BCS Advanced Programming SG

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Cloud Computing – The Legal Background

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Outline

- Introduction
- Cloud computing features
- Legal issues
- Questions/comments – end only

Introduction

- Cloud Legal Project
  - CCLS autumn 2009
  - http://cloudlegalproject.org/Research
- Personal
- Attendees
  - users, developers, providers, lawyers?

Legal background

- Rights
- Responsibilities – legal obligations, liability
- Sources – law, regulation, contract
- Application to cloud, & differences
- Perspectives differ – user, provider, developer/provider, data subject etc

But first…

Mindsets:

Technologists vs Lawyers

Technologists

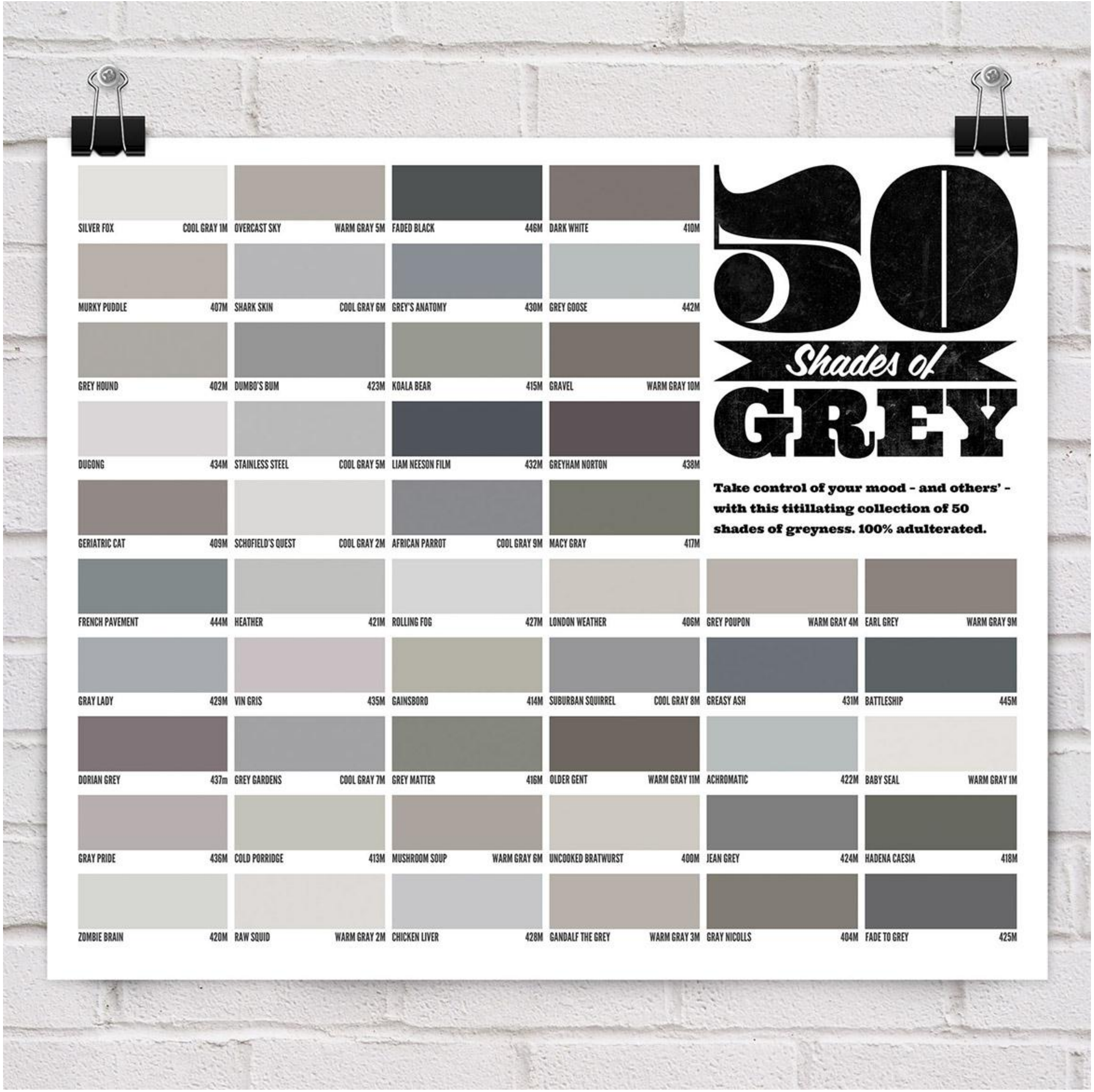
Technologists

1100

1010

0101

Lawyers



50 Shades of GREY

Take control of your mood - and others' - with this titillating collection of 50 shades of greyness. 100% adulterated.

SILVER FOX COOL GRAY 1M	OVERCAST SKY WARM GRAY 5M	FADED BLACK 446M	DARK WHITE 410M		
MURKY PUDDLE 407M	SHARK SKIN COOL GRAY 6M	GREY'S ANATOMY 430M	GREY GOOSE 442M		
GREY HOUND 402M	DUMBO'S BUM 423M	KOALA BEAR 415M	GRAVEL WARM GRAY 10M		
DUGONG 434M	STAINLESS STEEL COOL GRAY 5M	LIAM NEESON FILM 432M	GREYHAM NORTON 438M		
GERIATRIC CAT 409M	SCHOFIELD'S QUEST COOL GRAY 2M	AFRICAN PARROT COOL GRAY 9M	MACY GRAY 417M		
FRENCH PAVEMENT 444M	HEATHER 421M	ROLLING FOG 427M	LONDON WEATHER 406M	GREY POUPON WARM GRAY 4M	EARL GREY WARM GRAY 9M
GRAY LADY 429M	VIN GRIS 435M	GAINSBORO 414M	SUBURBAN SQUIRREL COOL GRAY 8M	GREASY ASH 431M	BATTLESHIP 445M
DORIAN GREY 437m	GREY GARDENS COOL GRAY 7M	GREY MATTER 416M	OLDER GENT WARM GRAY 11M	ACHROMATIC 422M	BABY SEAL WARM GRAY 1M
GRAY PRIDE 436M	COLD PORRIDGE 413M	MUSHROOM SOUP WARM GRAY 6M	UNCOOKED BRATWURST 400M	JEAN GREY 424M	HADENA CAESIA 418M
ZOMBIE BRAIN 420M	RAW SQUID WARM GRAY 2M	CHICKEN LIVER 428M	GANDALF THE GREY WARM GRAY 3M	GRAY NICOLLS 404M	FADE TO GREY 425M

Interpreting the interpreters

Legislation X

Case A:
‘X means…’

Case B:
‘Case A means…’

Length of the Chancellor’s foot

The Denning Dimension

"The little old lady wins!"

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Certainty? Hah!

‘It depends…’

Interpretation

Context

Probabilities

pity

…let's ~~kill~~ all the lawyers!

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Ask an English lawyer about ***other*** countries' laws…

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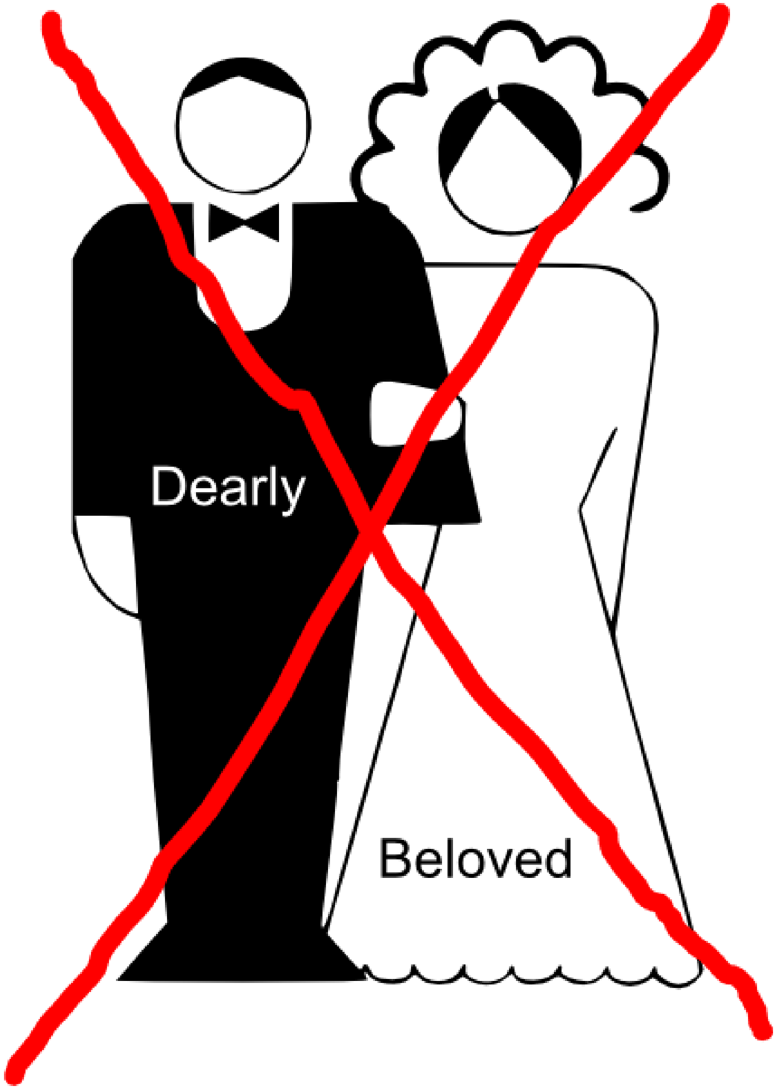
Ask a divorce lawyer about ***IP*** law…



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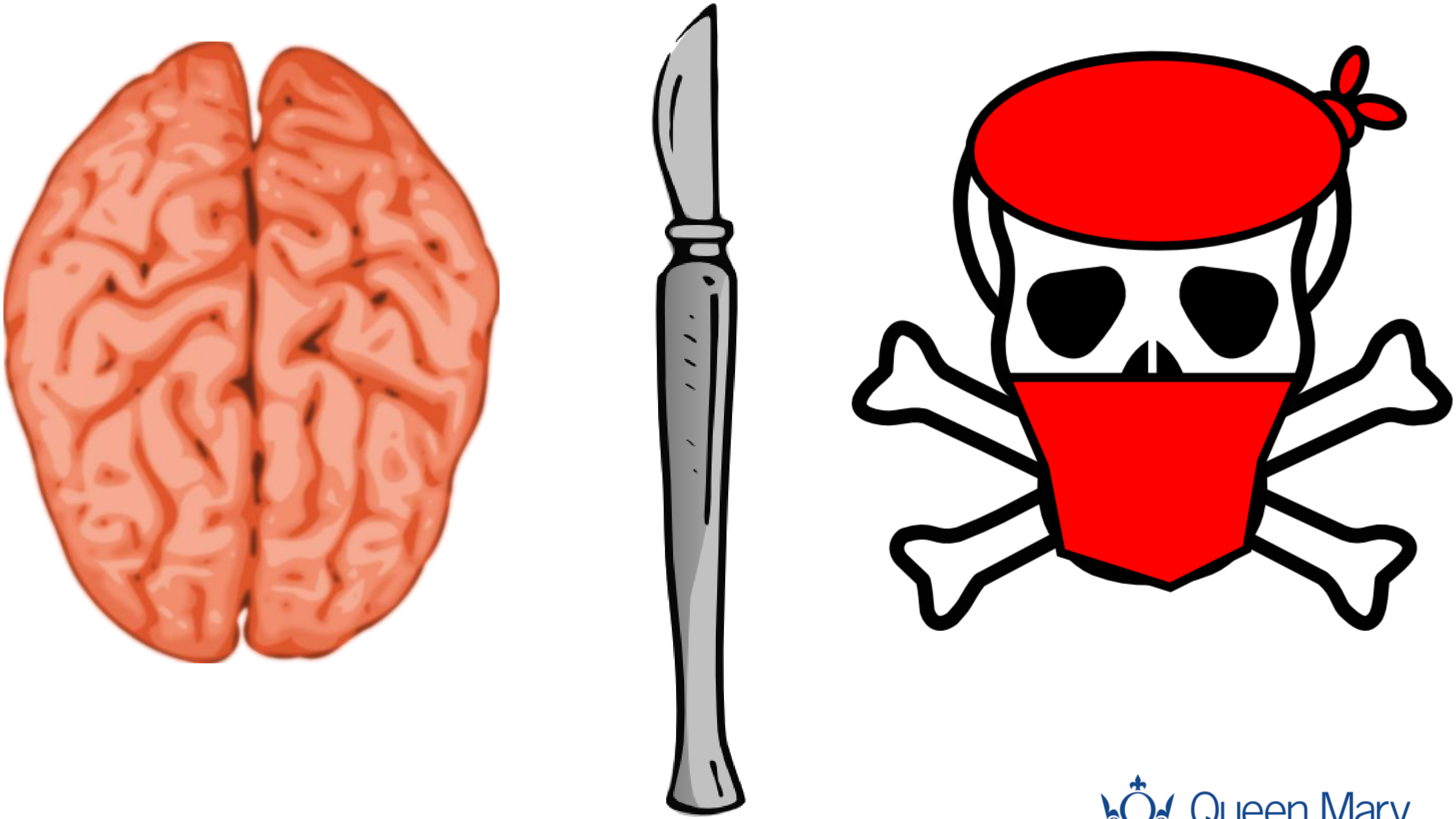
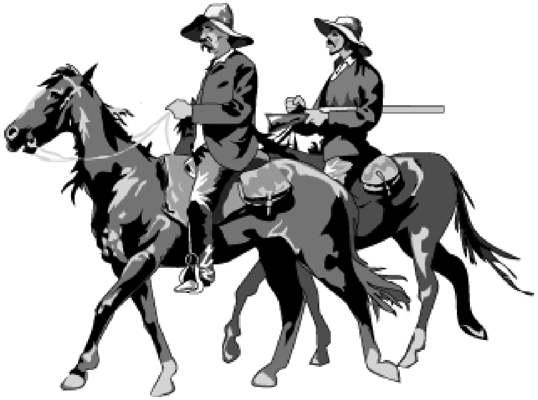
Ask a GP, or bowel surgeon, to operate on your brain?!



Laws & the internet…

SALOON



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UK, EU

CLOUD COMPUTING FEATURES

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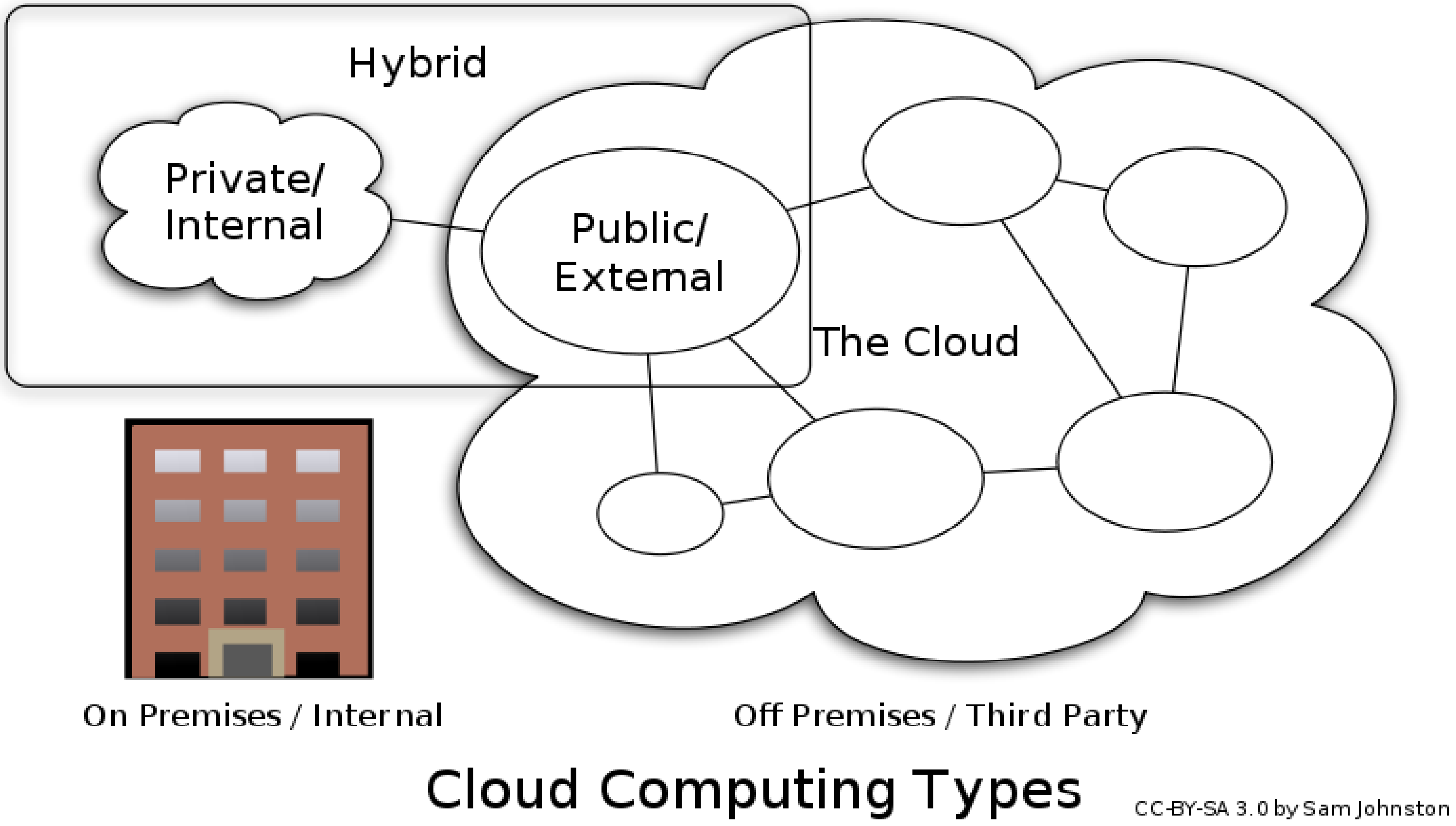
So, what *is* cloud computing?

- Use of **IT resources** over a network (eg internet), scalable on demand.
- US NIST definition, and service models:
    - **Software as a Service (SaaS)** - apps
        - ***Incl.* Storage as a Service (also SaaS!)**
    - **Infrastructure as a Service (IaaS)** – compute, storage
    - **Platform as a Service (PaaS)** – app development/hosting platform

Deployment models: private, public and hybrid clouds… ***community clouds***



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Models - 4 key points

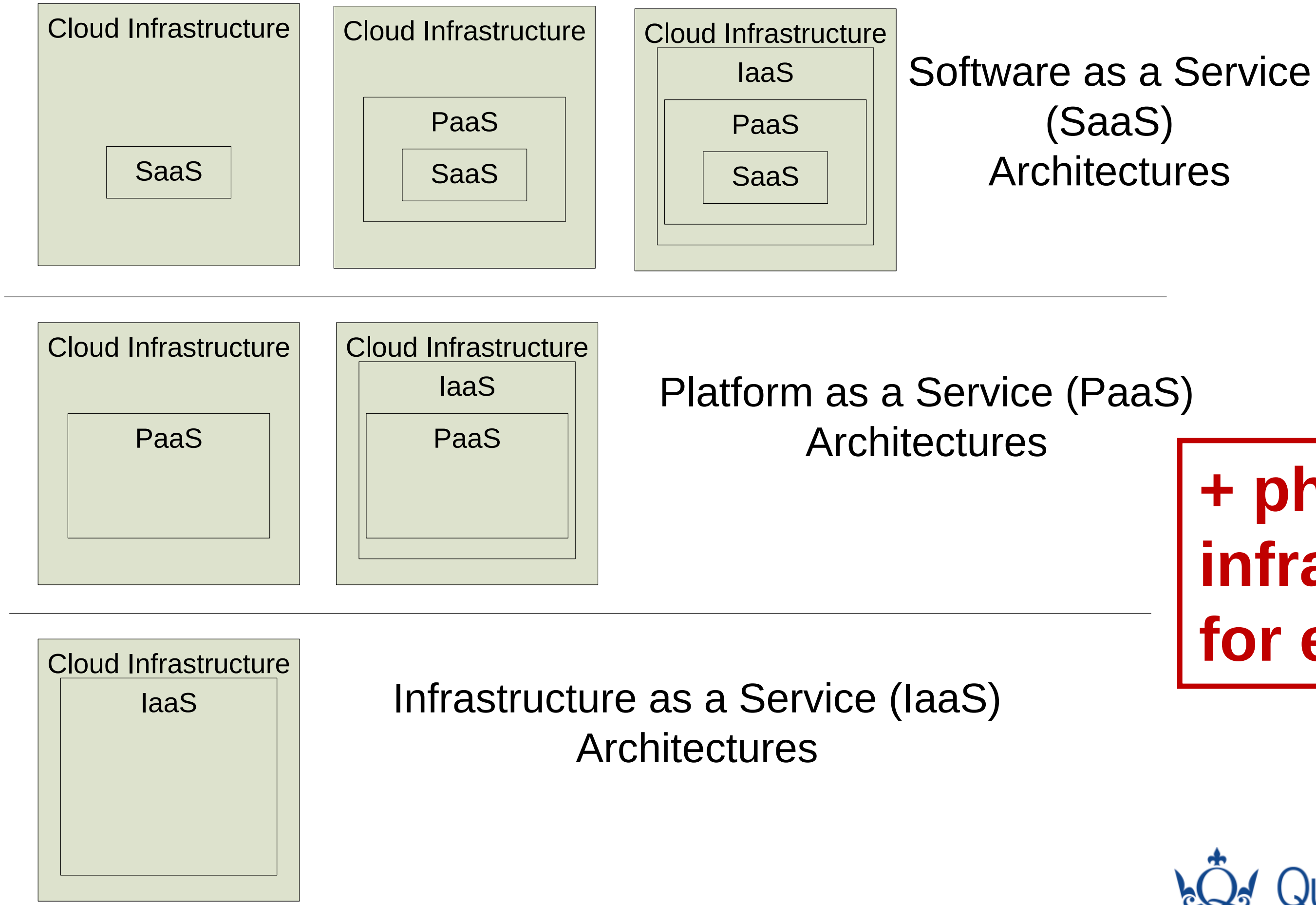
- User expertise required – SaaS to IaaS
- Spectrum, not distinct – esp. IaaS / PaaS
- Classification may depend on viewpoint

User ---- DropBox ---- Amazon
SaaS IaaS

- Ecosystem of players – which component / service?

Cloud layers/‘stack’– different possible architectures, possible hidden layers --> **Who** holds user’s data? **Where**?

+ SaaS on IaaS



Cloud Infrastructure

SaaS

Cloud Infrastructure

PaaS

SaaS

Cloud Infrastructure

IaaS

PaaS

SaaS

Software as a Service (SaaS) Architectures

Cloud Infrastructure

PaaS

Cloud Infrastructure

IaaS

PaaS

Platform as a Service (PaaS) Architectures

Cloud Infrastructure

IaaS

Infrastructure as a Service (IaaS) Architectures

+ physical infrastructure for each!

From http://csrc.nist.gov/groups/SNS/cloud-computing/cloud-computing-v26.ppt

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Key cloud computing features relevant to legal analysis

- Multiple providers? (layers)
- Data replication, deletion
- Sharding/chunking/fragmentation
- Location – multiple; changing?
- Design - provider access; encryption
- Use of/dependence on shared, third party resources, incl connectivity

LEGAL ISSUES

Who owns data in the cloud?

- Information 'Ownership' in the Cloud, Reed
- ‘Ownership’ of digital data
- Data created outside the cloud
  - 3 C’s and a D
- Data created in the cloud
  - By cloud user
  - By cloud provider
- Contract terms

Running applications in the cloud

- Running patented software on US servers?
- Open source software
  - ➢run vs distribute/release
  - ➢Affero GPL licence

Other IP law issues - infringement?

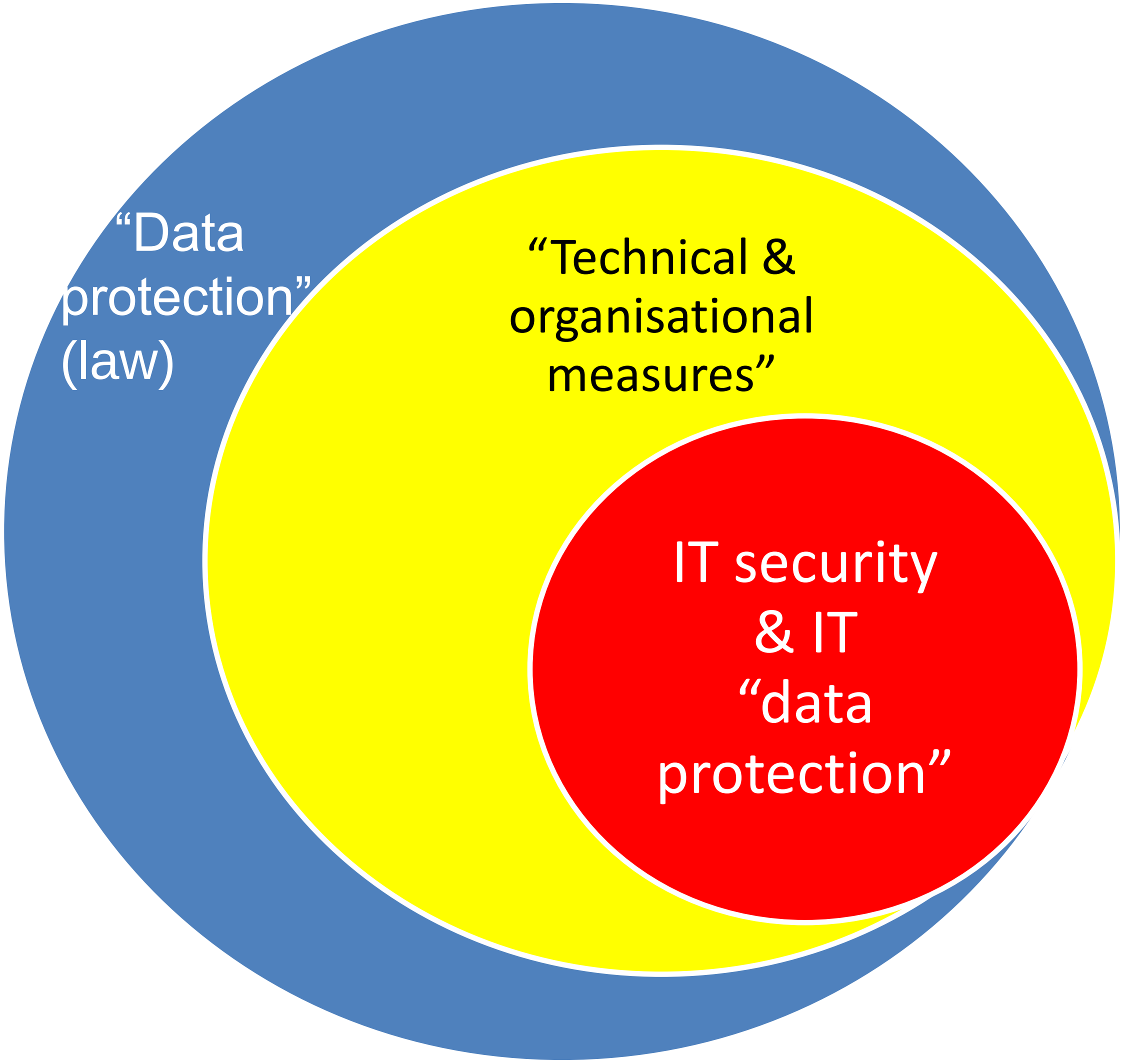
- Database right – ‘re-utilisation’ - which country?
  - Of uploader, server, and/or recipient?
  - Football Dataco v Sportradar - ECJ
    - mere accessibility…
    - ‘at least’ recipient’s country, iff targeted
    - uploader/server?
  - Broader application?
- Takedown of infringing content – as per ‘normal’ sites? Copies?

Data protection law – foundational issues

- **What?** - “personal data”
- **Who?** - responsibility
- **When?** – applicability of laws
- **Where**? – location (& **how** – transfer)

- ***Issues may differ*** – user, provider, data subject

Data protection - law vs IT


“Data protection” (law)
“Technical & organisational measures”
IT security & IT “data protection”

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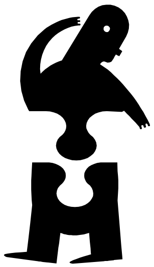
What information is regulated – “personal data” in the clouds

- Significance of “personal data” definition
- Anonymised data, encrypted data
  - What is “good enough”?
- Fragmented data
- Anonymisation/encryption procedure
- Suggestions:
  - Status of encrypted data; encryption etc procedures
  - Realistic risk of identification/harm
- Full paper http://bit.ly/clouddataprotection1



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Who is responsible for personal data in the cloud?

- Controller vs processor - significance
- Cloud user
- Cloud provider(s) – metadata; access?
- What ***should*** provider's status be?
  - E Commerce Directive-style defences for infrastructure providers (unless access + control)
  - End to end accountability (instead of binary controller/processor distinction)
- Full paper http://bit.ly/clouddataprotection2

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When do EU data protection laws apply to a ***non-EEA*** cloud user/controller?

- **“EEA establishment” + ”context”** - incl. through third party

- Public international law
- **“Use”** of EEA **“equipment”**
  - Cookies (“equipment”) – SaaS
  - EEA data centre/provider?

- Even within EEA…
- Full paper http://bit.ly/clouddataprotection3

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Where can "personal data" be located?

- UK Government's ICT Offshoring (International Sourcing) Guidance, 2011 - data location restrictions
  - national security
  - data protection laws
- Data protection:
  - data protection laws - all sectors, sizes
  - transfer restriction - EEA only unless "adequate protection" or specific exception
  - "transfer" - remote access

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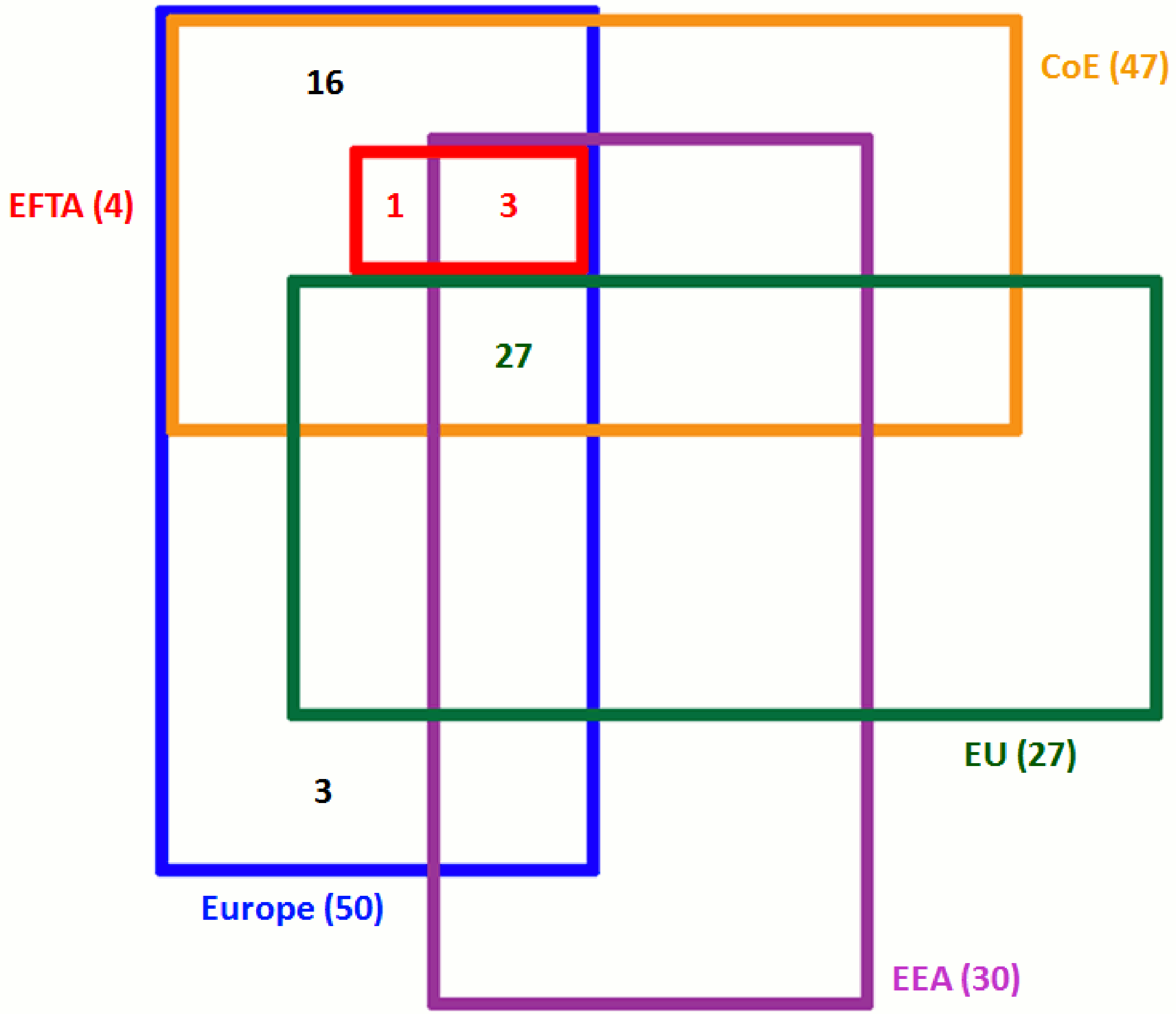
EEA, EU, Europe…



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http://bit.ly/eu-venn

(for large version & table listing countries)

“Adequate protection”

- How? Who decides?
- Approved methods to achieve
- ICO – controller decides (cf others)
- Now vs future…

“If we include entities outside the European Union, the data transfer that is inevitable with cloud computing — and which has no legitimacy under data privacy law — makes clouds inherently impermissible.”

German regulator Thilo Weichert

“The DPA does not prohibit the overseas transfer of personal data, but it does require that it is protected adequately wherever it is located and whoever is processing it. Clearly, this raises compliance issues that organisations using internet-based computing need to address.”

UK Information Commissioner
(“Personal Information Online”)

How can personal data be transferred outside the EEA? - 1

- Whitelisted countries
  - a short list
- US Safe Harbor –
  - applicability - “processors”; layers/sub-providers & onward transfers
  - restricted - non-US/EEA data centres (Danish DPA)
  - adequacy - concerns

How can personal data be transferred outside the EEA? - 2

- BCRs
  - within group only, time/costs
- Model clauses – as is, no changes; if layered?
  - For EEA customer using a cloud provider –

Provider	Sub-provider	Covered by model clauses?
Non-EEA	Non-EEA	Yes
EEA	Non-EEA	**No**

So, in practice… regional clouds

- Can users choose their data’s location?
  - ➢No choice
  - ➢In practice…
- Regions? - increasingly
  - ➢EEA ≠ EU ≠ Europe – Danish DPA (Google)
  - ➢**Contractual** commitment? Amazon...
  - ➢Verification of location? Trust

But even *within* the EEA…

- Establishments / data centres in ***multiple*** EEA Member States?
- ***Obstacle***: lack of harmonisation, inconsistencies/conflict - eg security requirements
- Abolish?
- Full paper http://bit.ly/clouddataprotection4

Law enforcement access to cloud data

- Requests to ***providers*** for user data
  - ➢system design, user encryption?
- US PATRIOT Act - bogeyman?
  - ➢all countries…
  - ➢providers' terms: rights; scope; notice
  - ➢data protection law: export, & ICO cloud guidance
- Walden's Cloud Legal Project paper, ComputerWorldUK summaries

The future…

- Regulators’ guidance in July 2012
- ICO guidance Sep 2012
- Draft Data Protection Regulation
- Not very cloud-appropriate!
    - ➢QMUL press release, papers

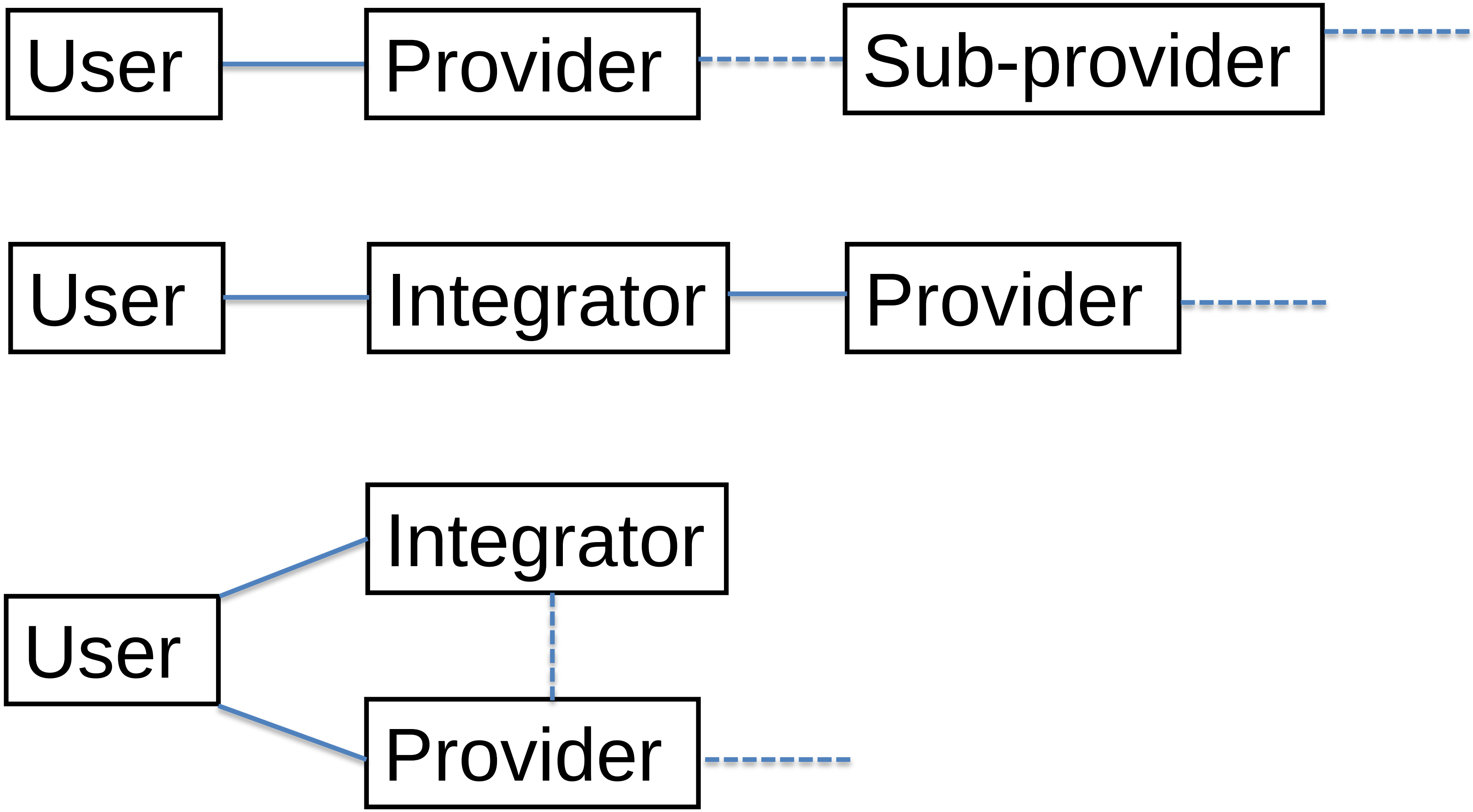
Meanwhile, in practice

- Location, location, location
- Encryption, encryption, encryption
  - ➢Limitations – speed; value-add; operations
  - ➢Key management critical
- Contract, contract, contract (next…)
- Contract - procurement
  - ➢Internal controls
  - ➢Due diligence

Cloud contract terms - introduction

- Legacy of consumer web services – ‘off the shelf’ cloud computing
  - Providers' standard terms
  - Click-through - easy, quick, free / credit card
  - Users’ internal procurement
- Cloud Legal Project research
  - 2010 - standard cloud providers' terms
  - 2012 - negotiated cloud contracts

Some possible contractual structures - 2 types of users



User — Provider - - - Sub-provider - - -

User — Integrator — Provider - - -

User — Integrator

User — Provider - - -

Integrator - - - Provider

Dotted line means, may (or may not) exist

Cloud contracts

- "Contracts for clouds: comparison and analysis of the terms and conditions of cloud computing services", Bradshaw, Millard & Walden
- 31 sets of standard T&C (defined broadly)
- Key issues include:
  - ➢ Complexity & multiple dependencies
  - ➢ Predictability
  - ➢ Inappropriate / unenforceable / illegal

General findings

- Liability
- Disclaimers
- Choice of law and jurisdiction
- Change/terminate service, terms
- Data recovery following termination of service
- Subcontracting
- IP rights

Whose laws apply in a cloud dispute?

Choice of law specified by cloud provider…	Number *
US State: California (most common), Massachusetts (Akamai), Washington (Amazon), Utah (Decho), Texas (The Planet)	15
English law, probably because service provider based there	4
English law, for customers in Europe / EMEA	4
Other EU jurisdictions (for European customers): eg. Ireland (Apple), Luxembourg (some Microsoft services)	2
Scottish law (Flexiant)	1
The customer's local law	2
No choice of law expressed or implied, or ambiguous choice (eg. “UK Law” for g.ho.st)	3

** Number in each category is out of 31 contracts analysed by QMUL Cloud Legal Project*
http://www.cloudlegal.ccls.qmul.ac.uk/

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Negotiated contracts research

- “Negotiating Cloud Contracts: Looking at Clouds from Both Sides Now” – Hon, Millard & Walden (2012) http://bit.ly/negotiatedcloudcontracts (Stanford Technology Law Review, Dec 2012)
- Methodology - Dec 2010 to early 2012
  - ➢ Detailed “no names” interviews
  - ➢ Cloud providers / users /others (including integrators and law firms)
  - ➢ FOI requests

Why do users seek changes?

- Provider-favourable terms
  - Though not always
- Commercial, eg SLAs, risk allocation
- Legal / regulatory compliance, esp.
  - personal data
  - financial services

Can users negotiate successfully?

- User's position - bargaining power
  - Esp financial institutions, government - *their* mandatory standard terms, eg UK G-Cloud
  - Mostly confidential, but eg Google / City of LA; Cambridge U
- Provider's position
- Cloud is only part of larger deal
- NB integrators – risk of mismatch

Top 6 issues in negotiated cloud deals

1. Exclusion / limitation of liability
2. Service levels
3. Security and privacy, incl DP
4. Lock-in and exit
5. Providers' rights to modify service unilaterally
6. IPRs

Summary - signs of market changes

- Customer-appropriate vs cloud-appropriate -> fudge - user risk (eg regulatory) ***or*** provider agrees meaningless / impossible terms
- High end (user demand) + low end (regulatory / consumer protection action) + increasing provider competition -> standard terms shift?
- Education - lawyers, policymakers, even IT channel (not software licensing, product sales, traditional outsourcing)
- Industry standards and certifications - and legal / regulatory recognition for compliance purposes

UK G-Cloud programme v1

- Framework agreement + call-off contracts
- Overlay approach – provider's terms + overriding terms
    - US gov social media sites
    - risks
- Issues with v1
    - *which* provider terms
    - substantial / material amendments – public procurement law
    - provider can change terms!
- v2 – restricts changes, but clarity…
- Full paper available

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Other legal issues…

- Competition law - **lock-in** vs interoperability / portability, standardisation efforts
  - CLP paper
- Etc etc…
  - Running software in the cloud -
    - Export control? (*eg.* use of cryptography)
  - Tax?
  - Derivatives? (cloud markets)

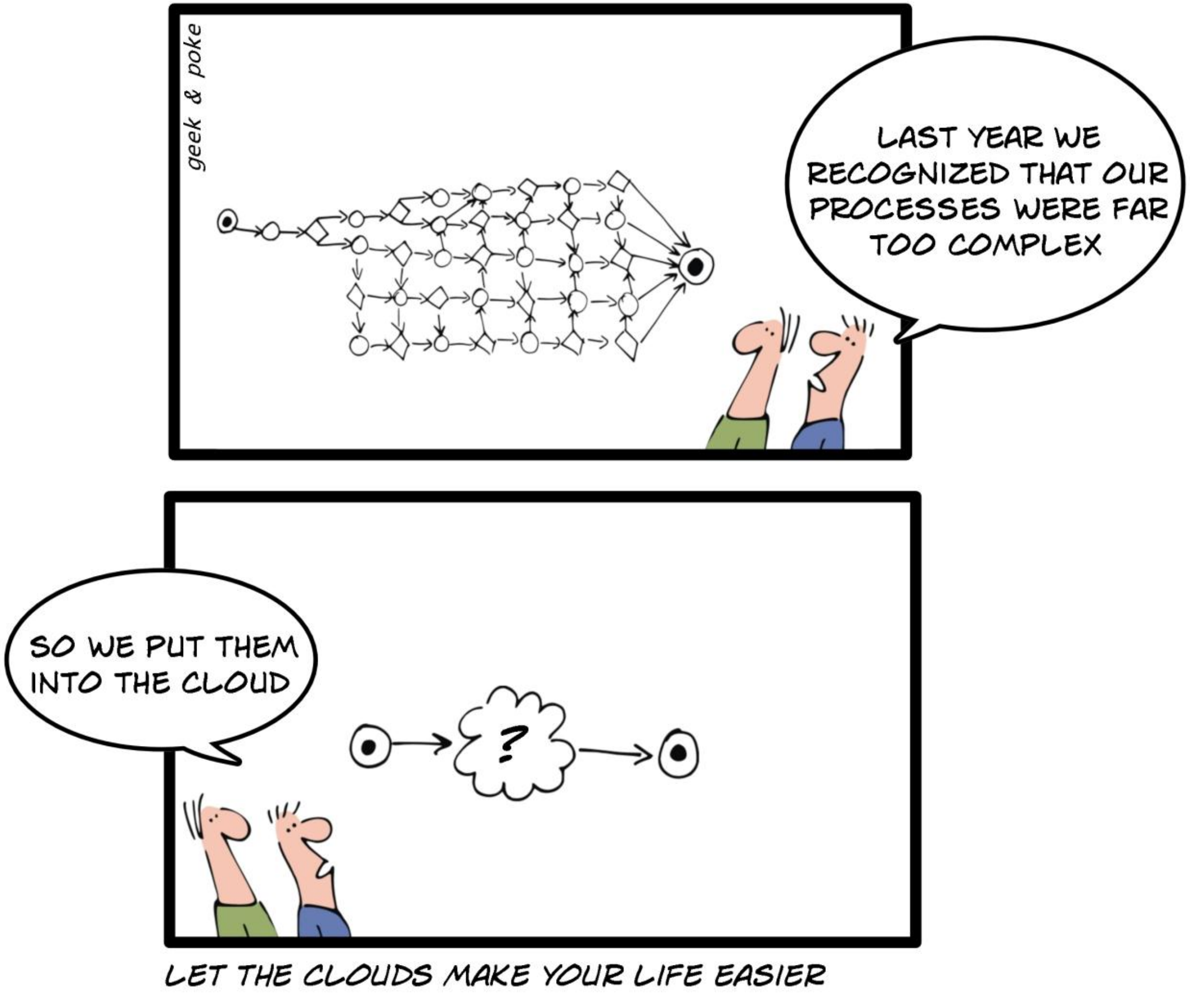
Cloud users – practical questions

- Cloud use/migration - what, how, when, why, who (incl. layers), where?
- Shop around; multiple providers?
- Due diligence – for ***particular*** intended use
  - Incl. system design, certifications, financial, data portability/deletion
  - Legal / security / risk assessments – involve early, inform fully – ENISA papers
  - Contract terms – check, negotiate? Own end users?
- Self-help - own security measures, backup; insurance? Monitoring, audits?

Cloud providers – practical questions

- Regulatory review of contract terms
  - suitability for intended users, users' compliance needs
  - competitive advantage?
- Pre-contractual disclosures/transparency
  - security, sub-providers, locations
- Tools for users – monitoring location etc
- More broadly:
  - Education / awareness
  - Industry standards and third party certifications

Making life easier?


geek & poke
LAST YEAR WE RECOGNIZED THAT OUR PROCESSES WERE FAR TOO COMPLEX
SO WE PUT THEM INTO THE CLOUD
?
LET THE CLOUDS MAKE YOUR LIFE EASIER

By Oliver Widder, Geek and Poke.

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Forecast: cloudy and changeable… but bright!

- Benefits – but unintended consequences…
- Legal / regulatory obligations continue
- Physical location
- Differences in cloud service providers
- Risks of compelled disclosure and other external disruptions
- Regulators and lawmakers…
- Cloud contracts evolution – customers, competitors, regulation, cases

References and further reading

- CLP research - http://cloudlegalproject.org/Research
- Including links to some resources – http://bit.ly/cloudlinks
- Future CLP papers
    - ➢Consumer protection
    - ➢Cloud governance

Thanks for listening!

Any questions…

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