Cloud Computing: A European Perspective

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Overview

- Cloud Universe – Definitions
- Cloud Risks in Europe
- Governance, Risk and Compliance (GRC) Issues
- European Union Perspective
  - Research Agenda
  - GRC Recommendations
  - Regulatory Initiatives
- Selected National Approaches in the EU
- Conclusions and Outlook

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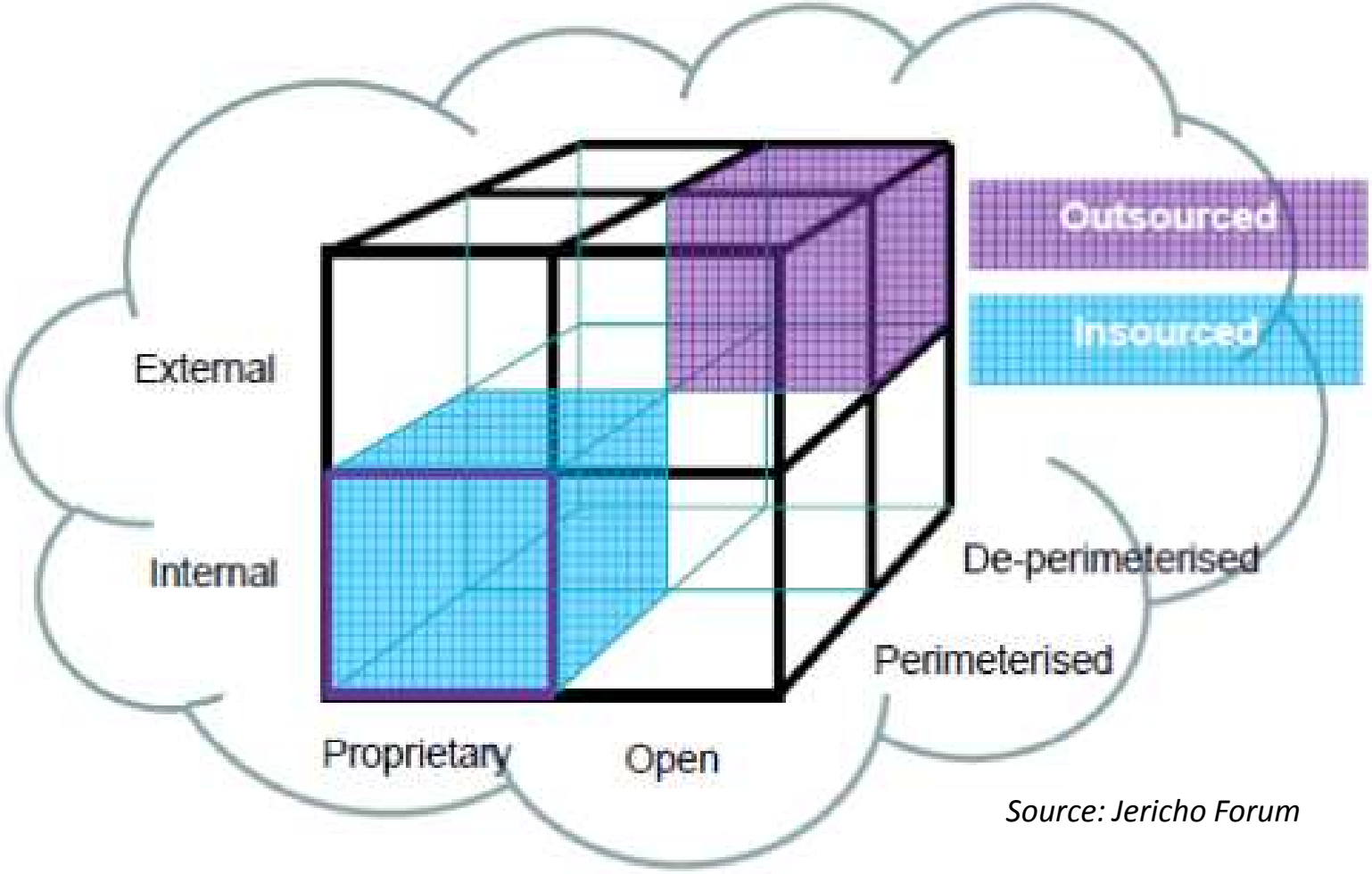
CLOUD UNIVERSE - DEFINITIONS

The Cloud Universe



Source: Jericho Forum

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Cloud Cube Dimensions and Layers

- Internal vs. External – delineate the physical boundaries of the cloud under review
- Proprietary vs. Open – determine ownership of technology, services, interfaces and other components
- Perimeterised vs. De-Perimeterised – trace your corporate boundaries (structural / logical), for instance DMZ / firewalling: may be wider than physical
- Layer(s) at which the cloud exists – Process, Software (SaaS), Platform (PaaS), Infrastructure (IaaS)

- Insourced vs. Outsourced – control of resources, contracts

Source: based on Cloud Cube Model (Jericho)

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Social Networks as Part of the Cloud

- Social Networks have rapidly become an area of concern throughout Europe – therefore included in this presentation
- Practical areas of concern: Facebook controversy, employment / recruitment practices, GPS-based tracking of minors etc.

- Typically external, de-perimeterised, outsourced
- Process or software layer, sometimes platform layer

- Social networks are user-centric: they tunnel through the corporate paradigm
- Link between social network users and their corporate background is organisational, not technical
- Corporate use of social networks must be bottom-up (by definition)
- Social networks are encapsulated by a Privacy boundary that is drawn around the individual user
- Network operators have introduced far-reaching terms and conditions that may be in breach of European privacy regulations

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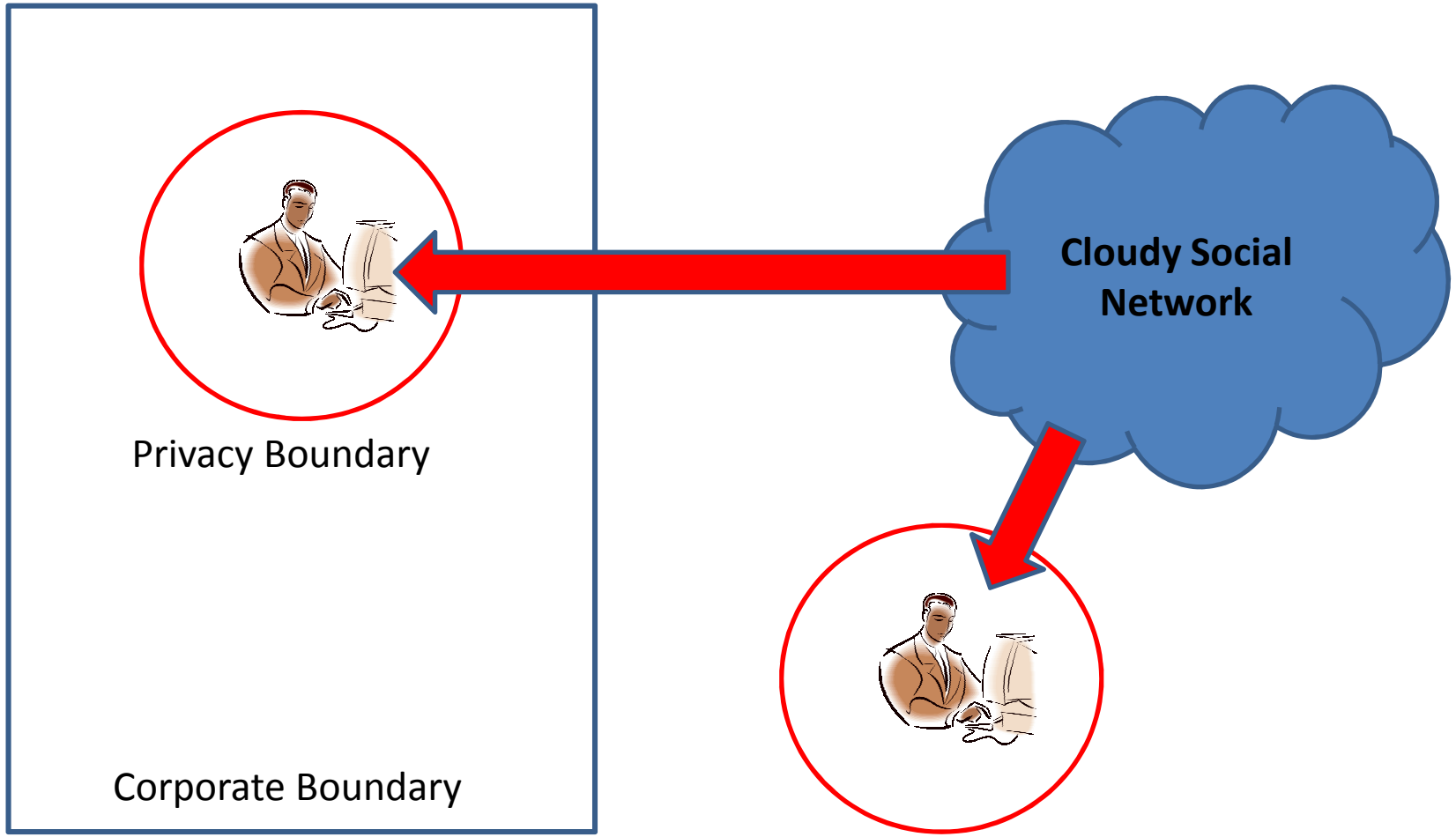
User, Corporation, and Social Network



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CLOUD RISKS IN EUROPE

Key Risks in Cloud Computing

- User privileges – access, bypassing the border etc.
- Regulatory compliance – key internal controls, financial controls etc.
- Data location – physical and logical
- Data segregation – data at rest, data flow, encryption etc.
- Availability and DR – capacity and recovery capabilities, dimensioning of platforms and infrastructure, etc.
- Audit and investigative support – logging, audit trails, evidence, chain of custody etc.
- Long-term viability – what to do about 10 yr retention (or longer)

Source: Gartner

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More Key Risks

- Contracting risk – SLA design, strategic dependencies, exit scenarios, etc.
- User privacy risk – protective rights may be prohibitive to audit AND regulators, ie contradictory points of law (also consider employee duty of care)
- Reputational and societal risk – Process as a Service, and social networks, evoke spontaeous phenomena such as virtual flash mobs etc.
- Reverse user privacy risk – targeted identity theft, defamatory activity, libel / slander, stalking etc. (also consider employer duty of care)

Strategic European Risks

- Sourcing dependency (lock-in): technical dominance of non-EU commercial providers
- Cross-border: loss of control over data and infrastructure situated outside the Union
- Cyber crime: decentralised attack and crime vectors from outside the Union
- Data availability: service and platform continuity for critical infrastructures
- Alignment: integration of clouds with existing GRC provisions across the member states

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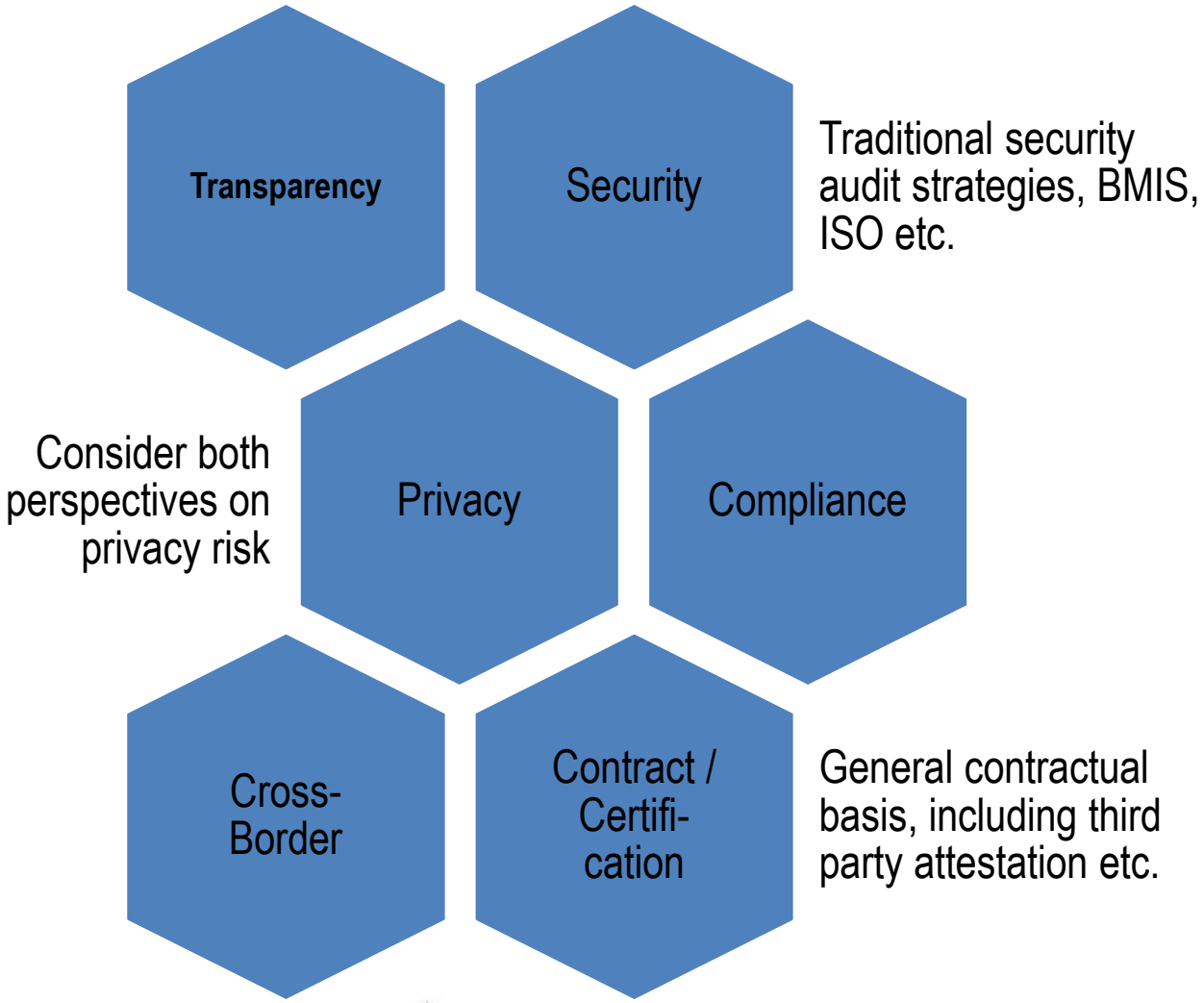
GOVERNANCE, RISK AND COMPLIANCE (GRC) ISSUES

GRC Issues



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GRC Issues

- Transparency: Structure, Quality of Service, suppliers and supply chains, liability
- Security: Outlying services, degree of control, alignment with corporate and national ISMS, critical infrastructures
- Privacy: EU and national laws, safe harbor, binding corporate rules (BCR), data location issues, encryption and archival
- Compliance: adjusting cloud GRC to internal corporate compliance provisions, eg SOx, operational risk etc.
- Cross-border: multiple suppliers / vendors, agile data, data mappings, data management, binding corporate rules
- Contract / Certification: rights to audit, contractual language vs technology, existing certifications (eg ISO 27001), existing regulatory reports

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EUROPEAN UNION PERSPECTIVE

Research Agenda

- EU Framework Programme 7 (FP7):
  - The Future of Cloud Computing, Report (2010)
  - January 2010 Symposium, including an interesting EU / Japan comparative perspective
- 2011 FP7 Work Programme under way
- European Network Information Security Agency (ENISA):
  - Official EU agency conducting surveys and research in cloud computing, specifically security
  - Cloud Computing Security Risk Assessment (2009)
  - Cloud Computing Small and Medium sized Enterprise (SME) Report (2009)

GRC Recommendations

- Governance: growing number of informal calls for better governance (from industry) since 2009
  - See for instance Helmbrecht (2010), further Proceedings of Octopus Conference (2010)
- Risk: growing risk and some notable incidents
  - See for instance EU Parliamentary Resolution (June 2010)
- Compliance: heterogeneous approaches across EU:
  - ENISA: Cloud Computing Information Assurance Framework (2009)
  - France: national federation of clouds (?)
  - Germany: generic regulatory approach, privacy-driven
- Emergence of a growing consultancy sector, many vendor-centric recommendations

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Regulatory Initiatives

- Most regulatory activity is indirect
- Provisions such as SOx, 8th EU Directive (EuroSOx), Privacy laws etc. influence cloud computing
- Employment practices are a significant driver that is shaping public cloud security
- While there appears to be a common goal to regulate, this is difficult across 27 member states
- Best practice / self-regulation vs. Codification
- Several sectors (eg Finance, Health) are subject to more stringent regulation

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SELECTED NATIONAL APPROACHES IN THE EU

Example: France

- Planned national infrastructure (federation of clouds)
- Independence vis a vis US / international cloud structures
- National agencies or institutions
- Substantial budget allocated

- French plans are widely seen as difficult to implement
- It is not clear if any national structure will be competitive in the international arena

Example: Germany

- Two National Plans:
  - Critical Infrastructures, including some strategic clouds
  - Standardisation, specifically BSI 100 series, across all federal agencies
- Close alignment with State Privacy Officers
- Adaptation of national privacy laws
- Alignment with EU initiatives on critical infrastructures and security

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CONCLUSIONS AND OUTLOOK

Conclusions

- Cloud computing is a dominant theme throughout the EU
- There is a defined research agenda at Union level, both in the technical and in the societal fields
- Best practices are forming, but this will require some more work
- At this point, there is no definitive regulation or definitive governance over cloud computing
- Many GRC issues persist, sometimes addressed by non-governmental bodies or Union agencies
- National thinking on cloud GRC is still heterogeneous

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Outlook

- Regulatory initiatives at EU level may start in the near future
- Internationally recognised frameworks such as COBIT and BMIS are applicable
- Standardisation and best practice are slowly converging
- New challenges are arising from privacy and social networks, as the latter are becoming a mass movement
- At national and Union levels, individual (personal) protection in public clouds is an important issue
- Corporate and national protection of critical infrastructures are extended to cloud computing
- Cyber crime grows in importance, particularly at the corporate and industry sector level

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Background Materials

- The sources quoted and some important background materials are supplied together with this presentation
- All sources quoted represent the opinion of the respective author(s)

Thank you very much indeed for your kind attention.
Your questions and comments are highly appreciated.

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