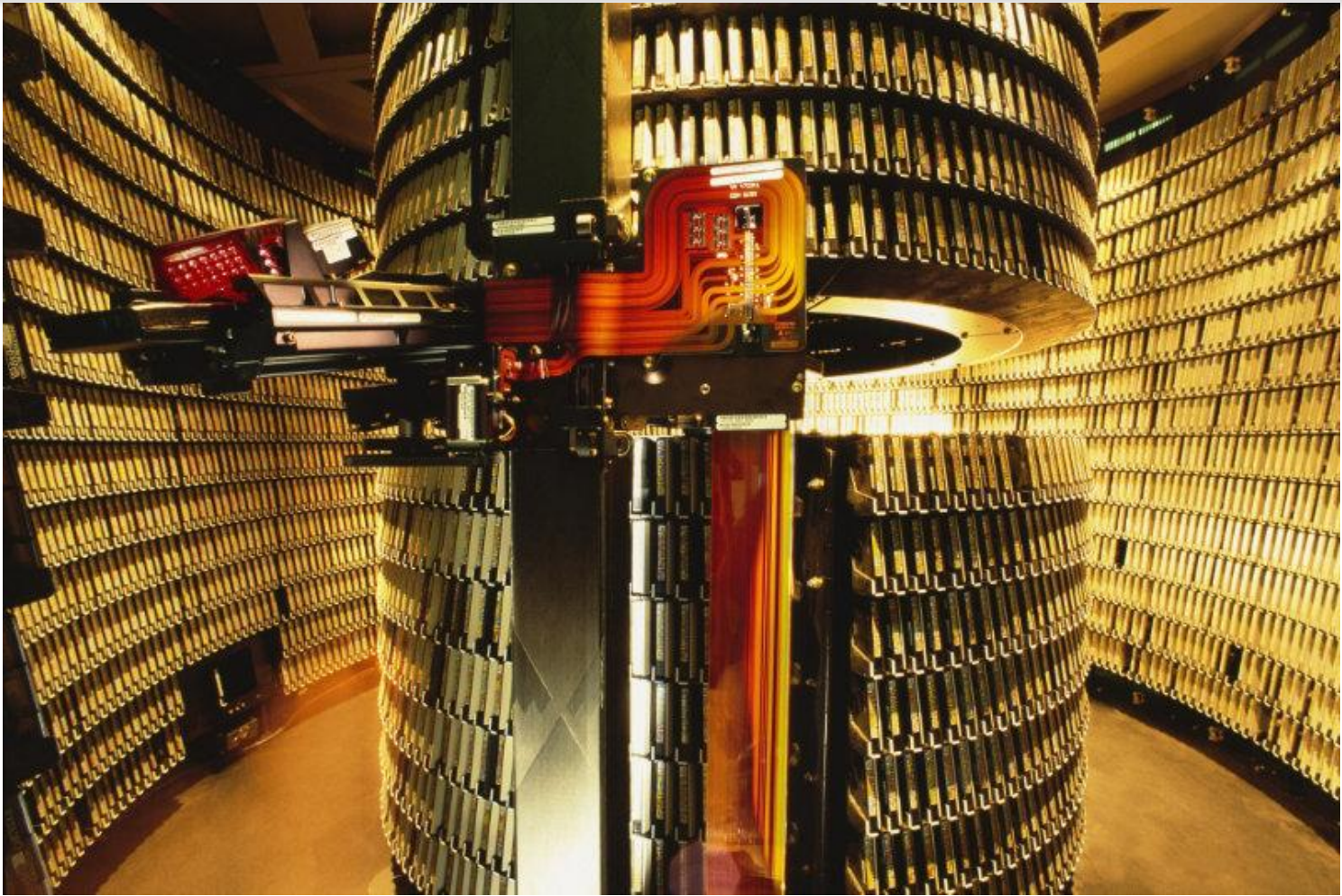# Common new technology

Cloud based archiving

1. Data preservation
2. Different kinds of Clouds
3. Security in Clouds
4. Law in the Clouds
5. Requirement in 21.A.165 (h)
6. ISO/IEC 27000

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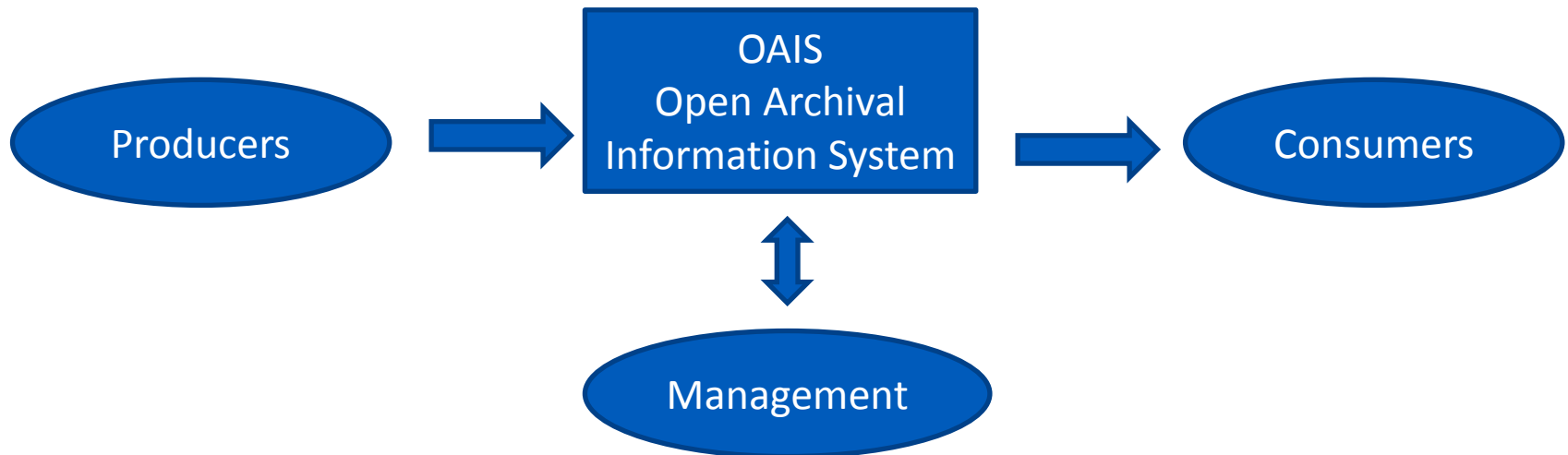
Tape-robot

Magnetic decaying

- Magnetic decaying
  - In average 1% of the bits disappear every year. Magnetic disorder in the substrate(entropy), floppy disc, hard disc, cassette tape.

- Hard discs
  - Change before warranty expires.
  - Some month up to 8-10 year.
  - Important production data shall have backup
  - Mechanical problem starts before other problem occurs

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Data Preservation

- Copy data to new media
  - Hard disc, every 4 years
  - Tape, every 6 years
- Hard work, perhaps Cloud archiving is a solution?
- If you by the service, Cloud service is doing the job.

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Data Preservation

- **Open Archival Information System**
  - OAIS
  - ISO/IEC 14721:2012

```
┌──────────┐      ┌──────────────────┐      ┌──────────┐
│ Producers│ ───> │       OAIS       │ ───> │ Consumers│
└──────────┘      │  Open Archival   │      └──────────┘
                  │Information System│
                  └──────────────────┘
                          ↕
                     ┌──────────┐
                     │Management│
                     └──────────┘
```

Different kinds of Clouds

Dropbox

Amazon S3
Highly scalable, reliable, and low-latency data storage infrastructure.
Learn More »

Cygate

Microsoft Azure

IBM Storage

storegate

ORACLE Cloud

box

mozy
BY EMC

Google Cloud Platform

Cloud Distribution AB

syncplicity

SugarSync

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Different types of cloud

- IaaS
  - Infrastructure as a Service
  - Storage, Virtual Machines, Servers, Network
- PaaS
  - Plattform as a Service
  - Databases, Webservers, Applicationservers
- SaaS
  - Software as a Service
  - Gmail, Office365, Salesforce, etc, etc

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About security in the Cloud 1

- Encryption of data in Cloud
  - Encrypt data before archiving in cloud

    more securely

    manage keys at home or in the cloud
  - Encrypt data in cloud

    It is difficult to know if the data is well protected

- login
  - Password (need to be well protected stored in a safe)
  - two-factor
  - certificate
  - VPN

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About security in the Cloud 2

- Availability
  - To reach the service requires Internet

    redundant

    different internet service provider if availability is very important

- Cloud-Policy/Guideline

    should have

    Feel free to build on standads

  - http://www.itmanagerdaily.com/cloud-computing-policy-template/
  - ISO/IEC 27017

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Law in the Cloud 1

- Law in the Cloud
  - Is the information physically in Sweden or somewhere else ?
  - Is the information within EU/EES/US?
- Personal data
  - Adekvat security
    - Safe Harbour
    - Privacy Shield

Law in the Cloud 2

- To do before a cloud service put into use

    – analyse the risk and vulnerability

    – check the legality

    – third country

    – Designate a responsible person to control the risk of a bankruptcy of the cloud company so there will be time to get back the archived data

    – Document the Cloud policy/guideline in POE(security, encryption, login, availability) according to 21.A.165

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Requirement in 21.A.165 (h) and GM

- Arciving for continious airworthiness
- All forms of recording media are acceptable(paper , film, magnetic…)
- Identify record to be kept
- Describe the organisation of, and responsibility for archiving system (location, compilation, format) and condition for access to the information.
- Control access and provide effective protection from detoriation or accidental damage.
- Ensure continued readability of the records.
- Demonstrate to the competent authority proper functioning of the records system

Examples of cloud certifications

- Cloud Certification Schemes List
  - EU Commission

- Examples of certifications
  - Certified Cloud Service
  - CSA Cloud Security Alliance
  - EuroCloud
  - ISO/IEC 27001
  - Payment Card Industry Data Security Standard
  - Leet Security Rating Guide
  - Service Organization Control (SOC)
  - Cloud Industry Forum Code of Practice

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Law in the Cloud 3

- Sign agreements with a provider of Coud service
  - A package of agreements may contain:
    - SLA, Service Level Agreement
    - Policy for security, can be ISO/IEC 27000
    - Policy for Integrity, included in ISO/IEC 27000
    - Terms of service

    DropBox ceases operation? A process shall be in place taking care of:

    Who got the e-mail?

    Who is responible?

    Who is responsible to download the archived data?

    What is the alternative storage?

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Some examples of agreements

- Amazon AWS/S3

  - Certificate

  - ISO 27001/27017/27018

    - There are many more

  - Amazon has facilities throughout the world including EU

- But

  - aws.amazon.com/s3/sla/

  - *" The Service Commitment does not apply to any unavailability, suspension or termination of Amazon S3…"*

  - Bankruptcy or closure! and the cloud service has no longer an responsibility according to the service commitment. (It can not happen overnight but there is still a need to have a responsible function in the POA)

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Some examples of agreements

- DropBox

- In much the same certifications as Amazon
  - ISO 27001/27018
  - SOC1/2/3

- The service commitment sound similar…
  - " Vi förbehåller oss också rätten att stänga av eller avsluta tjänsterna när som helst efter eget godtycke och utan föregående meddelande."

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ISO/IEC 27000

- ISO/IEC 27000 Standards for information security
  - ISO/IEC 27001 and ISO/IEC 27002 general Info Sec
  - ISO/IEC 27017 and 27018 have more security controls for cloud service

- If the cloud provider is ISO/IEC 27000 certified you can assume that you can trust their processes.

- In practice it is the only thing you can do.

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