



HOW MAKER SPACES AND FAB LABS CAN ACCELERATE THE TRANSITION TO CIRCULAR CITIES

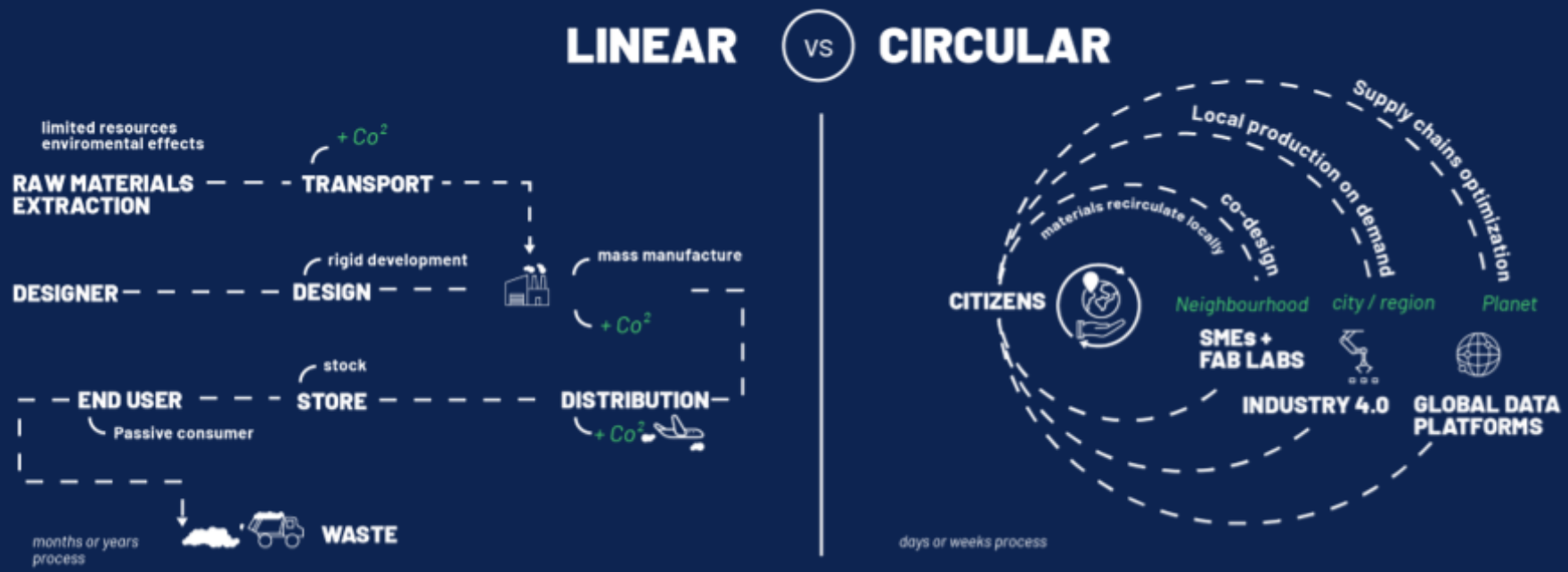


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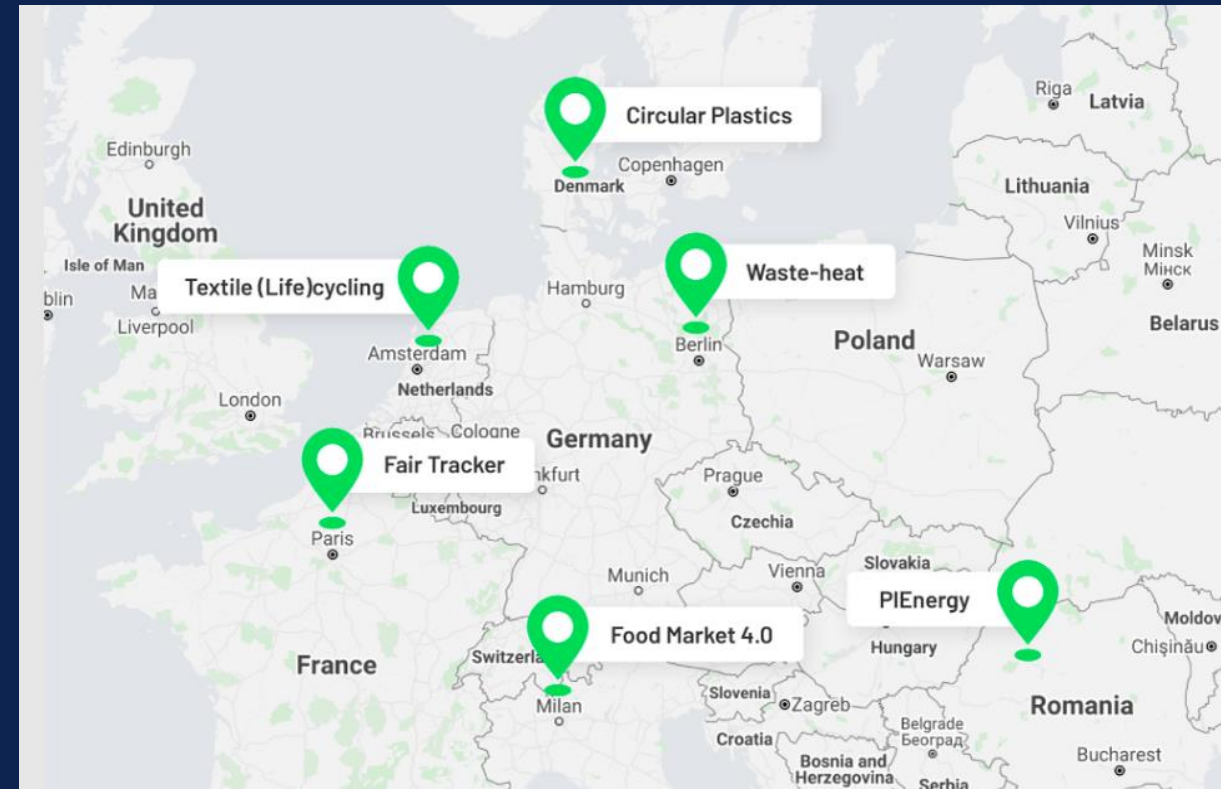
REFLOW is an EU H2020 funded project that seeks to understand and transform urban material flows, co-create and test regenerative solutions at business, governance, and citizen levels to create a resilient circular economy.



THE APPROACH



International research networks and stakeholders at various scales co-creating solutions to be tested in 6 European pilot cities





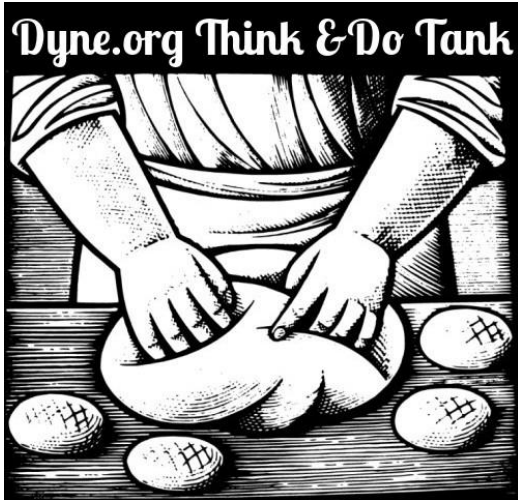
We are Dyne

We facilitate artists, creatives and engaged citizens in the digital age, sharing tools, practices and narratives for community empowerment.

🌐 dyne.org

✉ info@dyne.org

🐦 [@dyneorg](https://twitter.com/dyneorg)



Among other things, we built, share and curate:

Zenroom

A crypto smart-contract executor (<https://zenroom.org/>)

Devuan

a fork of Debian without systemd that allows users to reclaim control over their system by avoiding unnecessary entanglements and ensuring Init Freedom. (<https://devuan.org/>)

DecodeOS

Operating System for Private and Anonymous Computation Clusters (<https://decodeos.dyne.org/>)

Social Wallet

Design and manage currencies in a simple and secure way. (<http://socialwallet.dyne.org/>)



What drives us when designing infrastructure for communities

What drives us when designing infrastructure for communities

**We don't pretend – neither
think of – fixing cities
through software.**

We leave such attitude to the “move fast break things” kinda enthusiast people.



What drives us when designing infrastructure for communities

**We want to empower
existing communities or
facilitate the creation and
management of new ones.**

What drives us when designing infrastructure for communities

**We want communities to
keep ownership and control
over ~~data~~ value produced.**

What drives us when designing infrastructure for communities

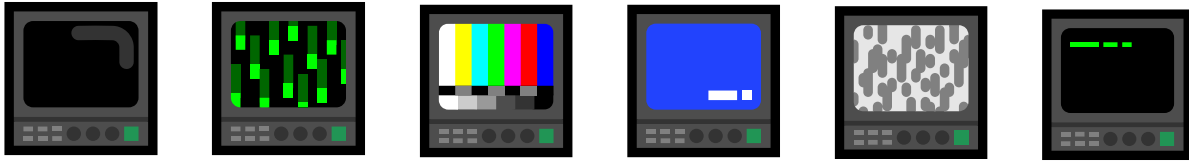
... and federate with other communities, creating networks of networks.

What drives us when designing infrastructure for communities

**We want to push open -
standard protocols,
encryption and human
readable smart contracts.**

What drives us when designing infrastructure for communities

We want to deeply mix social and economic activities together, to empower coordination and human interactions on multiple levels



A tour of ReflowOS

1. The tech stack

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Main softwares

DecodeOS

Zenroom

CommonsPub

Protocols & vocabularies

ActivityPub

ValueFlows

Zencode

1. The tech stack



...Where the f*k is the
blockchain?**

1. The tech stack

Thanks to zenroom, Blockchains are an implementation details, not a core feature

ActivityPub is a w3c standard with growing adoption and apps in production with consistent userbase

We want to keep the freedom of alternating global consensus with federated governance, case by case

We  con/federation

**On a political
Technical
Social
level**



Murray Bookchin

A tour of ReflowOS

1. The main features

**Communities can create
permissioned or public
network.**

Communities can create permissioned or public network.

Public network

Any FabLab can create an account, or deploy its own instance and start interacting with the open network: following other groups or users, engaging in economic activities, discussing, ...

The network is explorable from the web, guests will be able to get an overview of the network activities without being logged in.

Useful to:

- incentivate citizen/other agents engagement
- promote their activities also outside of the network
- spread the adoption

Communities can create permissioned or public network.

Permissioned network

A pre-established entity (a consortium, network, ...) decides the governance rules to be part of the network and emit invites. Any activities is hidden within the network and invisible to the outside. Non-participants are not aware of anything that happen within the network, that is not reachable through the web because hidden by tor.

Useful to:

- Make your own business
- Share private and confidential information
- Create private economic agreements and exchanges

Users can create and moderate groups, follow other users and have meaningful discussions

They can publish, discuss and match offers and needs

Users can publish, discuss and match offers and needs

Materials / Skills / Services / Tangible or intangible resources



“

I need 4 boards of solid oak, 2m x 2m x 15mm



“

I need an Arduino programmer for a workshop on September



“

I offer 16kg of cotton, various color, second hand but good quality



“

I need a raspberry PI

**Offers and needs can be
customized adding
geolocation, categories, due
date, ...**

Offers and needs can be customized adding geolocation, categories and due date



“

I need 4 boards of solid oak, 2m x 2m x 15mm

At least 4 boards, but I can take more if you don't care, they should be in good shape, and without holes. Don't mind if they're second hand, I need them to test my new laser cutter.



Formia, Italy



19 August

#solid oak, #second hand, #15mm, #laser cutter

**... and they can be searched,
filtered, bookmarked and
discussed across federated
instances**

... and they can be searched, filtered, bookmarked and discussed across federated instances



“

I need 4 boards of solid oak, 2m x 2m x 15mm

At least 4 boards, but I can take more if you don't care, they should be in good shape, and without holes. Don't mind if they're second hand, I need them to test my new laser cutter.



I have one solid oak, ~ 3m x 1.4m x 15mm, not a perfect rectangle shape, because I've cutted a part of it, the wood is pretty new tough.

Reply

Accept



I can give you 2 solid oaks, bought for laser cutter usage – available if you can come to my lab this week

Bookmark

All nice, but what are the differences respect the dozens of existing ads platforms?

A tour of ReflowOS main features












It's open source and federated!

**It is backed by an economic
vocabulary that allows to create
and follow value chains across
networks!**



A tour of ReflowOS main features

Resources are subject to transform during their lifecycle through economic events.

-  #needed a specific *deck* for an exhibition, and offered a reward
-  #committed to build the *desk*
-  #exchanged 65 social currency with 2 solid *oak tables, glue and paint* with 
-  #used a *laser cutter*, other needed resources and #cited a *table design* to #produce the *desk*
-  #transferred the desk to 
- After the exhibition  #trasferred the deck to  that recycled the usable solid oak
-  #offered the recycled solid oak tables
-  #accepted the offer and took the recycled solid tables

A tour of ReflowOS main features

Any economic event may be put in relation with precedent or next ones, defining the *network metabolism* and enabling the creation of *material passport* for resources produced within the network.

Some concrete network metabolism usecases

Analyzing the scarcity and abundance of resources and skills in your network

Optimize the existing resources flows, reduce material waste and encourage the adoption of recycled materials

Create ad-hoc supply chains based on network availability and requests



Encourage citizen engagement through data viz and stories about tracked material lifecycles



Thank you!



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Time for questions!

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