

# Assessing Digital Preservation Capabilities Using a Checklist Assessment Method

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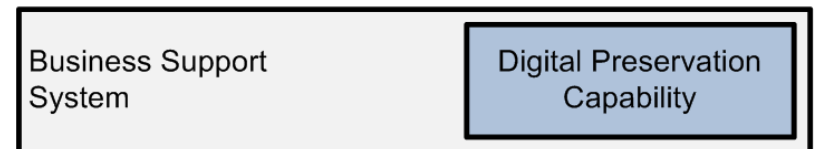
# Context

- Digital Preservation has mainly been driven by memory institutions
- However, the problem is already being acknowledged by organizations from different walks of life
- In many of these organizations the repository approach is not applicable
- In this scenarios, DP is seen as a desirable property of information systems

Traditional Scenario: Digital Preservation as a System/Service



Alternative Scenario: Digital Preservation as a Capability



# Problem

- Several DP assessment methods are currently available, however their application in non-traditional DP scenarios is difficult due to the assumption that a repository is present
- There is a need for an assessment method that is able to determine the DP capabilities of the information systems of an organization

# Proposal

- This work proposes a checklist assessment method based on the capability-based reference architecture
  - Based on the DP assessment methods already existing, but reworked and aligned with the capability approach
- Contains sets of criteria organized per capability
- Allows performing gap analysis and capability level

# DP Capabilities

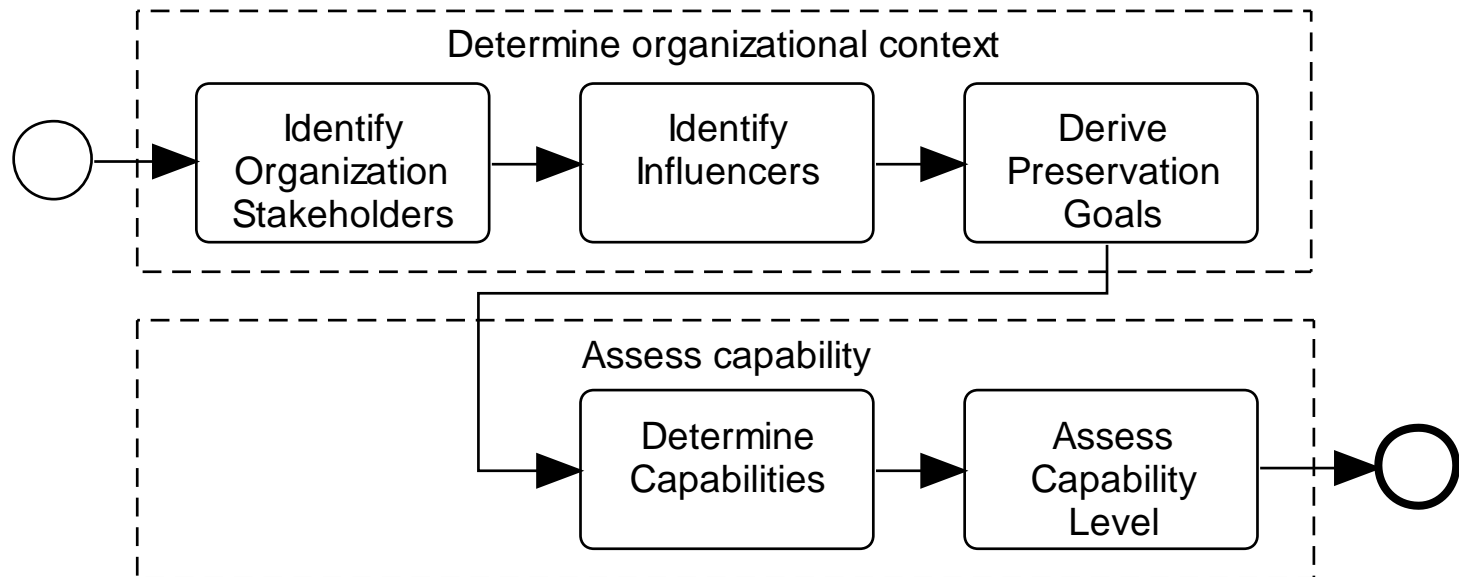
- A capability is an ability realized by a combination of elements
  - actors, business functions and business processes, and technology
- A capability -based Reference Architecture (RA) for DP was defined in the context of the SHAMAN project
  - RA's have the aim of capturing domain-specific knowledge and integrate it in a way that it can be later reused for developing new system architectures

# DP Capabilities

<b>Capability</b>	
<b>GRC Capabilities</b>	GC1. Governance
	GC2. Risk
	GC3. Compliance
<b>Business Capabilities</b>	BC1. Acquire Content
	BC2. Secure Bitstreams
	BC3. Preserve Content
	BC4. Disseminate Content
<b>Support Capabilities</b>	SC1. Manage Data
	SC2. Manage Infrastructure
	SC3. Manage HR
	SC4. Manage Finances

# Assessing DP Capabilities

- With the detailed description of capabilities provided, it becomes possible to assess concrete scenarios for the existence of capabilities
- The assessment is possible through the use of a checklist and a method



# The Assessment Checklist

- The checklist is divided in three main sections, one for each top-level capability (GRC, Business, and Support )
- Then, these sections are divided into their constituent sub-capabilities
- The compliance criteria are based on references of the area of DP
  - Repository-specific criteria were reworked and generalized in order to widen the scope of application to all types of information systems



# The Assessment Checklist – Risk Capability Criteria Example

GC2	Risk	
GC2.1	The organization has ongoing commitment to analyze and report on risk and benefit (including assets, licenses, and liabilities).	x
GC2.2	The organization has a documented change management process that identifies changes to critical processes that potentially affect the organization and manages the underlying risk.	0
GC2.3	The organization has a process for testing and managing the risk of critical changes to the system.	x
GC2.4	The organization has a process to react to the availability of new software security updates based on a risk-benefit assessment.	x
GC2.5	The organization maintains a systematic analysis of such factors as data, systems, personnel, physical plant, and security needs.	x
GC2.6	The organization has implemented controls to adequately address each of the defined security needs.	x
GC2.7	The organization has suitable written disaster preparedness and recovery plan(s), including at least one off-site backup of all preserved information together with an off-site copy of the recovery plan(s).	0

# The Assessment Checklist

- This checklist is available as a spreadsheet, allowing two methods for calculating the compliance level:
  - Automatic, which is a linear method;
  - Custom, in which we can define the weights for each criterion
- Each capability group is measured from 0% to 100% of compliance
- Then, each sub-capability has a maximum percentage which in the custom evaluation method can be defined

# The Assessment Checklist - Configuration

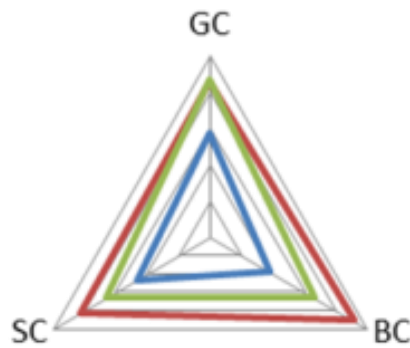
Capabilities	Weights	
GC	100	
GC1	50	
GC1.1	50	5
GC1.2		15
GC1.3		10
GC1.4		15
GC1.5		5
GC1.6		0
GC1.7		0

Levels		
Levels	Percentage	
	Min.	Max.
1	0	25
2	26	45
3	46	65
4	66	80
5	81	100

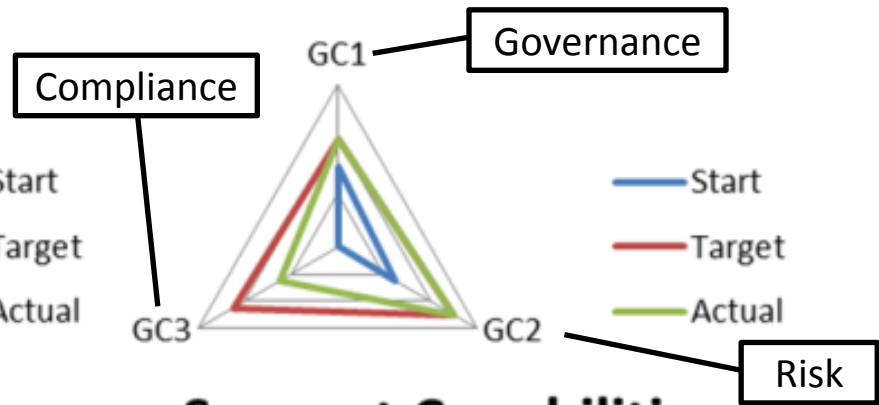
<i>Percentage</i>	<i>Level</i>	<i>Target</i>	<i>Difference</i>
0,00	1	5	-4
0,00	1	4	-3

# The Assessment Checklist – Compliance Graphs

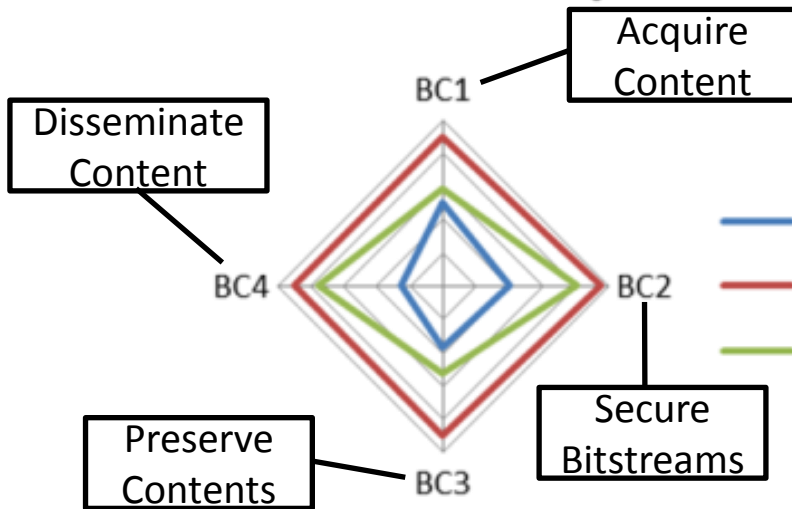
## Global Overview



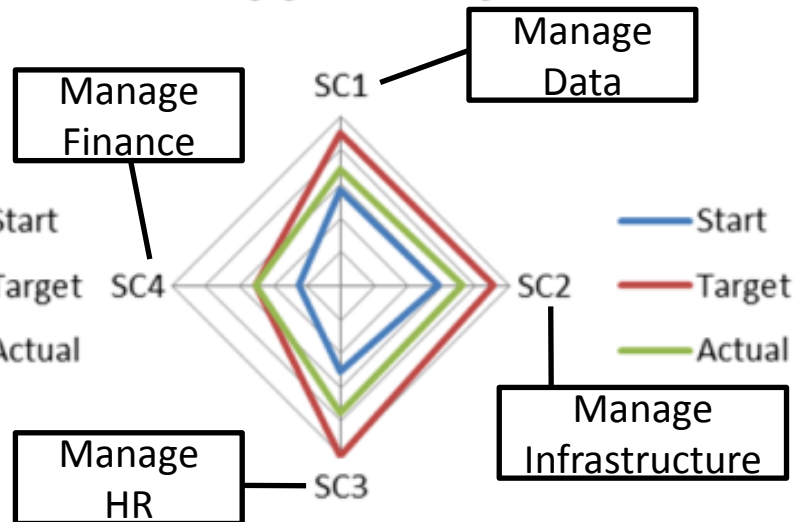
## GRC Capabilities



## Business Capabilities



## Support Capabilities

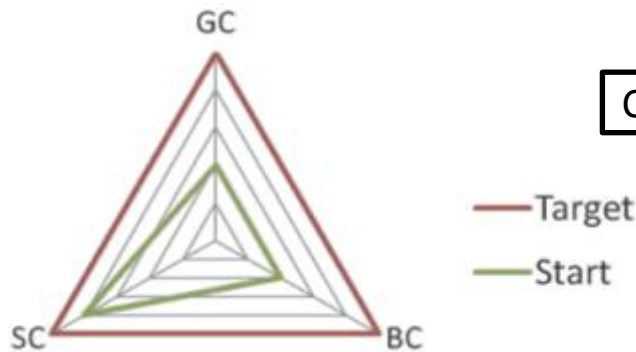


# Application of the Checklist Assessment

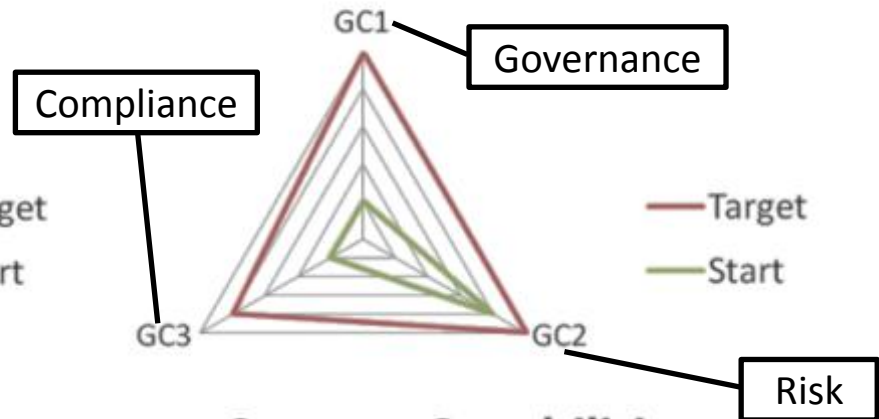
- Two scenarios involving e-Science data
  - High-energy physics (experimental data)
  - Civil engineering (observational data)
- The assessment was performed after meetings explaining the issues surrounding the preservation of e-Science data and the RA
- The involved stakeholder were then asked to perform the assessment

# Application of the Checklist Assessment – High Energy Physics

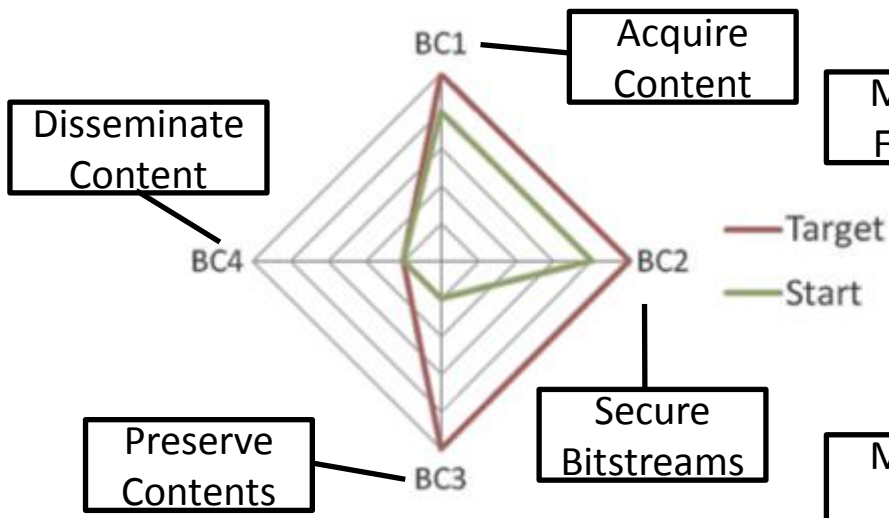
## Global Overview



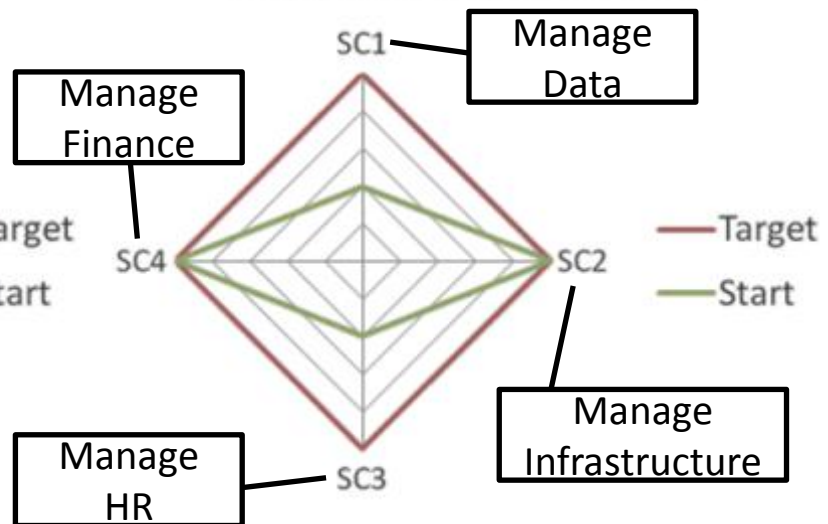
## GRC Capabilities



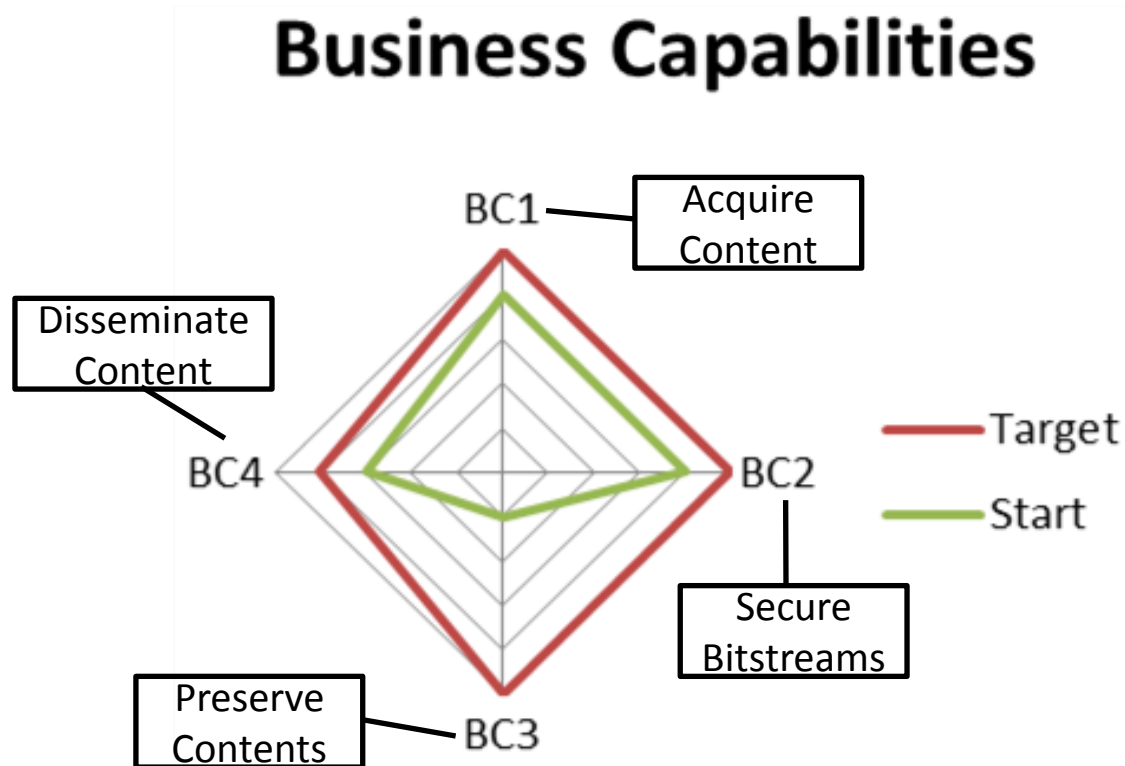
## Business Capabilities



## Support Capabilities



# Application of the Checklist Assessment – Civil Engineering



# Conclusions

- This article presented and evaluated a checklist-based method for capability assessment in digital preservation
- The implications of the logical preservation of data are not well known in the analyzed institutions, despite the existence of bitstream preservation capabilities
- The level of the governance and compliance capabilities which indicates that the issue is mainly seen as a technological issue



# Thank You

- Questions??

# DP Capabilities

