



Mykyta Petik

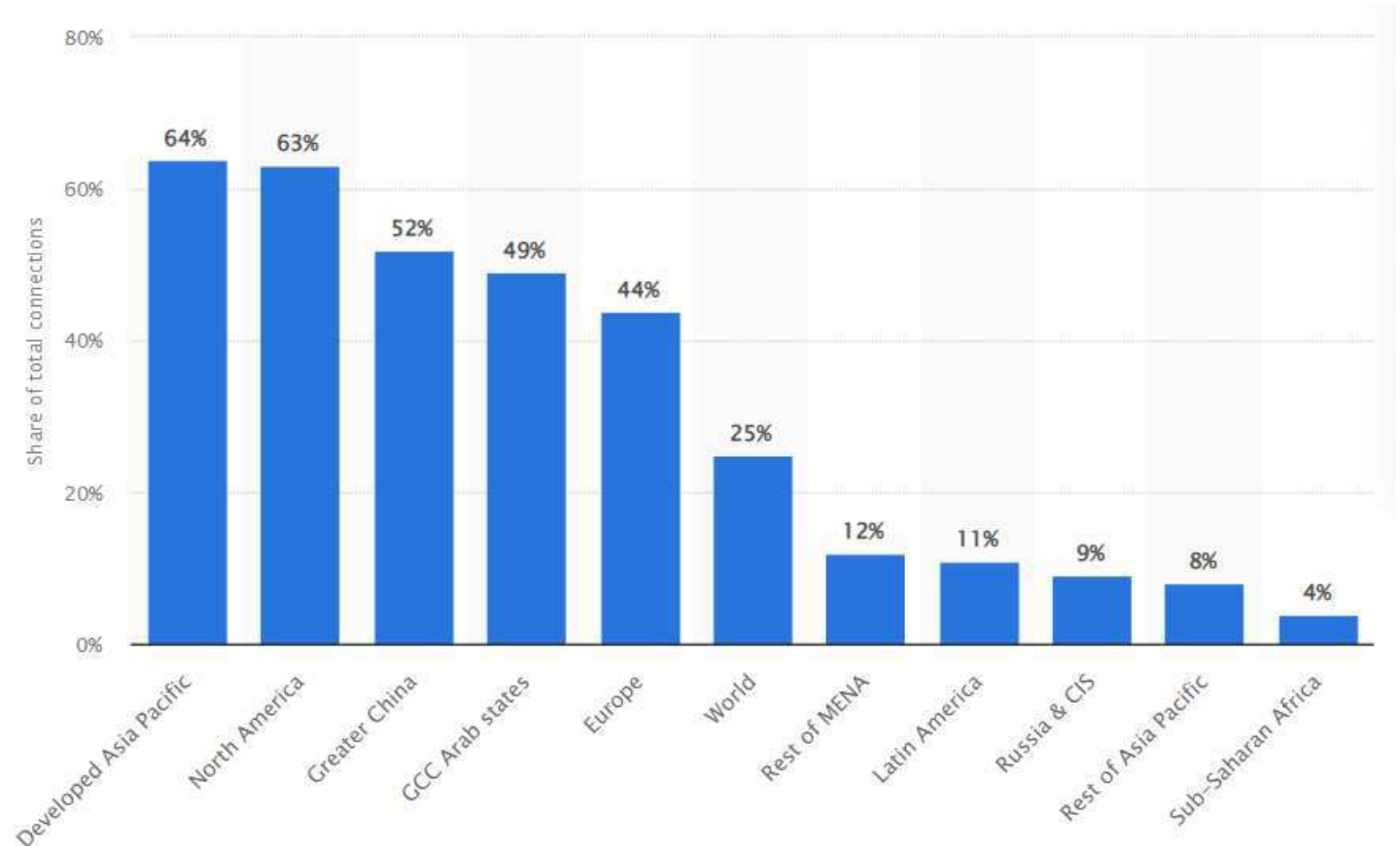
LEGAL ASPECTS OF PRIVACY AND SECURITY IN 5G NETWORKS

KU LEUVEN



5G is a major thing

Forecast 5G share of total mobile connections in 2025, by region



5G use cases

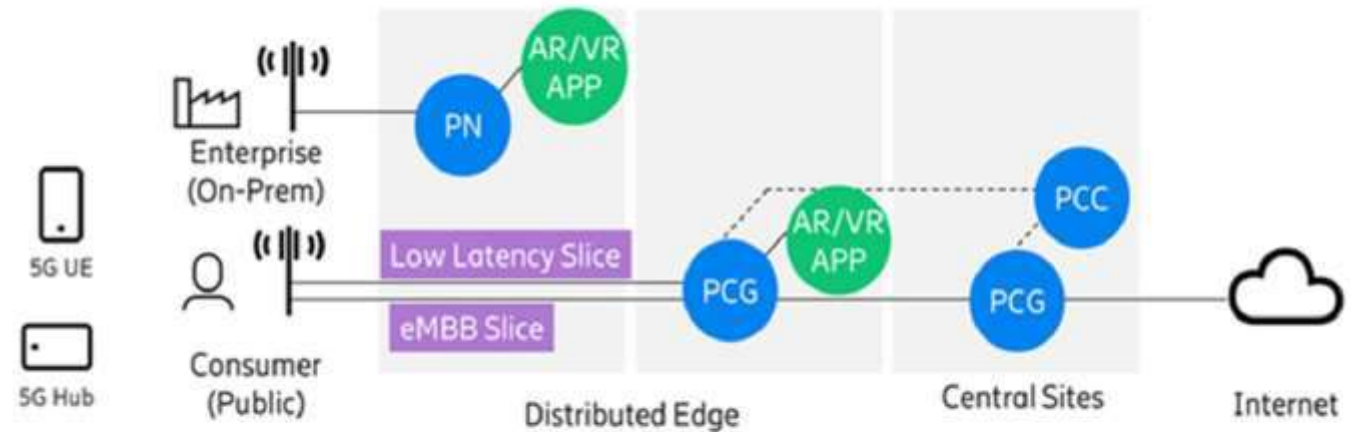


Major innovations in 5G networks (1)

Virtualization – substituting of network hardware with virtual counterparts

Edge computing – to process the data in close proximity to ('at the edge of') the network through edge computing facilities and data processing centers

Geolocation – 5G envisages larger number of connected devices and higher network density. These factors contribute to the localisation of the user with much higher precision than in previous generations of mobile networks



Ericsson 5G network in a distributed architecture

Major innovations in 5G networks (2)

- Collection of vast amounts of personal data at high speed
- Introduces new actors – SDN providers, app developers, CSPs – and their roles
- Software-defined networks
- Precise user geolocation
- Omnipresence

Controllers and processors in 5G networks (1)

Data Controller is an entity which, alone or jointly with others, determines the purposes and means of the processing of personal data **regardless** of how they are described or describe themselves

Examples:

Mobile Operator

App Developer

Internet Provider



Controllers and processors in 5G networks (2)

Data Processor processes personal data on behalf of data controller based on **factual** analysis

Examples:

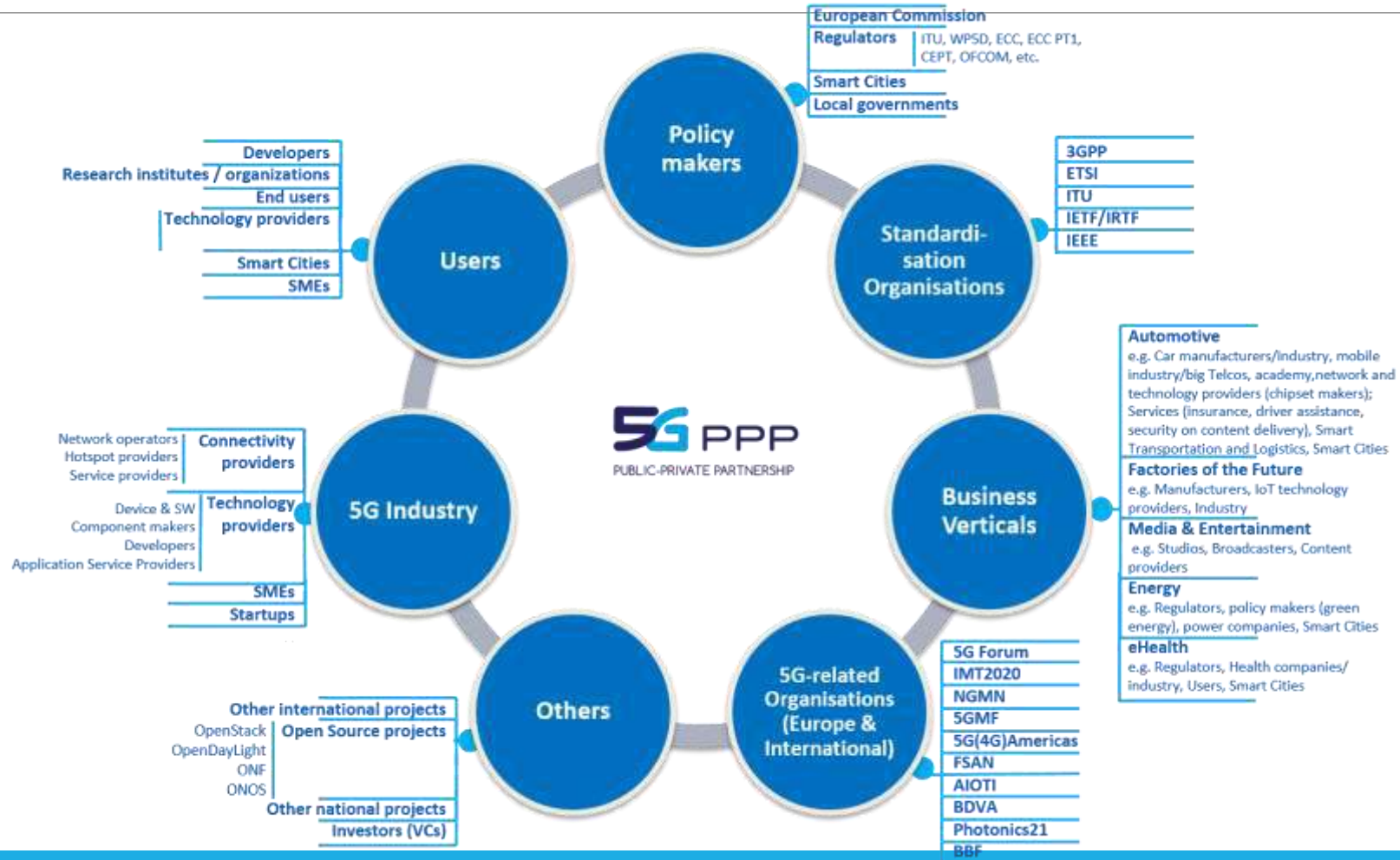
AI-service provider

SDN provider

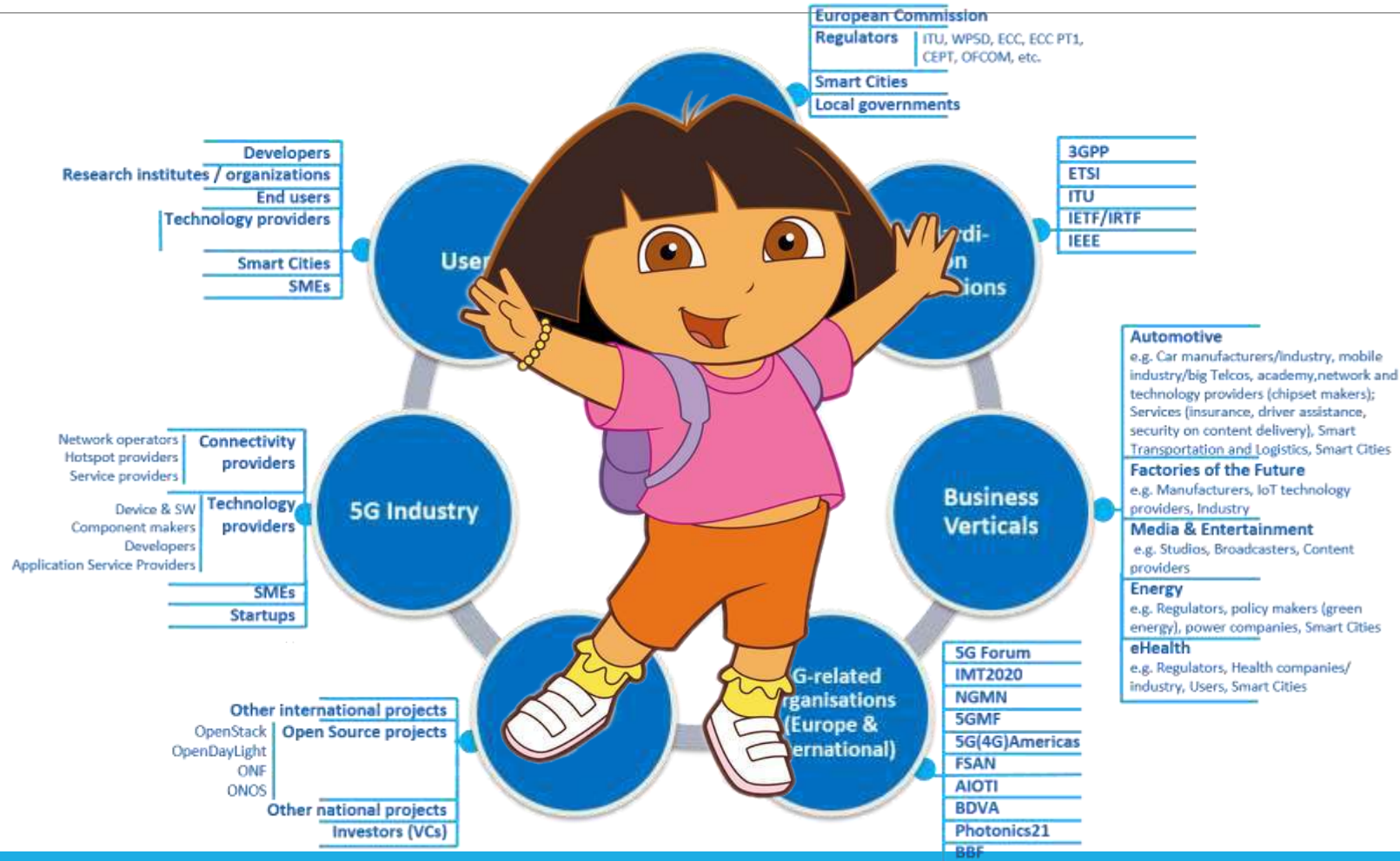
Cloud Service Provider



Stakeholders in 5G networks (1)

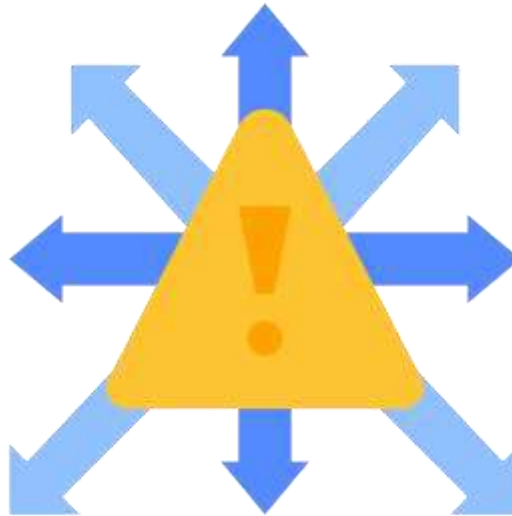


Stakeholders in 5G networks (1)



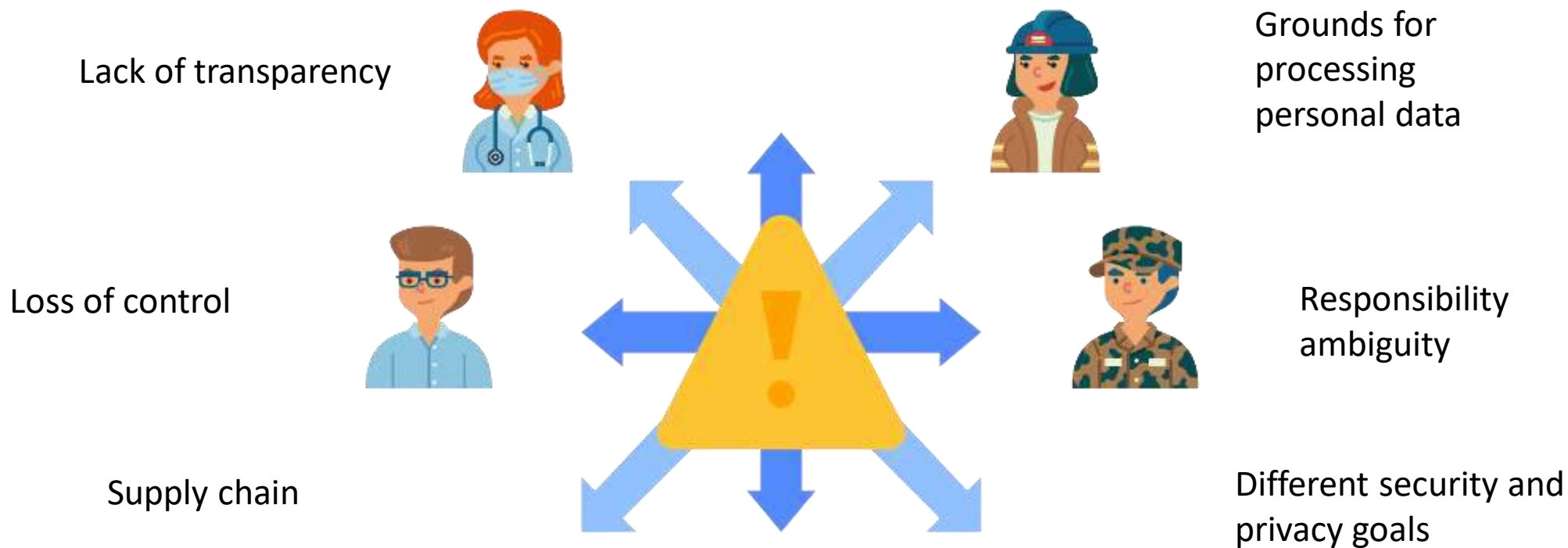
Stakeholders in 5G networks (2)

We cannot identify controllers/processors among actors... so what?



Stakeholders in 5G networks (2)

We cannot identify controllers/processors among actors... so what?



Icons by ultimatearm via Flaticon.com

'Principles of data protection' in 5G networks

| | New actors | Network flexibility and high-speed rates | Cloud edge computing and | 5G-enabled sensors and devices | Volume of processed personal data | Precise geolocation |
|--|------------|--|--------------------------|--------------------------------|-----------------------------------|---------------------|
| Lawfulness, fairness and transparency | X | X | X | X | X | X |
| Purpose limitation | X | | | X | X | X |
| Data minimisation | | | ? | X | X | X |
| Accuracy | X | | | X | X | |
| Storage limitation | X | | ? | | X | |
| Integrity and confidentiality (security) | X | ? | ? | X | X | |
| Accountability | X | | ? | X | | |

Consent dilution

Consent to processing personal data must be freely given, specific, informed, and unambiguous

Data Controller must demonstrate that the user/person gave a consent

MUST be a real choice



How 5G technological novelties affect GDPR rights and obligations (1)

| | High speed data rates | High traffic density | Massive number of connected devices (IoT) | IP-based |
|---|-----------------------|----------------------|---|----------|
| Right to be informed | X | | X | |
| Right of access | | | X | |
| Right to rectification | X | | X | |
| Right to be forgotten | X | | X | |
| Right to restriction of processing | X | | X | |
| Right to be notified about rectification or erasure | X | | X | |
| Right to data portability | | | X | |
| Right to object | | | X | |

Rizou, S., Alexandropoulou-Egyptiadou, E., & Psannis, K. E. (2020). GDPR Interference With Next Generation 5G and IoT Networks. IEEE Access, 8, 108052–108061. <https://doi.org/10.1109/access.2020.3000662>.

How 5G technological novelties affect GDPR rights and obligations (2)

| | High speed data rates | High traffic density | Massive number of connected devices (IoT) | IP-based |
|---|-----------------------|----------------------|---|----------|
| Right to deter automated decision –making | X | X | X | X |
| Subject's consent and withdrawal of consent | | | X | |
| Child consent | | | X | |
| Privacy by design | | X | X | X |
| Breach Notification within 72h | X | | X | |
| Privacy impact assessment (PIA) | X | X | X | |
| Location privacy | | X | | X |

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What happens in the future?

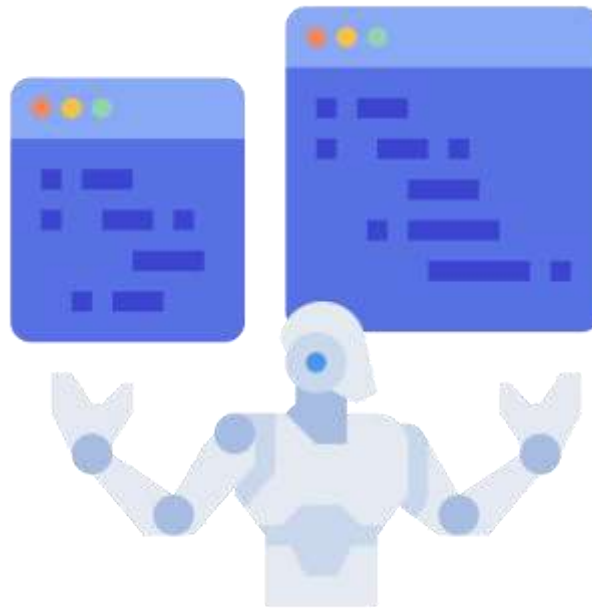


What happens in the future?

nobody knows



Short quiz



Short quiz

DevOps?

Short quiz

DevOps?
DevSecOps?

Short quiz

DevOps?

DevSecOps?

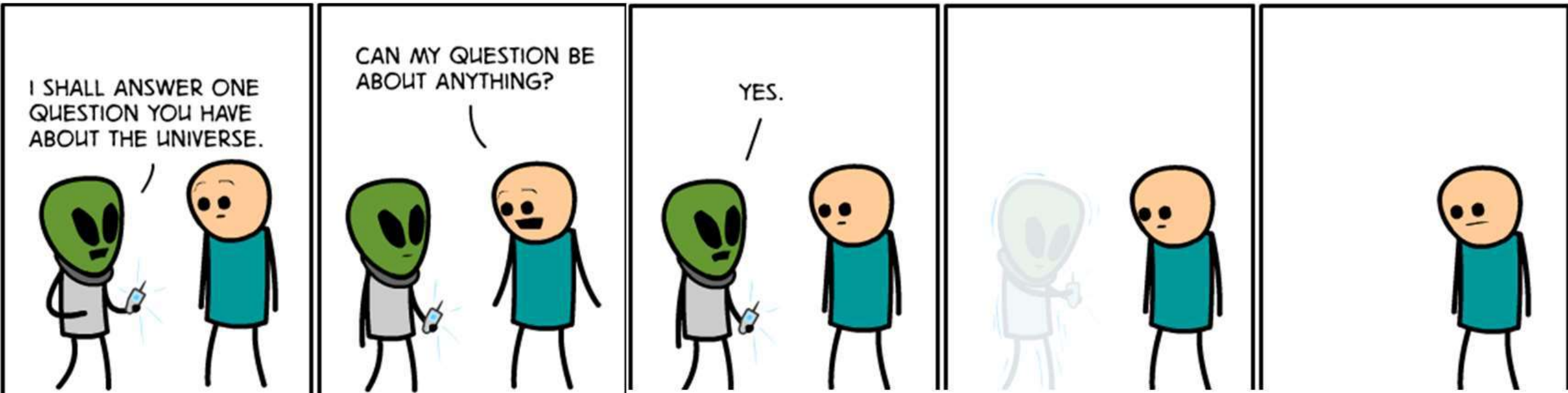
EthDevSecOps?

EthDevSecOps

“The DevSecOps paradigm might be extended into **EthDevSecOps**, where **Eth** stands for **ethics**, by incorporating multidisciplinary skills to address any concern about human beings and the respect of their fundamental rights (e.g. privacy, freedom, participation, non-discrimination, inclusion, democracy).”

- European Parliamentary Research Service Study on Privacy and security aspects of 5G technology

Questions?



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Thank you!