

Maturity Model For Assessing Data Infrastructures – CESSDA as an Example

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IASSIST 2016, Bergen, 01/06/2016



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement number 674939.

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Background: Objectives

- **CESSDA SaW: Strengthening and widening the European infrastructure for social science data archives**
 - “State of play evaluation of social science data archives and services in EEA countries, identifying gaps and bottlenecks in existing services, and produce national development plans.”
 - “...a development model for describing the status of the data infrastructure in the social sciences at the national level.”



Background: Starting Points

CMM for services examples

Reference Architectures

European Framework for Audit and Certification

CESSDA

FitSM

SSH-RM

DSA-WDS

CESSDA Statutes

CMMI-SVC

OAIS

DIN 31644

CESSDA Annex 2

CARDIO

ISO 16363



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Background: Capability Maturity Modelling

- Evaluation of processes & activities that an organisation undertakes (to provide a product/service)
 - To what degree are these implemented and optimised
- Stepwise progression through levels of maturity towards optimisation
 - Depending upon goals, not every process needs to be fully optimised



REQUIREMENT AREA

Organisational
Infrastructure

Digital Object
Management

Technical
Infrastructure / Risk

PROCESS AREA

Acquisition and Ingest

Preservation: storage, curation
and planning

Access / Provisioning

Capability
Completeness

1: Initial
2: Partial
3: Complete

REQUIRED OR EXPECTED ACTIVITIES

Access interfaces

Searchable and
indexed content

Downloadable data
holdings

Data formats

Metadata formats

Metadata
harvesting

Discoverability
and accessibility

Access control
and handling of
anomalies

Level of Maturity

0: Not defined
1: Initial
2: Repeated/partial
3: Defined
4: Managed
5: Optimised



REQUIREMENT AREA

PROCESS AREA

REQUIRED OR EXPECTED ACTIVITIES

Organisational Infrastructure

Digital Object Management

Technical Infrastructure / Risk

Mission and scope

Contracts, licenses and liabilities

Funding, staff, resources

Outreach and communication

Confidentiality, ethics and disclosure risk

Documentation

Management Oversight

Mission

Designated Community

Mandate

Mission statement

Scope

Continuity of access

Guaranteed period of responsibility

Definition

Monitoring

Capability Completeness

Level of Maturity

1: Initial
2: Partial
3: Complete

0: Not defined
1: Initial
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3: Defined
4: Managed
5: Optimised



REQUIREMENT AREA

PROCESS AREA

ACTIVITIES

Digital Object Management

Acquisition and Ingest

Preservation: storage, curation and planning

Access / Provisioning

Purpose: to provide access to research data in an effective and secure way, ensuring that data can be understood, used and re-used in the long-term perspective.

Objective: Access control and handling of anomalies.

Objective: to enable users to discover, access and download data and metadata.

Metadata harvesting

Activity 2

Activity 3

..

“The repository enables the harvesting of all their resource discovery metadata and relevant preservation metadata”

- 0:** No metadata harvesting enabled
- 1: Initial:** metadata is unstructured - limited accessibility
- 2: Repeated /partial:** most metadata can be harvested, but protocols are not implemented (or are only partly implemented).
- 3: Defined:** all metadata are harvestable; OAI-PMH / Dublin Core implemented.
- 4: Managed:** metadata harvesting is measured and monitored; regular reviews of metadata protocols
- 5: Optimised:** outputs of monitoring are formally reported; reporting are aligned to technology watch and communication with users..

Next Steps: Conclusions

- First version of the Capability Development Model - still a work in progress
 - Concentration on the (data) service providers & data repositories
 - Balancing needs for assessment in SaW and an in-depth development model
- Minimum & ideal capability completeness levels and maturity levels.
 - A question for CESSDA
- A model to be used for long-term service improvement self-assessment?



Next Steps: Immediate Next Steps

- Availability: cessda.net/CESSDA-Services/Projects/CESSDA-SaW/Work-Packages/WP3/CESSDA-CDM (*but not yet*)
- Integrate research community into model
- Integrate comments & feedback from SaW assessments



Next Steps: Long-term Next Steps

- Broadening: scope to cover national context (research, funding (& national policy), and data creation)
- Deepening: number of capabilities and activities
- Expanding: with examples



And Finally...

- Not the only maturity modelling in CESSDA
- CESSDA Technical Framework
 - Software Maturity Model
 - Aligned with CESSDA-CDM
- John Shepherdson (session 3F - *The CESSDA Technical Framework- What is it and Why is it Needed?*)





Thank you for your attention



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