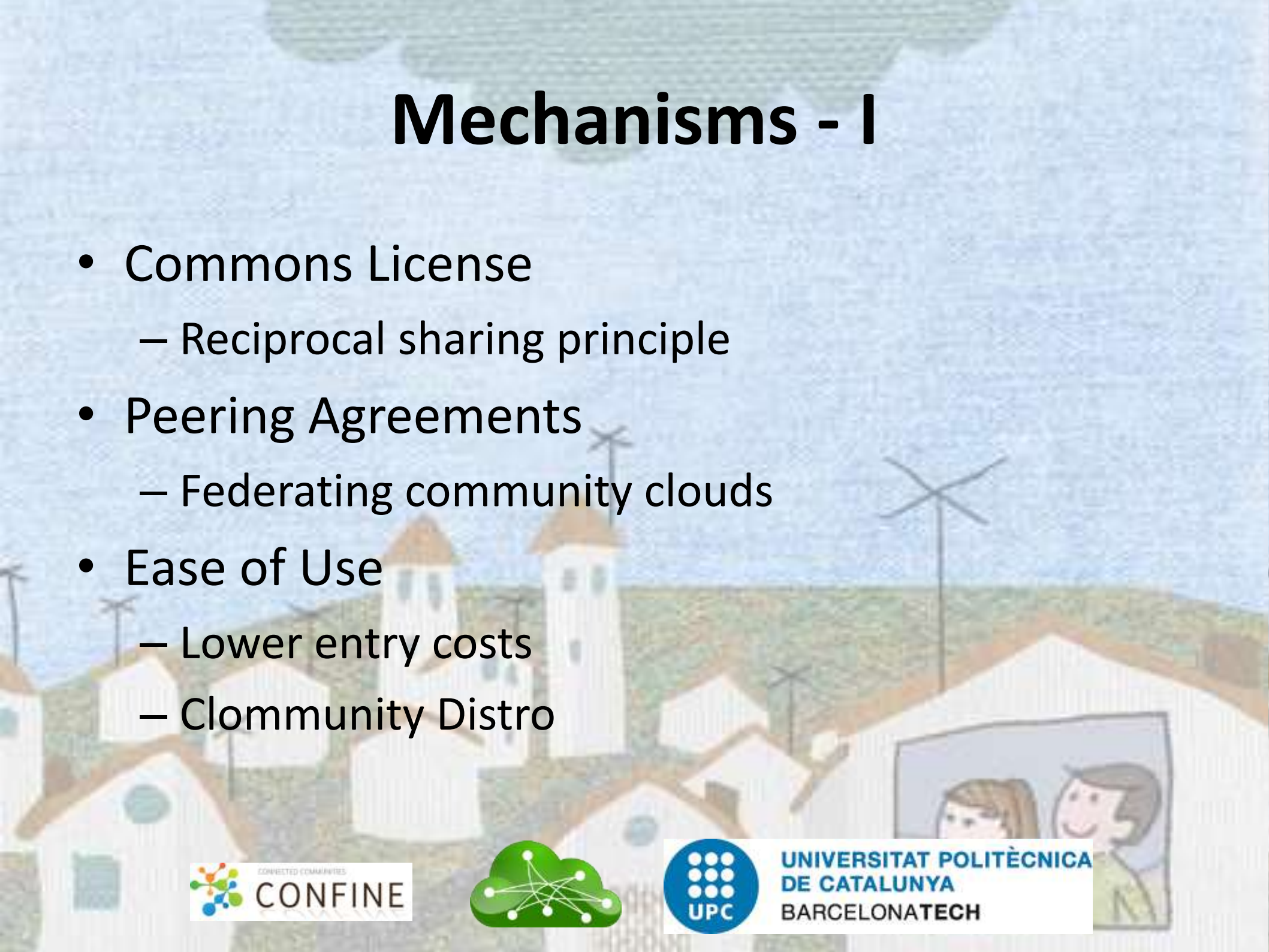
Mechanisms - I

- Commons License
  - Reciprocal sharing principle
- Peering Agreements
  - Federating community clouds
- Ease of Use
  - Lower entry costs
  - Clommunity Distro



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Mechanisms - II

- Social Capital
  - Bonding Social Capital
  - Bridging Social Capital
- Social Relationships
  - Equality matching
  - Communal sharing
  - Authority ranking
  - Market pricing

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Mechanisms - III

- Transaction Costs
  - Easy to coordinate and collaborate
- Locality
- Overlay Topology
  - Location aware resource assignment
- Entry Barriers
  - Invitation only
  - Prior contribution

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Mechanisms - IV

- Role of Developers
  - Facilitator between providers and consumers
- Service Models
  - Economic Sectors
  - IaaS, PaaS, SaaS
- Value Addition and Differentiation
  - ownCloud
  - FreedomBox
  - CloudEdge

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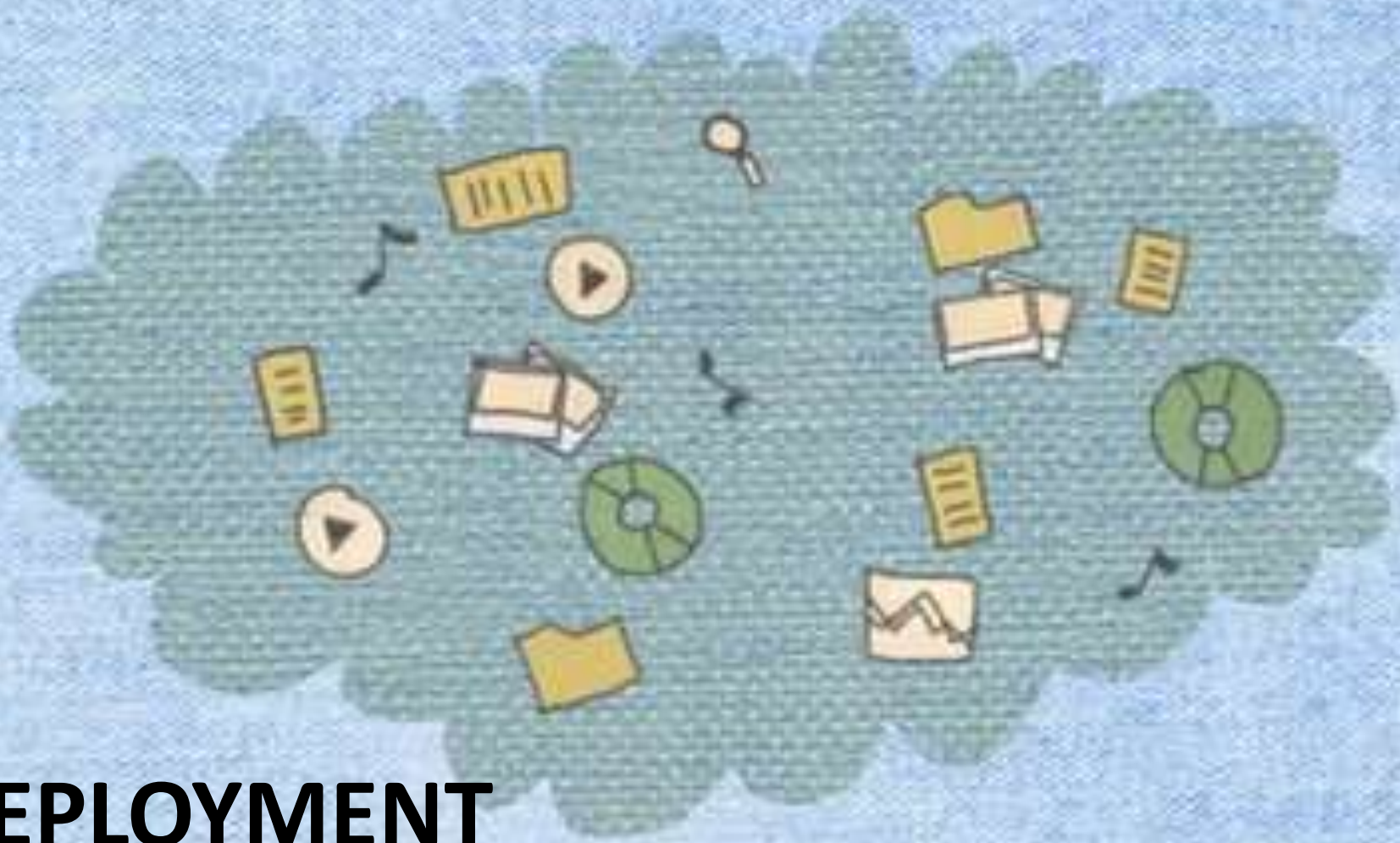

DEPLOYMENT

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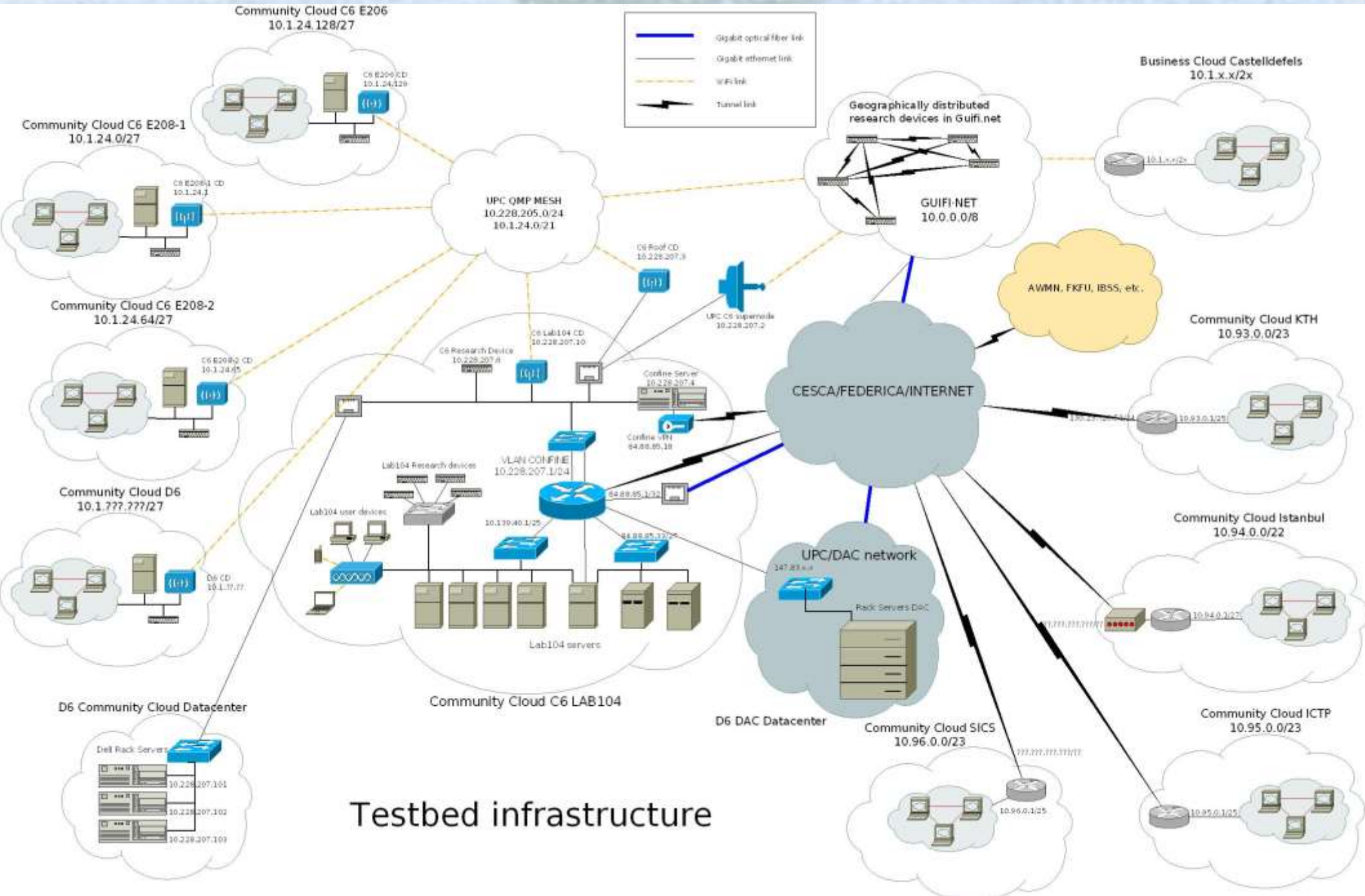
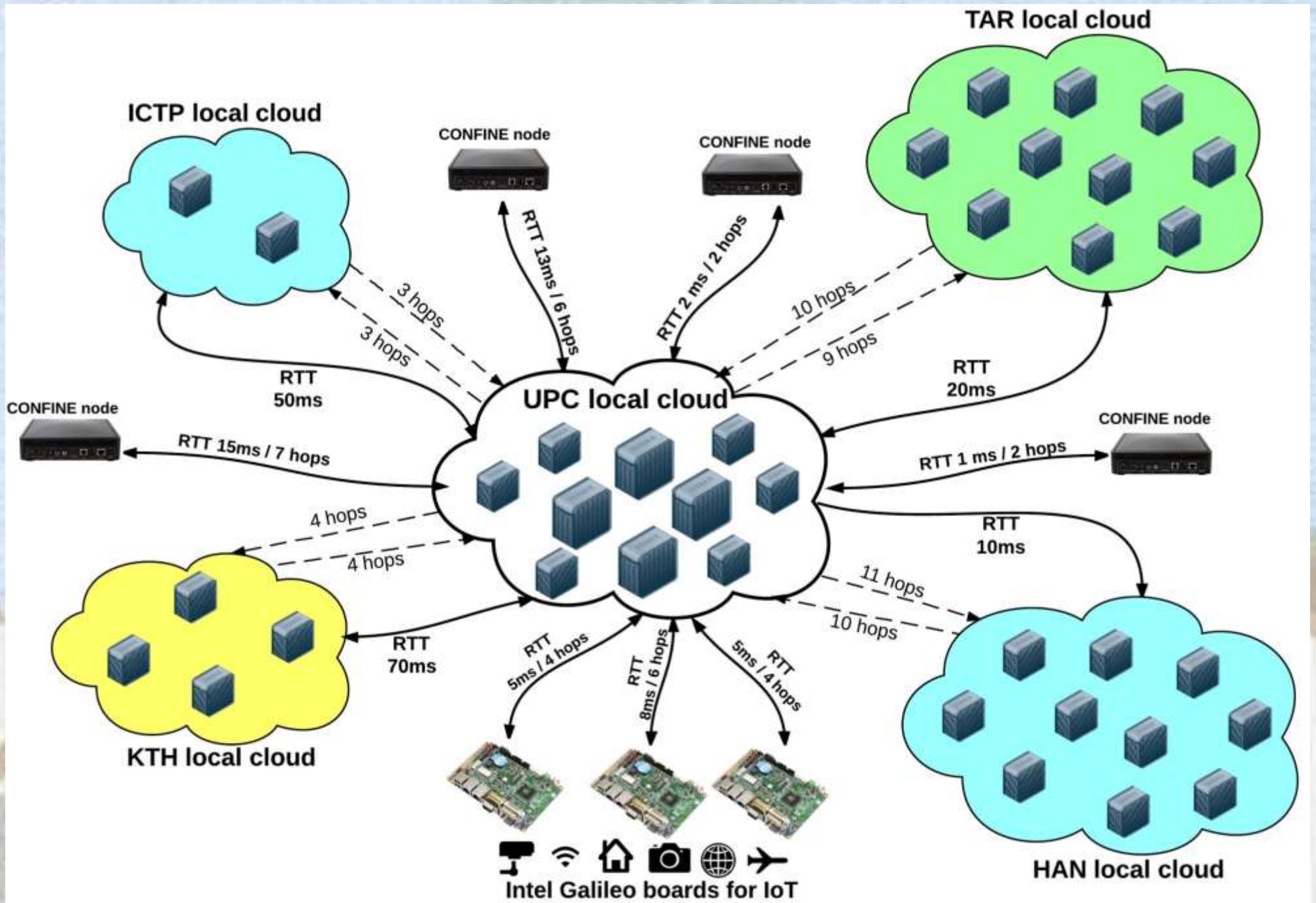
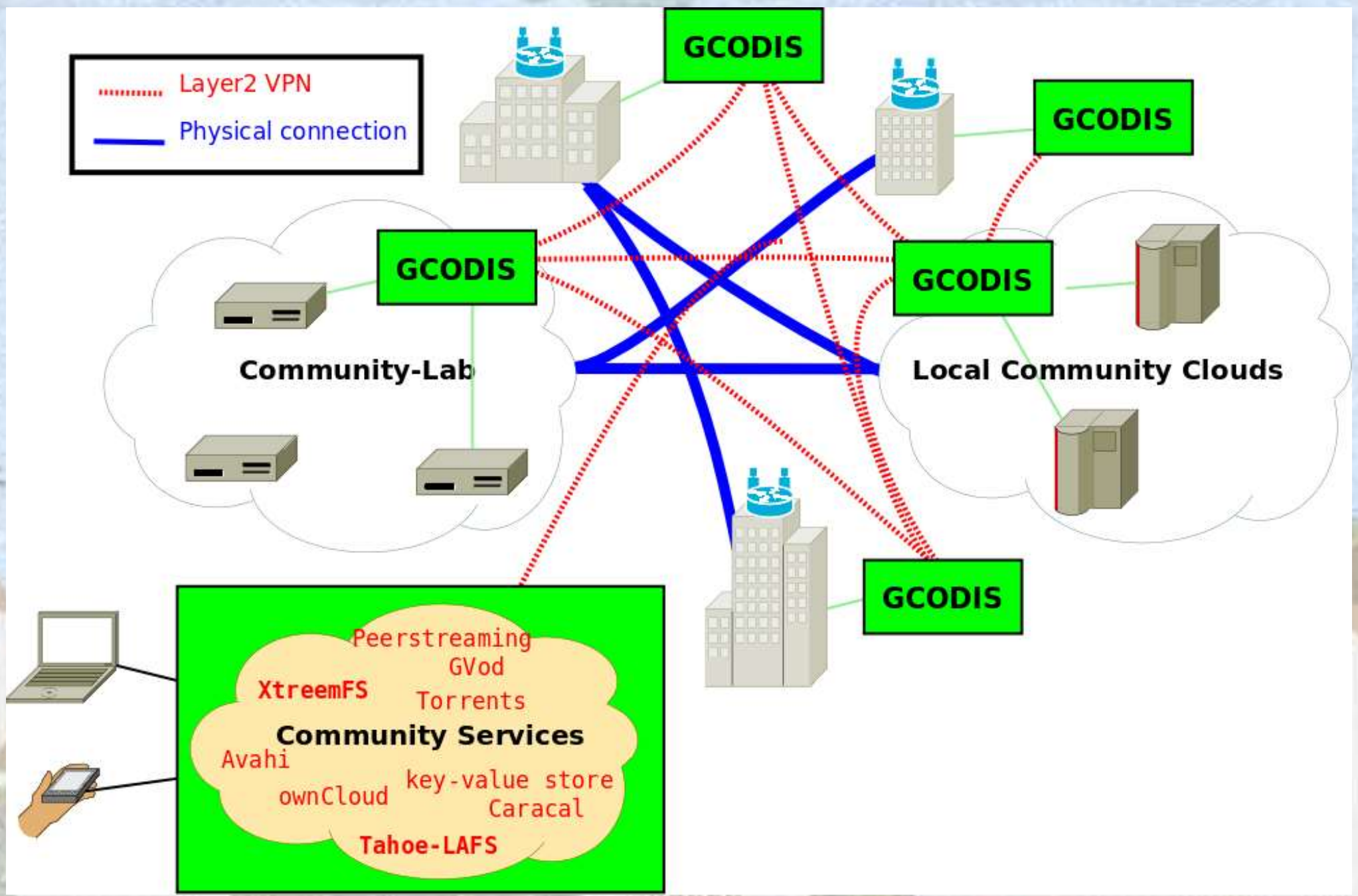
Testbed Infrastructure

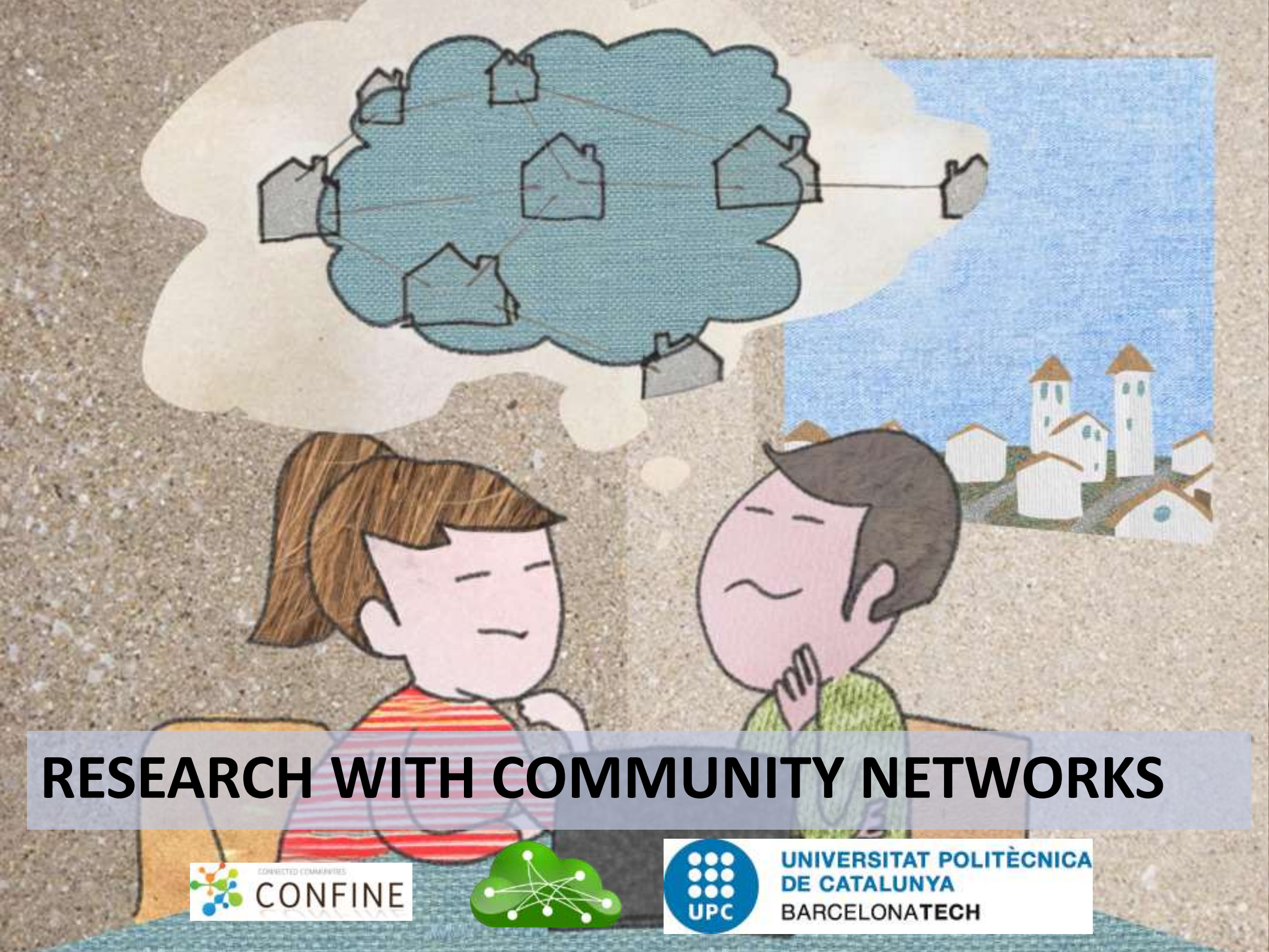


Storage Service Experiments



Clommunity Distro





RESEARCH WITH COMMUNITY NETWORKS

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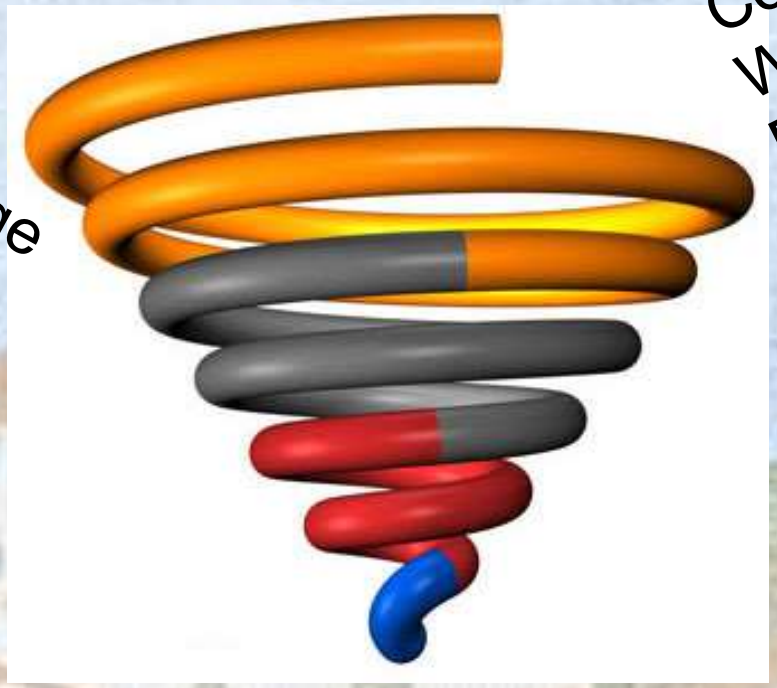
Collaboration to the next level

Voluntary Computing
P2P Distributed Storage
Computational Grids
Cycle Sharing
Cloud Computing



Community Networks
Wireless Mesh Networks
Bottom-up Broadband
Social Networks

Community Cloud

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Open Questions - I

How, why and where can community clouds be useful?

How to speed-up uptake and ensure sustainability of community clouds?

Can we devise socio-economic mechanisms to sustain collaboration in community clouds?

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Open Questions - II

What kind of system architectures are suitable?

How to ensure security and privacy?

How to scale the system and ensure quality?

How to build location-aware applications?

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Call for the Distributed Computing and Artificial Intelligence research community to contribute with more sustainable, adaptive, scalable, integrated, autonomic solutions for clouds in community networks, to support different Internet models for the future

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CLOMMUNITY

A Community networking Cloud in a box

Thank you

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