

Microsoft Cloud Computing Research Centre

5th Annual Symposium, September 2018

Compliance & accountability: tech landscaping

Jat Singh

Compliant & Accountable Systems Group

Dept. Computer Science & Technology

University of Cambridge

jatinder.singh@cst.cam.ac.uk

Technology is not *itself*
the solution

However...



£118.49 £200.99 prime
FREE Delivery
More buying choices
£96.98 (39 used & new offers)

★★★★★ 180
Product Features
... mitigate vibration in multi-bay NAS enclosures for consistent ...



QNAP TS-328 3 Bay Desktop NAS Enclosure (GDPR Compliant)
by QNAP
£269.73
FREE Delivery
More buying choices
£246.00 (10 new offers)



Seagate 1 TB IronWolf 3.5 Inch 5900 RPM Internal Hard Drive for 1-8 Bay NAS Systems (64 MB Cache, 180 TB/Year Workload Rate, Up to 180 MB/s)



GDPR PRODUCTS

BE SAFE, BE SECURE, BE COMPLIANT

GDPR - 25th MAY 2018



Search

[HOME](#)

[SHOP BY BRAND](#)

[OFFICE SUPPLIES](#) ▾

[SAFETY & SECURITY](#) ▾

[SAFES](#)

[SHREDDERS](#) ▾

[VISITOR BOOKS](#)

[PRIVACY SCREENFILTERS](#)

Paperclips

Home / Office Supplies / Paperclips

Showing all 11 results

Sort by price: low to high ▾

[Search More Products](#)



Q-Connect 32mm Lipped Paperclips (Pack of 1000)

KF01317

Price: £2.96



Q-Connect 32mm Plain Paperclips (Pack of 1000)

KF01314Q

Price: £3.28



Q-Connect 32mm Lipped Paperclips (Pack of 1000)

KF01316Q

Price: £3.58



Q-Connect 32mm Plain Paperclips (Pack of 1000)

KF01315

Price: £3.65

Technology is not *itself*
the solution

But it has a role to play

Technical means for

(1) Transparency

showing what's happening

Technical operation, configurations, interconnections, explanations

(2) Control

managing what's happening

operational bounds, constraints, preferences, policy, "different ways"

Technology can help

Different perspectives

1. *Involved in 'provision'*: Designers, developers, deployers, operators,
2. *External: **Users*** (people!) customers, regulators, investigators, ...

Technology can **assist**: *governance, compliance, audit & accountability*

- Help manage responsibilities, obligations, risk assessments (+/-tech)
- Oversight/enforcement, mitigation/rectification
- Empowerment

Tech horizons

(Five areas of many)

1. Federating architectures

Cloud >> centralisation

IoT: “Natural” decentralisation
(edge/fog, personal clouds)

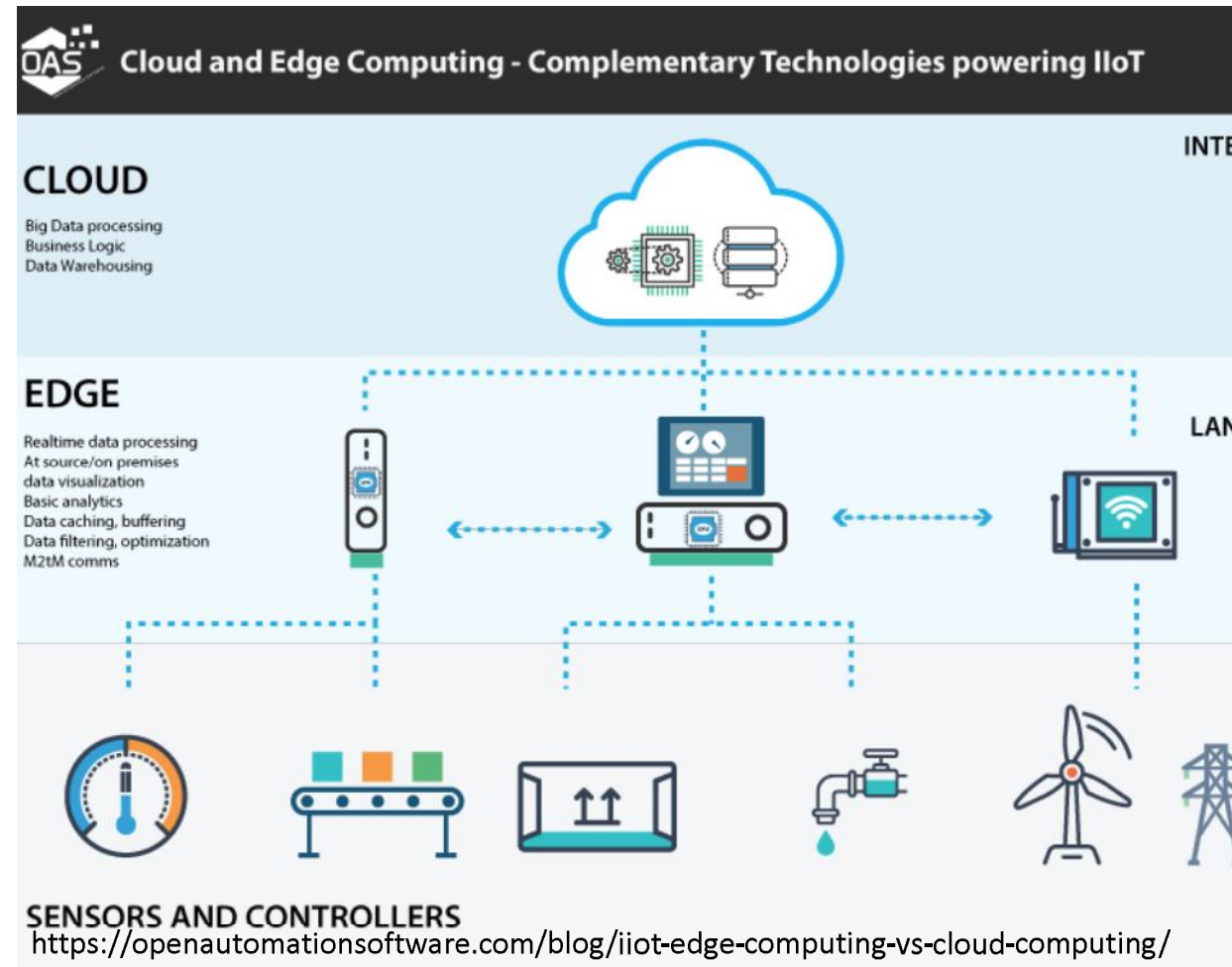
Driven by tech requirements

1. “Hyper-localisation” (data, processing, functionality)
2. Distributed compute

Points for mediation & intervention!

- Local **visibility** and **control** functionality & data exchange;

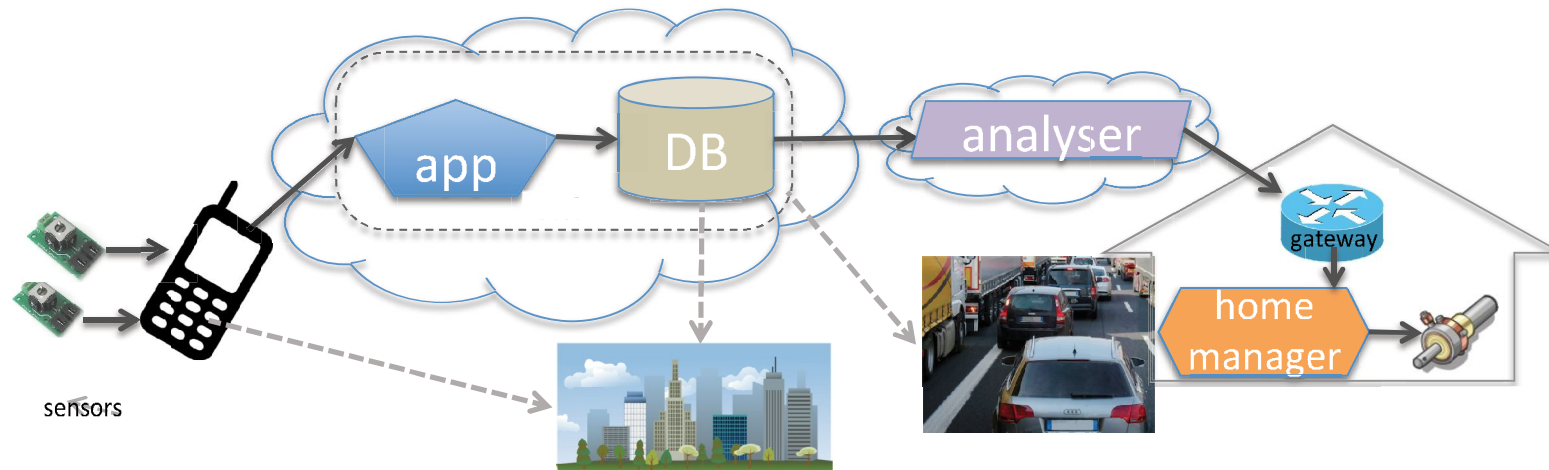
Computational methods (Sec MPC)



2. Data flow management

Many issues concern data exchanges

Systems are increasingly *data driven*



Across technologies, across organisations, across regions

Data tracking/provenance: expose what's happening to data

Flow management (policy): 'sticky-policies', Information Flow Control, ECA

3. Audit

Technical records of what's happening

More than logs! (?)

Need means for:

- **Reliable** records
- **Across** boundaries
 - Records + visibility
 - Tech or organisational

Audit increasingly on the agenda



4. Algorithmic & automated decision-making

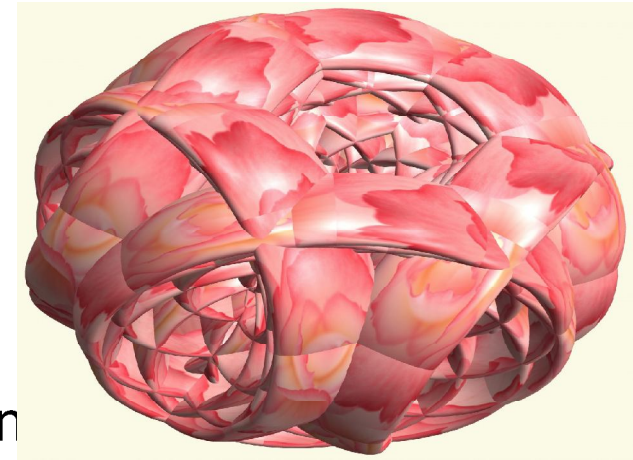
Considerable attention: Driven by ML concerns, automation

- Opacity, explanations
- Fairness, bias

Broader systems-context (*part-of-a-process*)

- Decision provenance: expose decision pipelines
 - Exposing what led-up to a decision/action, *and* flow-on (design + runtime)
 - Assessing, managing, influencing decision-making
 - Paper:: doi:10.1109/ACCESS.2018.2887201

Show, ensure (and maintain) proper operation



5. Trusted Execution Environments (enclaves)

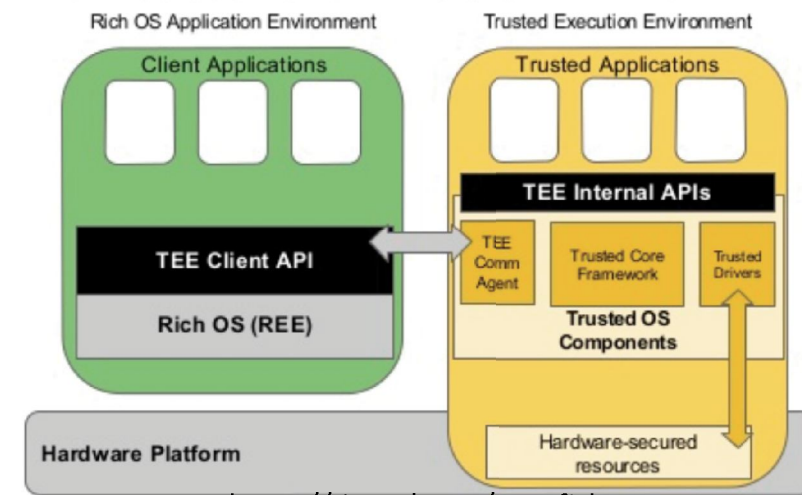
Hardware-backed means (crypto) enabling:

- Secure/isolated code execution and data processing
 - Ensure certain code was executed, data not leaked
- Remote attestation – e.g. re configuration

Use cloud without trusting the provider!

Privacy preserving analytics, etc.

Architecture of Platform with TEE



<https://tinyurl.com/y8ecfjzl>

Just a few directions...

BETTER SYSTEMS

(regtech?) compliance, agency, accountability

Tech already in the pipeline that may help

- Overlaps + synergies
- Most a work in progress, much work to do

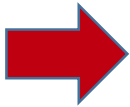
Fundamentals rather than 'band-aids'

- CaaS, platform-tooling ?

ICO call for views on updating the data sharing code of practice

Q1 We intend to revise the code to address the impact of changes in data protection legislation, where these changes are relevant to data sharing. What changes to the data protection legislation do you think we should focus on when updating the code?

Q2 Apart from recent changes to data protection legislation, are there other developments that are having an impact on your organisation's data sharing practice that you would like us to address in the updated code?



- Yes
 No

Q3 Please specify

Q4 Does the 2011 data sharing code of practice strike the right balance between recognising the benefits of sharing personal data and the need to protect it? Please give details.

- Yes
 No