Digital Curation Centre (DCC) and DigitalPreservationEurope (DPE) Audit Toolkit: DRAMBORA

Perla Innocenti, Andrew McHugh, Seamus Ross, Raivo Ruusalepp

Digital Curation Centre (DCC), DigitalPreservationEurope (DPE),
HATII at the University of Glasgow & National Archives of the Netherlands

International Conference on Digital Preservation (iPRES) 2007, Beijing

About

- Trusted repositories
- The origin of DRAMBORA
- Ongoing activities and liaisons
- DRAMBORA future

Trust, Trustworthiness and Safe Stewardship

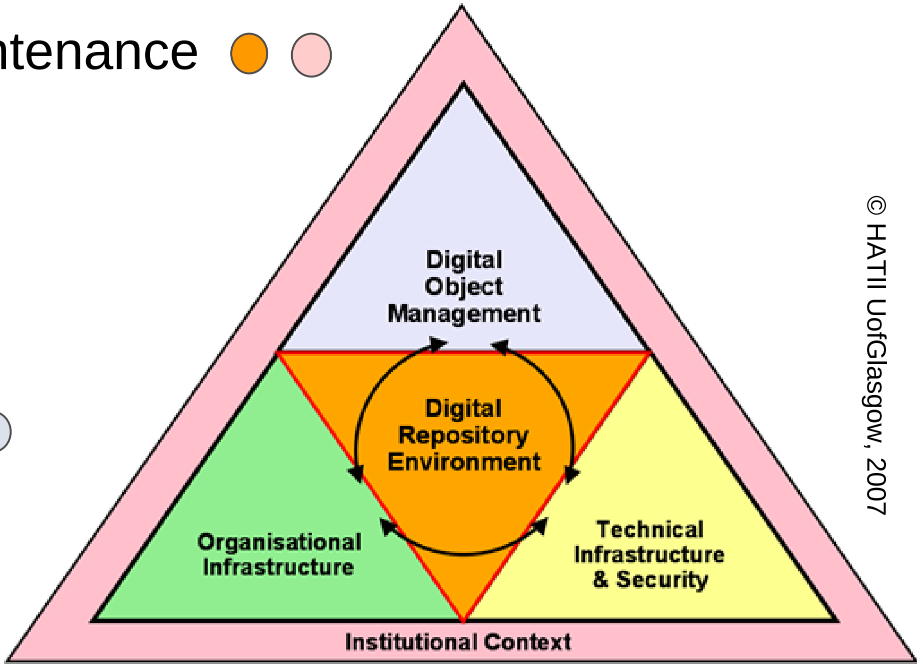
- Evolution of the Digital Preservation (specifically Repository) Landscape:
  - **Defining** the problem
    - *Preserving Digital Information*
    - *Trusted Digital Repositories: Attributes & Responsibilities*
  - **Practical Responses** to the problem
    - repository software [DSPACE, ePrints, Fedora]
    - metadata schema [PREMIS]
    - reference models [OAIS]

- This work focuses on **determining the success of the solutions we propose or have already deployed**

- *“Stewardship is easy and inexpensive to claim; it is expensive and difficult to honor, and perhaps it will prove to be all too easy to later abdicate”* Lynch (2003)

10 Characteristics of Digital Repositories

- An intellectual context for the work:
  - Commitment to digital object maintenance 🟠 ○
  - Organisational fitness 🟢
  - Legal & regulatory legitimacy 🟢
  - Effective & efficient policies 🟠
  - Acquisition & ingest criteria ○
  - Integrity, authenticity & usability ○
  - Provenance ○
  - Dissemination ○
  - Preservation planning & action ○
  - Adequate technical infrastructure 🟡


Digital Object Management
Digital Repository Environment
Organisational Infrastructure
Technical Infrastructure & Security
Institutional Context

© HATII UofGlasgow, 2007

(CRL/OCLC/NESTOR/DCC/DPE meeting, January 2007)

Trust, Risk and Repositories

- Are repositories capable of:
  - – identifying and prioritising the risks that impede their activities?
  - – managing the risks to mitigate the likelihood of their occurrence?
  - – establishing effective contingencies to alleviate the effects of the risks that occur?
- If so, then they are likely to engender a trustworthy status – if they can demonstrate these capabilities

Preservation risk is actual

- It is technological
- It is social
- It is organisational
- And it is cultural

Actual risks can be assessed and measured - actual risks can be managed.

The origin of DRAMBORA: DCC Pilot Audits

- Digital Curation Centre (DCC) engaged in a series of pilot audits in diverse environments
- 6 UK, European and International organisations
- National Libraries, Scientific Data Centers, Cultural and Heritage Archives
- Rationale
  - establish evidence base
  - establish list of key participants
  - refine metrics for assessment
  - contribute to global effort to conceive audit processes
  - establish a methodology and workflow for audit

Digital Repository Audit Method Based on Risk Assessment (DRAMBORA)

- Developed by DCC & DPE, DRAMBORA encourages repositories to:
  - **develop an organisational profile**, describing and documenting mandate, objectives, activities and assets;
  - **identify** and **assess** the risks that impede their activities and threaten their assets;
  - **manage** the risks to mitigate the likelihood of their occurrence
  - establish effective **contingencies** to alleviate the effects of the risks that cannot be avoided.

A risk-aware path to self-assurance and partner confidence for digital repositories
DRAMBORA

- Supports:
  - **Validation** [*"Are my efforts successful?"*]
  - **Preparation** [*"What must I do to satisfy external auditors?"*]
  - **Anticipation** [*"Are my proposals likely to succeed?"*]

DRAMBORA Objectives

- The purpose of the DRAMBORA toolkit is to assist an auditor to:
  - – **define the mandate and scope** of functions of the repository
  - – **identify the activities and assets** of the repository
  - – **identify the risks** and vulnerabilities associated with the mandate, activities and assets
  - – **assess** and calculate the risks
  - – define **risk management** measures
  - – **report** on the self-audit

Benefits of DRAMBORA

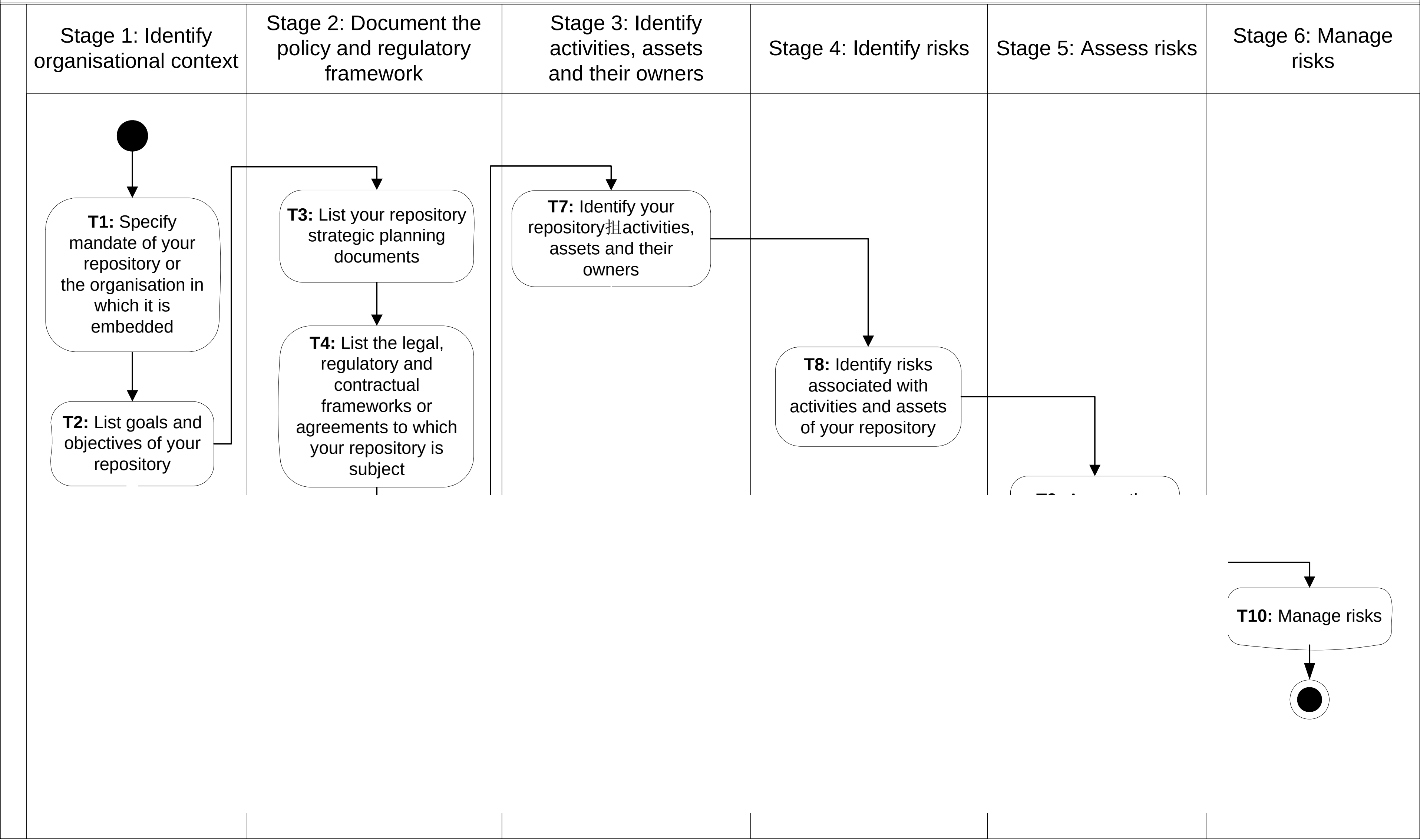
- Following the successful completion of the self-audit, organisations can expect to have:
  - Established a **comprehensive and documented self-awareness** of their mission, aims and objectives, and of intrinsic activities and assets
  - Constructed a **detailed catalogue of pertinent risks**, related to digital repositories categorised according to type and inter-risk relationships
  - Created an **internal understanding** of the successes and shortcomings of the organisation
  - **Prepared the organisation** for subsequent external audit

Think metric!

DRAMBORA: converting uncertainties into manageable risks

DRAMBORA Workflow

Using the digital repository self-audit toolkit



Stage 1: Identify organisational context

Stage 2: Document the policy and regulatory framework

Stage 3: Identify activities, assets and their owners

Stage 4: Identify risks

Stage 5: Assess risks

Stage 6: Manage risks

T1: Specify mandate of your repository or the organisation in which it is embedded

T2: List goals and objectives of your repository

T3: List your repository strategic planning documents

T4: List the legal, regulatory and contractual frameworks or agreements to which your repository is subject

T7: Identify your repository抯activities, assets and their owners

T8: Identify risks associated with activities and assets of your repository

T10: Manage risks

Stage 4: Identifying Risks

- Assets & Activities associated with **vulnerabilities** – characterised as risks
- Auditors must build **structured list of risks**, according to associated activities and assets
- **No single methodology** – brainstorming structured according to activities/assets is effective

Kinds of risk

- **Assets or activities fail** to achieve or adequately contribute to relevant goals or objectives
- **Internal threats** pose obstacles to success of one or more activities
- **External threats** pose obstacles to success of one or more activities
- **Threats to organisational assets**

Example Risk:
Budget cut/withdrawal of funding

- **Description**
  - Repository operational budget is cut or withdrawn

- **Example manifestation**
  - Local recession provokes budgetary reduction of government financed repository
  - Digital Library fails to demonstrate its centrality to its funding and user community

Example Risk: Legal liability for IPR infringement

- **Description**
  - – A repository is legally accountable for a breach of copyright, patent infringement or other IPR-related misdemeanor as a direct result of its business activities

- **Example manifestation**
  - – The reverse engineering of a software application in contravention of its end user license agreement, and the copyright breach of a institutional repository in disseminating e-journal content

Example risk: Exploitation of IT security vulnerability

- **Description**
  - – Shortcomings in the repository’s security provisions can be identified and used to gain unauthorized access to its systems
- **Example manifestation**
  - – Unpatched software security loopholes are hacked, or intruders gain physical access to the repository through a security door that is wedged open

Testing DRAMBORA 1.0

- National Archives of Scotland, Edinburgh, UK
- National Library of the Czech Republic
- National Central Library of Florence, Italy
- International Institute for Social History, Amsterdam, The Netherlands
- Netarkivet (Danish Internet Archive), Denmark
- Ludwig Boltzmann Institute in Linz, Austria, in cooperation with the Ars Electronica Center
- E-LIS repository managed by CILEA, Rome, Italy
- Lithuanian Museum of Ethnocosmology, Lithuania

What DRAMBORA users learned…

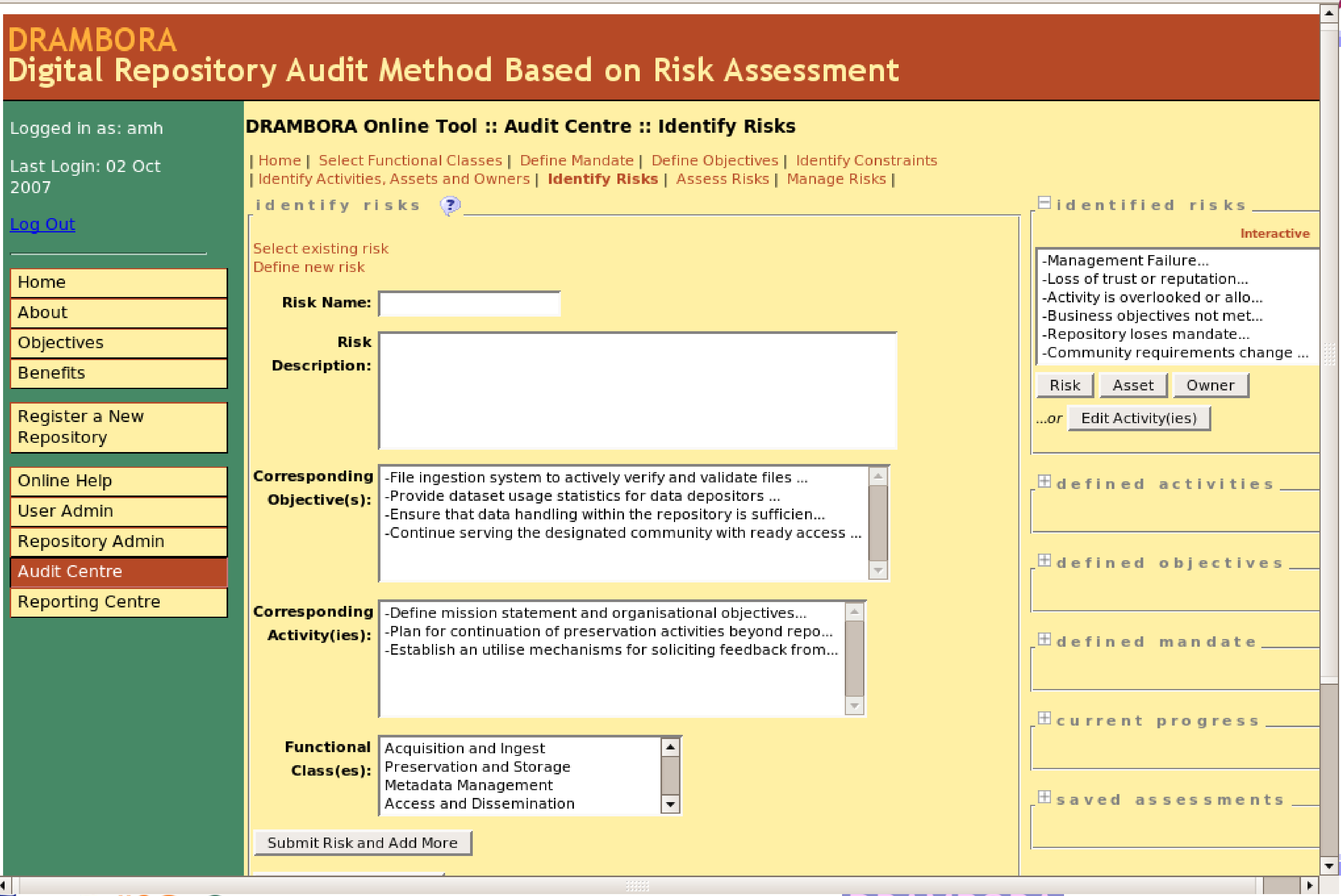
- *“Good, visible and persuading documentation of risks might help to improve conditions for their successful management. And, of course, as soon as you have the truly trusted repository, you need the good documentation and certification to prove it”*

- *“We discovered some points of weakness in the repository and also learned to stop fretting about the stuff we actually do very well”*

- *“Assessment will be continued and the risk register will be an integral part of the repository once it becomes operational”*

- *“We originally planned to use TRAC for both our internal and later external audit. We also looked at NESTOR. […] we believe that regular self audits using DRAMBORA will make the external audit easier and cheaper”*

DRAMBORA Future (I)



DRAMBORA
Digital Repository Audit Method Based on Risk Assessment

Logged in as: amh

Last Login: 02 Oct 2007

Log Out

DRAMBORA Online Tool :: Audit Centre :: Identify Risks

| Home | Select Functional Classes | Define Mandate | Define Objectives | Identify Constraints | Identify Activities, Assets and Owners | **Identify Risks** | Assess Risks | Manage Risks |

identify risks

Select existing risk
Define new risk

Risk Name:

Risk Description:

Corresponding Objective(s):
- -File ingestion system to actively verify and validate files ...
- -Provide dataset usage statistics for data depositors ...
- -Ensure that data handling within the repository is sufficien...
- -Continue serving the designated community with ready access ...

Corresponding Activity(ies):
- -Define mission statement and organisational objectives...
- -Plan for continuation of preservation activities beyond repo...
- -Establish an utilise mechanisms for soliciting feedback from...

Functional Class(es):
- Acquisition and Ingest
- Preservation and Storage
- Metadata Management
- Access and Dissemination

Submit Risk and Add More

identified risks

Interactive

- -Management Failure...
- -Loss of trust or reputation...
- -Activity is overlooked or allo...
- -Business objectives not met...
- -Repository loses mandate...
- -Community requirements change ...

DRAMBORA Future (II)

- Autumn/Winter 2007: Digital Libraries audits within Digital Preservation Cluster of DELOS (JPA4)
- Training within DPE Training Programme
- Dissemination of results and activities in scientific journals and conferences
- Version 3.0 in Spring 2008
- Accreditation of self-auditors in 2008

Get involved!

If your organization wishes to learn more about DRAMBORA, request support or join the growing network of DRAMBORA users, contact us online at

www.repositoryaudit.eu

or by email at

feedback@repositoryaudit.eu

and

support@repositoryaudit.eu

THANK YOU! 谢谢你