

**DE**centralised **C**itizens **O**wned  
**D**ata **E**cosystem



**d e c o d e**



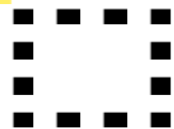
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WWW2018, Lyon, 25 Apr. 2018

The logo for dyne.org, consisting of the text 'dyne.org' in a lowercase, sans-serif font, with a thick, black, hand-drawn scribble underneath it.

Hacker community since 1994 – GNU/Linux/BSD  
Internet based not-for-profit software foundry  
Sustainable tech / Interdisciplinarity / Art & Science  
Design with minimalism: UNIX principles  
Community engagement  
and empowerment

Can we be in control of our data  
and the way it is managed and shared? Can it  
be an easy and Portable standard?  
Oh and... free and open source!



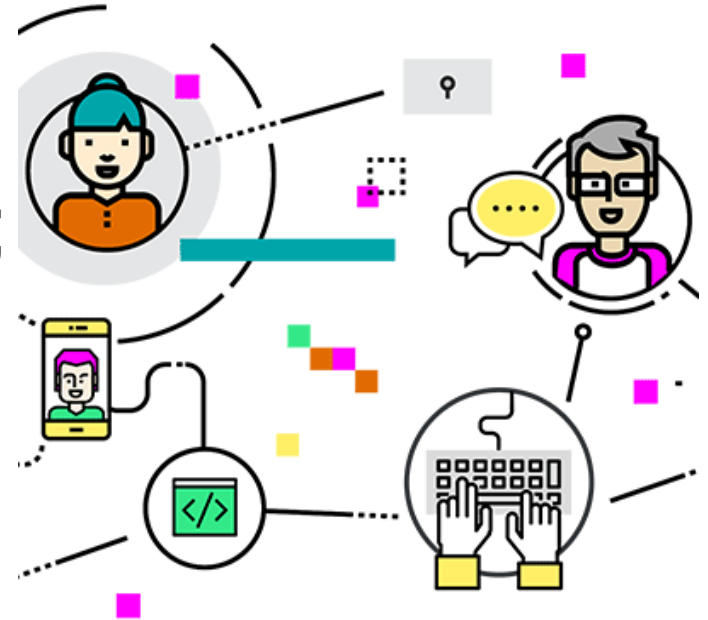
■ **decode**

## Building blocks

- Attribute Based Crypto
- Certificate Transparency
- Distributed Ledger

# Outline

- DECODE vision and objectives;
- How to achieve such objectives;
- Derived applications.



# DECODE Vision

DECODE will contribute to formulating and standardising a different approach to data management including languages for expressing “smart contracts” relating to privacy and digital commons.



# DECODE Objectives

- 1) **develop** an intuitive interface empowering citizens to control with the click of a button with whom they share their data, in which format (addressing interoperability), and who is allowed to perform actions at what times, up to the lowest possible granularity.
- 2) DECODE will **enable** adaptive, smart, context-dependent access rules, i.e. Smart Rules.
- 3) DECODE will contribute to design and **propose standards** and protocols for the governance of distributed data, identity and entitlements.

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# How to achieve DECODE objectives?

ZENROOM crypto-lang: <https://zenroom.dyne.org>

Applying cryptography to manage data protection requirements in a GDPR compliant environment:

- Backend agnostic
- Interoperable among OS
- Secure



**LANGSEC: Language-theoretic Security**

**"The View from the Tower of Babel"**

The logo for 'decode' features the word in a lowercase, sans-serif font. To the left of the text are three horizontal bars: a yellow one at the top, a teal one in the middle, and an orange one at the bottom. A small pink square is positioned above the letter 'e'.

# How to achieve DECODE objectives?

A Smart Rule is a set of cryptographic instructions processing privacy requirements to manage consensual relations and data protection conduct of data subjects/owners and data controllers/consumers.

The Smart Rule concept will allow each participant to define in detail his/her sovereignty on his/her personal data.



# How to achieve DECODE objectives?

ZENROOM crypto-lang: <https://zenroom.dyne.org>

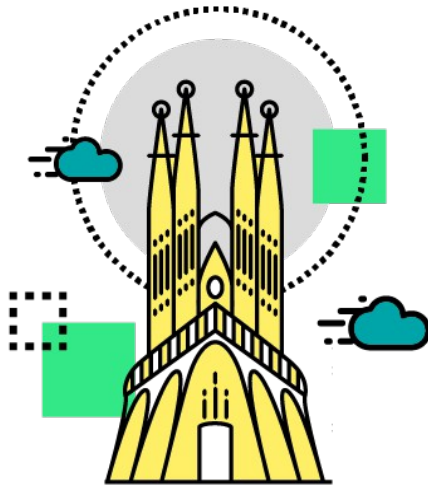


ZR allows citizens to **share** identity attributes and to **entitle** data controllers to access such attributes.

Citizens can, at any moment, **revoke** the entitlements to data controllers.

# Example: DECIDIM Barcelona

- ATTRIBUTE: Date of Birth ('**being over 16 yr**') encrypted with public key.
- ENTITLEMENT: BCN CITY HALL CAN VERIFY ATTRIBUTE with private key.
- DECIDIM organizers can access signature to verify vote.
- DECIDIM participant can revoke entitlement with a click of a button.



**DECODE NODE**  
[CONTROLLED EXECUTION ENVIRONMENT]

**DECODE HUB**  
[Arduino]

**DECODE OS**  
[A 'blend' of Devuan + Core packages]



**DECODE CORE**

**DECODE  
APPLICATION  
SMART RULES**

**DECODE  
APPLICATION  
SMART RULES**

**DECODE  
APPLICATION  
SMART RULES**

**ATTRIBUTE VAULT**  
[Controlled access to  
**attribute** data]

**LEDGER**  
[Client access to distributed  
ledger]

**IOT CONNECTOR**  
[Provides connectivity to IOT  
devices]

# Derived Applications

It is possible to apply Zenroom crypto-lang and approach to other domains wherein privacy is key, e.g. distributed ledger technology (DLT).

Giving to participants (consumers) control on their **monetary data** transactions and the **decentralized governance of a DLT protocol** within **GDPR** compliant environment.



European Commission > Strategy > Digital Single Market > News >

Digital Single Market

NEWS ARTICLE | 27 February 2018

**EU-Funded Research ignites Yetta: a Next Generation Blockchain currency for the Smart Economy**



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**Thank You**

For your attention

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