Freifunk Aachen

WiFi4EU

broken by technical specifications - a not so friendly introduction

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Overview

Freifunk Aachen

- The idea

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- The idea
- The plan

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- The idea
- The plan
- Why it matters

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- The idea
- The plan
- Why it matters
- Thirteen ways it went wrong

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Freifunk Aachen

- The idea
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- Why it matters
- Thirteen ways it went wrong
- What has been done

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- Why it matters
- Thirteen ways it went wrong
- What has been done
- What can be done

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- What has been done
- What can be done
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The idea

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- Europe 2020 Strategy [1]

The idea

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- Europe 2020 Strategy [1]
  - Employment
    - 75% of people aged 20–64 to be in work

The idea

Freifunk Aachen

- Europe 2020 Strategy [1]
  - Employment
  - Research and development (R&D)
    - 3% of the EU's GDP to be invested in R&D

The idea

Freifunk Aachen

- Europe 2020 Strategy [1]
  - Employment
  - Research and development (R&D)
  - Climate change and energy
    - greenhouse gas emissions 20% lower than 1990 levels
    - 20% of energy coming from renewables
    - 20% increase in energy efficiency

The idea

Freifunk Aachen

- Europe 2020 Strategy [1]
  - Employment
  - Research and development (R&D)
  - Climate change and energy
  - Education
    - rates of early school leavers below 10%
    - at least 40% of people aged 30–34 having completed higher education

The idea

Freifunk Aachen

- Europe 2020 Strategy [1]
  - Employment
  - Research and development (R&D)
  - Climate change and energy
  - Education
  - Poverty and social exclusion
    - at least 20 million fewer people in – or at risk of – poverty/social exclusion

The idea

Freifunk Aachen

- Europe 2020 Strategy [1]
  - Employment
  - Research and development (R&D)
  - Climate change and energy
  - Education
  - Poverty and social exclusion
- Digital Single Market [2]

The idea

Freifunk Aachen

- Europe 2020 Strategy [1]
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  - “Four Freedoms” within the EU [3]:

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Freifunk Aachen

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    - goods

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    - services

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Freifunk Aachen

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- Digital Single Market [2]
  - “Four Freedoms” within the EU [3]:
    - goods
    - capital
    - services
    - labour

The idea

Freifunk Aachen

- Digital Single Market [2]
  - May 2015 - 2020

The idea

Freifunk Aachen

- Digital Single Market [2]
  - May 2015 - 2020
  - 14 legislative proposals

The idea

Freifunk Aachen

- Digital Single Market [2]
  - May 2015 - 2020
  - 14 legislative proposals
  - May 2016: Geoblocking abolished [4]
    - Freedom of digital services

The idea

Freifunk Aachen

- Digital Single Market [2]
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  - May 2016: Geoblocking abolished [4]
  - July 2016: eIDAS [5]

    electronic **ID**entification, **A**uthentication and trust **S**ervices

The idea

Freifunk Aachen

- Digital Single Market [2]
  - May 2015 - 2020
  - 14 legislative proposals
  - May 2016: Geoblocking abolished [4]
  - July 2016: eIDAS [5]
  - Jun 2017: European Union roaming regulations [6]
    - “34 % of Europeans travel abroad within the EU at least once a year. 8 In 2014, about half of Europeans said they would not use mobile internet abroad because it was too costly. “[4]

The idea

Freifunk Aachen

- Digital Single Market [2]
  - May 2015 - 2020
  - 14 legislative proposals
  - May 2016: Geoblocking abolished [4]
  - July 2016: eIDAS [5]
  - Jun 2017: European Union roaming regulations [6]
  - March 2018: Wifi4EU [7]
    - “WiFi4EU-funded networks will be free of charge, free of advertising and free of personal data” [8]

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- Digital Single Market [2]
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  - Jun 2017: European Union roaming regulations [6]
  - March 2018: Wifi4EU [7],[8]
  - May 2018: GDPR [9]
    - “The reform is an essential step to strengthening citizens' fundamental rights in the digital age and facilitating business by simplifying rules for companies in the Digital Single Market.” - European Commission [10]

The idea

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  - March 2018: Wifi4EU [7],[8]
  - May 2018: GDPR [9],[10]
  - Sep 2018: EU Copyright Directive (Link Tax/ Uploadfilters) [11]
    - “Imagine if every time you opened your mouth, computers controlled by big companies would check what you were about to say, and have the power to prevent you from saying it. [...]”
      Julia Reda (MEP) et Al.

The idea

Freifunk Aachen

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  - May 2018: GDPR [9],[10]
  - Sep 2018: EU Copyright Directive (Link Tax/ Uploadfilters) [11]
  - Dez 2018: eEvidence [12]
    - “The new rules will allow law enforcement in EU Member States to better track down leads online and across borders, while providing sufficient safeguards for the rights and freedoms of all concerned.” European Comission [13]

The plan

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- “Everyone benefiting from connectivity means that it should not matter where you live or how much you earn. So we propose today to equip every European village and every city with free wireless internet access around the main centres of public life by 2020.”

  Jean-Claude Juncker, President of the European Commission [7]

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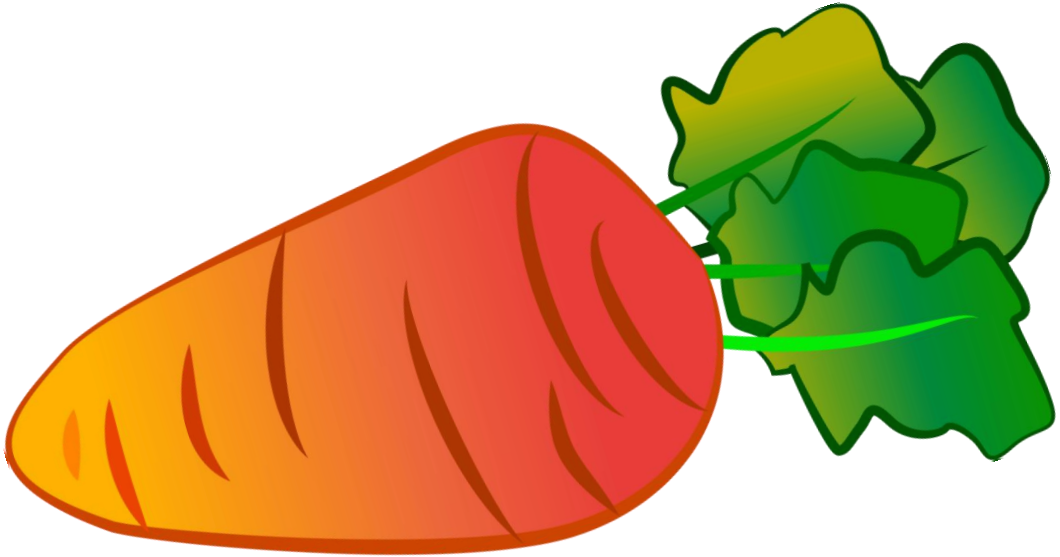
- Implement a EU wide standard

The plan



The plan

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[15]

The plan

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[16]

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- Extra money for keeping “WiFi4EU standard”

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Freifunk Aachen

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- “Security and data protection risk: the scheme will ensure full protection of personal data and sufficient level of authentication to ensure the user-friendliness of the connection at the access point level. “ 2016/0287 (COD)[17]

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- **YAY! Network authentication!**

The plan

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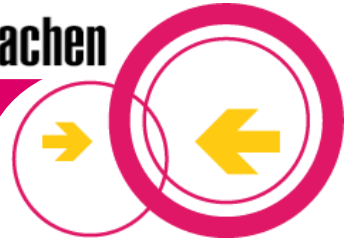

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- **YAY! Network authentication!**
- WiFi-Based IMSI Catcher - O’Hanlon, Borgaonkar (Oxford) [18]

Why it matters

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- EU standards have normative effects

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- We pay with €

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- “Deutsche Telekom not obligated to preserve data due to EU rules” OLG Cologne 20.04.2018 [20]

Why it matters

Freifunk Aachen

- EU standards have normative effects
- We pay with €
- GDPR spawned data protection laws in China, Brazil, California [19]
- “Deutsche Telekom not obligated to preserve data due to EU rules” OLG Cologne 20.04.2018 [20]
- This is just the beginning of Wifi4EU

- 25.10.17. “Network Authentication” [17]

  “Security and data protection risk:the scheme will ensure full protection of personal data and sufficient level of authentication to ensure the user-friendliness of the connection at the access point level.“

Thirteen ways it went wrong

Freifunk Aachen

- 25.10.17. “Network Authentication” [17]
- 20.03.18: Press release “free of personal data”[8]

„WiFi4EU-funded networks will be free of charge, free of advertising and free of personal data”

Thirteen ways it went wrong

Freifunk Aachen

- 25.10.17. “Network Authentication” [17]
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- 15.05.18: First call First call (1.000 vouchers, 15 Mio €)

Thirteen ways it went wrong

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- 25.10.17. “Network Authentication” [17]
- 20.03.18: Press release “free of personal data”[8]
- 25.04.18: Tech. spec Q25: “Central Authentication Infrastructure”

  “in the second stage (from 2019 onwards), a common authentication platform will be set up”

- 15.05.18: First call First call (1.000 vouchers, 15 Mio €)

Thirteen ways it went wrong

Freifunk Aachen

- GDPR Compliance
  - There is no need for any form of authentication to use WLAN #freifunk
  - Authentication for eGoverment on need to know basis

Thirteen ways it went wrong

Freifunk Aachen

- GDPR Compliance
- fiscal responsibility [21]
  - Those servers & the personnel to run them cost a TON of money.

Thirteen ways it went wrong

Freifunk Aachen

- GDPR Compliance
- fiscal responsibility [21]
- fair markets/hidden subsidies I
  - There are very few competitors who can handle the massive serverload for Wifi4EU

Thirteen ways it went wrong

Freifunk Aachen

- GDPR Compliance
- fiscal responsibility [21]
- fair markets/hidden subsidies I
- national/union security
  - The centralized login data of all citizens of a EU country is a data trove that should better not exist

Thirteen ways it went wrong

Freifunk Aachen

- GDPR Compliance
- fiscal responsibility [21]
- fair markets/hidden subsidies I
- national/union security
- single point of failure

Thirteen ways it went wrong

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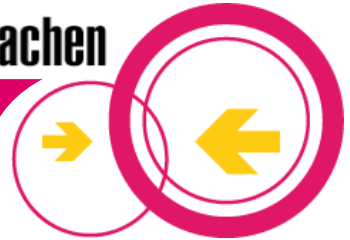

- GDPR Compliance
- fiscal responsibility [21]
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Thirteen ways it went wrong

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- 25.04.18: Tech. spec Q25: “Central Authentication Infrastructure”
- 30.04.18: Tech. spec Q26: “Captive portal with snippet”

  The technical specifications of the captive portal [...]

- 15.05.18: First call First call (1.000 vouchers, 15 Mio €)

Thirteen ways it went wrong

Freifunk Aachen

- GDPR Compliance
- fiscal responsibility [21]
- fair markets/hidden subsidies I
- national/union security
- single point of failure
- inhibit innovation (IoT)
  - WLAN is a digital infrastructure, captive portals limit the devices that allow for its use. #IOT

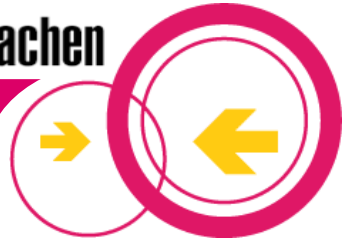
Thirteen ways it went wrong

Freifunk Aachen

- GDPR Compliance
- fiscal responsibility [21]
- fair markets/hidden subsidies I
- national/union security
- single point of failure
- inhibit innovation (IoT)
- inclusion
    - captive portals block use of service for disabled and technological unskilled humans, e.g. the elderly

Thirteen ways it went wrong

Freifunk Aachen



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- fiscal responsibility [21]
- fair markets/hidden subsidies I
- national/union security
- single point of failure
- inhibit innovation (IoT)
- inclusion
  - captive portals block use of service for disabled and technological unskilled humans, e.g. the elderly
  - legacy devices

Thirteen ways it went wrong

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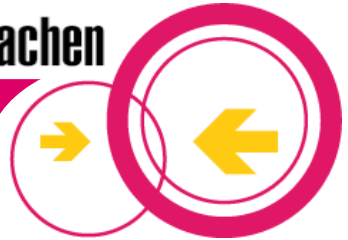

- GDPR Compliance
- fiscal responsibility [21]
- fair markets/hidden subsidies I
- national/union security
- single point of failure
- inhibit innovation (IoT)
- inclusion
- IT Security I
    - security techniques like Domain Name System Security Extensions (DNSSEC) are incompatible the DNS rewriting [22]

Thirteen ways it went wrong

- GDPR Compliance
- fiscal responsibility [21]
- fair markets/hidden subsidies I
- national/union security
- single point of failure
- inhibit innovation (IoT)
- inclusion
- IT Security I

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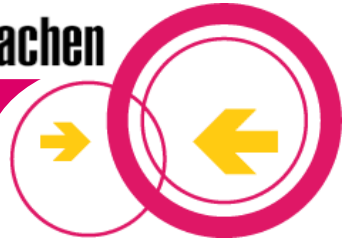
Thirteen ways it went wrong

Freifunk Aachen



- GDPR Compliance
- fiscal responsibility [21]
- fair markets/hidden subsidies I
- national/union security
- single point of failure
- inhibit innovation (IoT) - not fixed by WPA3
- inclusion
- IT Security I

8

Thirteen ways it went wrong

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  The technical specifications of the captive portal [...]
  - “Embedded snippet from EC for monitoring actual functioning of the WiFi4EU network (no personal data collected)”

- 15.05.18: First call First call (1.000 vouchers, 15 Mio €)

Thirteen ways it went wrong

Freifunk Aachen

- GDPR Compliance
- fiscal responsibility
- fair markets/hidden subsidies
- national/union security
- inhibit innovation (IoT)
- inclusion
- IT Security II
  - This is a potential backdoor into the access point and allows to gather user data

Thirteen ways it went wrong

Freifunk Aachen

- GDPR Compliance
- fiscal responsibility
- fair markets/hidden subsidies
- national/union security
- inhibit innovation (IoT)
- inclusion
- IT Security I,II

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Thirteen ways it went wrong

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  The technical specifications of the captive portal [...]
  - “Embedded snippet from EC for monitoring actual functioning of the WiFi4EU network (no personal data collected)”
  - WiFi4EU branding required (WiFi4EU SSID);

- 15.05.18: First call First call (1.000 vouchers, 15 Mio €)

Thirteen ways it went wrong

Freifunk Aachen

- GDPR Compliance
- fiscal responsibility
- fair markets/hidden subsidies
- national/union security
- inhibit innovation
- inclusion
- IT Security III
  - This basically democratizes hacking - honey pots are too easy for legacy devices

Thirteen ways it went wrong

Freifunk Aachen

- GDPR Compliance
- fiscal responsibility
- fair markets/hidden subsidies
- national/union security
- inhibit innovation
- inclusion
- IT Security I,II,III

10

Thirteen ways it went wrong

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- 25.04.18: Tech. spec Q25: “Central Authentication Infrastructure”
- 30.04.18: Tech. spec Q26: “Captive portal with snippet”
- 08.05.18: Tech. spec Q27: “Hotspot 2.0”

comply with Hotspot 2.0 (Passpoint Wi-Fi Alliance certification programme).

- 15.05.18: First call First call (1.000 vouchers, 15 Mio €)

Thirteen ways it went wrong

Freifunk Aachen

- GDPR Compliance II
  - hotspot 2.0 accesses SIM ID

Thirteen ways it went wrong

Freifunk Aachen

- GDPR Compliance II
- fair markets/hidden subsidies II
  - hotspot 2.0 allows for so called “connection roaming”

Thirteen ways it went wrong

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Thirteen ways it went wrong

Freifunk Aachen

- GDPR Compliance II
- fair markets/hidden subsidies II
  - hotspot 2.0 allows for so called “connection roaming”
  - allows to steer traffic between connection types: WLAN, mobile, bluetooth, NFC, LTE

Thirteen ways it went wrong

Freifunk Aachen

- GDPR Compliance II
- fair markets/hidden subsidies II
  - hotspot 2.0 allows for so called “connection roaming”
  - allows to steer traffic between connection types: WLAN, mobile, bluetooth, NFC, LTE
  - hotspot 2.0 is proprietary so it is unclear how this is done

Thirteen ways it went wrong

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- GDPR Compliance II
- fair markets/hidden subsidies II
  - hotspot 2.0 allows for so called “connection roaming”
  - allows to steer traffic between connection types: WLAN, mobile, bluetooth, NFC, LTE
  - hotspot 2.0 is proprietary so it is unclear how this is done
  - conjecture: mobile traffic = expensive

Thirteen ways it went wrong

Freifunk Aachen

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  - hotspot 2.0 allows for so called “connection roaming”
  - allows to steer traffic between connection types: WLAN, mobile, bluetooth, NFC, LTE
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  - conjecture: hotspot 2.0 can be used to pass traffic from mobile to WLAN

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- GDPR Compliance II
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  - hotspot 2.0 allows for so called “connection roaming”
  - allows to steer traffic between connection types: WLAN, mobile, bluetooth, NFC, LTE
  - hotspot 2.0 is proprietary so it is unclear how this is done
  - conjecture: mobile traffic = expensive
  - conjecture: hotspot 2.0 can be used to pass traffic from mobile to WLAN
  - subsidization of mobile service providers

Thirteen ways it went wrong

Freifunk Aachen

- GDPR Compliance II
- fair markets/hidden subsidies II
- inclusion - social
  - hotspot 2.0 allows to circumvent captive portal

Thirteen ways it went wrong

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- GDPR Compliance II
- fair markets/hidden subsidies II
- inclusion - social
  - hotspot 2.0 allows to circumvent captive portal
  - State of the Art Smartphones have hotspot 2.0

Thirteen ways it went wrong

Freifunk Aachen

- GDPR Compliance I,II
- fair markets/hidden subsidies II
- inclusion - social
  - hotspot 2.0 allows to circumvent captive portal
  - State of the Art Smartphones have hotspot 2.0
  - poor ppl get captive portals, rich people get auto sign-ins

- GDPR Compliance I,II
- fiscal responsibility
- fair markets/hidden subsidies I, II
- national/union security
- inhibit innovation
- inclusion - ability, social
- IT Security I,II,III

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Thirteen ways it went wrong

Freifunk Aachen

- 15.05.18: First call (1.000 vouchers, 15 Mio €) goes live

Thirteen ways it went wrong

Freifunk Aachen

- 15.05.18: First call (1.000 vouchers, 15 Mio €)
  Homepage crashes

Thirteen ways it went wrong

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- 14.06.18: Call canceled [23]

Thirteen ways it went wrong

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- 15.05.18: First call (1.000 vouchers, 15 Mio €)
  Homepage crashes
- 14.06.18: Call canceled [23]
- 10.09.18: Open Market Consultation until 05.10. [24]
- 11.10.18: 2nd call announced [25]
- 07.-09.11.18: 2nd call (2.800 vouchers, 42 Million €) [25]
- 07.12.18: “Winners of the call are announced” [26]

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  Council agrees its position [27]

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Separation of powers

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Exekutive

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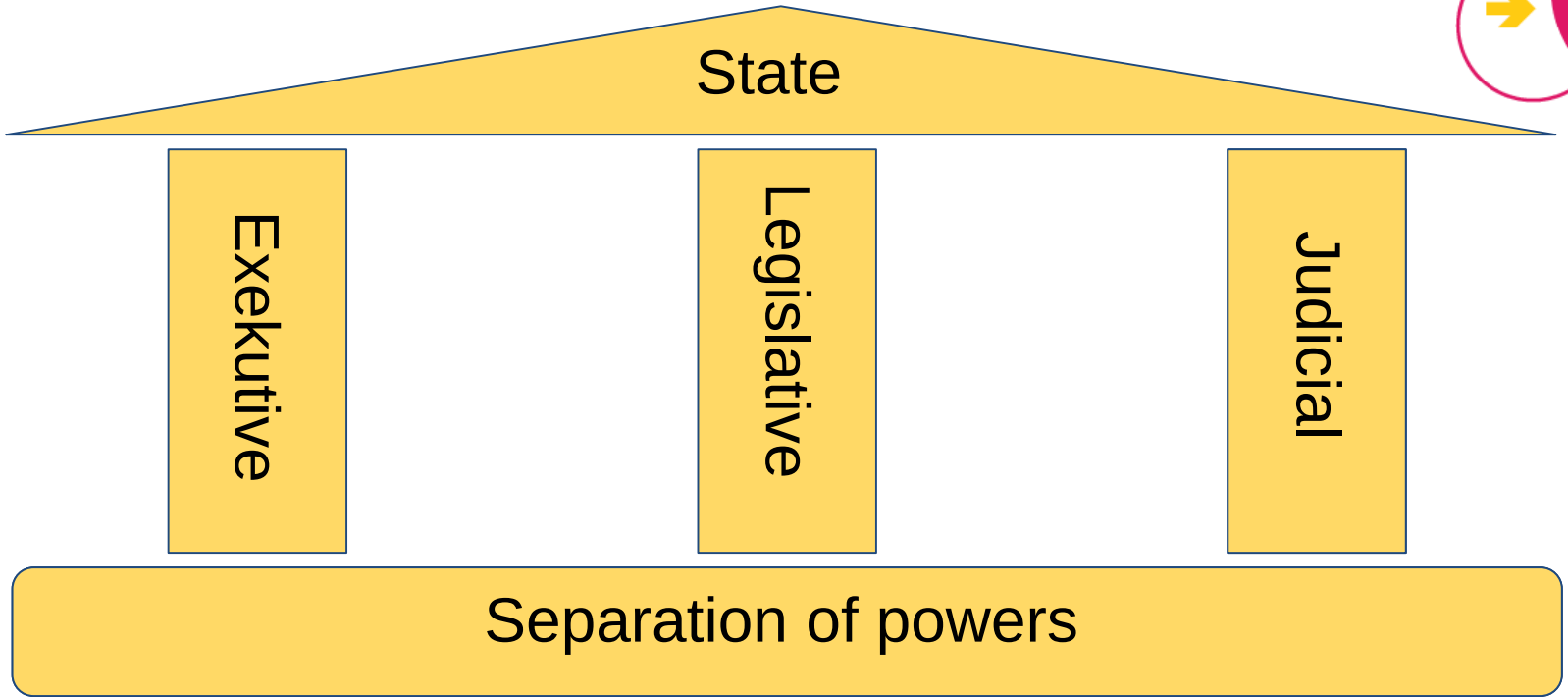

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State

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Freifunk Aachen

State A

Exekutive

Legislative

Judicial

State B

Separation of powers

No. 13: eEvidence

Freifunk Aachen

State A

Exekutive

Legislative

Judicial

State B

Separation of powers

State A

Exekutive

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State B

Separation of powers

State A

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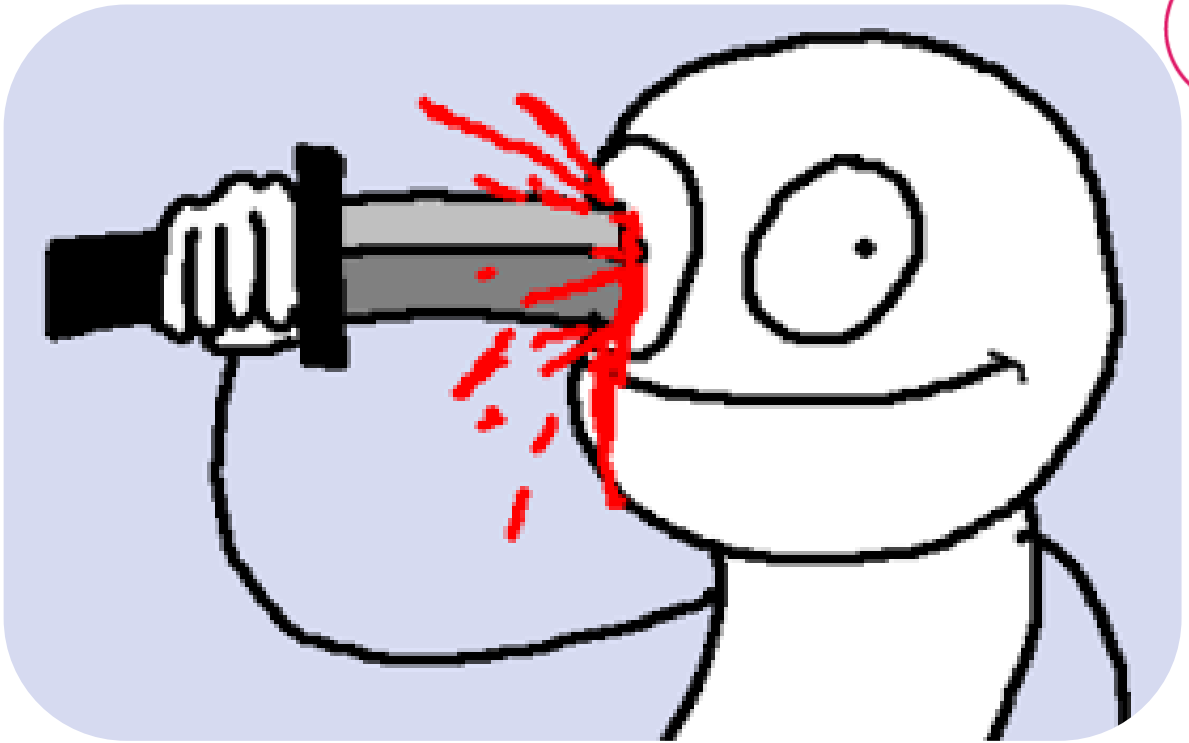

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- Join the discussion to build a desirable design:
  - 28.12.16:00 “Wifi4EU - how to fix it” - Open Infrastructure Orbit [42]

Freifunk Aachen

Questions?

Thanks to:

Freifunk Aachen

Freifunk Münsterland

Thanks to:

Freifunk Aachen

Freifunk Münsterland

@FuzzyLeapfrog

Thanks to:

Freifunk Aachen

Freifunk Münsterland

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Thank you for your time!

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