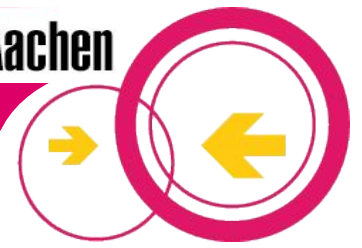


WiFi4EU

broken by technical specifications - a year of misery & new allies

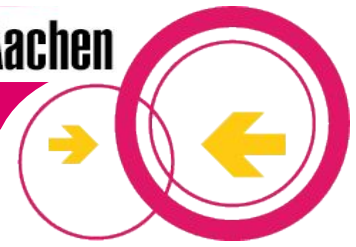
[@LittleDetritus](#) aka [Gregor Bransky](#) - [Freifunk Aachen](#) - gregor.bransky@freifunk-aachen.de





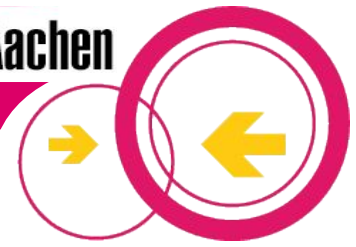
- The idea





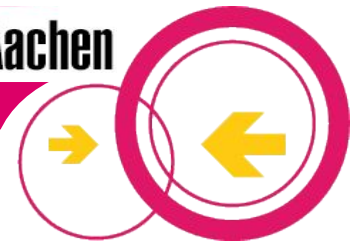
- The idea
- The plan





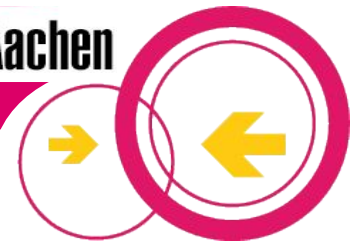
- The idea
- The plan
- Why it matters





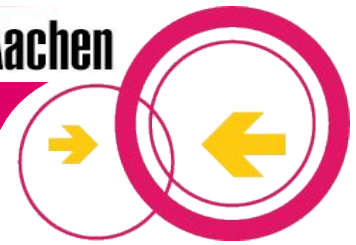
- The idea
- The plan
- Why it matters
- Thirteen ways it went wrong





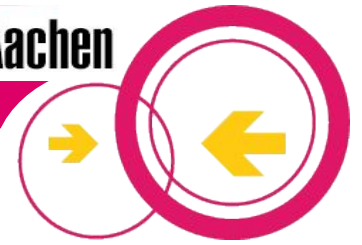
- The idea
- The plan
- Why it matters
- Thirteen ways it went wrong
- What has been done





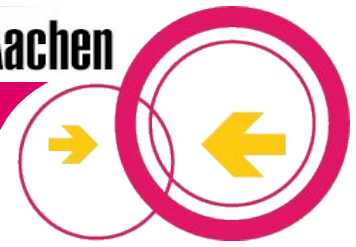
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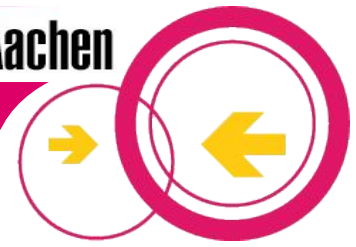
- The idea
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- What can be done
- Sources





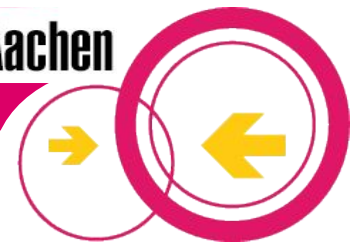
- Europe 2020 Strategy [1]





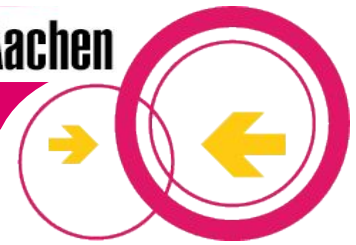
- Europe 2020 Strategy [1]
 - Employment
 - 75% of people aged 20–64 to be in work





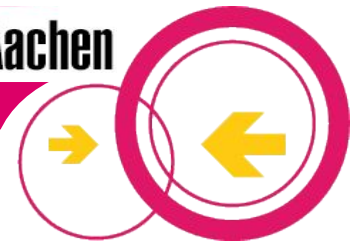
- Europe 2020 Strategy [1]
 - Employment
 - Research and development (R&D)
 - 3% of the EU's GDP to be invested in R&D





- 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

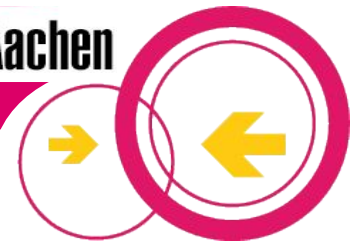




- Europe 2020 Strategy [1]

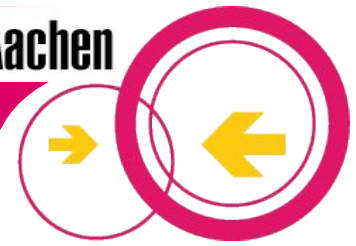
- Employment
- Research and development (R&D)
- Climate change and energy
- Education
 - rates of early school leavers below 10%
 - at least 40% of people aged 30–34 having completed higher education





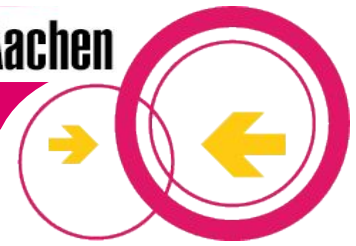
- Europe 2020 Strategy [1]
 - Employment
 - Research and development (R&D)
 - Climate change and energy
 - Education
 - Poverty and social exclusion
 - at least 20 million fewer people in – or at risk of – poverty/social exclusion





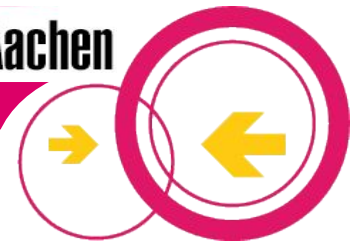
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- Digital Single Market [2]





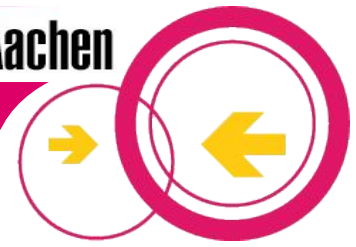
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 - “Four Freedoms” within the EU [3]:





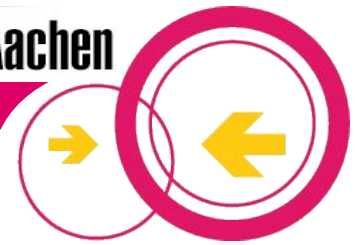
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 - goods





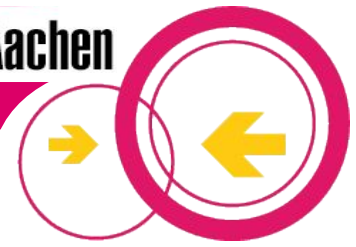
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 - goods
 - capital





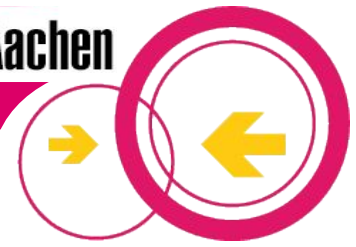
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 - “Four Freedoms” within the EU [3]:
 - goods
 - capital
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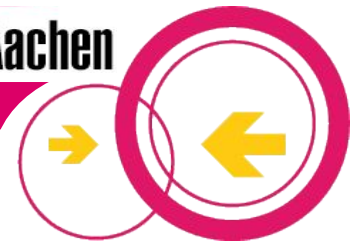
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 - goods
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 - services
 - labour





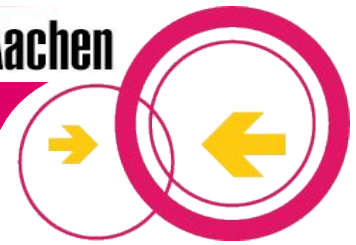
- Digital Single Market [2]
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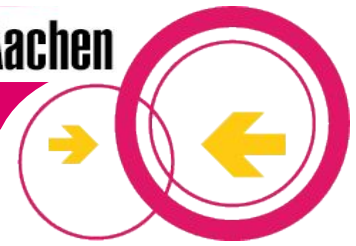
- Digital Single Market [2]
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 - 14 legislative proposals





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

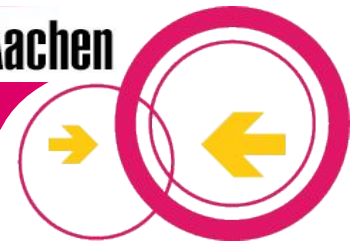




- Digital Single Market [2]

- May 2015 - 2020
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- May 2016: Geoblocking abolished [4]
- July 2016: eIDAS [5]
electronic **ID**entification, **A**uthentication and trust **S**ervices

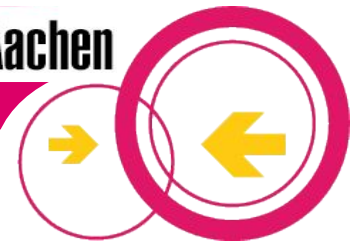




- Digital Single Market [2]

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- 14 legislative proposals
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- 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]

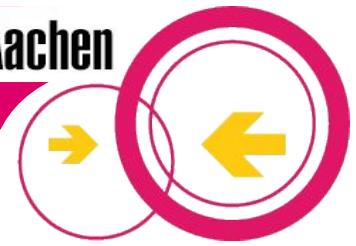




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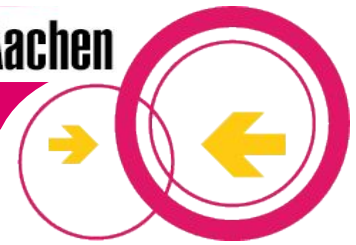




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- March 2018: Wifi4EU [7],[8]
- May 2018: GDPR [9]
 - “The reform is an essential step to strengthening citizens' fundamental rights in the digital age and facilitating business by simplifying rules for companies in the Digital Single Market.” - European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

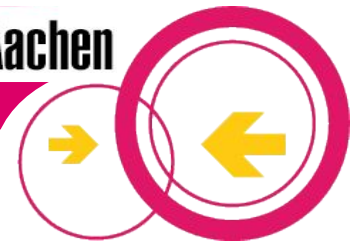




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- May 2018: GDPR [9],[10]
- Sep 2018: EU Copyright Directive (Link Tax/ Uploadfilters) [11]
 - “Imagine if every time you opened your mouth, computers controlled by big companies would check what you were about to say, and have the power to prevent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

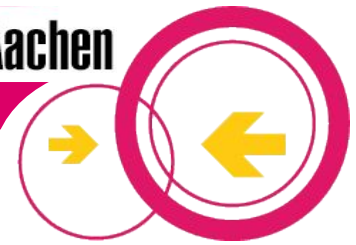




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 - “The new rules will allow law enforcement in EU Member States to better track down leads online and across borders, while providing sufficient safeguards for the rights and freedoms of all concerned.” European Commission [12]

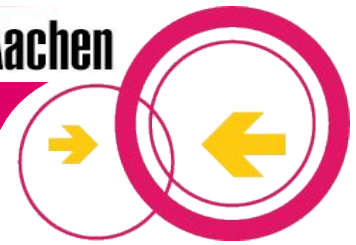




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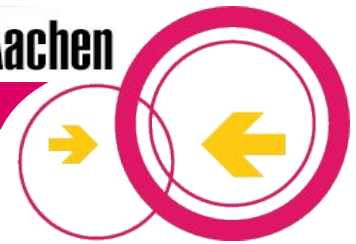




- “Everyone benefiting from connectivity means that it should not matter where you live or how much you earn. So we propose today to equip every European village and every city with free wireless internet access around the main centres of public life by 2020.”

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



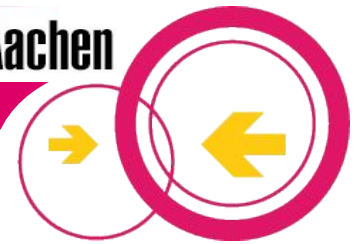


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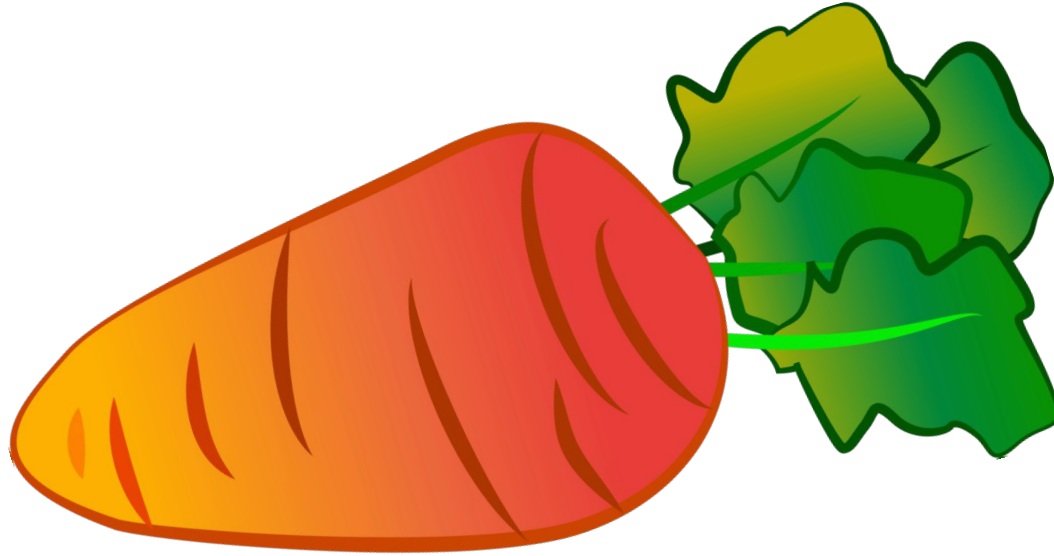
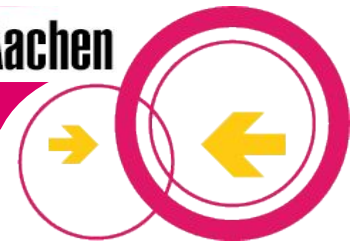


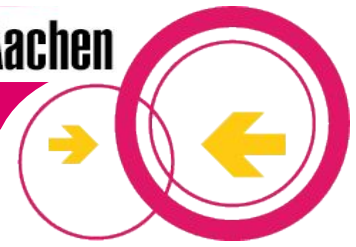
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- “WiFi4EU-funded networks will be free of charge, free of advertising and free of personal data” 20 March 2018 EC PR [8]
- Implement a EU wide standard

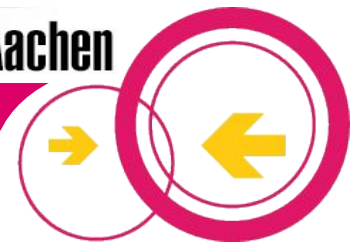






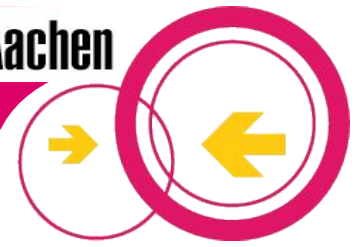
[15]





The plan

Freifunk Aachen

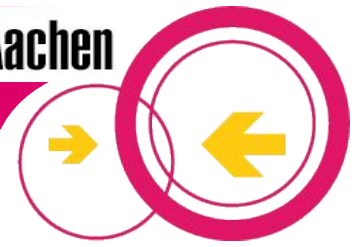


- 120 Million €



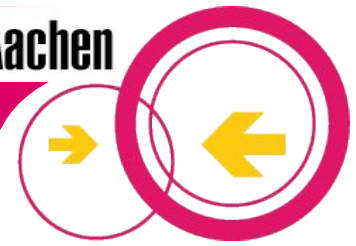
The plan

Freifunk Aachen



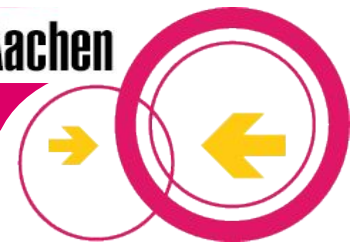
- 120 Million €
- 15.000€ for 8.000 municipalities





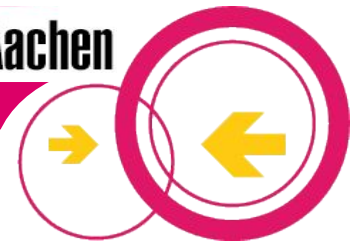
- 120 Million €
- 15.000€ for 8.000 municipalities
- 5 WiFi4EU calls until 2020





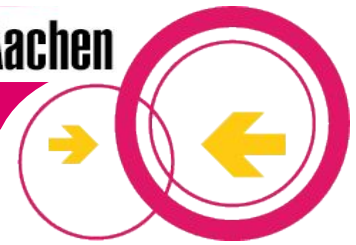
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- 1st call May 2018





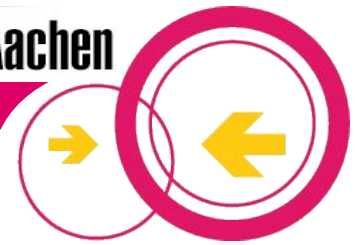
- 120 Million €
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- 5 WiFi4EU calls until 2020
- 1st call May 2018
- Not intended to fully finance the installation





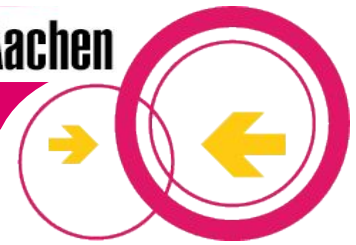
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- Extra money for keeping “WiFi4EU standard”





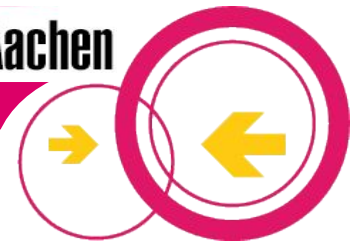
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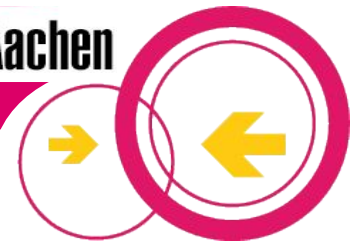
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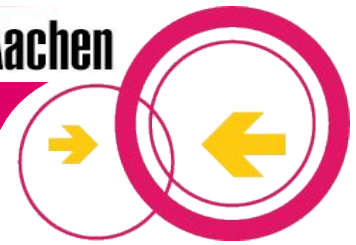
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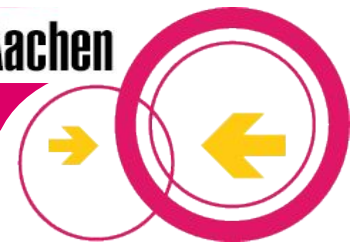
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- **YAY! Network authentication!**





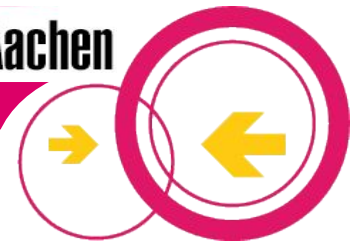
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- **YAY! Network authentication!**
- WiFi-Based IMSI Catcher - O’Hanlon, Borgaonkar (Oxford) BSides London [18]





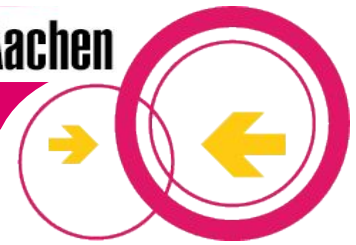
- EU standards have normative effects





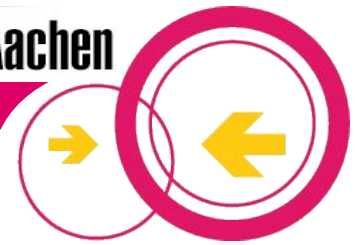
- EU standards have normative effects
- We pay with €





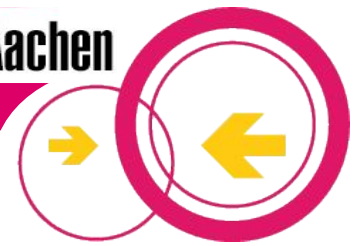
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- GDPR spawned data protection laws in China, Brazil, California [19]





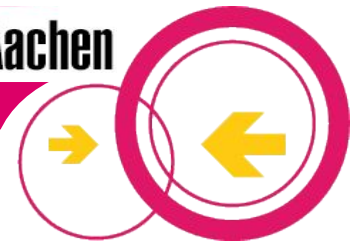
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- This is just the beginning of Wifi4EU

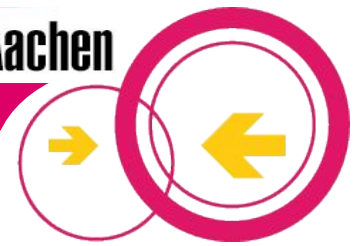




- 25.10.17. “Network Authentication” [17]

“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.“

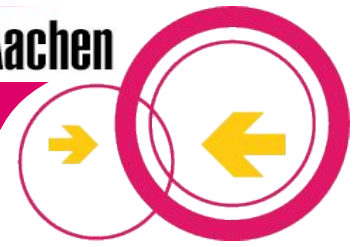




- 25.10.17. “Network Authentication” [17]
- 20.03.18: Press release “free of personal data”[8]

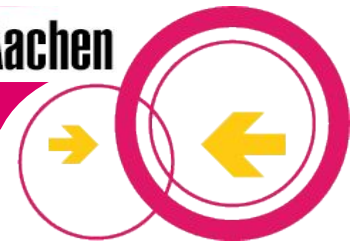
„WiFi4EU-funded networks will be free of charge, free of advertising and free of personal data”





- 25.10.17. “Network Authentication” [17]
- 20.03.18: Press release “free of personal data”[8]
- 15.05.18: Planned First call (1.000 vouchers, 15 Mio €)



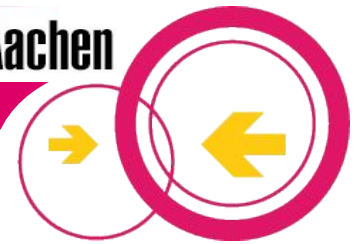


- 25.10.17. “Network Authentication” [17]
- 20.03.18: Press release “free of personal data”[8]
- 25.04.18: Tech. spec Q25: “Central Authentication Infrastructure”

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

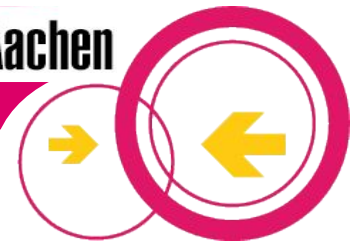
- 15.05.18: Planned First call (1.000 vouchers, 15 Mio €)





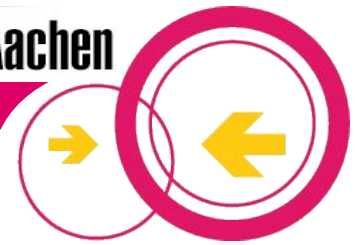
- GDPR Compliance I
 - There is no need for any form of authentication to use WLAN #freifunk
 - Authentication for eGovernment on need to know basis





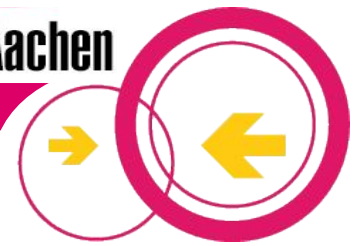
- GDPR Compliance I
- fiscal responsibility [21]
 - Those servers & the personnel to run them cost a TON of money.





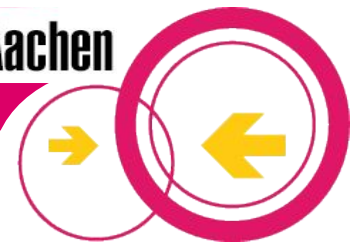
- GDPR Compliance I
- fiscal responsibility [21]
- fair markets/hidden subsidies I
 - There are very few competitors who can handle the massive serverload for Wifi4EU





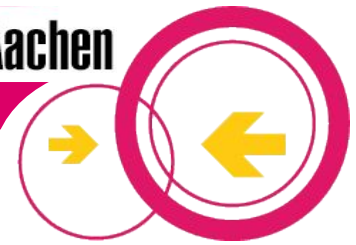
- GDPR Compliance I
- fiscal responsibility [21]
- fair markets/hidden subsidies I
- national/union security
 - The centralized login data of all citizens of a EU country is a data trove that should better not exist





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

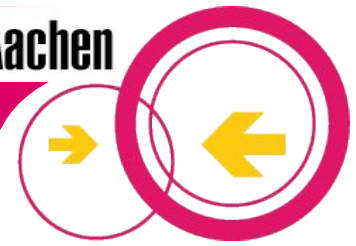




- GDPR Compliance I
- fiscal responsibility [21]
- fair markets/hidden subsidies I
- national/union security
- single point of failure

5



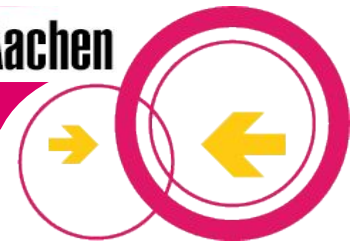


- 25.10.17. “Network Authentication” [17]
- 20.03.18: Press release “free of personal data”[8]
- 25.04.18: Tech. spec Q25: “Central Authentication Infrastructure”
- 30.04.18: Tech. spec Q26: “Captive portal with snippet”

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

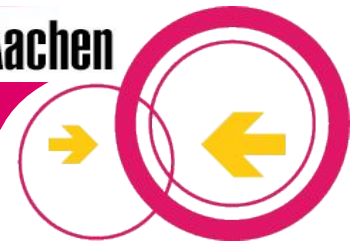
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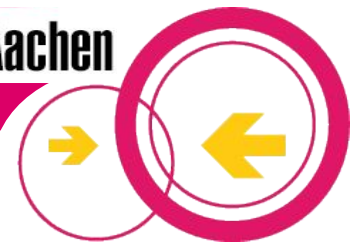
- GDPR Compliance I
- fiscal responsibility [21]
- fair markets/hidden subsidies I
- national/union security
- single point of failure
- inhibit innovation (IoT)
 - WLAN is a digital infrastructure, captive portals limit the devices that allow for its use. #IoT





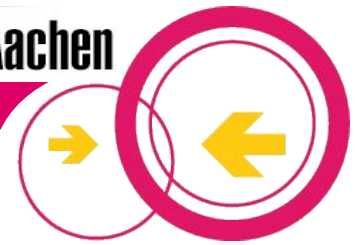
- GDPR Compliance I
- fiscal responsibility [21]
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- single point of failure
- inhibit innovation (IoT)
- inclusion
 - captive portals block use of service for disabled and technological unskilled humans, e.g. the elderly





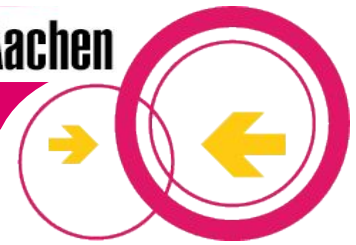
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- inclusion
 - captive portals block use of service for disabled and technological unskilled humans, e.g. the elderly
 - legacy devices





- GDPR Compliance I
- 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]

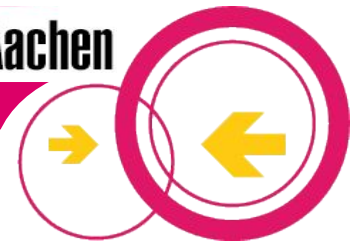




- GDPR Compliance I
- fiscal responsibility [21]
- fair markets/hidden subsidies I
- national/union security
- single point of failure
- inhibit innovation (IoT)
- inclusion
- IT Security I

8

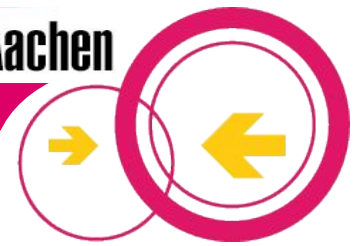




- GDPR Compliance I
- fiscal responsibility [21]
- fair markets/hidden subsidies I
- national/union security
- single point of failure
- inhibit innovation (IoT) - not fixed by WPA3
- inclusion
- IT Security I

8



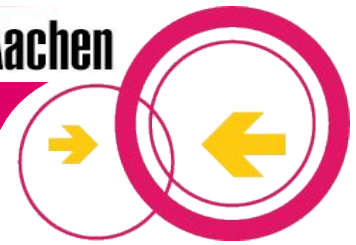


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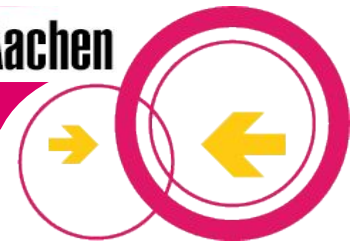
- “Embedded snippet from EC for monitoring actual functioning of the WiFi4EU network (no personal data collected)”
- 15.05.18: First call First call (1.000 vouchers, 15 Mio €)





- GDPR Compliance I
- fiscal responsibility
- fair markets/hidden subsidies I
- 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

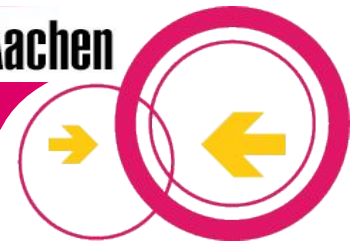




- GDPR Compliance I
- fiscal responsibility
- fair markets/hidden subsidies I
- national/union security
- inhibit innovation (IoT)
- inclusion
- IT Security I,II

9



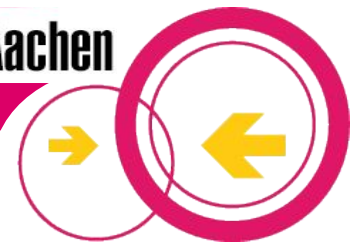


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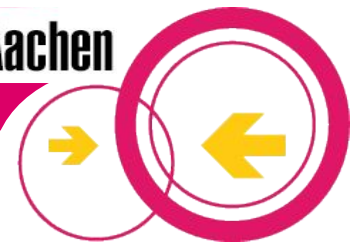
- “Embedded snippet from EC for monitoring actual functioning of the WiFi4EU network (no personal data collected)”
 - WiFi4EU branding required (WiFi4EU SSID);
- 15.05.18: First call First call (1.000 vouchers, 15 Mio €)





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

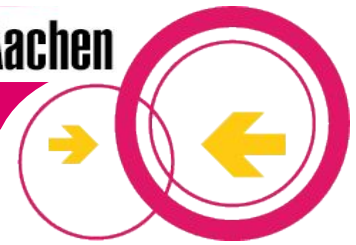




- GDPR Compliance I
- fiscal responsibility
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- national/union security
- inhibit innovation
- inclusion
- IT Security I,II,III

10



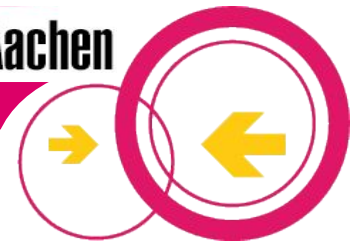


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- 30.04.18: Tech. spec Q26: “Captive portal with snippet”
- 08.05.18: Tech. spec Q27: “Hotspot 2.0”

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

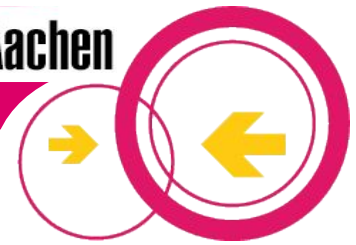
- 15.05.18: First call First call (1.000 vouchers, 15 Mio €)





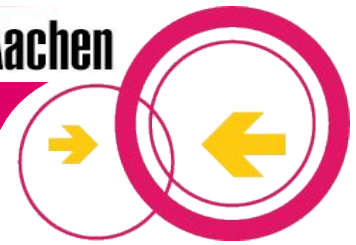
- GDPR Compliance I,II
 - hotspot 2.0 accesses SIM ID





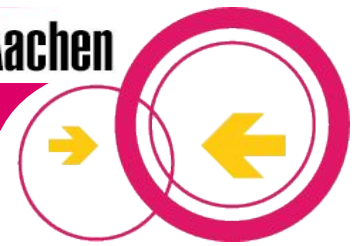
- GDPR Compliance I,II
- fair markets/hidden subsidies I,II
 - hotspot 2.0 allows for so called “connection roaming”





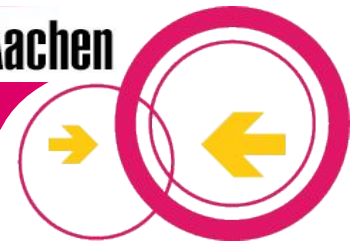
- GDPR Compliance I,II
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 - hotspot 2.0 allows for so called “connection roaming”
 - allows to steer traffic between connection types: WLAN, mobile, bluetooth, NFC, LTE





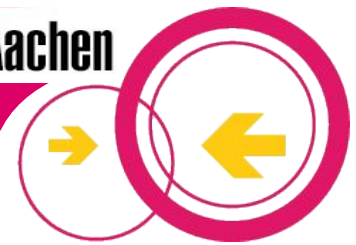
- GDPR Compliance I,II
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 - hotspot 2.0 allows for so called “connection roaming”
 - allows to steer traffic between connection types: WLAN, mobile, bluetooth, NFC, LTE
 - hotspot 2.0 is proprietary so it is unclear how this is done





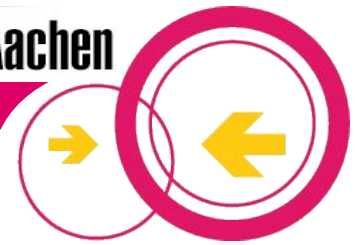
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 - allows to steer traffic between connection types: WLAN, mobile, bluetooth, NFC, LTE
 - hotspot 2.0 is proprietary so it is unclear how this is done
 - conjecture: mobile traffic = expensive





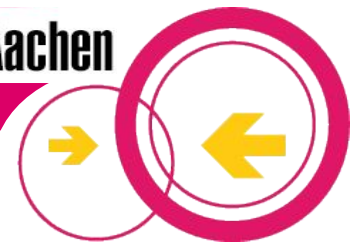
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 - conjecture: mobile traffic = expensive
 - conjecture: hotspot 2.0 can be used to pass traffic from mobile to WLAN





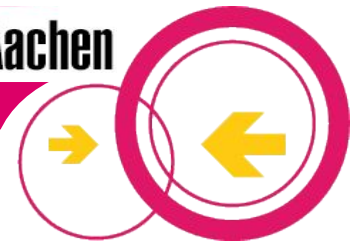
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 - hotspot 2.0 is proprietary so it is unclear how this is done
 - conjecture: mobile traffic = expensive
 - conjecture: hotspot 2.0 can be used to pass traffic from mobile to WLAN
 - subsidization of mobile service providers





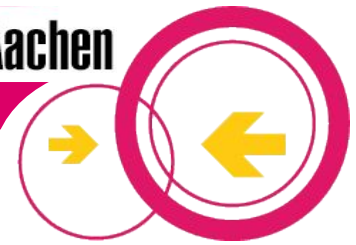
- GDPR Compliance I,II
- fair markets/hidden subsidies I,II
- inclusion - social
 - hotspot 2.0 allows to circumvent captive portal





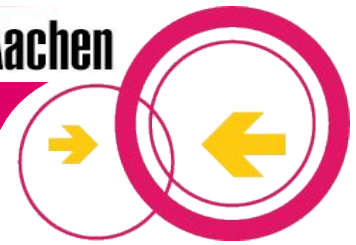
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 - State of the art Smartphones have hotspot 2.0





- GDPR Compliance I,II
- fair markets/hidden subsidies I,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

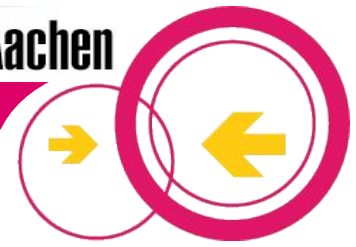




- GDPR Compliance I,II
- fiscal responsibility
- fair markets/hidden subsidies I, II
- national/union security
- inhibit innovation
- inclusion - ability, social
- IT Security I,II,III

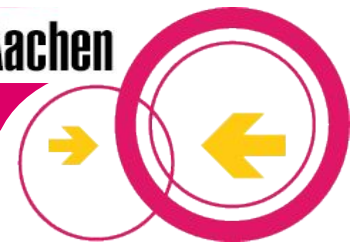
12





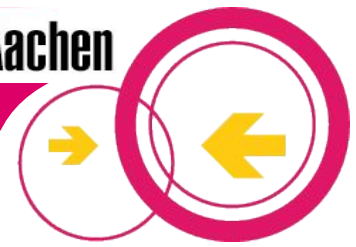
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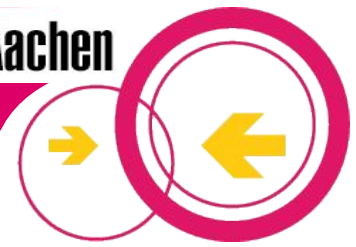
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Homepage crashes





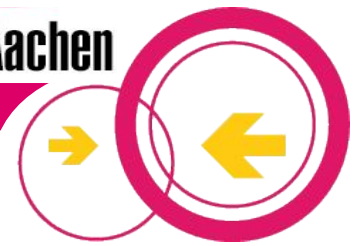
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- 14.06.18: Call canceled [23][24]





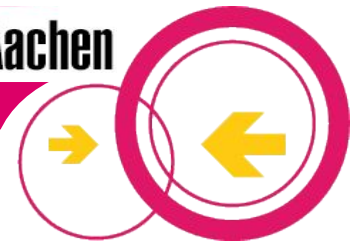
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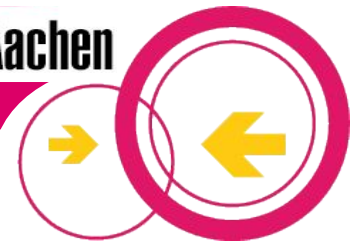
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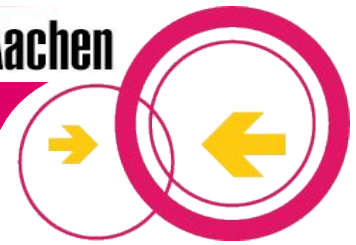
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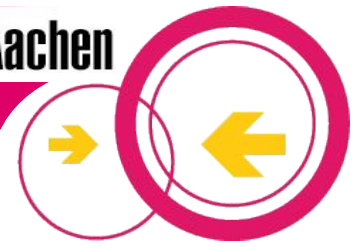
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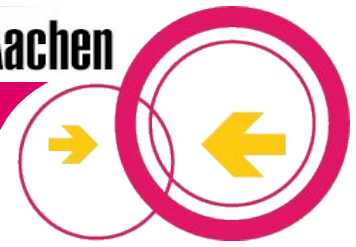
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 - 07.12.18: Regulation on cross border access to e-evidence:
Council agrees on its position [29]





Separation of powers

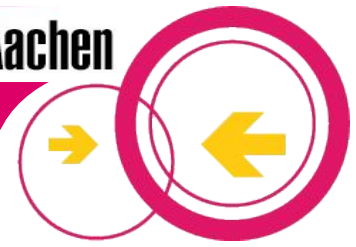




Exekutive

Separation of powers



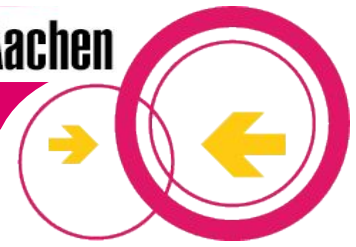


Exekutive

Legislative

Separation of powers





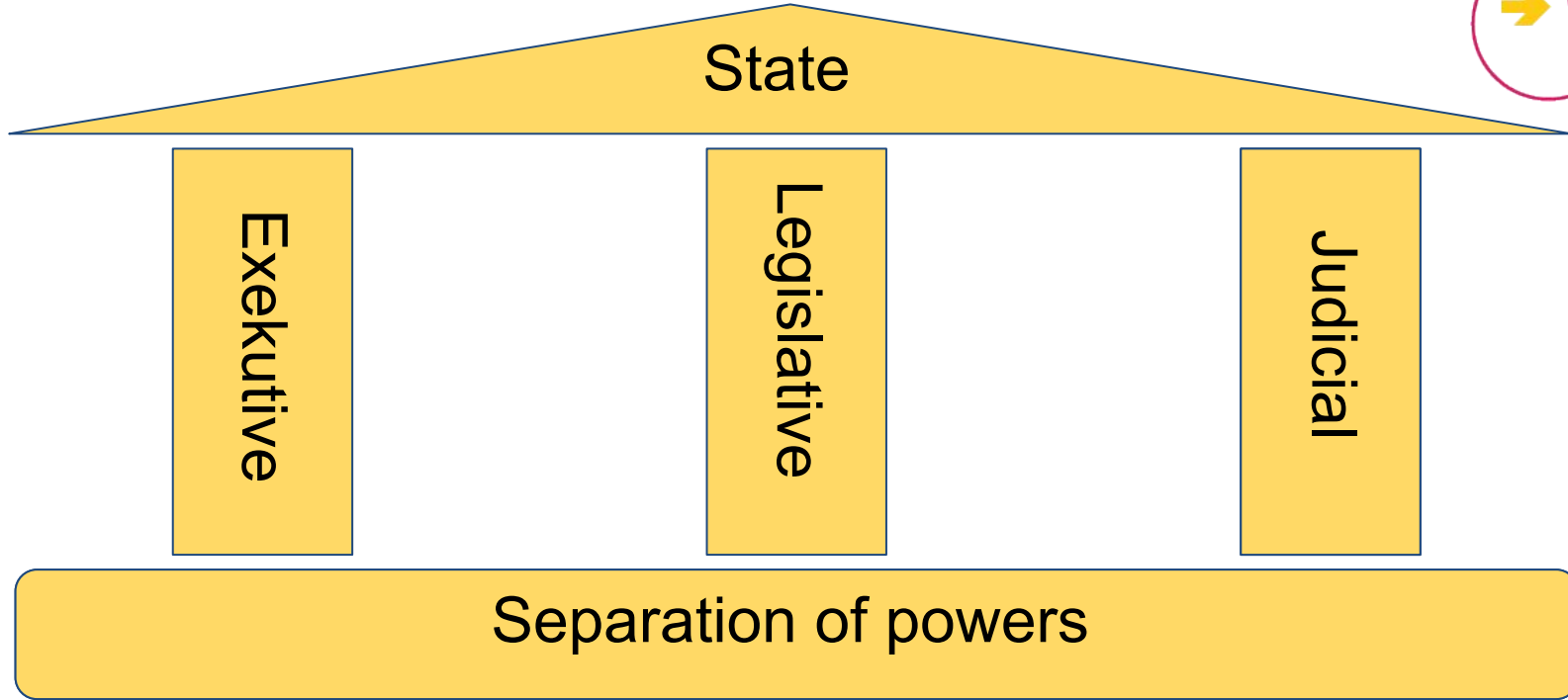
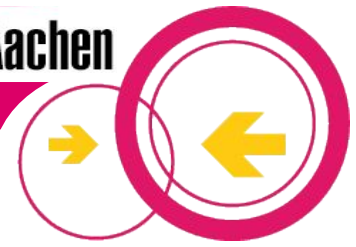
Exekutive

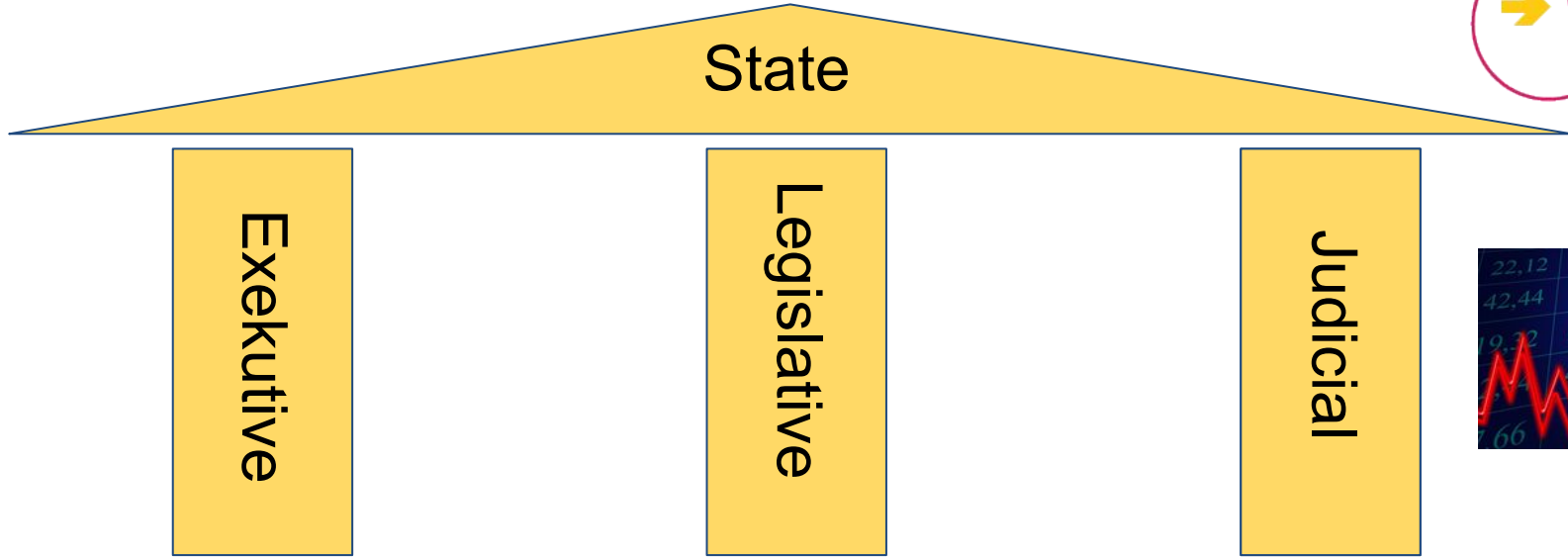
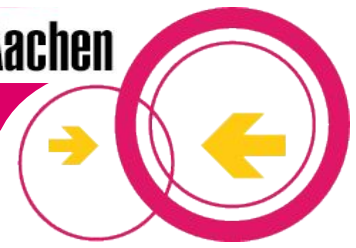
Legislative

Judicial

Separation of powers

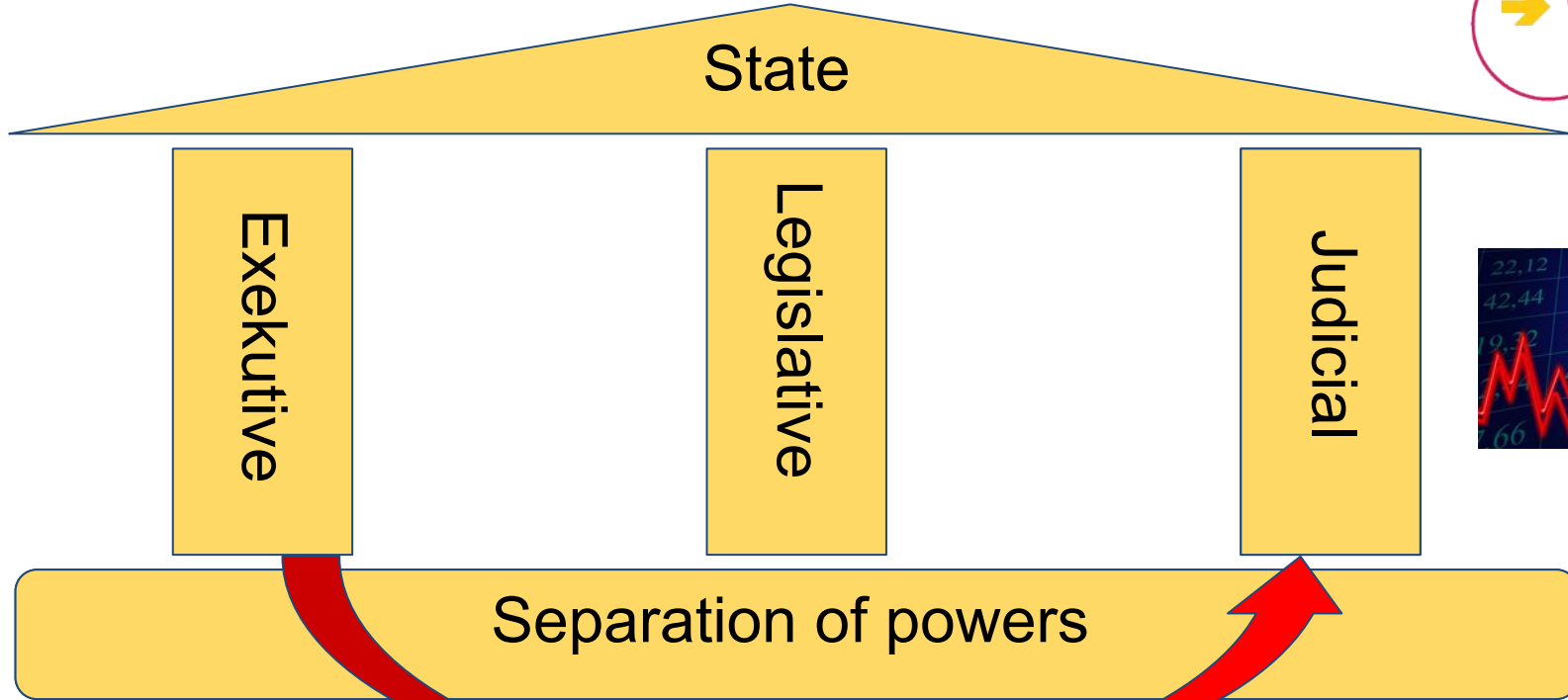
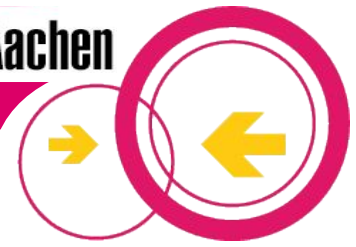


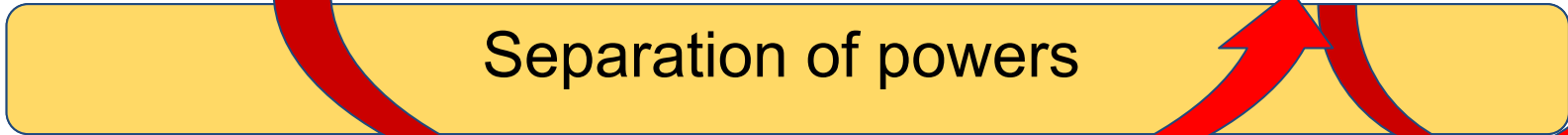
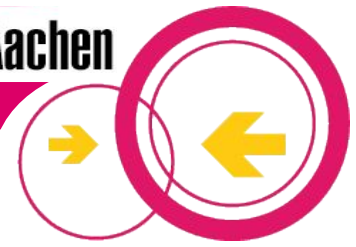


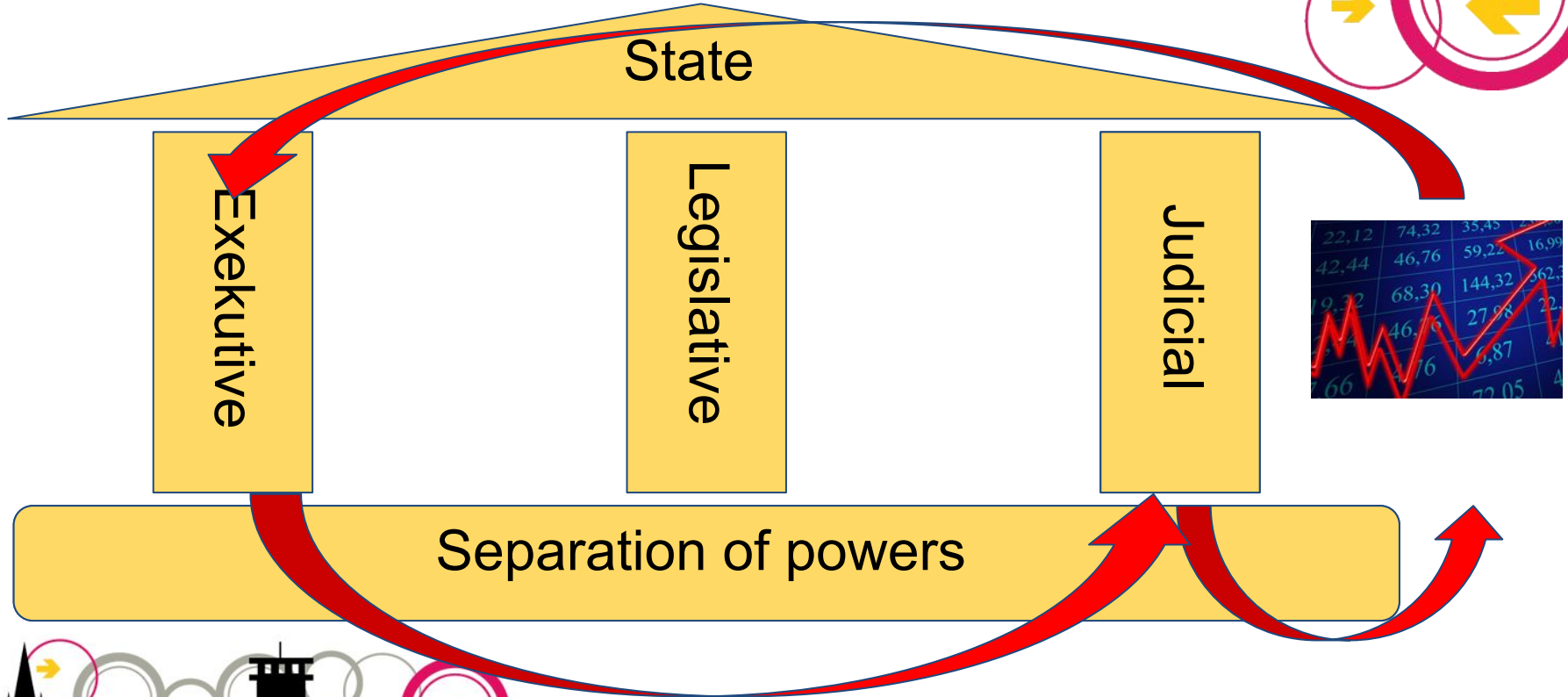
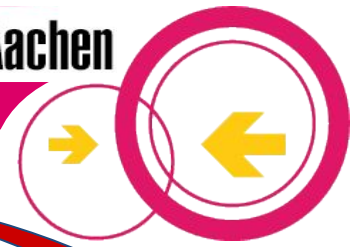


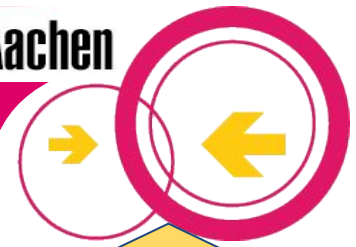
Separation of powers











State A

Exekutive

Legislative

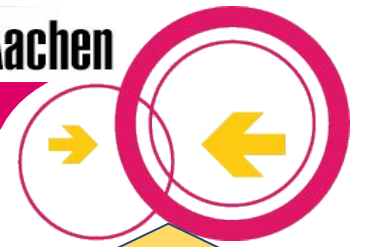
Judicial

State B



Separation of powers





State A

Exekutive

Legislative

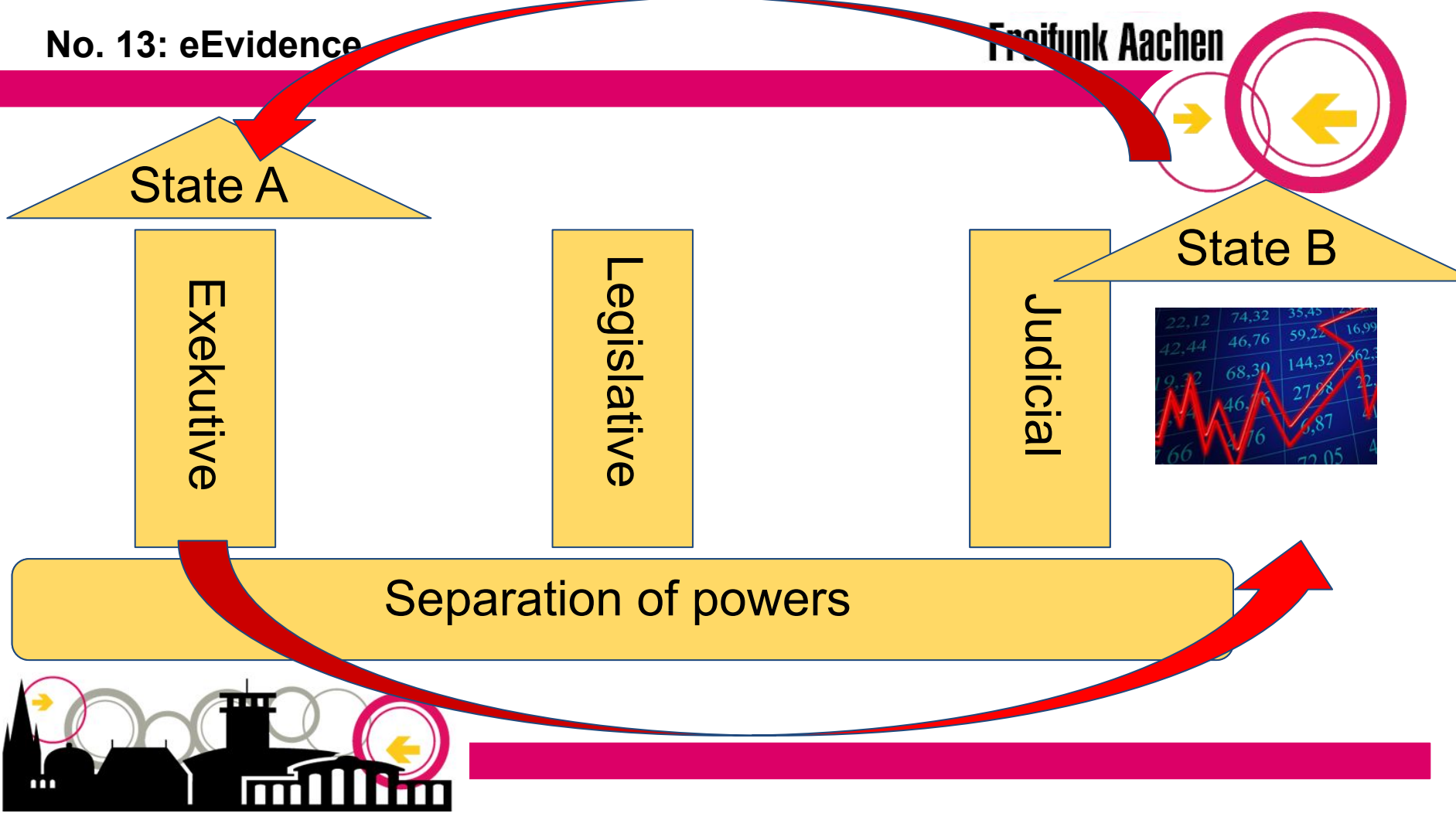
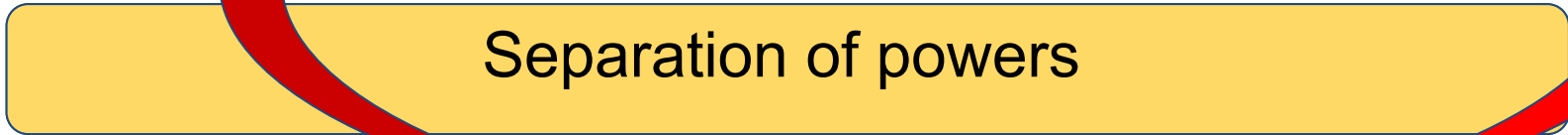
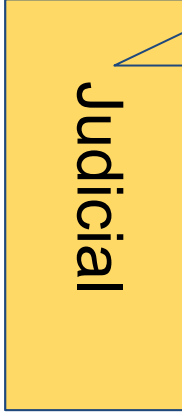
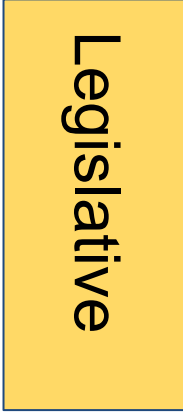
Judicial

State B



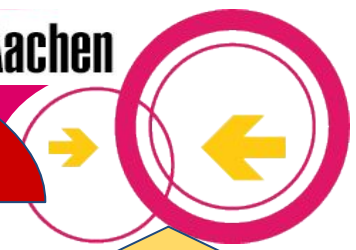
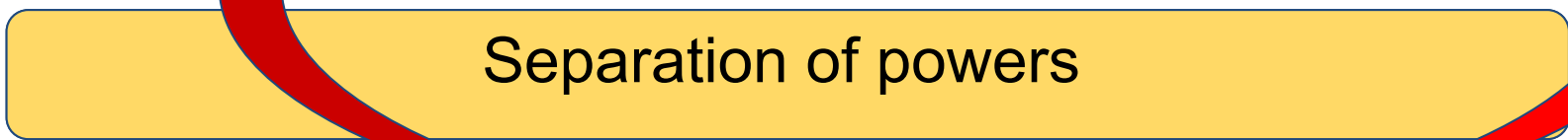
Separation of powers

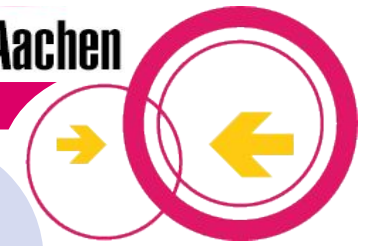
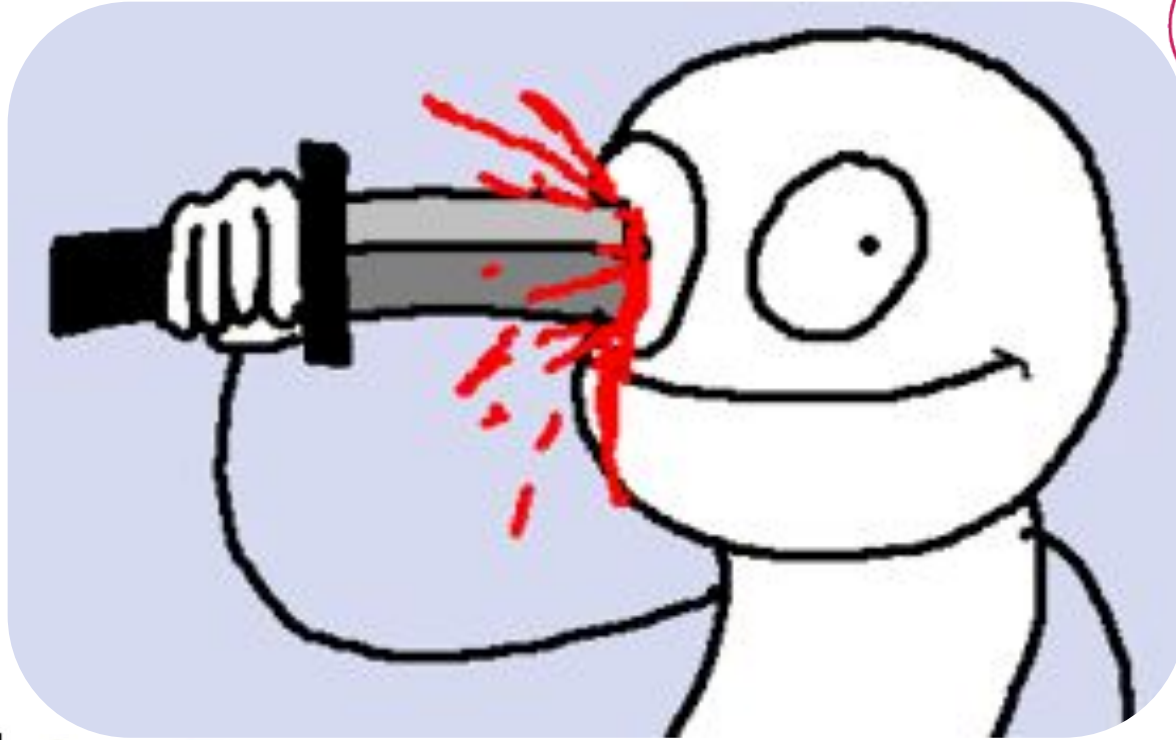


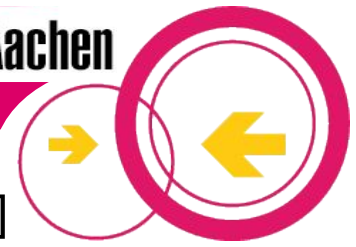




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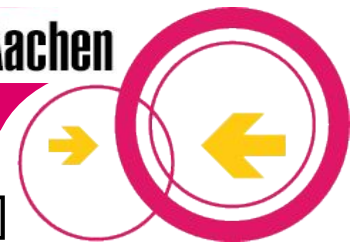






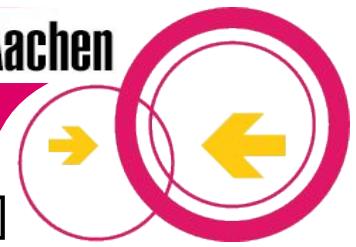
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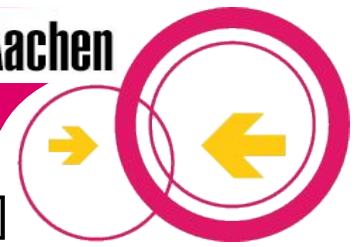
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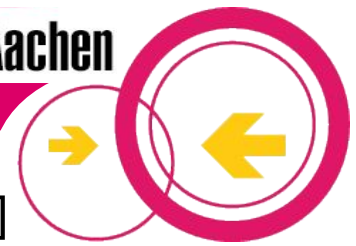
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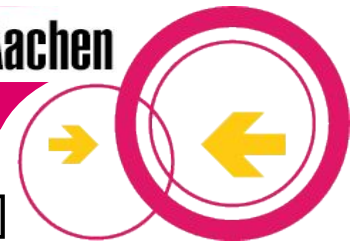
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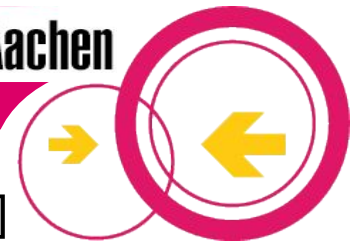
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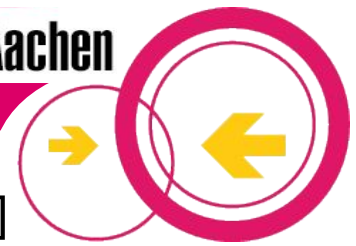
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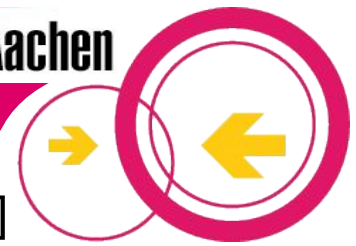
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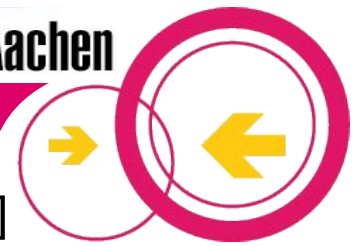
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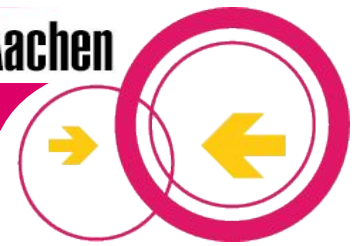
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Committee for digital Agenda Bundestag [37]
 - 14.12.18: Jimmy Schulz: "Open Letter to Giovanni Buttarelli EDPS [38]

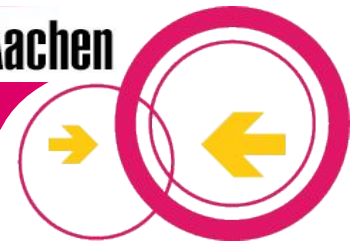




- 24.02.2019: Answer Buttarelli [39]

“... From a technical perspective, an open and secure WiFi network does not in principle require any form of user registration and authentication, in line with the principle of data minimisation. ...”





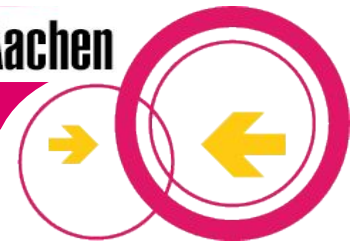
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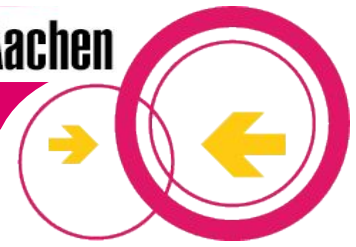
“... From a technical perspective, an open and secure WiFi network does not in principle require any form of user registration and authentication, in line with the principle of data minimisation. ...”

“ ... The EDPS will follow up with the Commission to ask clarification about the planned second phase of the WiFi4EU project, in particular regarding the envisaged authentication and monitoring system.

We will keep you informed.”

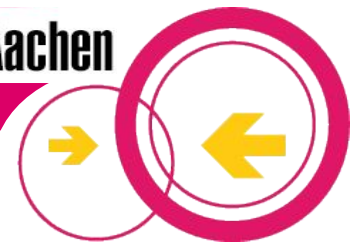






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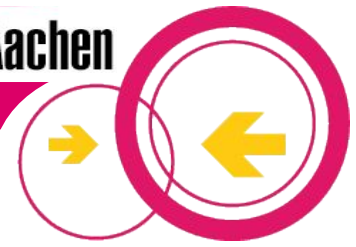


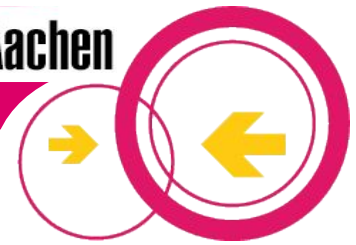


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“We are continuing to monitor the development of the WiFi4EU project.” - by mail

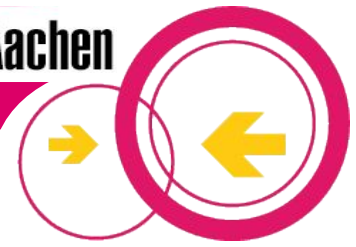






- Write [your](#) MEP [40]
- Is your town a “winner”? [41]
- Write the European Commission /Ask the EU [42]
- Find/Build an example for network authentication



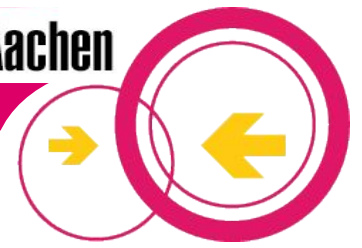


Questions?



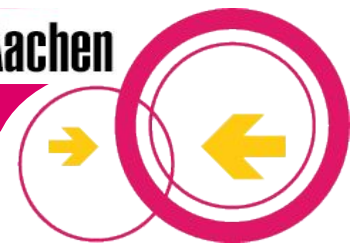
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Freifunk Aachen



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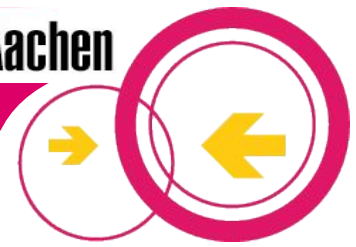


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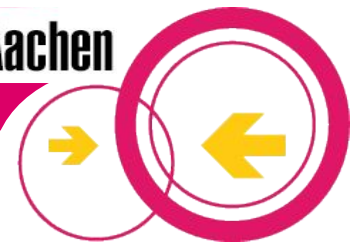
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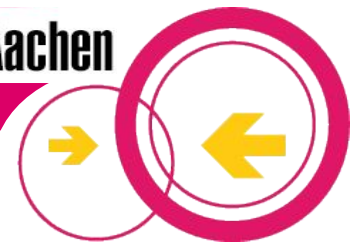
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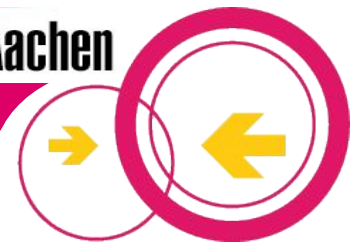
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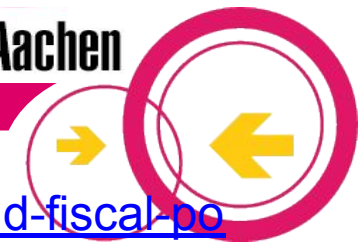
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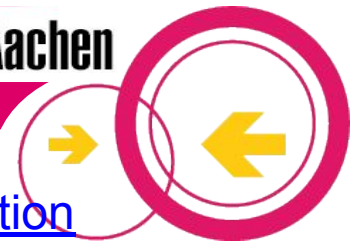
Thank you for your time!





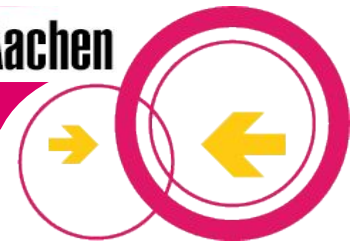
- [1] https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/european-semester/framework/europe-2020-strategy_en
- [2] https://ec.europa.eu/commission/priorities/digital-single-market_en
- [3] https://en.wikipedia.org/wiki/European_Single_Market
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- [9] https://en.wikipedia.org/wiki/General_Data_Protection_Regulation
- [10] http://europa.eu/rapid/press-release_MEMO-18-387_en.htm
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- [12] http://europa.eu/rapid/press-release_IP-18-3343_en.htm
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- [14] <https://www.wisc-online.com/assetrepository/viewasset?id=181>
- currently broken
- [15] https://en.wikipedia.org/wiki/Trench_raiding_club#/media/File:Crudely_shaped_trench_club_from_World_War_One_-_YORCM1960_145_8.JPG





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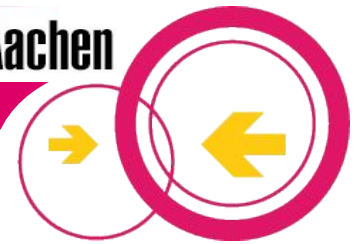
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[21] <https://wiki.geant.org/display/H2eduroam/How+to+deploy+eduroam+at+national+level>

[22] https://de.wikipedia.org/wiki/Captive_Portal#Umleitung_via_DNS

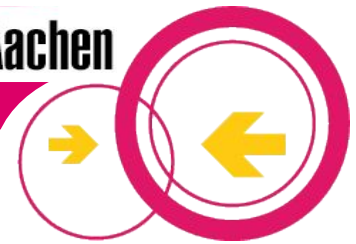
[23] <https://www.neweurope.eu/article/wifi4eu-call-riddled-problems/>

[24] http://europa.eu/rapid/press-release_STATEMENT-18-4158_en.htm

[25] <https://ec.europa.eu/digital-single-market/en/news/wifi4eu-single-authentication-and-monitoring-service>

[26] <https://ec.europa.eu/inea/en/connecting-europe-facility/cef-telecom/wifi4eu>





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<https://ec.europa.eu/digital-single-market/en/news/winners-wifi4eu-call-announced>

[28]

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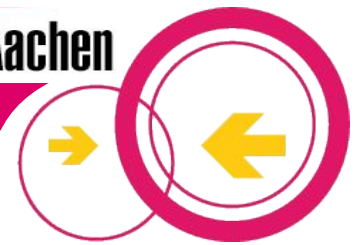
[29]

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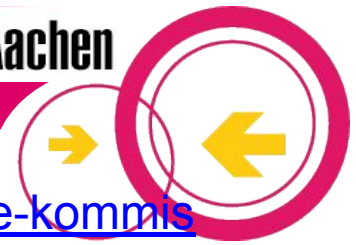
[35] <http://dipbt.bundestag.de/doc/btd/19/059/1905984.pdf>

[36] <https://twitter.com/LittleDetritus/status/1072506218537762816>

[37] min 33:49 <https://dbtg.tv/cvid/7298833>

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[42] <https://www.asktheeu.org/en/request/wifi4eu>

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