

oueees-202206 topic 04:

Cloud computing basics

Social implication of cloud
computing

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On the internet

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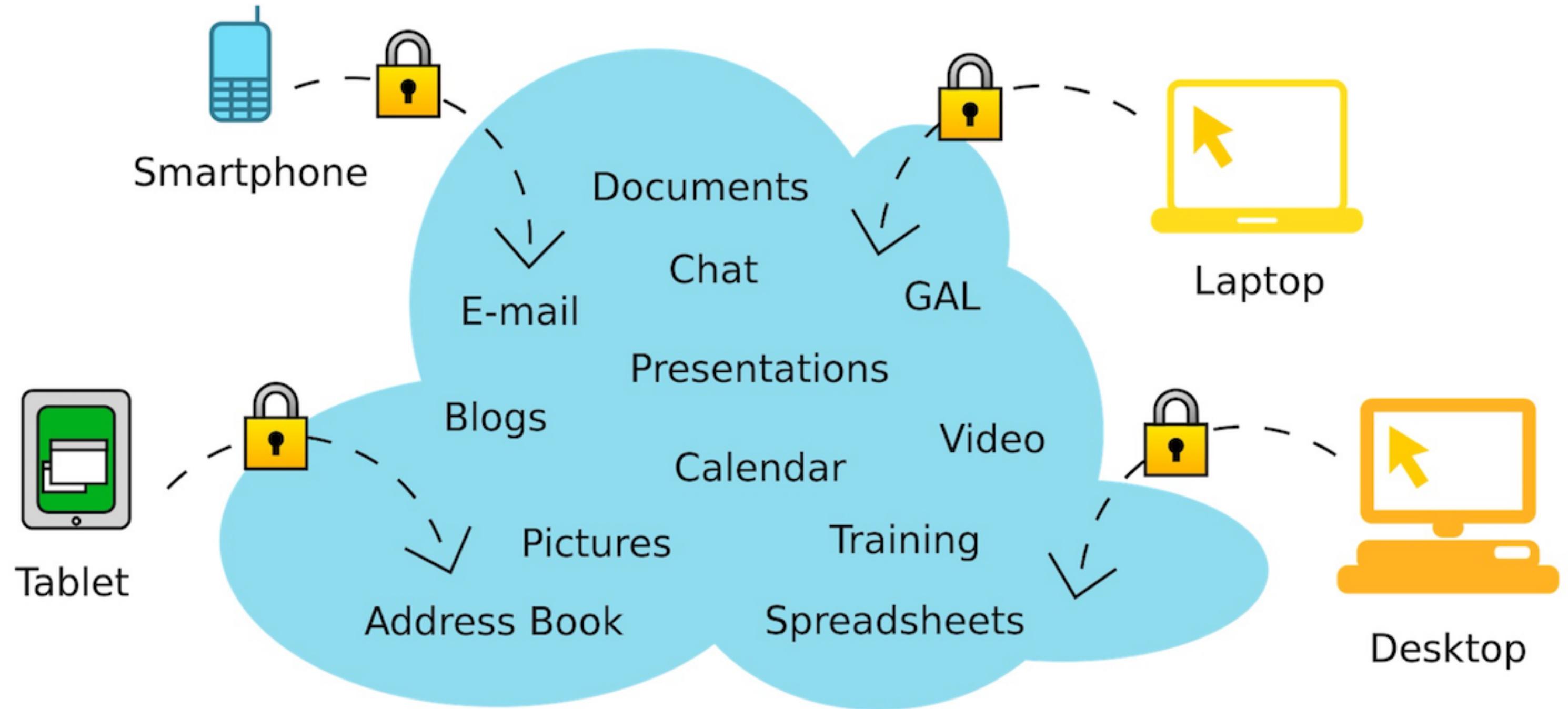
Lecture notes and reporting

- <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

Cloud computing basics



Modern computing is cloud computing



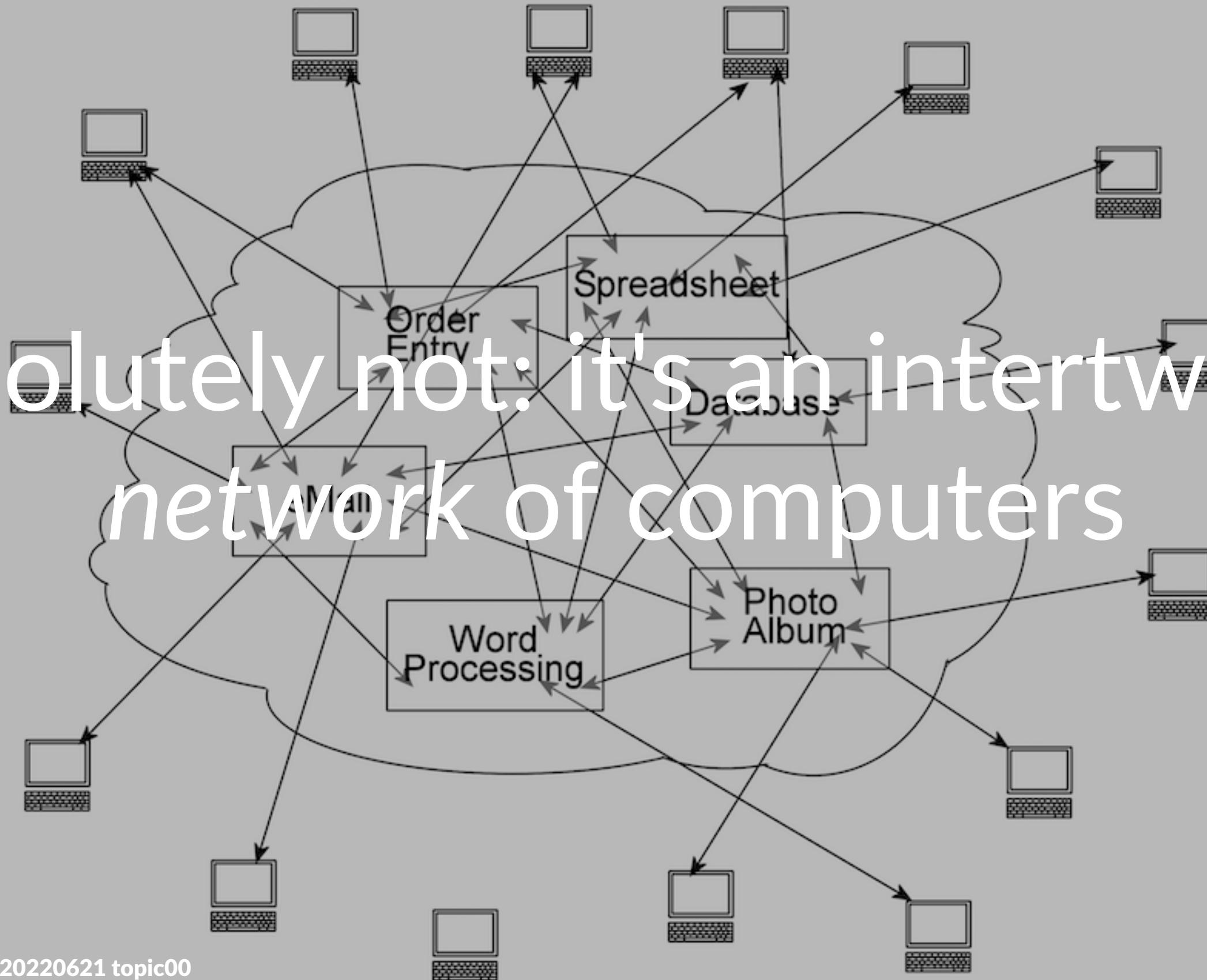
Cloud Computing

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



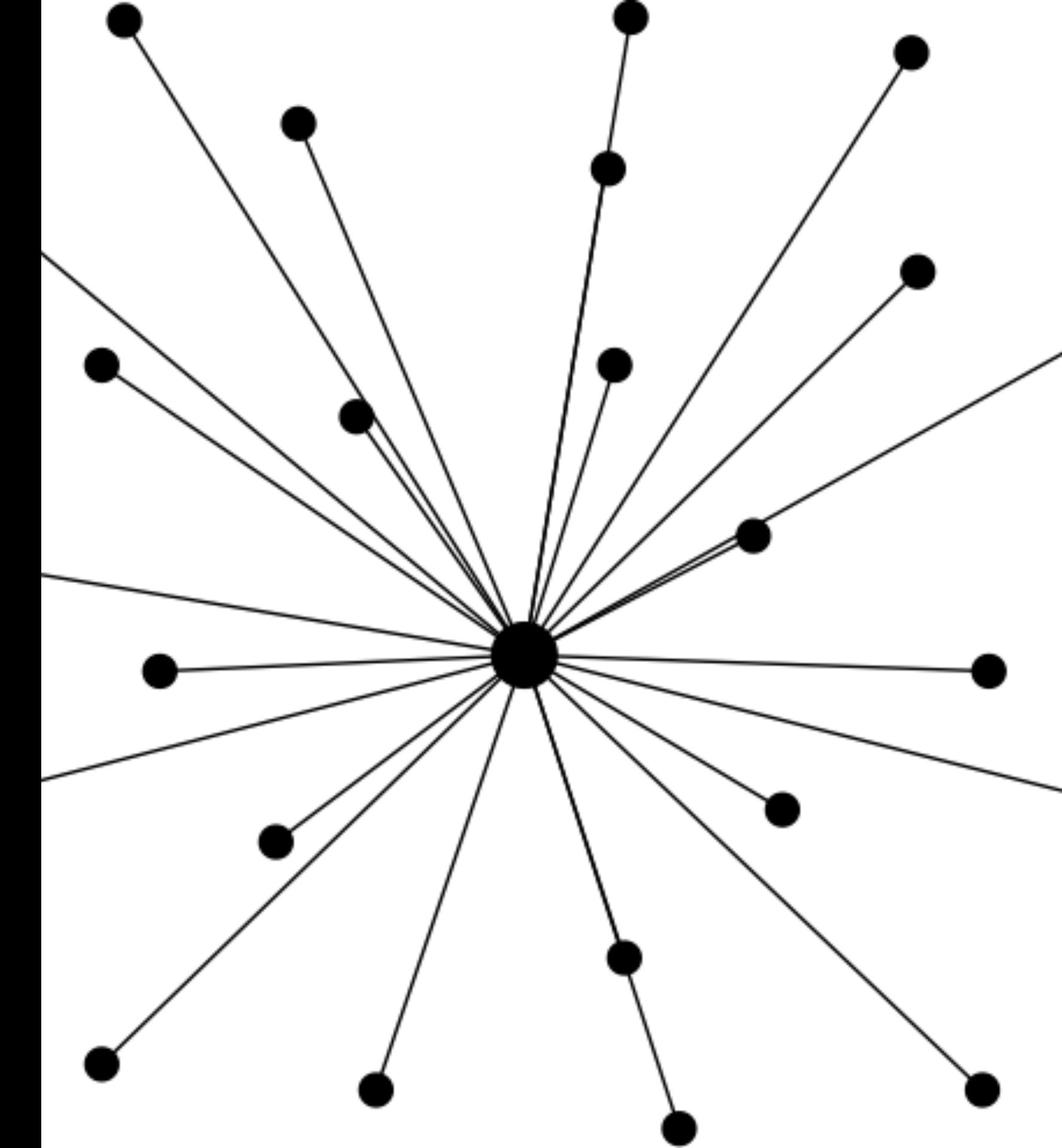
Web services are clusters of computers and networks

Thousands or millions of servers
connected together

A physical server is separated into multiple
virtual machines

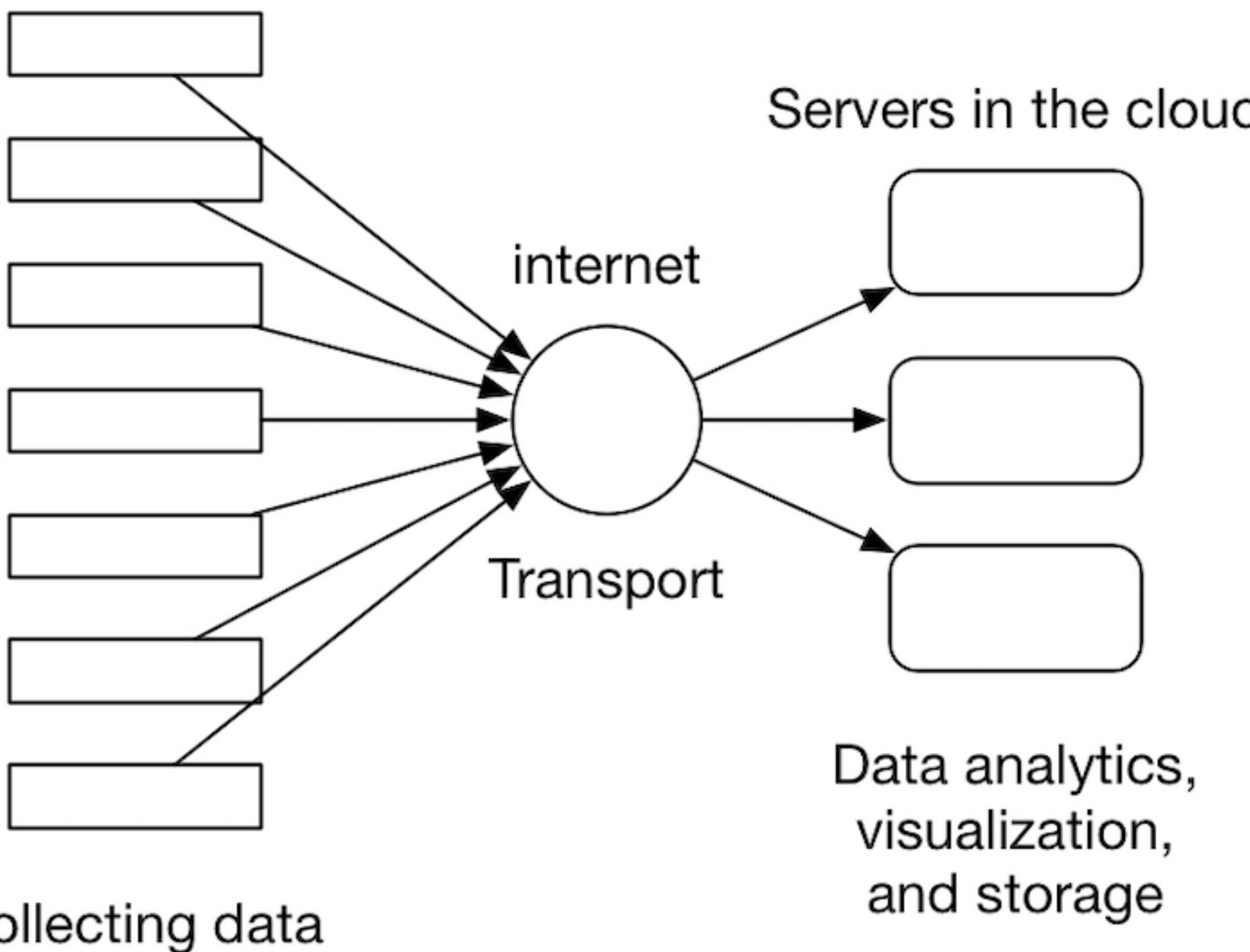


Cloud computing *is*
centralization



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

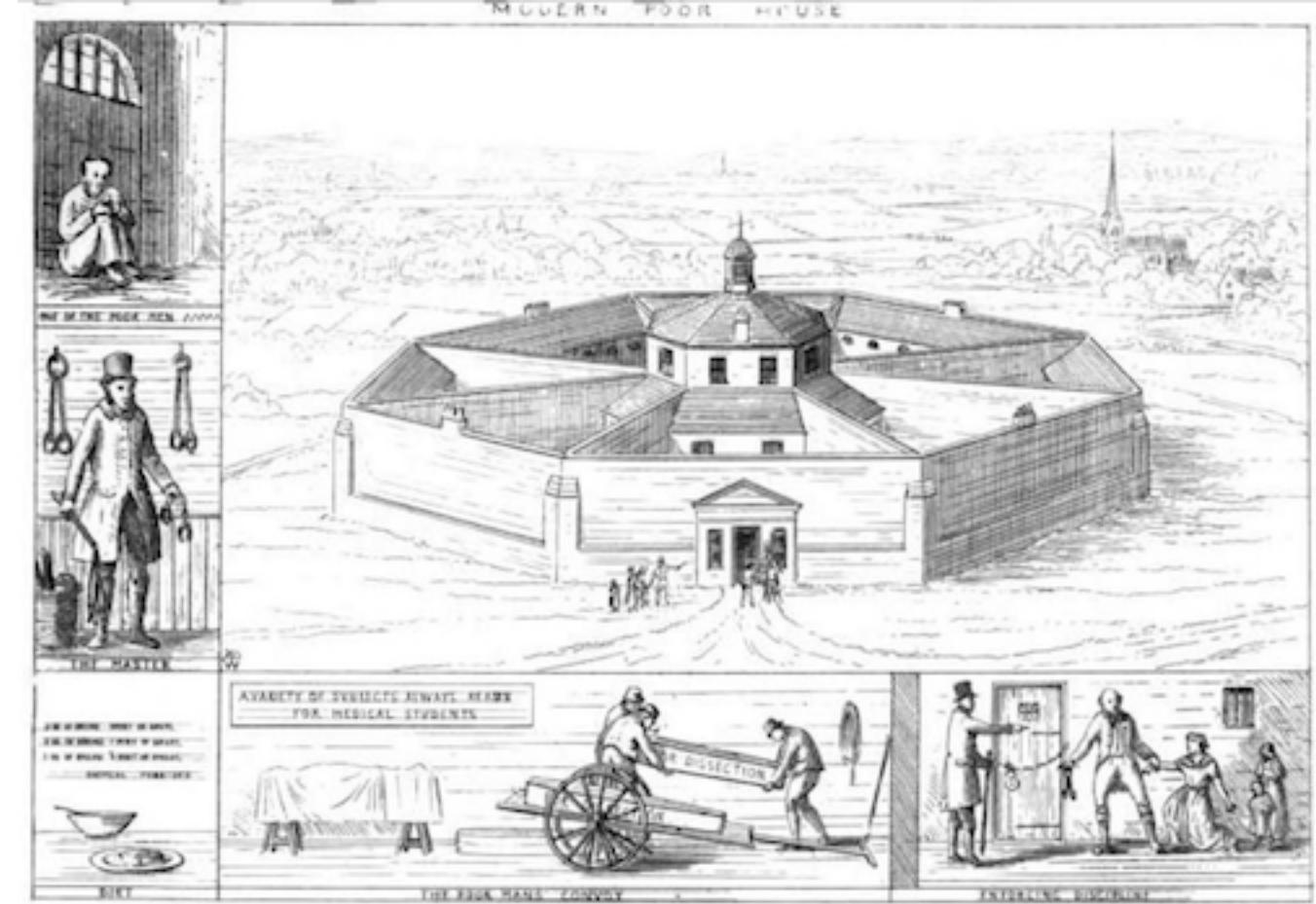
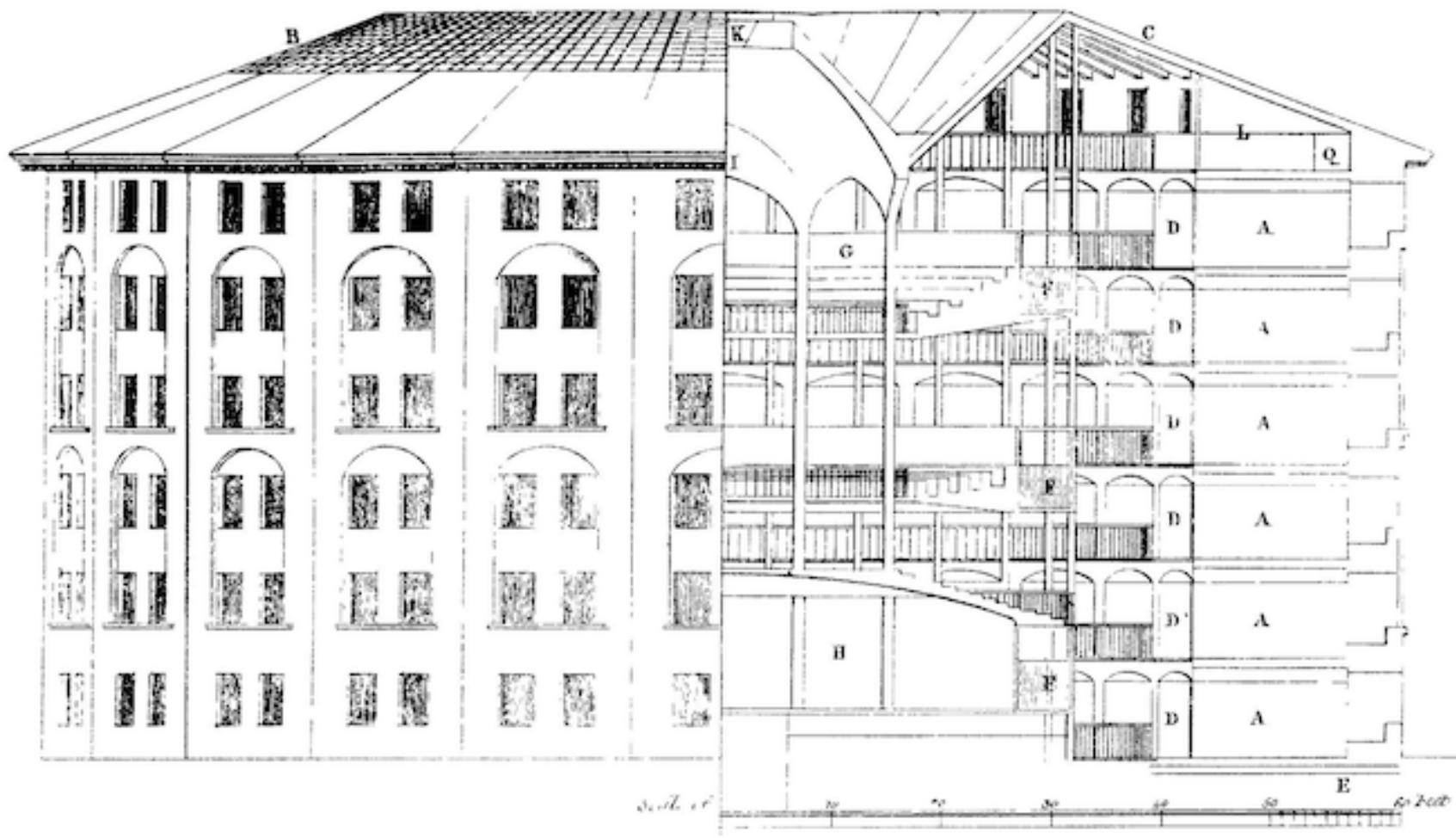
Centralized social behavior accelerated by cloud computing

- 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)

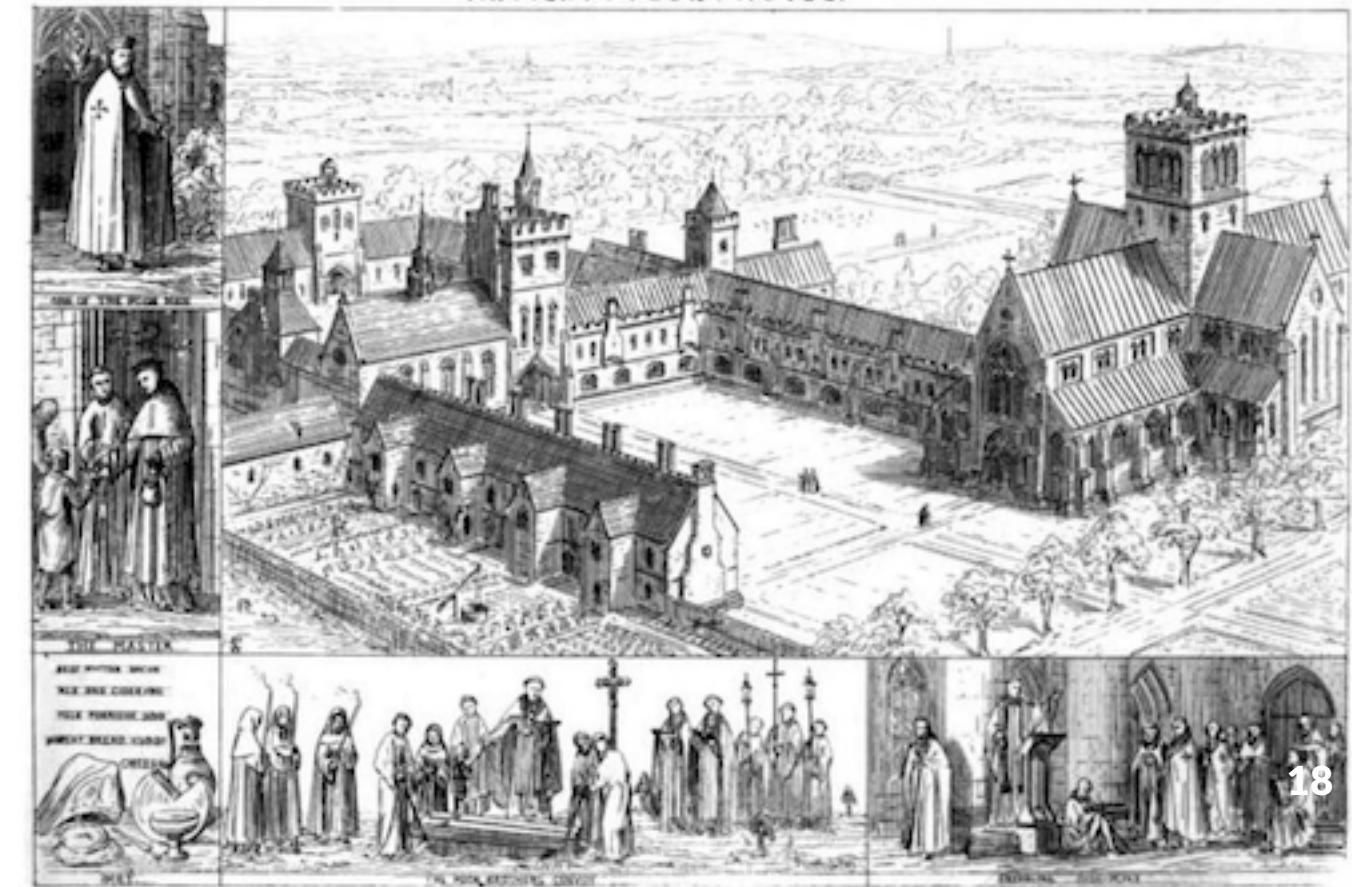
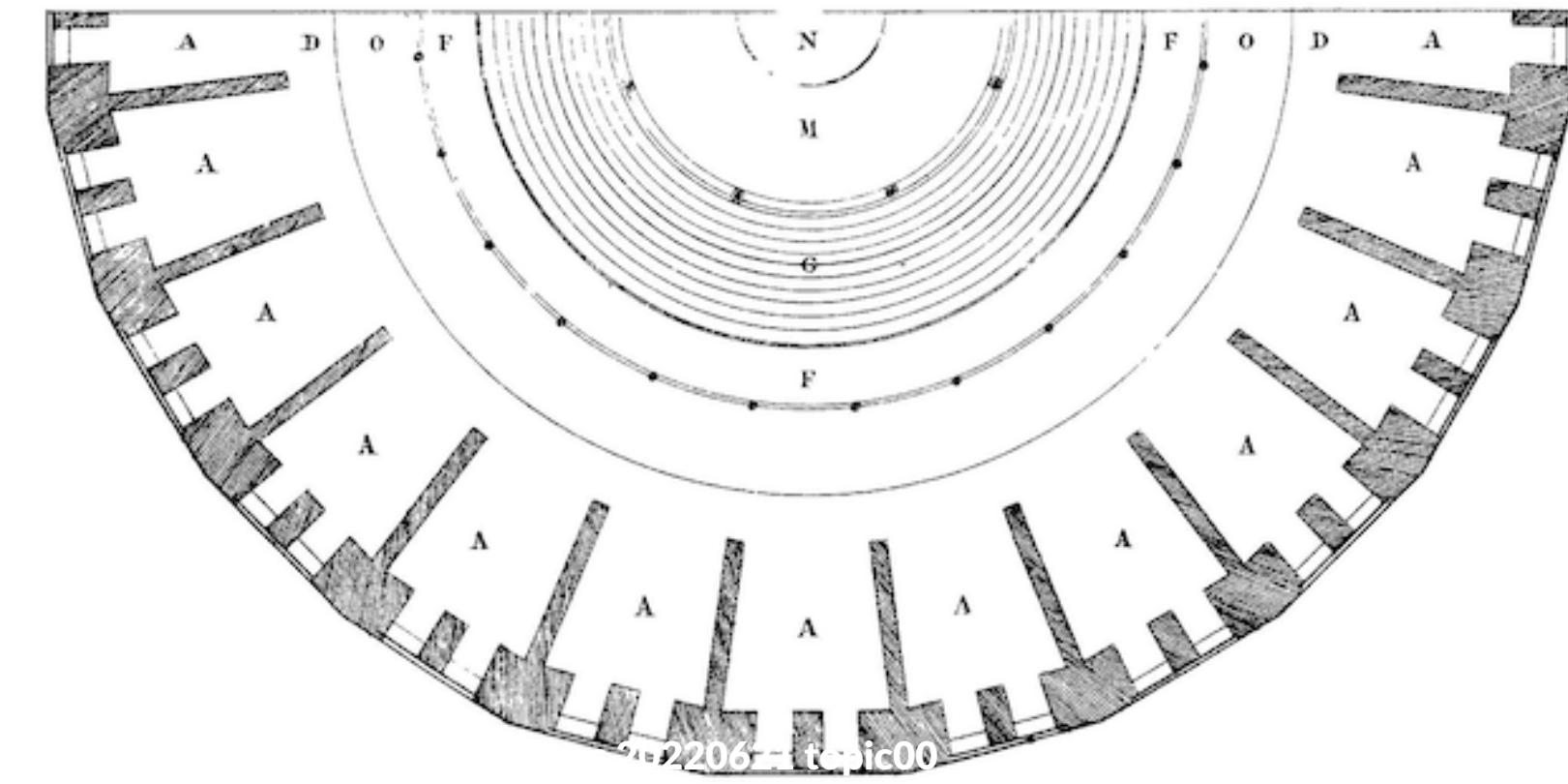
Presidio Modelo: a panopticon prison





CONTRASTED RESIDENCES FOR THE POOR

ANTIENT POOR-HOUSE.



INGSOC: the slogans ²

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

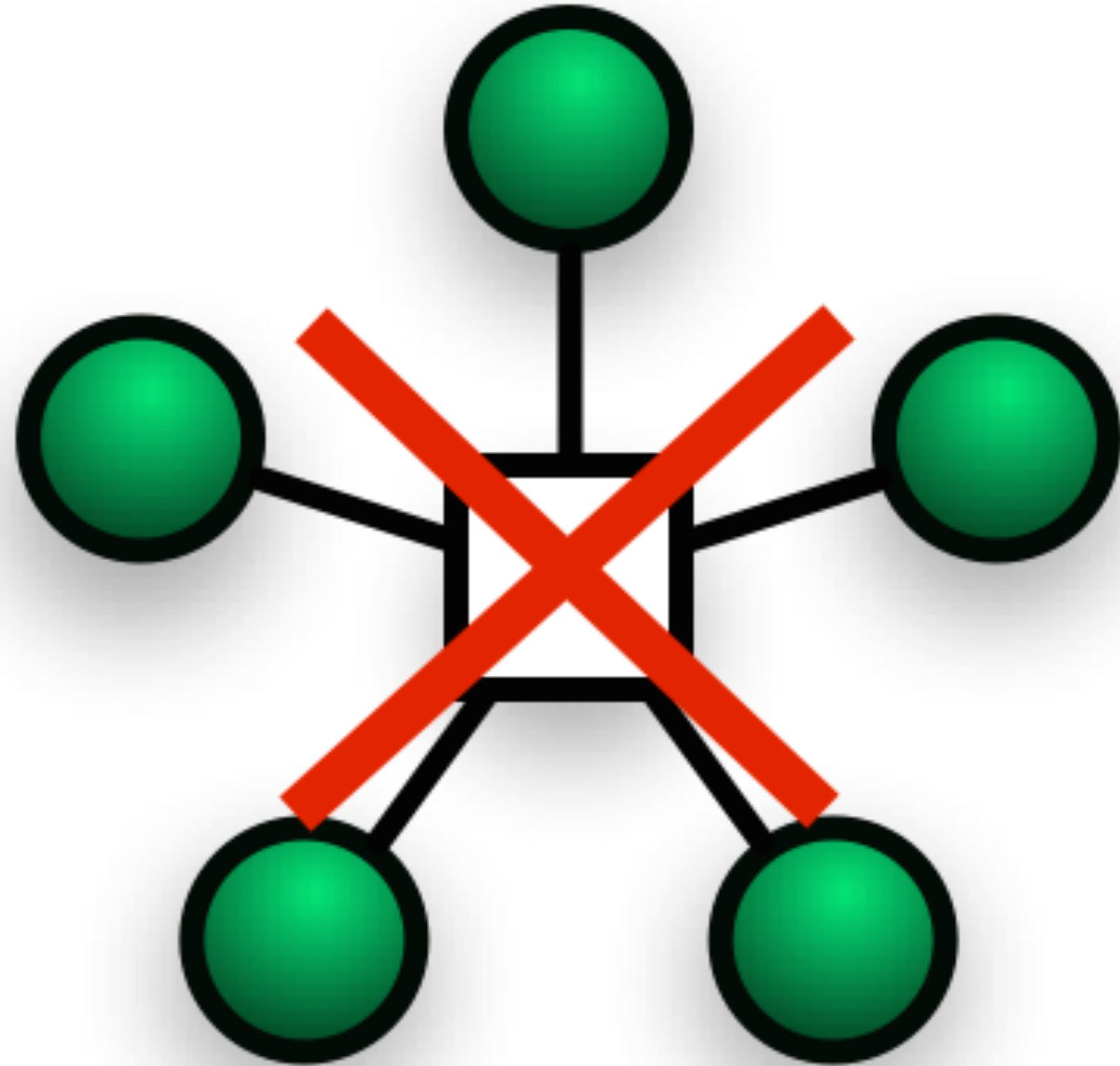
NOTE: this is a *fiction!*

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

Why cloud computing has become so *dystopian*? -- because 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

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