

# *Sobirania Tecnologica*

*Igualtat de drets  
en la societat de coneixement*



**freenowledgeinstitute**

*Tardor TIC BCN,  
CEB/TAC  
24 de Novembre 2016  
Wouter Tebbens*

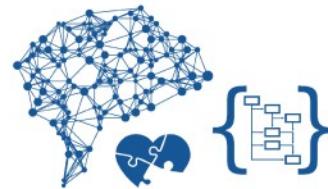


<https://www.wevolver.com/gael.langevin/inmoov-robot/main/description/>

# Top 10 skills

## in 2020

1. Complex Problem Solving
2. Critical Thinking
3. Creativity
4. People Management
5. Coordinating with Others
6. Emotional Intelligence
7. Judgment and Decision Making
8. Service Orientation
9. Negotiation
10. Cognitive Flexibility



## in 2015

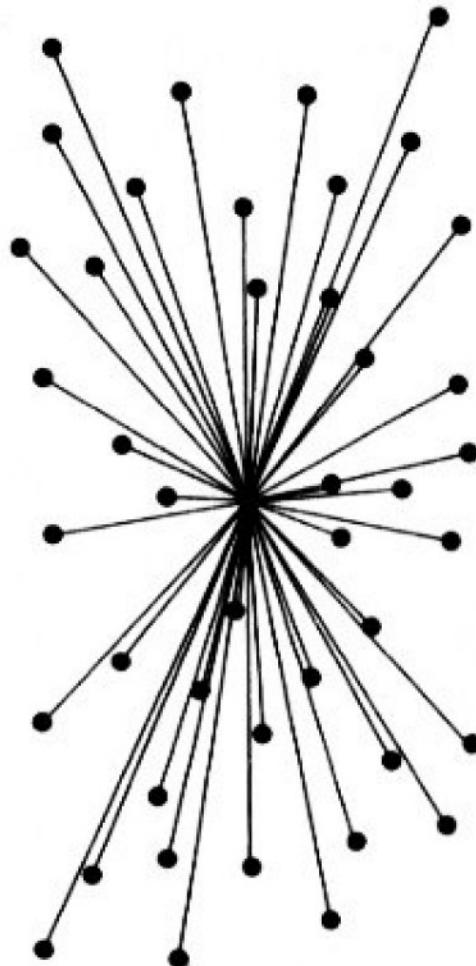
1. Complex Problem Solving
2. Coordinating with Others
3. People Management
4. Critical Thinking
5. Negotiation
6. Quality Control
7. Service Orientation
8. Judgment and Decision Making
9. Active Listening
10. Creativity



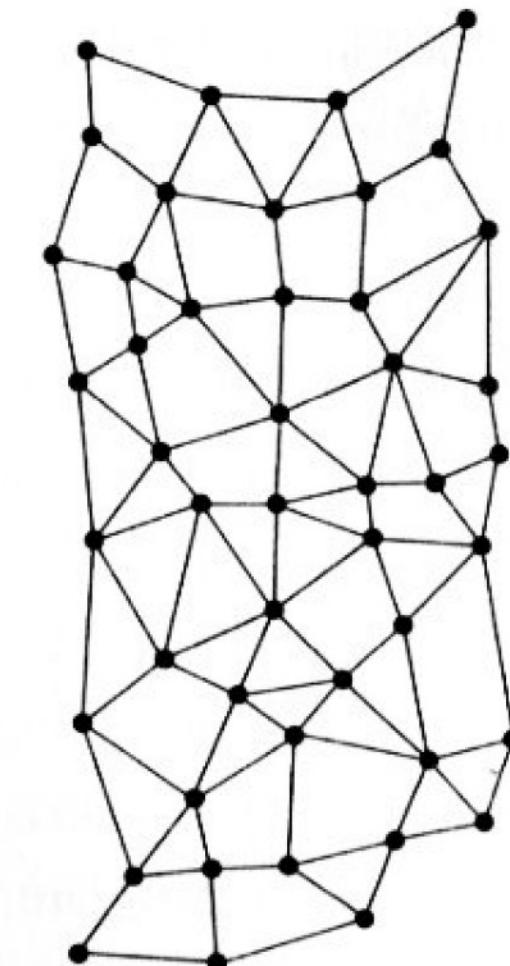
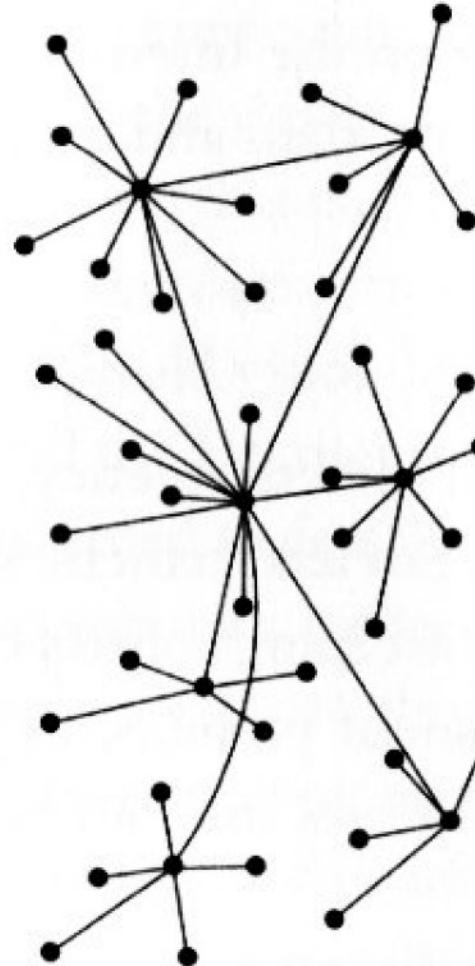
Source: Future of Jobs Report, World Economic Forum

<https://www.weforum.org/agenda/2016/01/the-10-skills-you-need-to-thrive-in-the-fourth-industrial-revolution>

# Internet i la societat xarxa

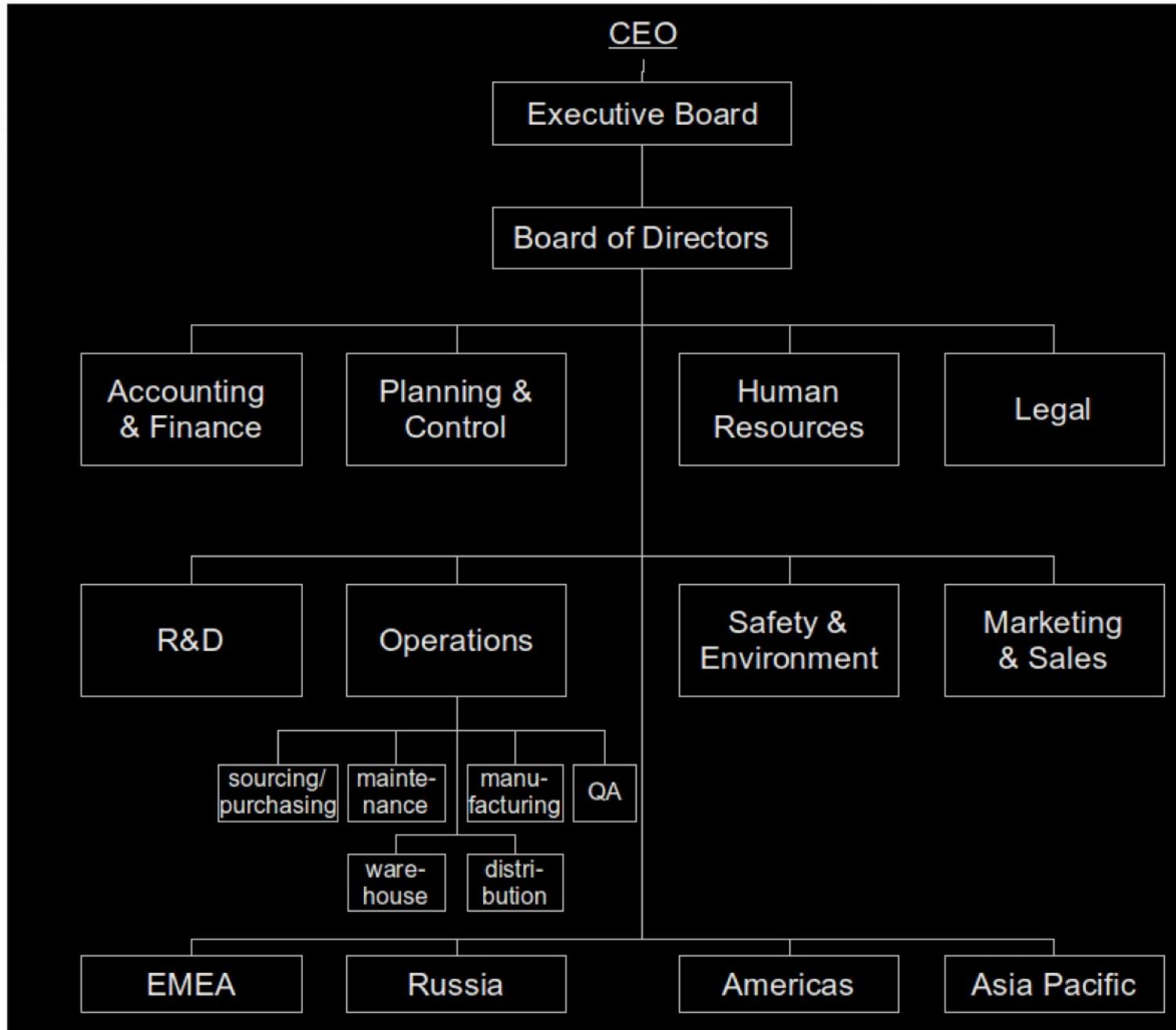


Menor grado de libertad

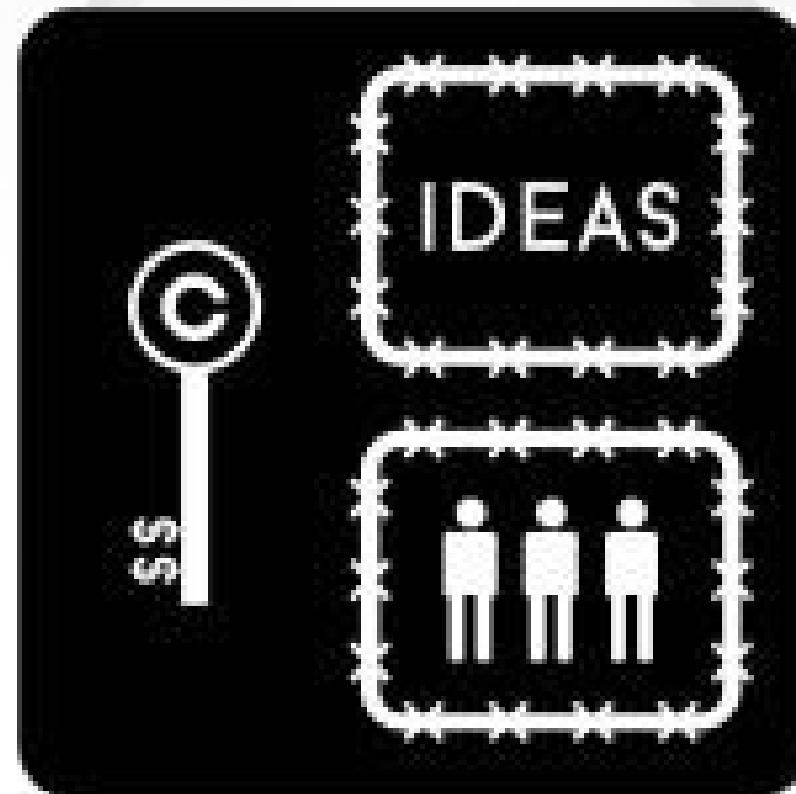


Maximo grado de libertad

# Estructura de Control



# Permission-based society



# Societat de Coneixement?

- Lleis de propietat intel·lectual
  - Cultura de opacitat
- Coneixement neix privatitzat



obra/expressió:



© Tots els  
drets  
reservats.

# Programari lliure (codi obert\*)

Quatre llibertats que asseguren *igualtat de drets*:

0. executar el programa per qualsevol propòsit
1. veure com funciona el programa i adaptar-lo a les necessitats pròpies\*\*
2. redistribuir còpies
3. millorar el programa i de distribuir-lo de nou amb les millores realitzades\*\*

\* Debian Free Software Guidelines → Open Source Definition

\*\* L'accés al codi font és un requisit.

# Mercat – Estat – Comuns



Holger Motzkau, WikiMedia Commons, CC BY-SA



2009, **Elinor Ostrom** receives Nobel Prize for her research on commons governance models

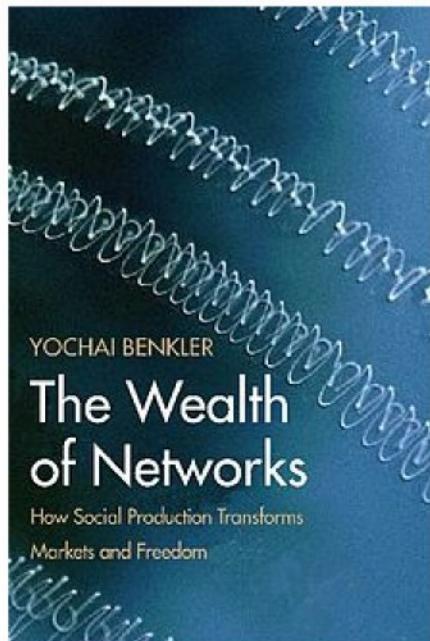
# El procomú\*

Un sistema de recursos comunitari caracteritzat per:

- Autogestió (~ governança comunal)
- Membresia accessible
- Coneixement *compartit*
- Membres tenen dret a la participació, l'ús, la contribució i la bifurcació (~ replicar)

\*) sinonims: (allò) comú, bens comuns (anglès: “commons”)

# Producció entre iguals (p2p)



Yochai Benkler, CC BY-NC-SA

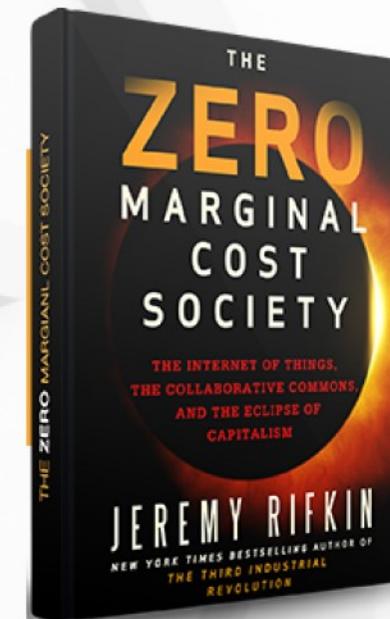
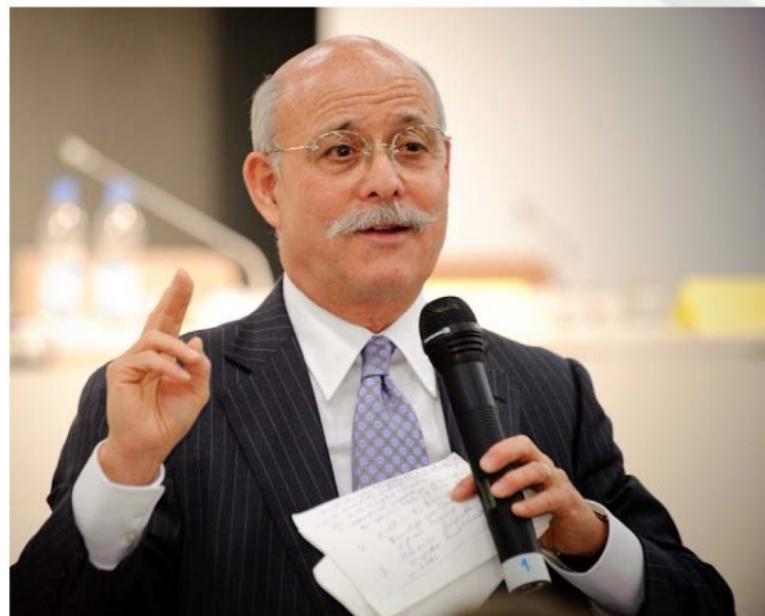


Foto by Joi Ito, CC BY

- Producció p2p com un tercer model
- Internet redueix els costos de transacció de la col·laboració
- CBPP: *Commons-based Peer Production*

# The Zero Marginal Cost Society

The Internet of Things, the Collaborative Commons,  
and the Eclipse of Capitalism



Heinrich Böll Stiftung, CC BY-SA 2.0

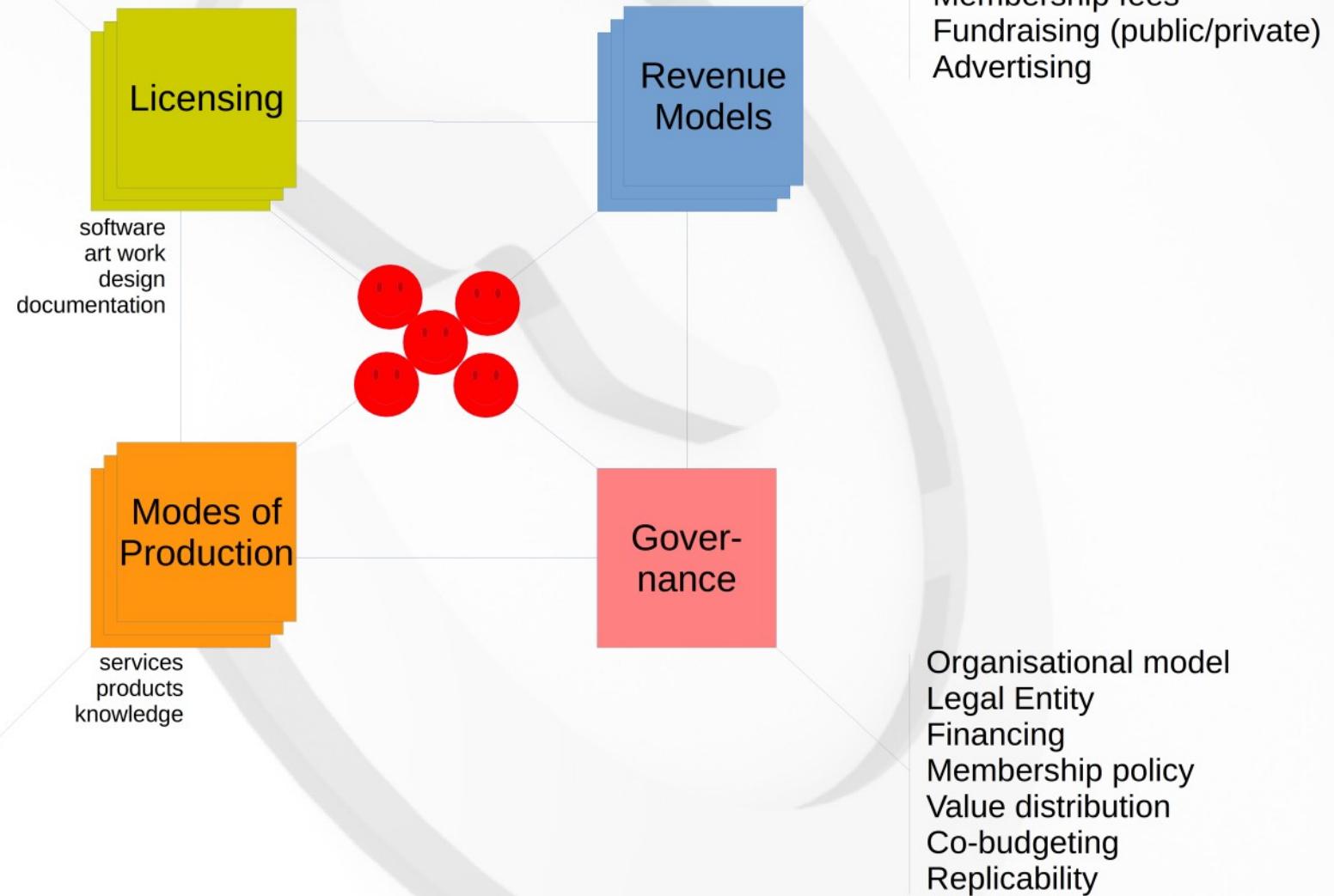
# Cost marginal (quasi) cero



cp page.html

# Models de Sostenibilitat de comunitats productives

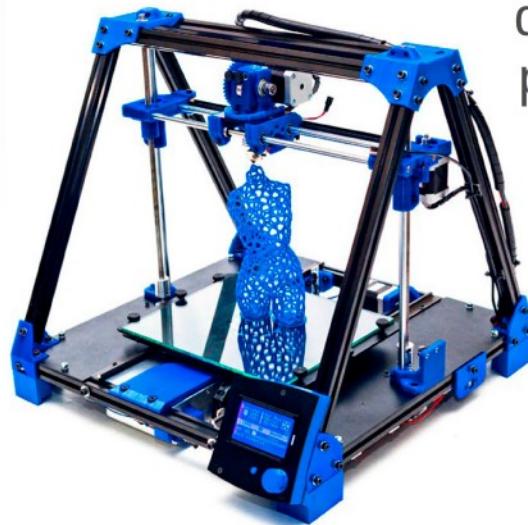
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Intra-firm  
Market  
Peer production

Organisational model  
Legal Entity  
Financing  
Membership policy  
Value distribution  
Co-budgeting  
Replicability

# Ecosistema Arduino



utilitzat  
dins altres  
productes



basat en



obra derivada



copies  
barates



Global trade starts here.™

dissenys

marca

comunitat

Wiring  
Processing



<http://forum.arduino.cc/>

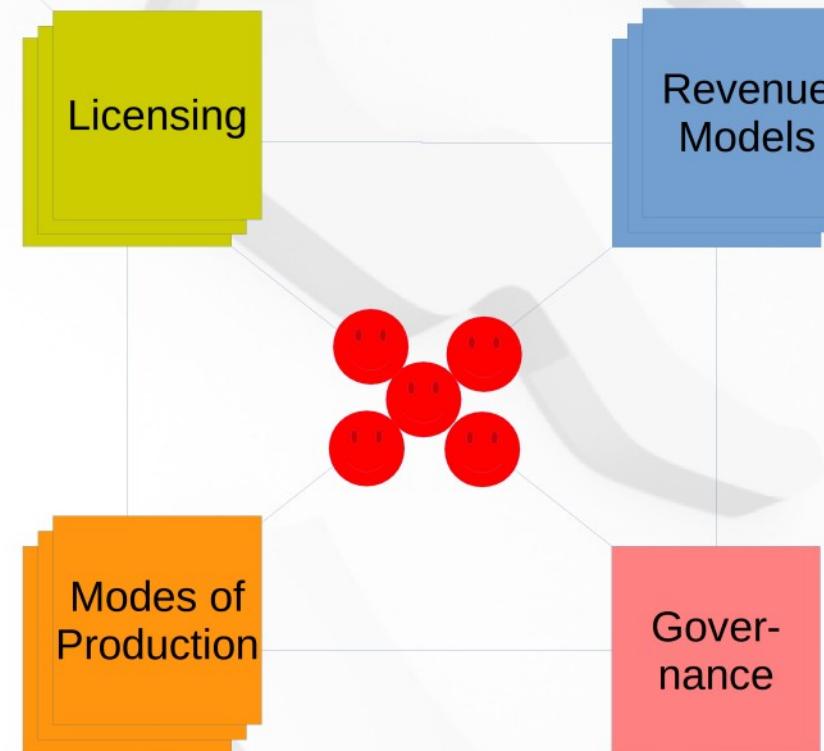
# Case: Arduino

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Software: ASL, MIT, GPL, LGPL, BSD  
design & documentation:  
CC BY-SA

software: p2p  
design / documentation: p2p  
physical products: intra-firm + market

Intra-firm  
Market  
Peer production

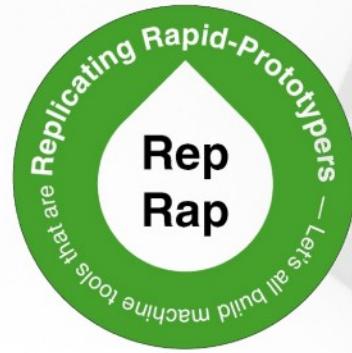


- Services: Arduino Certified
- Digital → physical
- Direct contact: donations
- Matchmaking
- Membership fees
- Public funding
- Advertising

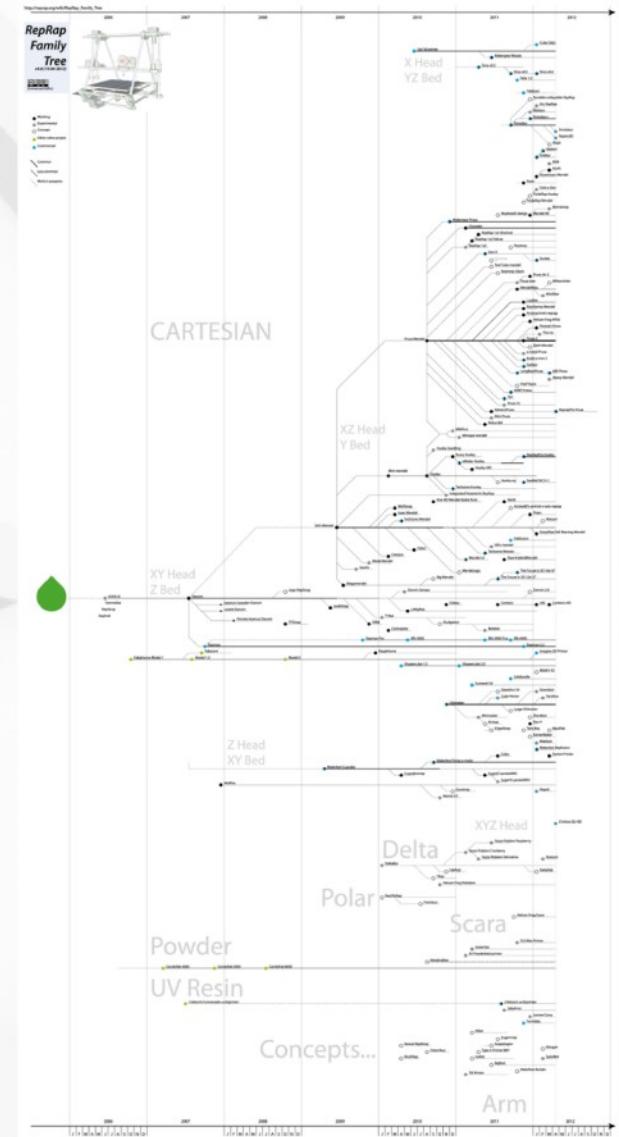
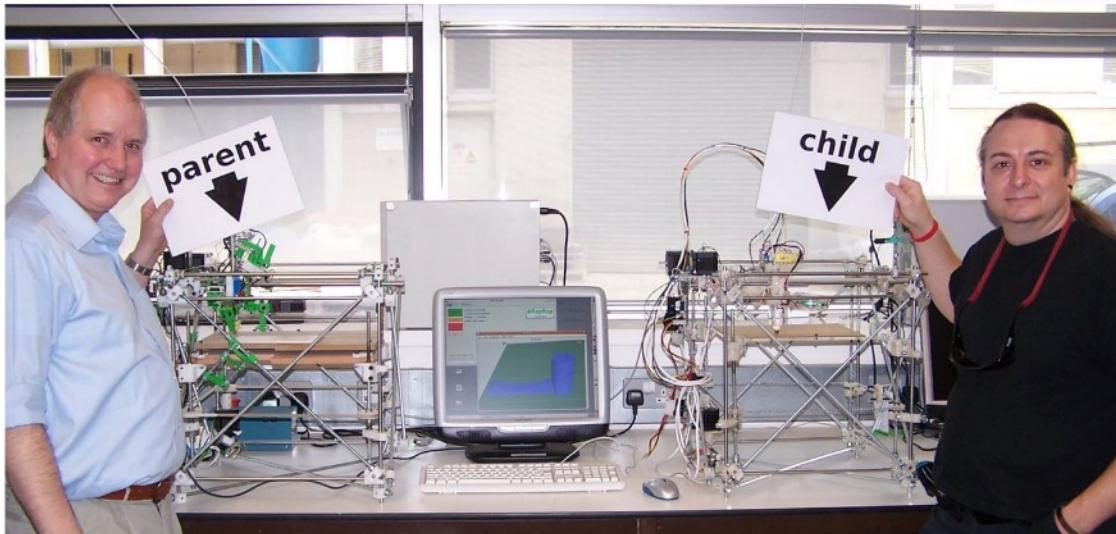
Legal Entity: Arduino LLC  
Membership policy: acces lliure  
Value distribution: no compartit  
Replicas: moltes!



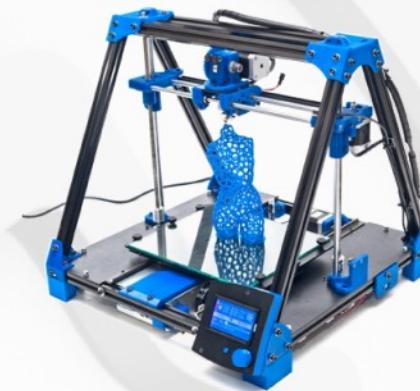
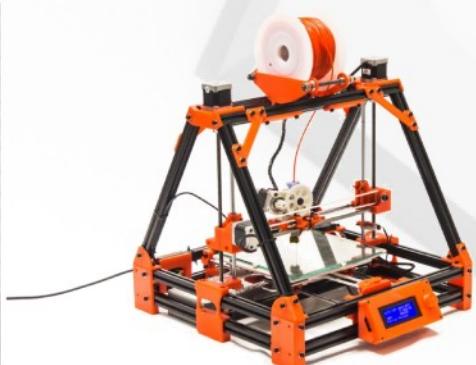
# Evolució Impressores 3D RepRap



- 2004: Adrian Bowyer crea RepRap
- 2008: primer RepRap “autoreplica”
- 2009: caducan primeres patents FDM



# RepRapBCN / BCN3D Technologies



**Rep|Rap**  
bcn

**RepRapBCN**

 **BCN3D**  
TECHNOLOGIES

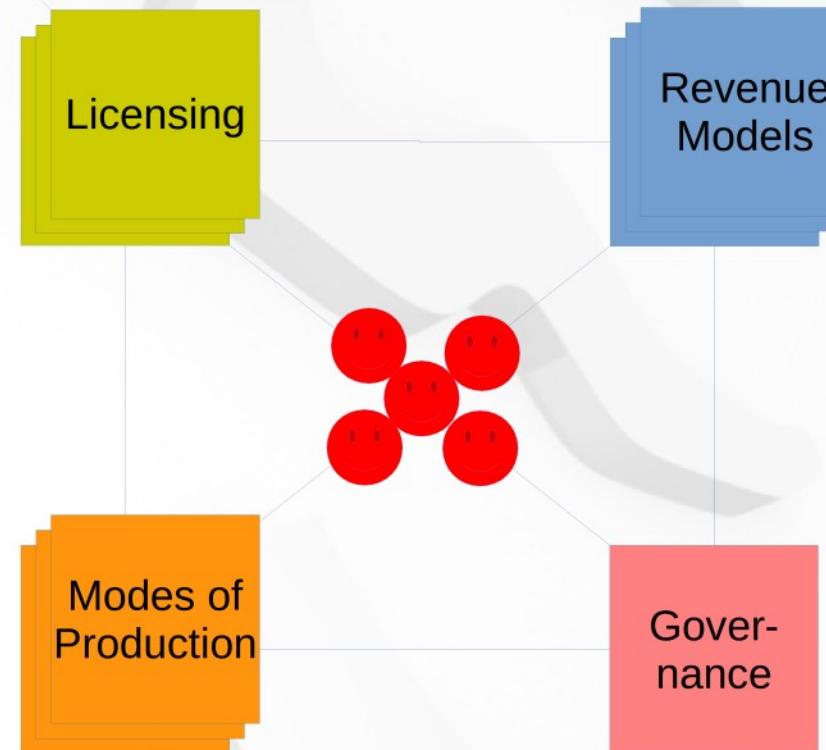
# Case: RepRap

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Software: GPL  
design & documentation:  
GNU FDL 1.2

software: p2p  
design / documentation: p2p  
physical products: intra-firm + market

Intra-firm  
Market  
Peer production

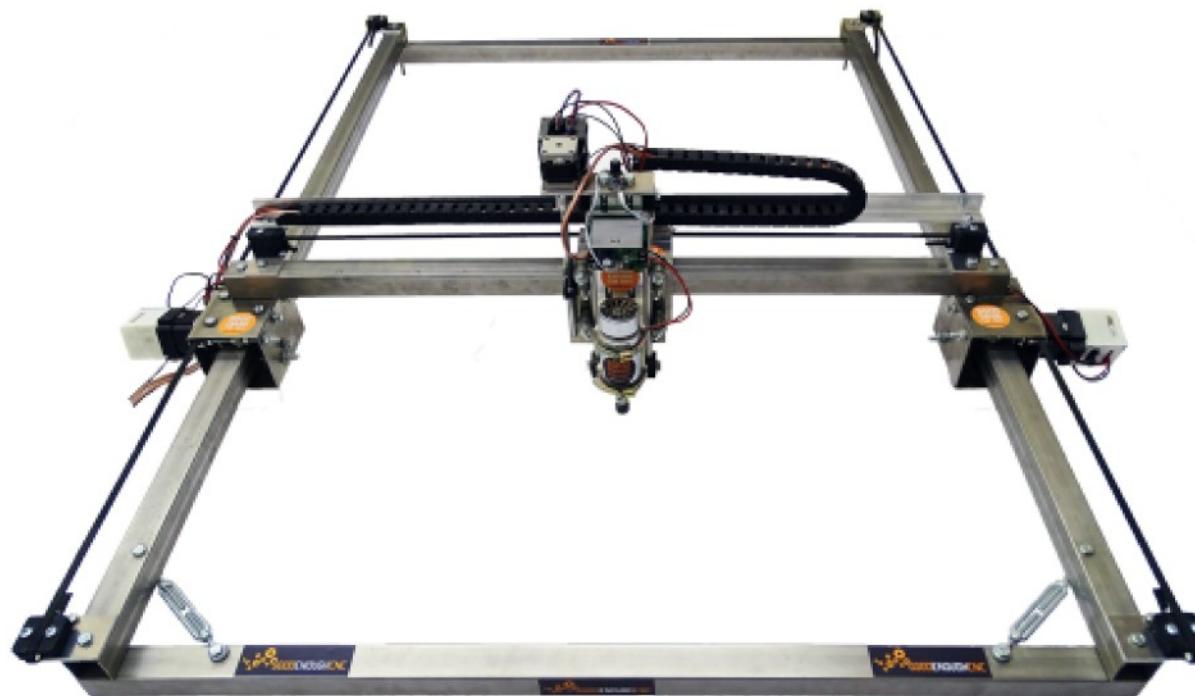


- Services: tallers
- Sale physical product
- Direct contact: donations
- Matchmaking
- Membership fees
- Public funding
- Advertising



Legal Entity: sense entitat central  
Membership policy: acces lliure  
Value distribution: -  
Replicas: moltes!

# GoodEnoughCNC



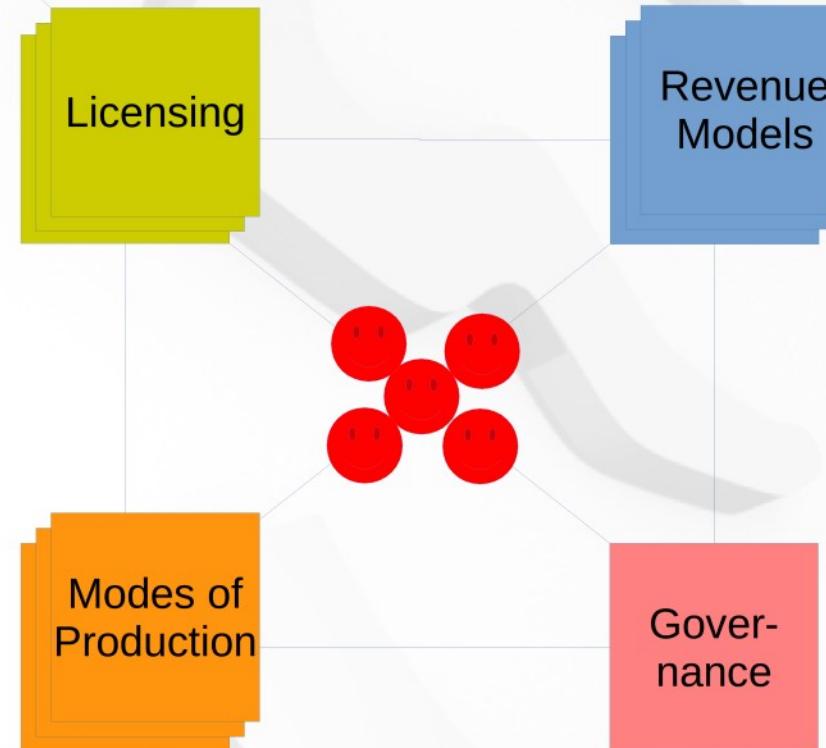
# Case: GoodEnoughCNC

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software: [GPLv3](#)  
design: [CERN OHL](#)  
documentation: [CC BY-SA 4.0](#)  
data: [CC0](#)

physical products: [intrafirm, p2p](#)  
service: [intra-firm](#)  
collaborative platforms:  
[Github](#)  
[Fabrikor: custom manufacturing service](#)

Intra-firm  
Market  
Peer production



- Services: [Tallers](#)
- Digital → physical: [kits, producte final](#)
- Direct contact: donations
- Matchmaking
- Membership fees
- Public funding
- Advertising

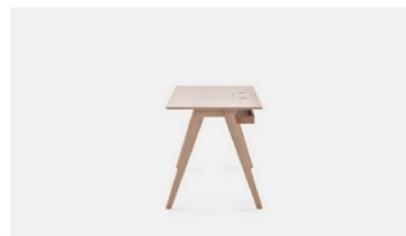
Legal Entity: IRNAS foundation  
Membership policy:  
Value distribution: DIY+commercial  
Replicas:

# OpenDesk.cc





Lean Desk



Studio Desk



Divide



Meeting Table



Unit Table



Team Desk



Cafe Table



Lift Standing Desk



Layout Table



Olivia Desk



Valoví Chair



Edie Set

<https://www.opendesk.cc/unit/unit-table>

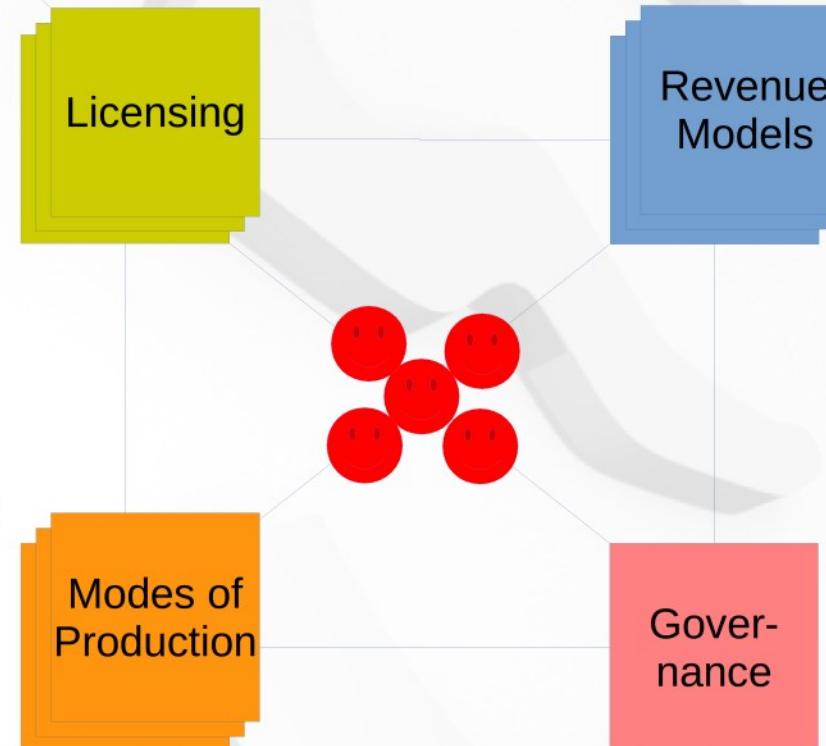
# Case: OpenDesk.cc

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software: proprietary  
designs: CC licensed

physical products: by local maker  
service: intra-firm  
collaborative platforms:  
opendesk.cc for designers,  
makers, buyers

Intra-firm  
Market  
Peer production



- Services: workspace design
- Digital → physical
- Direct contact: donations
- Matchmaking: 8%, 12%, 18%
- Membership fees
- Public funding
- Advertising

See: [Business Model](#)

Legal Entity: Fabbed Ltd  
Membership policy: Onboarding selection process  
Value distribution: 8%, 12%, 18%

# Ereuse.org / Reutilitz.cat



# Ereuse.org / Reutilitza.cat

Circular Production or how to create a product from waste



A decentralised, open and crowdsourced IoT data network owned and operated by its users in every city in the world

Commons:

- . LoRa Alliance
- . Long Range Wide Area Network = LoRaWAN  
secure bi-directional communication, mobility and localization
- . Low consumption
- . 2-10 Km
- . Numerous connections: up to 10,000/antenna
- . Free radio band
- . Open standards

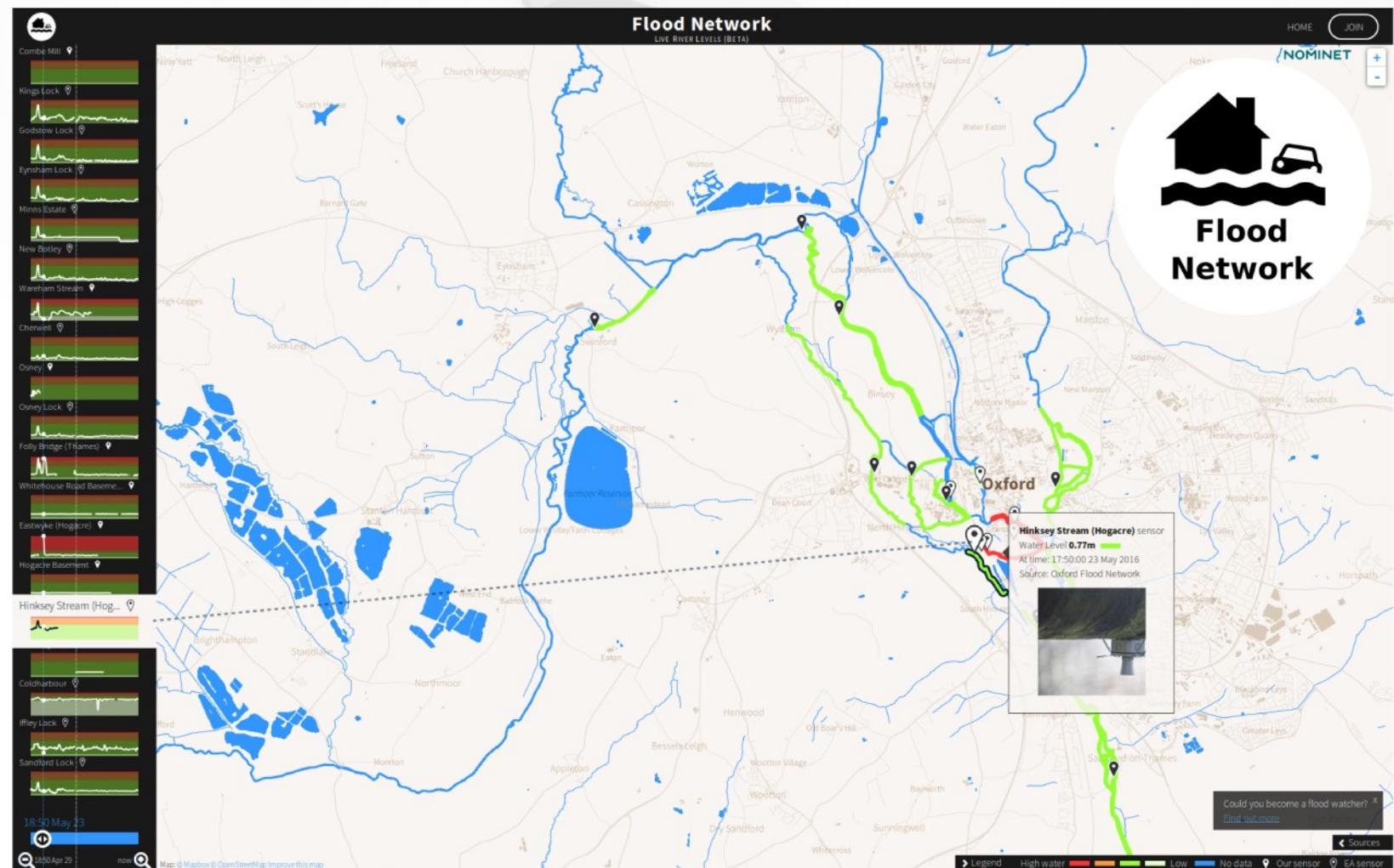
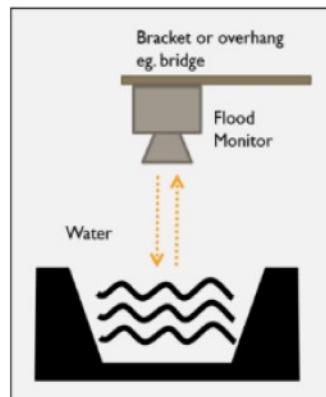
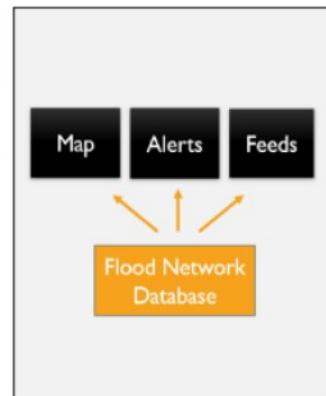








<https://flood.network/>



<https://map.flood.network/>

# Conclusions

- Igualtat de drets & sobirania tecnologica
- Skills del futur (WEF report):
  - Solucionar problemes complexes
  - Pensament crític
  - Creativitat
  - Coordinar en comunitats
- Models de sostenibilitat i negoci en obert:
  - Llicències lliures i obertes
  - Models d'ingressos
  - Models de governança
  - Models de producció col·laborativa