

oueees-202206 topic 04:

Cloud computing basics

Social implication of cloud
computing

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On the internet

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Lecture notes and reporting

- <https://github.com/jj1wdx/ouees-202206-public/>
- Check out the README.md file and the issues!
- Keyword at the end of the talk
- URL for submitting the report at the end of the talk

Errata on Topic 03: TCP is *Transmission Control Protocol* (RFC793)⁰

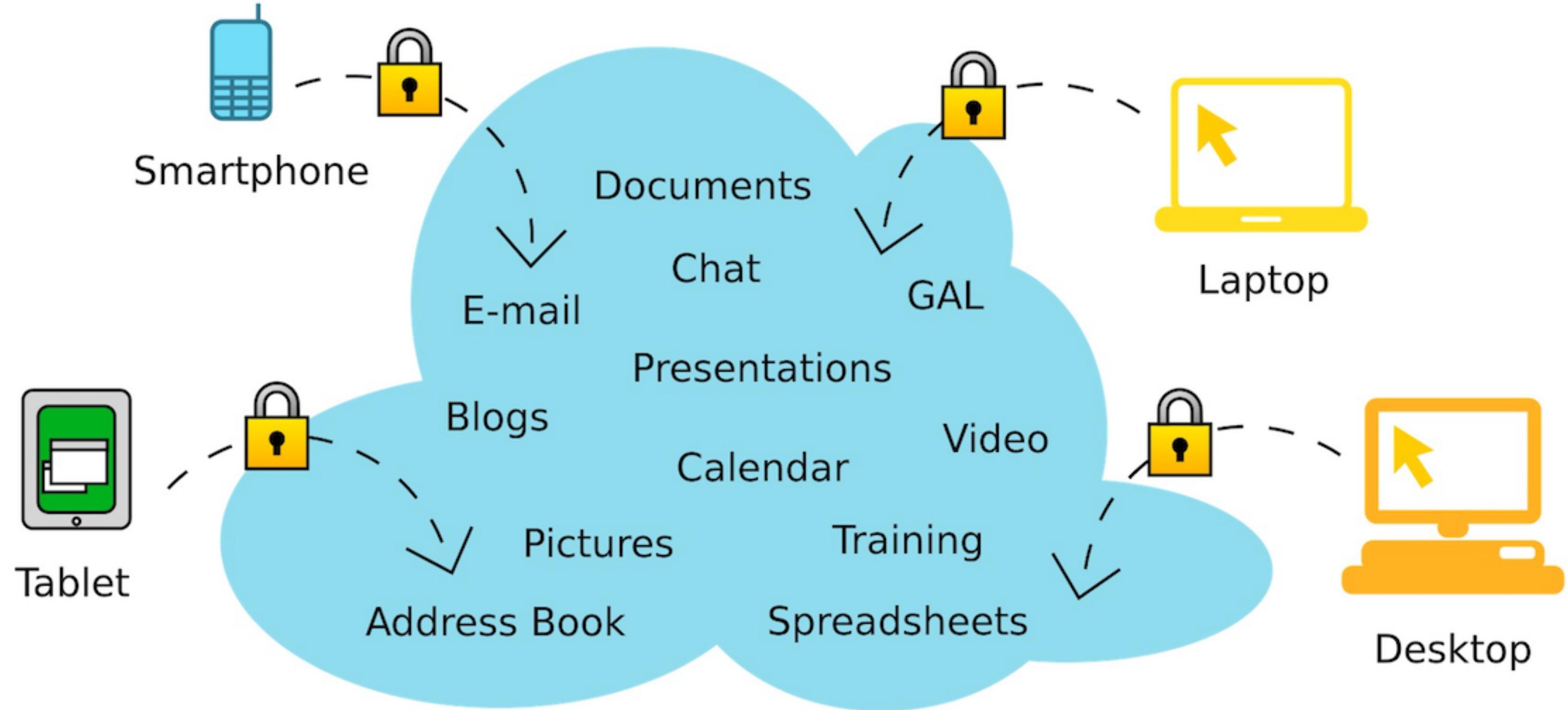
I regret the error. I'm very sorry.

⁰ See also <https://www.ietf.org/archive/id/draft-ietf-tcpcm-rfc793bis-28.html>

Cloud computing basics



Modern computing is cloud computing



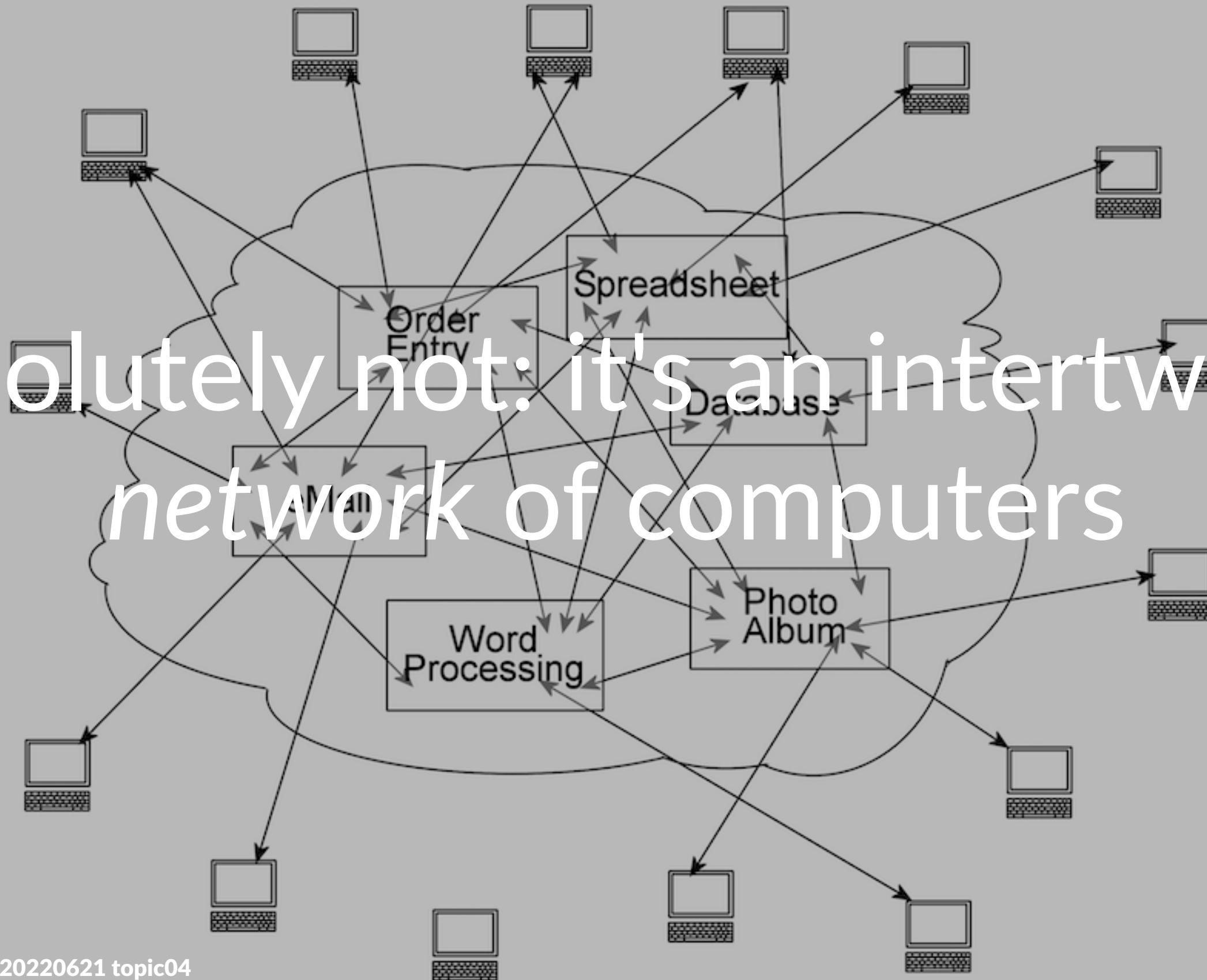
Cloud Computing

Having secure access to all your applications and data from any network device

Is cloud really a uniform and single entity?

Cloud Computing

Absolutely not: it's an intertwined
network of computers



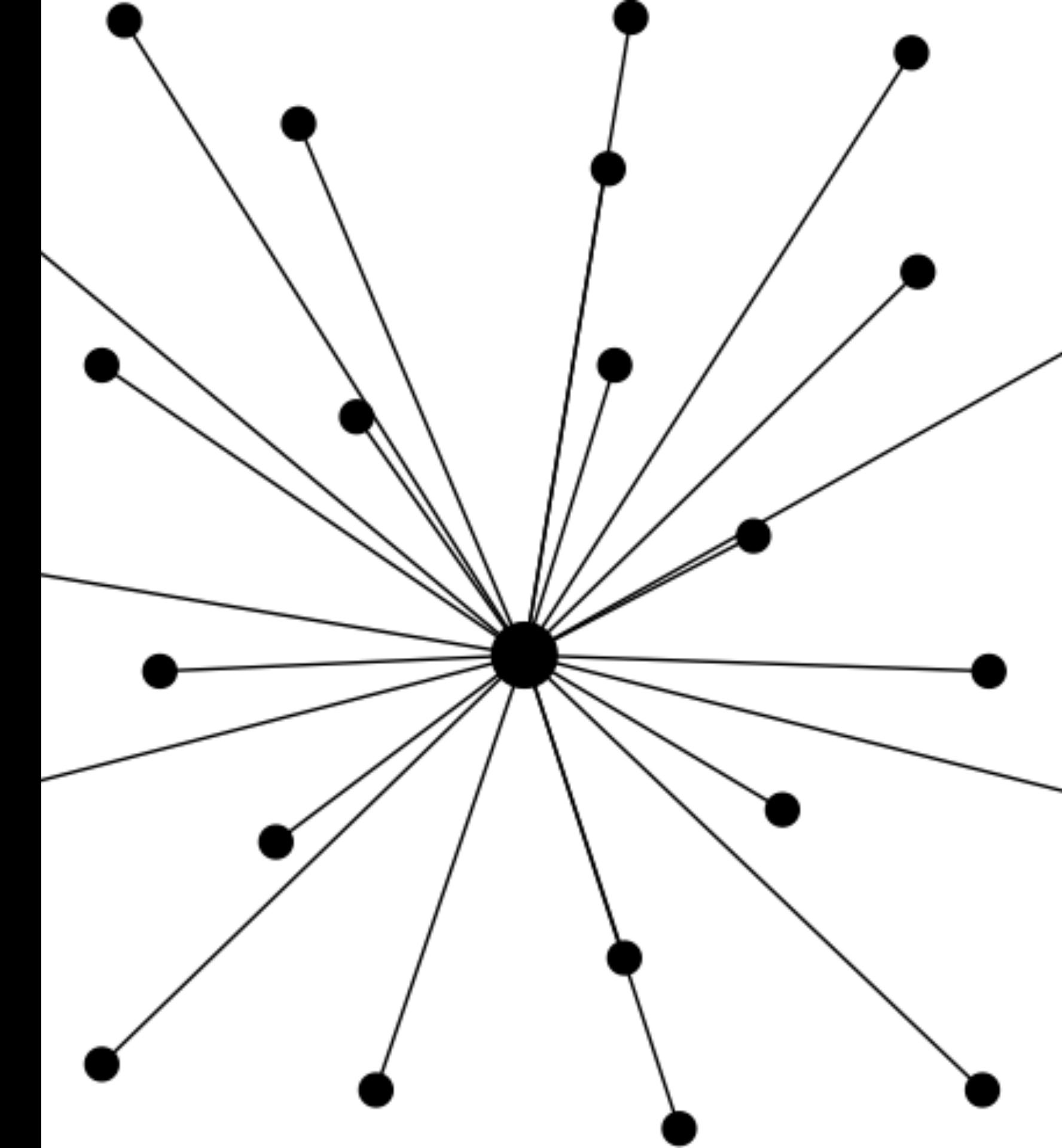
Web services are clusters of computers and networks

Thousands or millions of servers
connected together

A physical server is separated into multiple
virtual machines

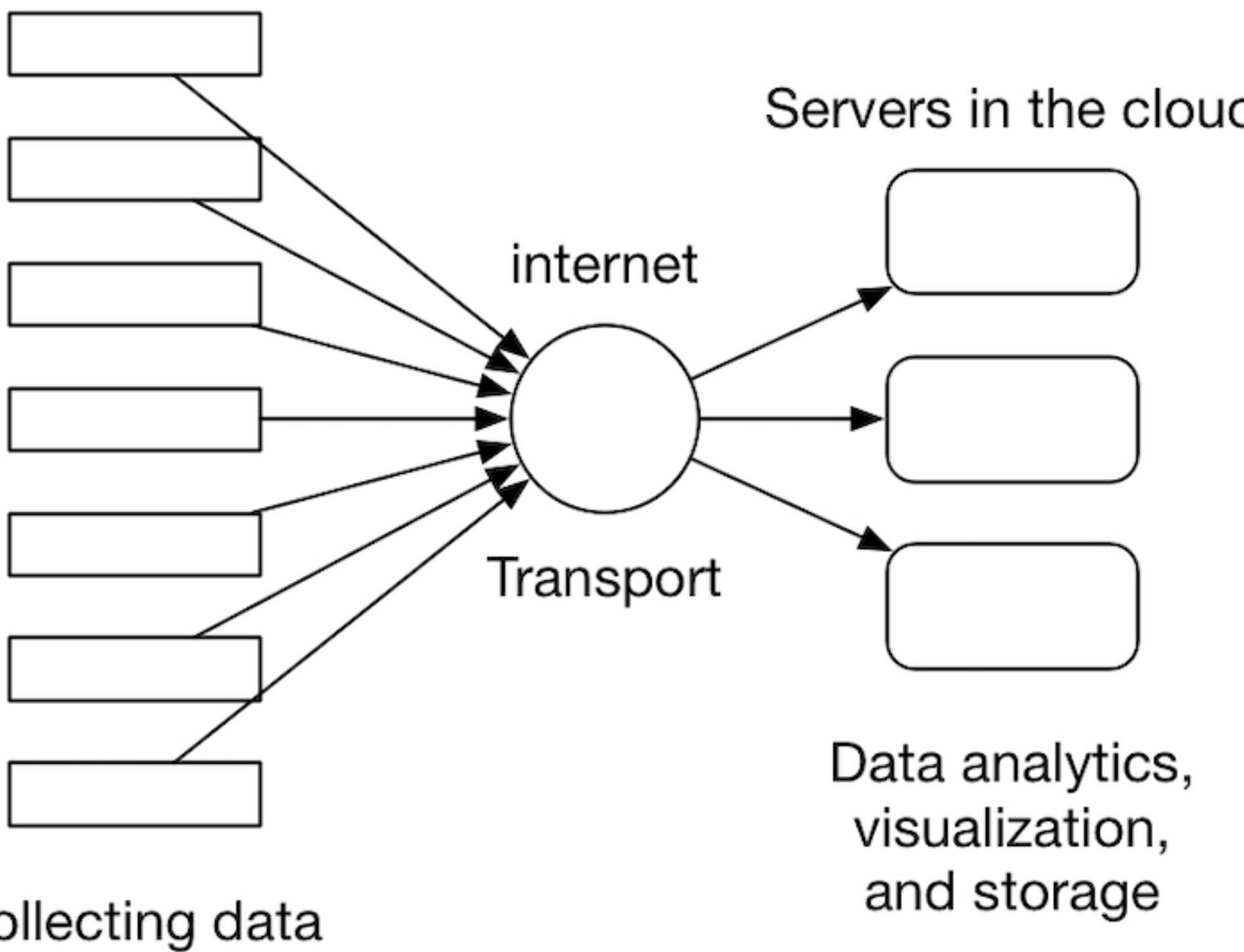


Cloud computing *is*
centralization



An example of cloud computing: Internet of Things (IoT) and telemetering

“Things” or devices



Collecting data

Telemetering

- Mostly unidirectional (not really *the true and genuine internet*)
- Sensors/devices gathering data through internet and feed them to the servers in the cloud computing platforms
- *The servers compute*
- *Extremely centralized*

Social implication of cloud computing

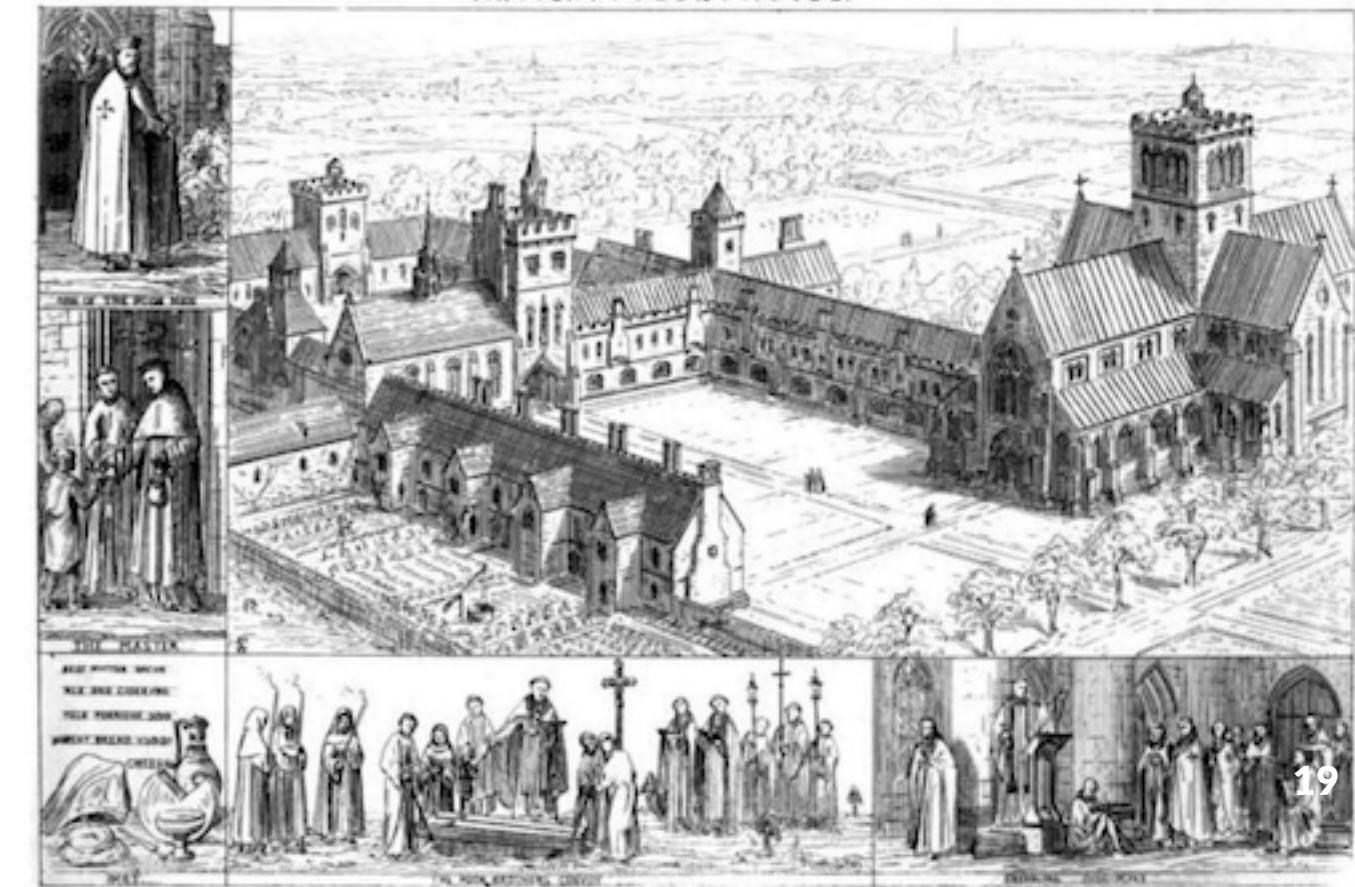
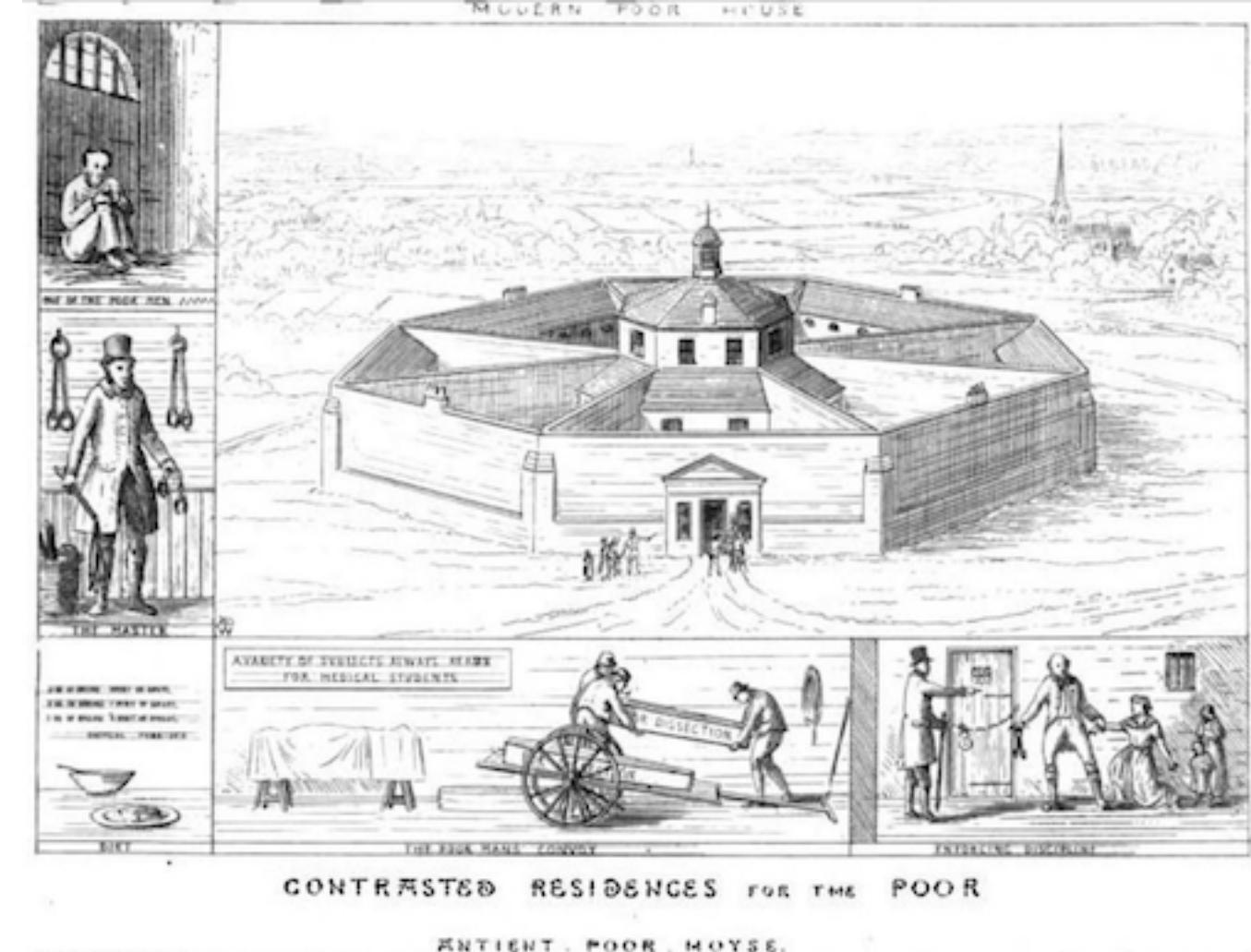
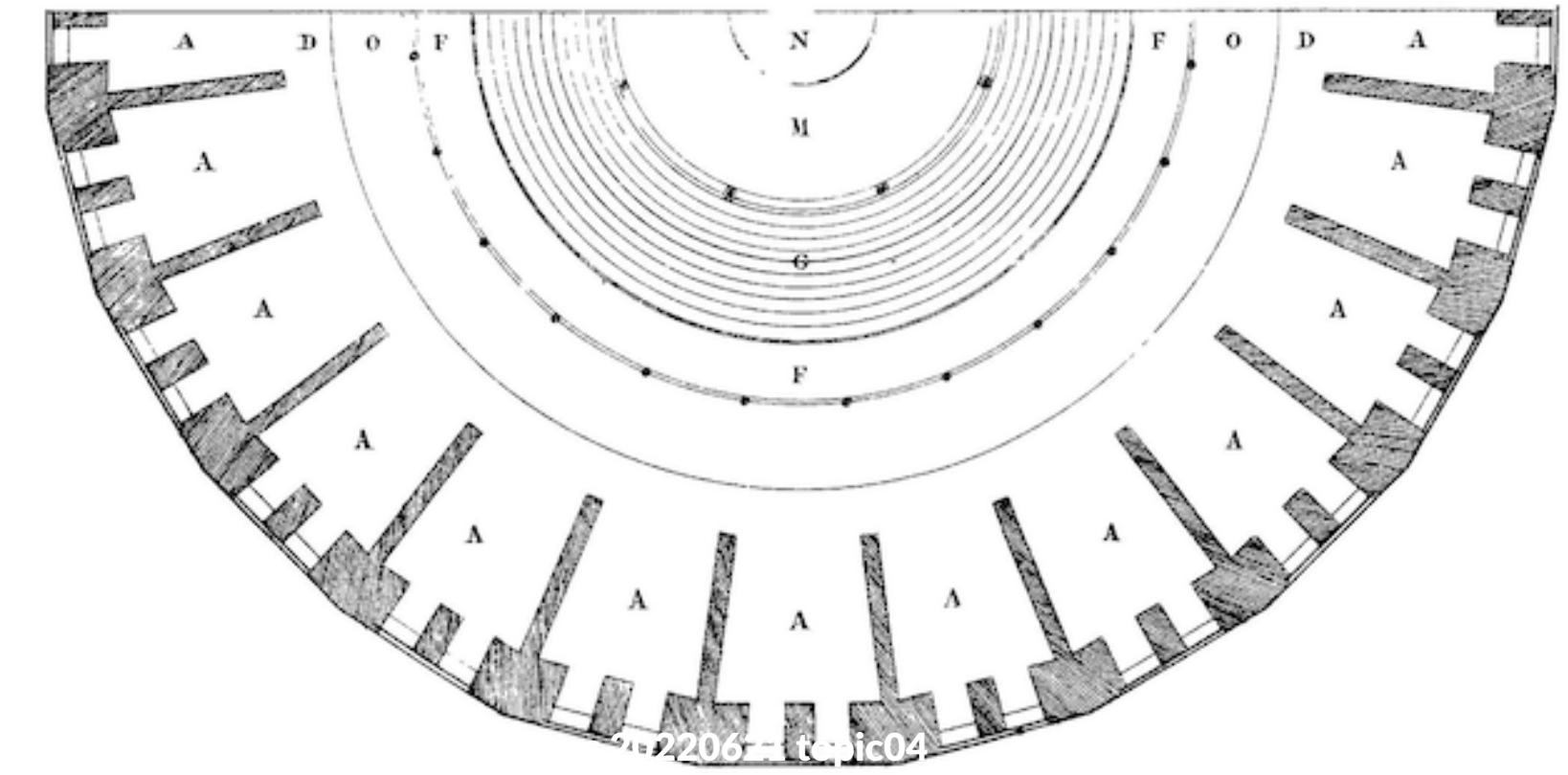
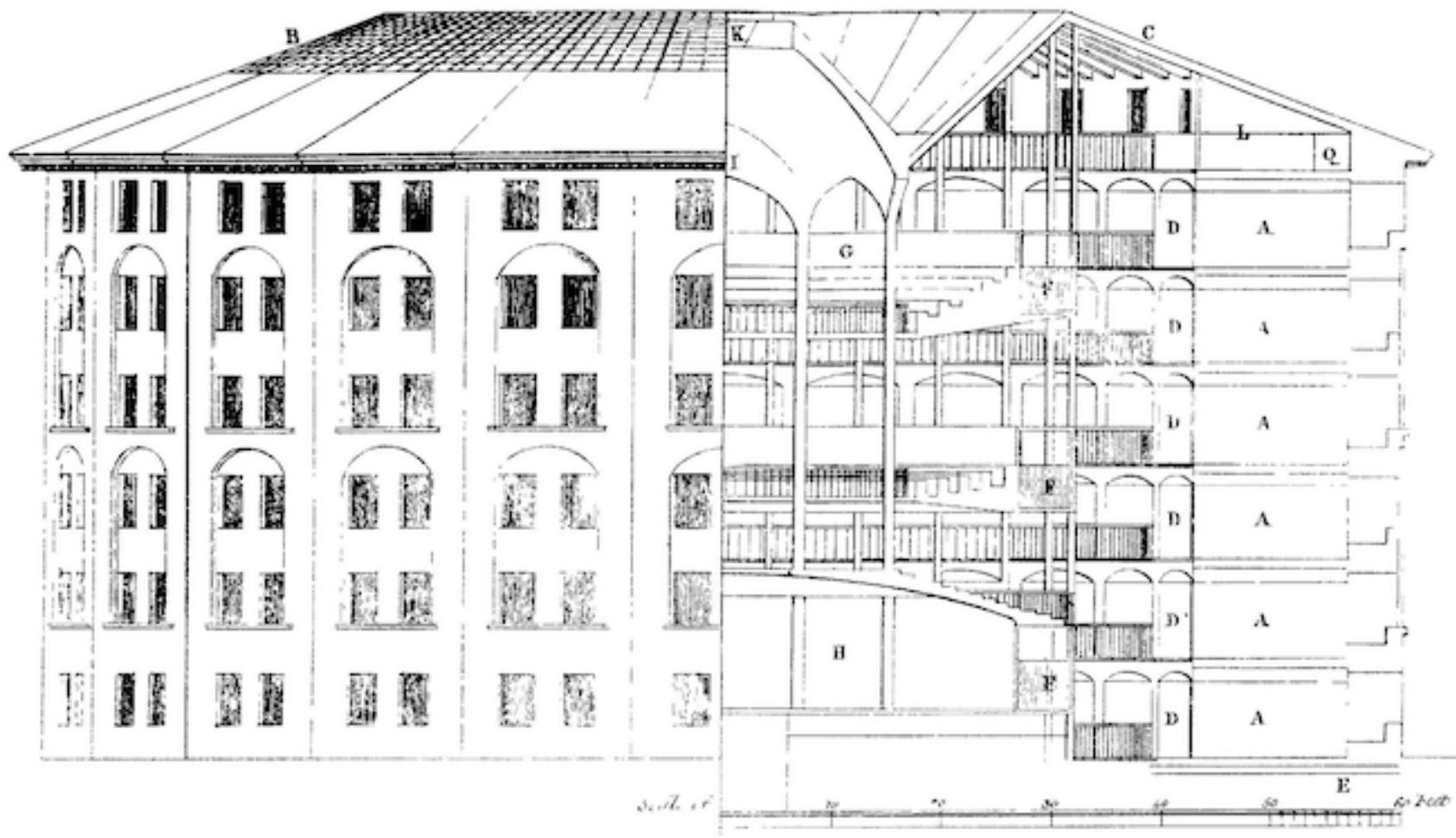
Centralized social behavior accelerated by cloud computing

- Sharing *everything* - no privacy
- *Panopticon*¹ style of governance, filtering, censorship, or autocracy
- Complete *externalization* of resources, leading to *no personal control*

¹n. a circular prison with cells arranged around a central well, from which prisoners could at all times be observed.
(New Oxford American Dictionary, Apple macOS 10.13.6)

Presidio Modelo: a panopticon prison





INGSOC: the slogans ²

- War is peace
- Freedom is slavery
- Ignorance is strength
- Independent thinking = *thoughtcrime*

NOTE: this is a *fiction!*

² George Orwell, "Nineteen Eighty-Four", 1949.

Historical examples of INGSOC-like nations

- Nazi Germany ³
- Empire of Japan ⁴ (Japan in 1868-1947)
- Soviet Union ⁵

³ https://en.wikipedia.org/wiki/Nazi_Germany

⁴ https://en.wikipedia.org/wiki/Empire_of_Japan

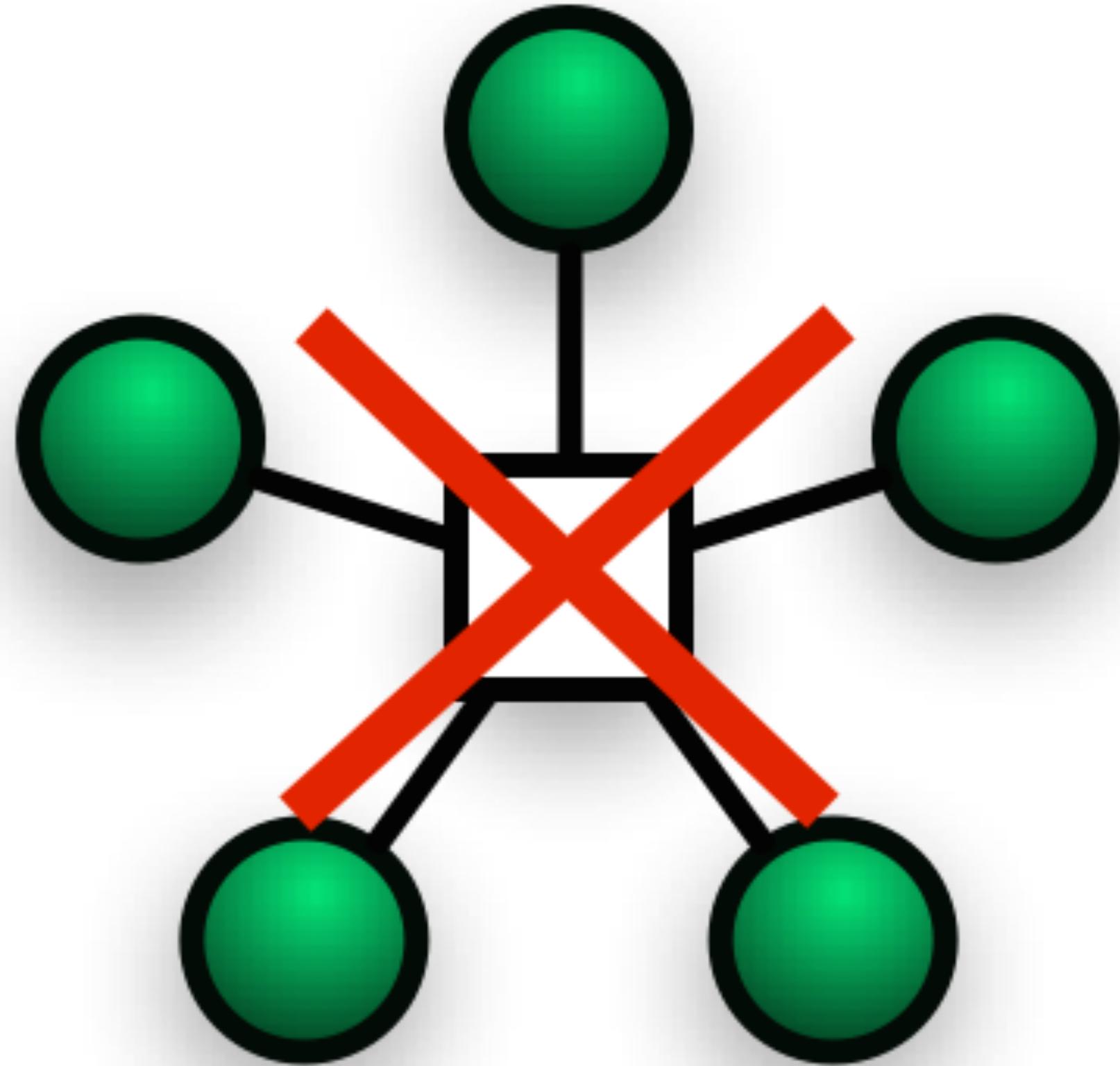
⁵ https://en.wikipedia.org/wiki/Soviet_Union

Why cloud computing has become
so dystopian?

We have sold freedom for convenience

- Ubiquitous/global accessibility
- Concentrated data for easy analysis
- Easy control of the information flow
- No extra cost for sharing
- No need to think about where the information locates
- A useful tool for fascist and despotic regimes

The inconvenient
truth of centralized
systems: what if the
core/cloud fails?



Inconvenience of centralized systems

- Ubiquity or *no accessibility*
- When the core fails, no alternative
- When the core loses data, *no backup*
- The system performance is restricted by the capability of the core
- Endpoint systems will lost *all capabilities*

Centralized systems are not
sustainable

...then how cloud computing systems manages
the sustainability?

Distributed systems provide
sustainability and resilience against
failures

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- Web services are clusters of computers: Kenji Rikitake, at Kyoto University ACCMS, April 2017