Data Management at Waterloo

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Agenda

- Legislation
- IPC Design Principles
- Data Management Principles
- Data Management at Waterloo

Data Management in Ontario Higher Education

- The Office of the Information and Privacy Commissioner (IPC) is responsible for ensuring compliance with Ontario's access and privacy laws. https://www.ipc.on.ca

- Freedom of Information and Protection of Privacy Act (FIPPA), R.S.O. 1990, c. F.31

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Privacy 101

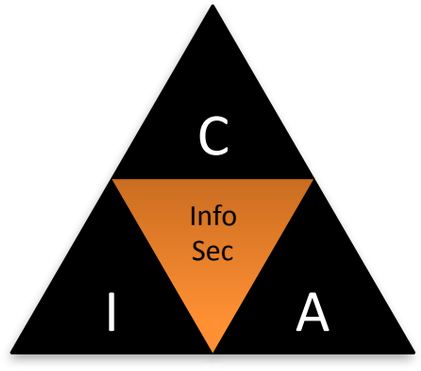
- Information Privacy is the right of an individual to exercise control over the collection, use, disclosure and retention of his or her personal information, including his or her student records.
- It is a legal matter.
- It is not an IT matter.
- Privacy ≠ Secrecy

Privacy Principles

1	**Accountability**
2	**Identifying Purposes**
3	**Consent**
4	**Limiting Collection**
5	**Limiting Use, Disclosure and Retention**
6	**Accuracy**
7	**Safeguards**
8	**Openness**
9	**Individual Access**
10	**Challenging Compliance**

No Privacy without Security

- Information Security - CIA Triad:



- **Confidentiality** - restricted access is enforced and maintained as expected.
- **Integrity** - assurance information can be trusted.
- **Availability** - access is possible when required.

Access 101

- Underlying Concept:
  - Citizens need information to take part in democratic process.
  - Information should be shared widely to those who need access (while respecting privacy and confidentiality).
  - Individual Privacy is a core value to the public.

Access 101 (cont'd)

- Through Freedom of Information (FOI) Requests, the public has a right to access records in an institution's custody or control unless:
  - an exemption applies; or
  - it is determined that the request is frivolous or vexatious; or
  - the information is excluded from Legislation.

Access 101 (cont'd)

- Must sever and release non-exempt portions and provide reasons for exemption.

- Directory of Records required to list all available records and personal information banks.

- All decisions made can be reviewed by the Information & Privacy Commissioner (IPC).

Routine Disclosure

"In the spirit of the Act, unless there is a statutory requirement or reason not to release the information, routine disclosure should become the norm."

Information/Privacy Commissioner Guidelines on Routine Disclosure

Hot Side Hot
Cool Side Crisp

McDLT

Hot Side Hot
Cool Side Crisp

Confidential

Public

Access by Design

www.privacybydesign.ca

McDLT

IPC: Privacy by Design (PbD)

1. **Proactive** not Reactive; **Preventative** not Remedial
2. Privacy as the **Default Setting**
3. Privacy **Embedded** into Design
4. Full Functionality — **Positive-Sum**, not Zero-Sum
5. End-to-End Security — **Full Lifecycle Protection**
6. **Visibility** and **Transparency** — Keep it **Open**
7. **Respect** for User Privacy — Keep it **User-Centric**

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IPC: Access by Design (AbD)

1. **Proactive**, not Reactive
2. Access **Embedded** into Design
3. Openness and Transparency = **Accountability**
4. Fosters **Collaboration**
5. Enhances **Efficient Government**
6. Makes Access Truly **Accessible**
7. Increases **Quality** of Information

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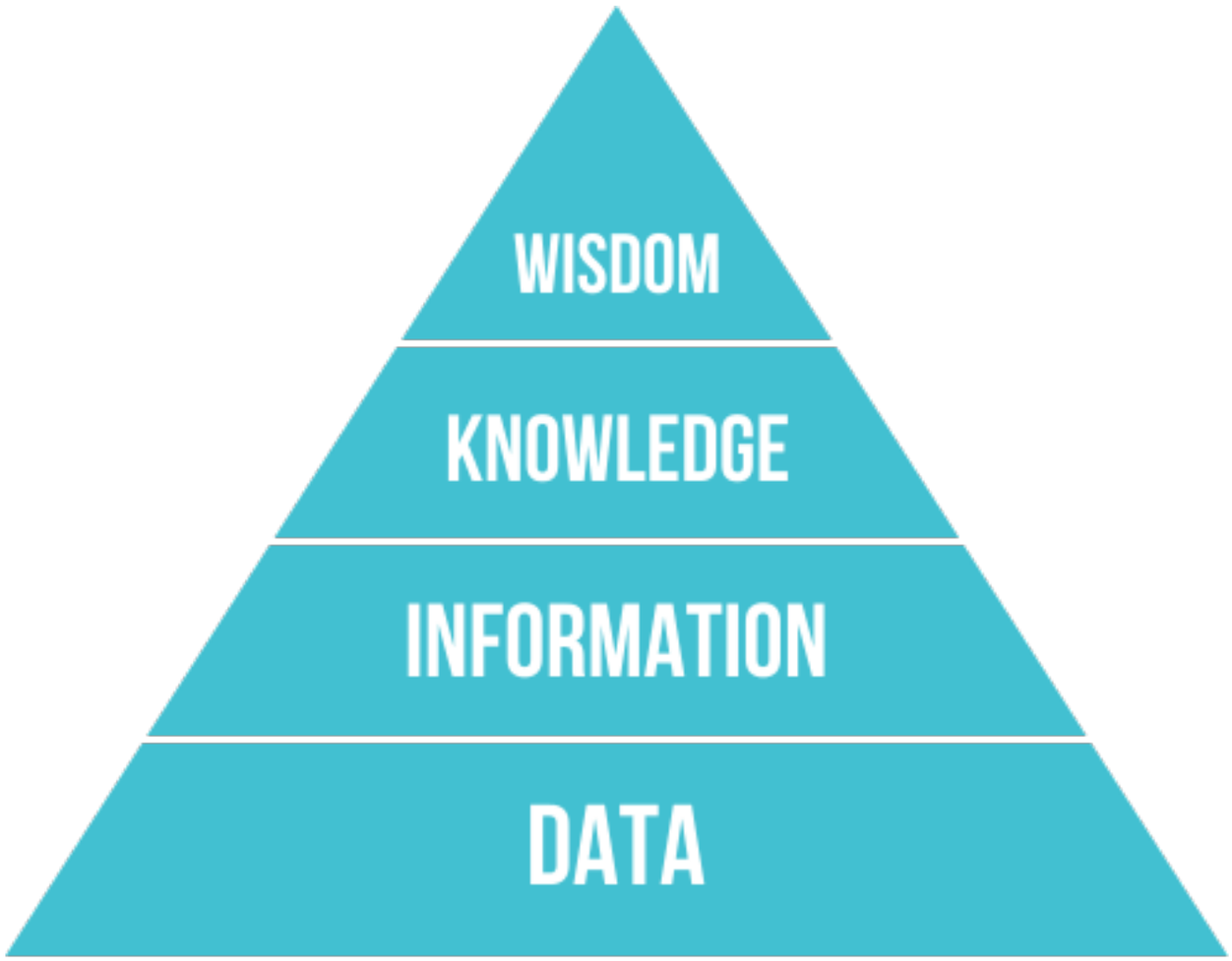
Summary

- We are in control and custody of information.
- Some of that information is confidential.
- Some of that information is public.
- The IPC recommends public information should be subject to routine disclosure.
- The IPC provides design principles (PbD, AbD) to guide us as we design business processes and technology.

DIKW

Data, Information, Knowledge, Wisdom

- **Data** – Facts without context.
- **Information** – Data “in formation”, data in context.
- **Knowledge** – Information in context. The ability to answer questions based on information; to know how something happens.
- **Wisdom** – Being able to act (based on knowledge) to amplify positive/dampen negative outcomes.



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DIKW

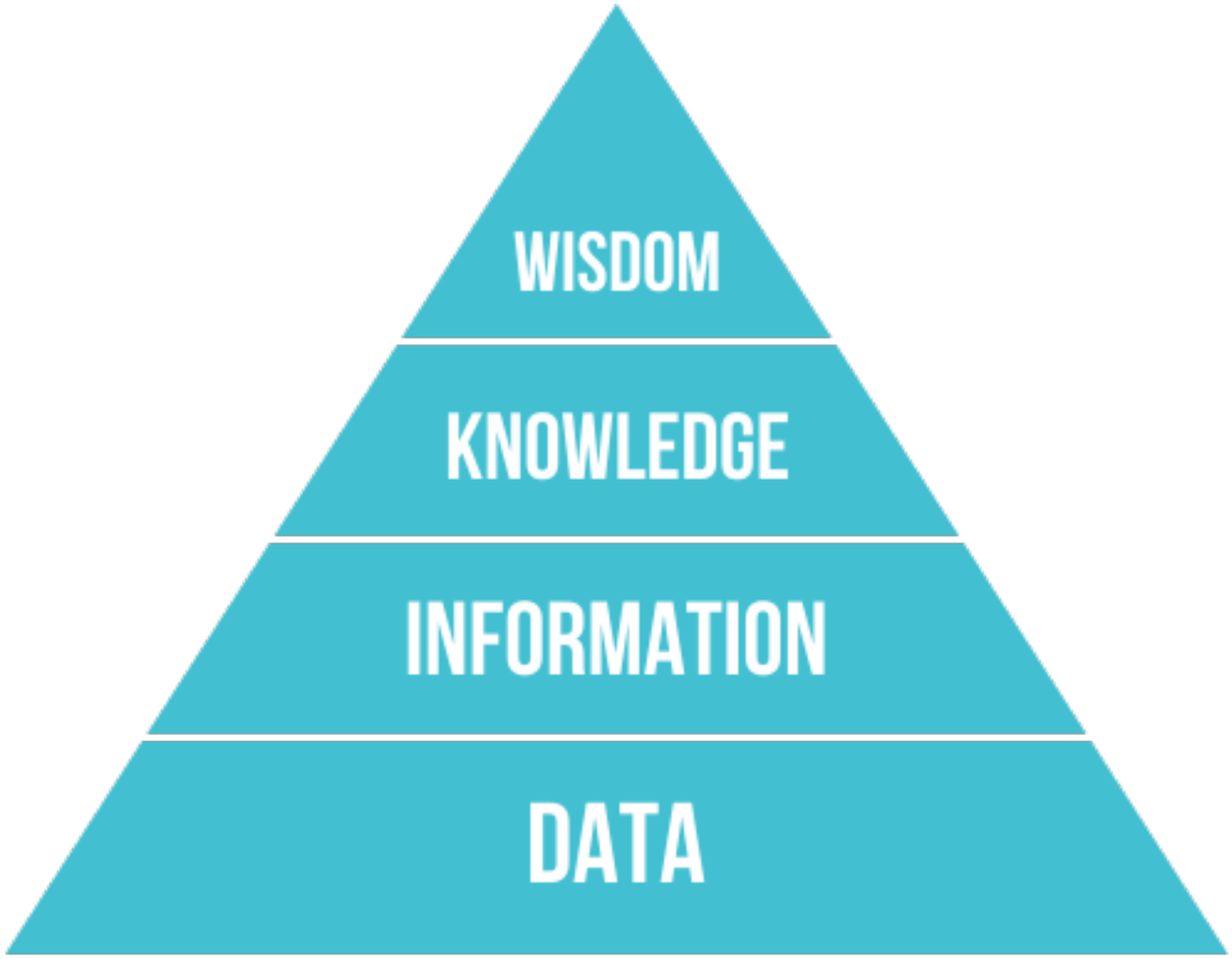
Data, Information, Knowledge, Wisdom

- **Data** – 24

- **Information** – Temperature in office: 24°C

- **Knowledge** – The air conditioner should prevent the temperature from rising over 21°C

- **Wisdom** – The air conditioner requires maintenance.



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Data Management

- DAMA DMBOK
  - Data Governance
  - Data Architecture Management
  - Data Development
  - Data Operations Management
  - Data Security Management
  - Reference and Master Data Management
  - Data Warehousing and Business Intelligence
  - Document and Content Management
  - Meta-data Management
  - Data Quality Management

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Data Management

- **Data Governance** – planning, supervision and control over data management and use

- **Data Architecture Management** – connection of data to the larger Enterprise Architecture strategy

- **Data Development** – analysis, design, building, testing, deployment and maintenance

- **Database Operations Management** – support for structured physical data assets

- **Data Security Management** – ensuring privacy, confidentiality and appropriate access

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Data Management

- **Reference & Master Data Management** – managing golden versions and replicas

- **Data Warehousing & Business Intelligence Management** – enabling access to decision support data for reporting and analysis

- **Document & Content Management** – storing, protecting, indexing and enabling access to data found in unstructured sources (electronic files and physical records)

- **Meta Data Management** – integrating, controlling and delivering meta data

- **Data Quality Management** – defining, monitoring and improving data quality

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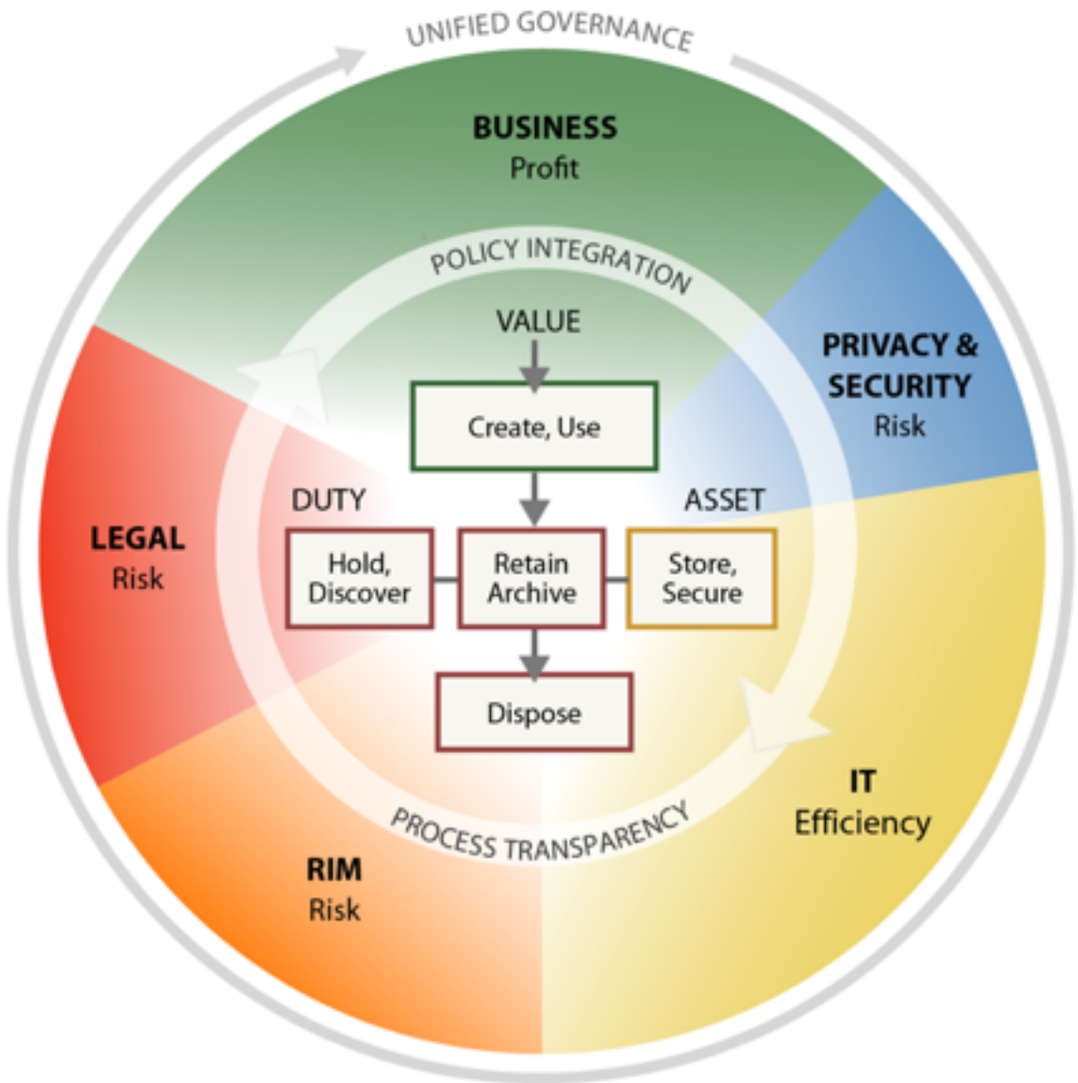
Governance

Information Governance Reference Model (IGRM)

Linking duty + value to information asset = efficient, effective management



Duty: Legal obligation for specific information

Value: Utility or business purpose of specific information

Asset: Specific container of information

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Data Management at Waterloo

- Core “Business” Data
  - Finance
  - Human Resources
  - Student Information
  - Research Information

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- Other Data
  - Research Data
    - On People
    - Corporate Partner Owned
  - Healthcare Data

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    - ~~Corporate Partner Owned~~
  - ~~Healthcare Data~~

Data Management at Waterloo

Business Data

OLTP

Online Transaction Processing

ODS

Operational Data Stores

Confidential

OLAP

Online Analytical Processing

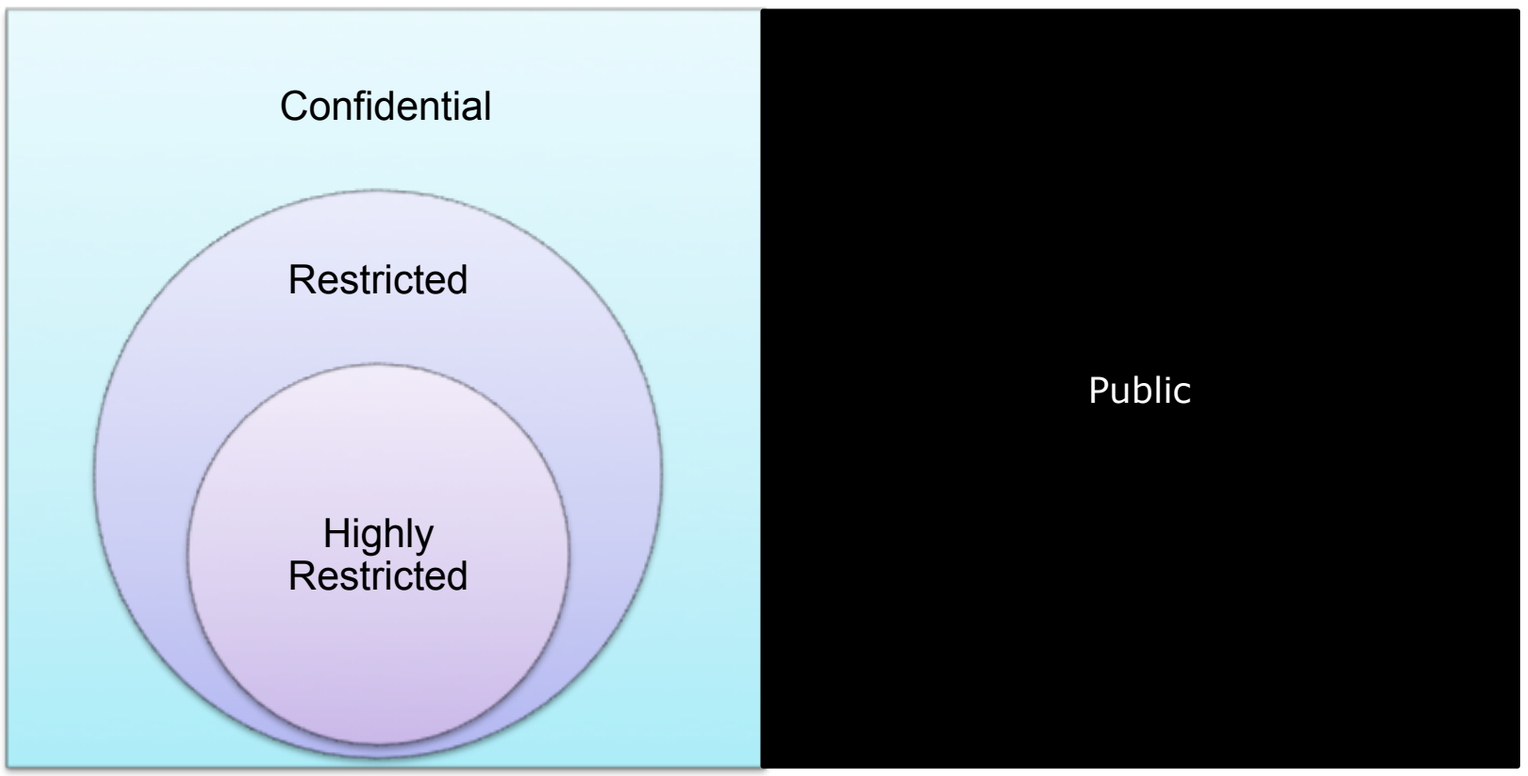
Public

Data Management at Waterloo

- Strengths
- Weaknesses
- Opportunities
- Threats

Waterloo Strengths

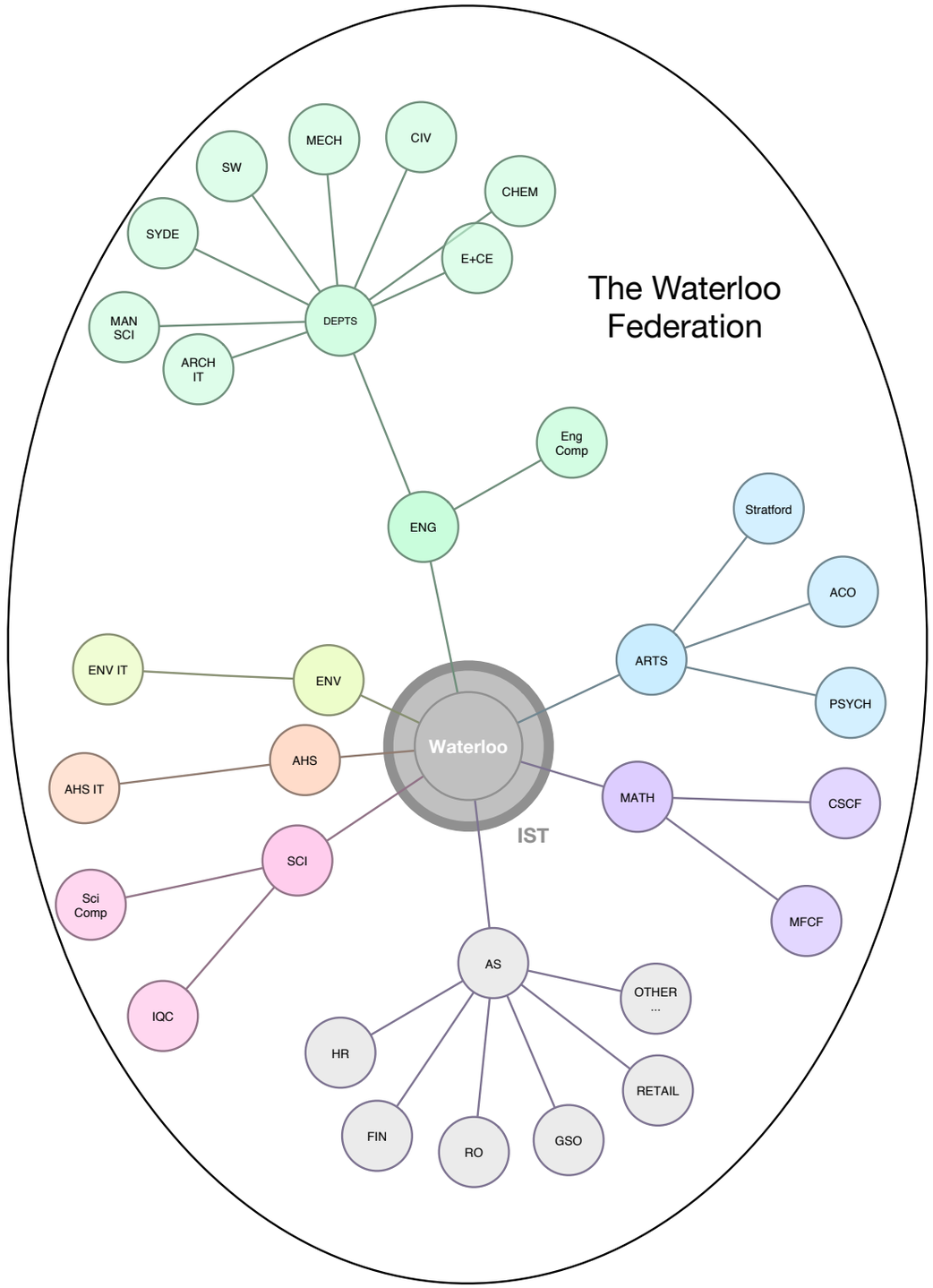
- Policy 8 - Information Security
  - Roles + Responsibilities (Steward >> Custodian >> User)
  - Information Security Classifications



https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-8

Waterloo Strengths

- Decentralized
- Federated Organization



Waterloo Strengths

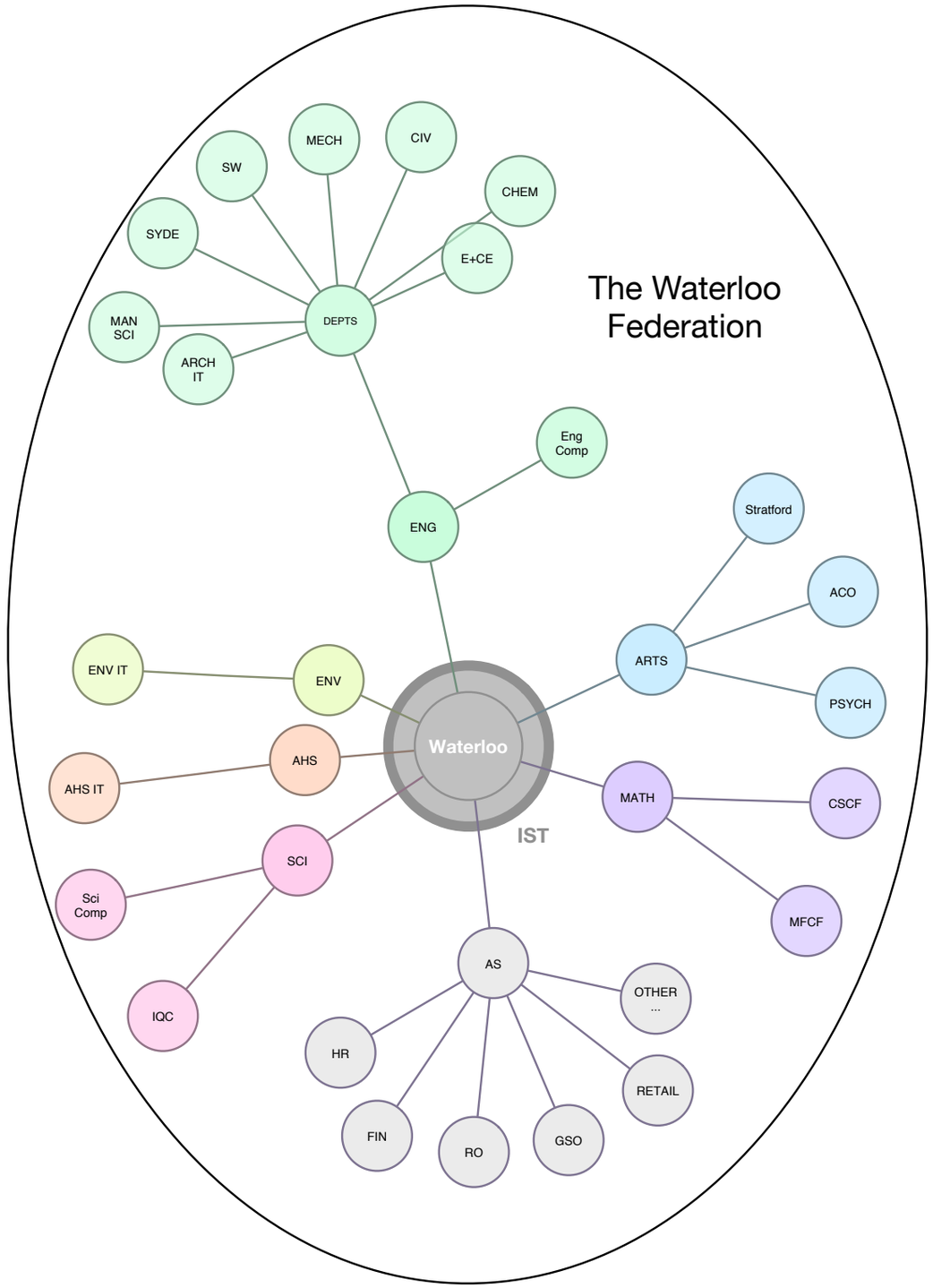
- Statement on Information Management
- Information is “Vital Asset”
- Recognize information’s part in governance, administration, service planning and delivery, and performance management of University.

Waterloo Weaknesses

- Policy 8 - Information Security
- AND …
    - Policy 11 - University Risk Management
    - Policy 12 - Records Management
    - Policy 13 - Archives
    - Policy 19 - Access to and Release of Student Information
    - Others?

Waterloo Weaknesses

- Decentralized
- Federated Organization



Waterloo Opportunities

- EDM Council (http://edmcouncil.org) Membership
  - Financial firms really care about their data.
  - Data Management Capability Assessment Model (DCAM) provides tool to measure state.
  - Not a perfect fit for Higher Ed, but we are using their tools as a starting point.

DCAM
Data Management Capability Assessment Model

Waterloo Opportunities

- Innovation in the Decentralized Areas brings multiple tools onto campus.

Waterloo Threats

- Multiple tools in distributed use lead to non-standard results.
    - NEED: Solid shared data warehousing.
    - NEED: Documented metadata + taxonomies.
- Often times data is ‘copied’ into local spreadsheets. “It’s easier.”
- We need rock solid data to make decisions.

Questions + Answers

- Or discussion… how do your organizations deal with data management?

Thank you!

Injury Time:
Enterprise Architecture