



PReservation **O**rganizations using Tools **i**n **A**gent Environments

PROTAGE

Nov 2007 – Oct 2010

Conference on Digital Storage and Archiving.
Mid- Sweden University 13 – 14 October 2008



Consortium



National Archives of Sweden, Coordinator



Luleå University of Technology (Sweden)



National Archives of Estonia



Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.V. (Germany)



University of Bradford (U. K.)



EASY Innova S.L. (Spain)



Giunti Labs S.r.l. (Italy)





Aim and Approach

The aim: to investigate and initiate complementary new approaches to digital preservation





Aim and Approach

- that make long-term digital preservation (including access) easy enough for users to be able to help preserving their own content,
- while reducing the cost and increasing the capacity of memory institutions to preserve digital information.





Aim and Approach

The idea: to link digital objects to long-term digital preservation processes by using agent-based software technology.....





Aim and Approach

Based on the latest research on digital preservation strategies and on autonomous systems, the PROTAGE project will build and validate flexible and extensible software agents for long-term digital preservation and access that can

- cooperate with
- and be integrated in

existing and new preservation systems.





Aim and Approach

Conclusion: the PROTAGE approach is based on pro-active autonomous software agents that are independent of hardware and software technologies.

This represents a shift of focus in digital preservation *from information systems to preservation-friendly digital objects.*





Aim and Approach

- **Targeted end users:** curators and digital content creators, including individuals managing their own digital collections.





Objectives

- Research the potential of software agent ecosystems to support the automation of digital preservation tasks;
- demonstrate the technical feasibility of such a system;
- analyse implementation in different organisational environments;
- explore possible integration with other digital preservation environments;
- explore synergies with other RTD activities in digital preservation.





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Agents





Agents

*An agent is a computer system
that is capable of independent action
on behalf of its user or owner
(figuring out what needs to be done to satisfy design
objectives, rather than constantly being told)*

(Jennings 1998)



Agent Ecosystems

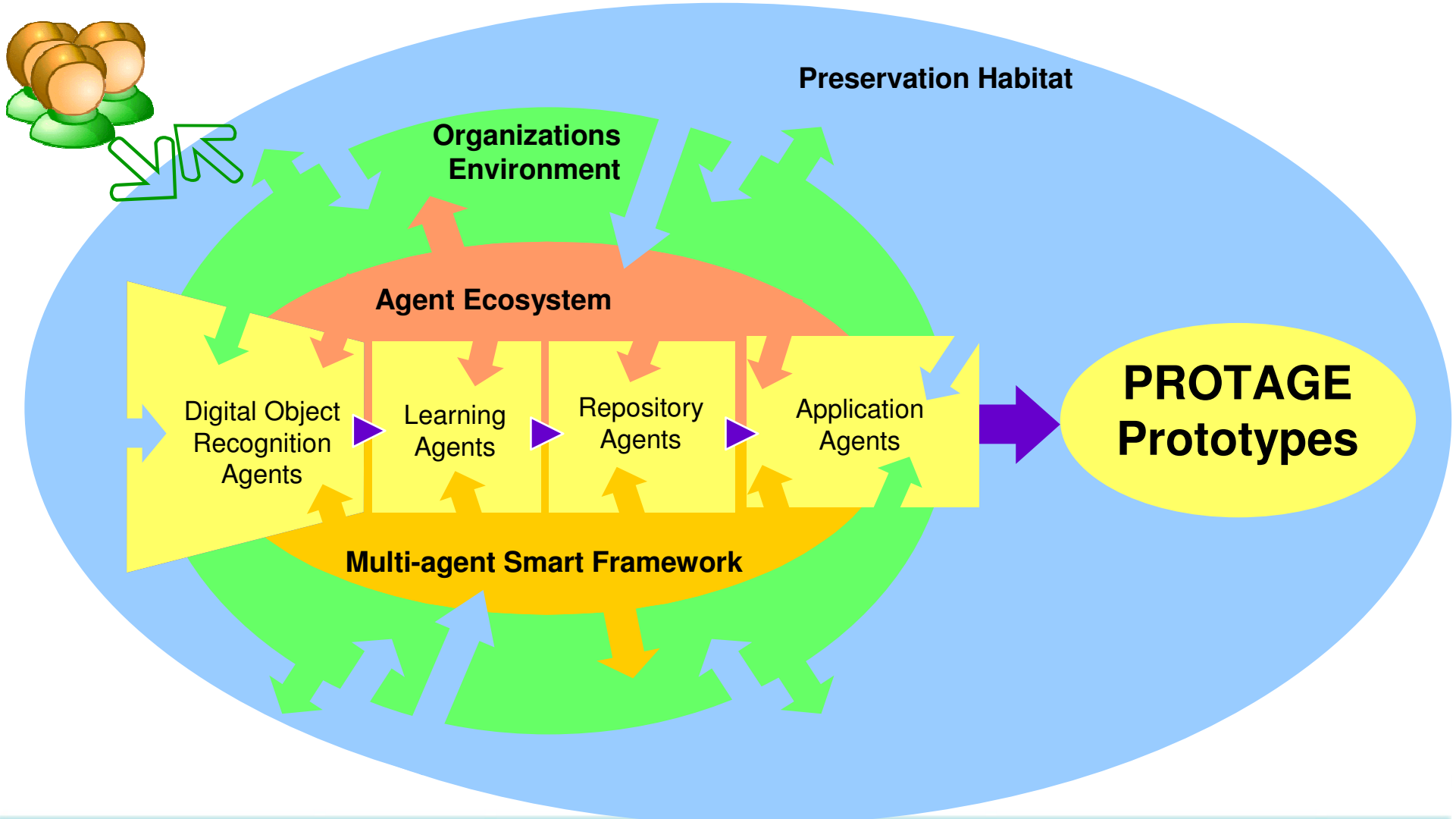
An agent ecosystem is a bio-inspired open-ended environment populated by autonomous agents which interact in a flexible way.

Autonomous agents can be regarded as similar to biological entities that are provided with some initial energy, abilities and capabilities of learning from their experience.





Multi-Agent Framework





Combining Flexibility and Learning Capacity

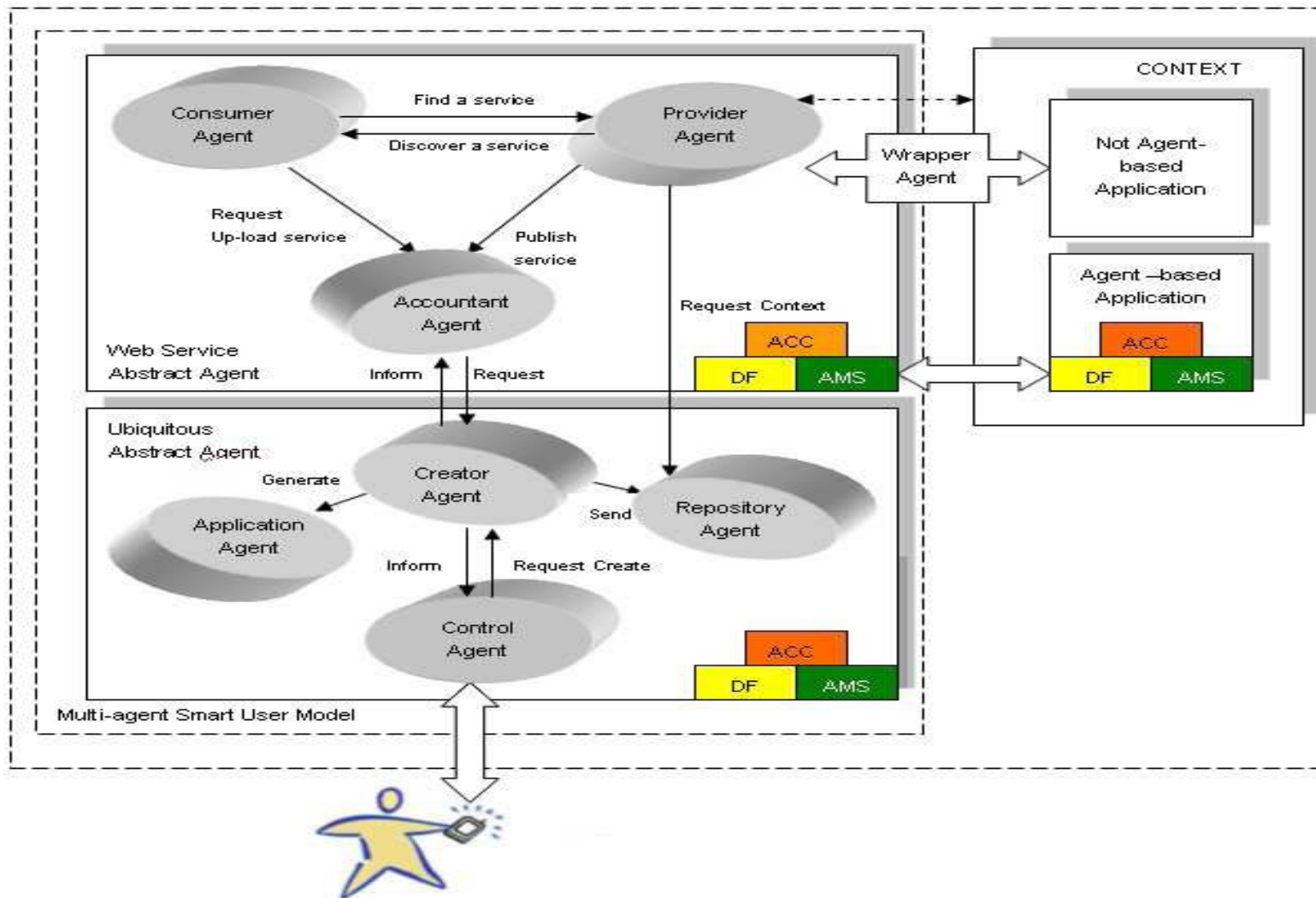
- The synergy between the flexibility of agent ecosystems and the learning capabilities of smart adaptive systems will be exploited in the project, in order to develop a fully FIPA[1] compliant Hybrid Smart Multi-Agent based architecture.

[1] The Foundation for Intelligent Physical Agents is an IEEE Computer Society standards organization that promotes agent-based technology.





Multi-agent Smart User Model





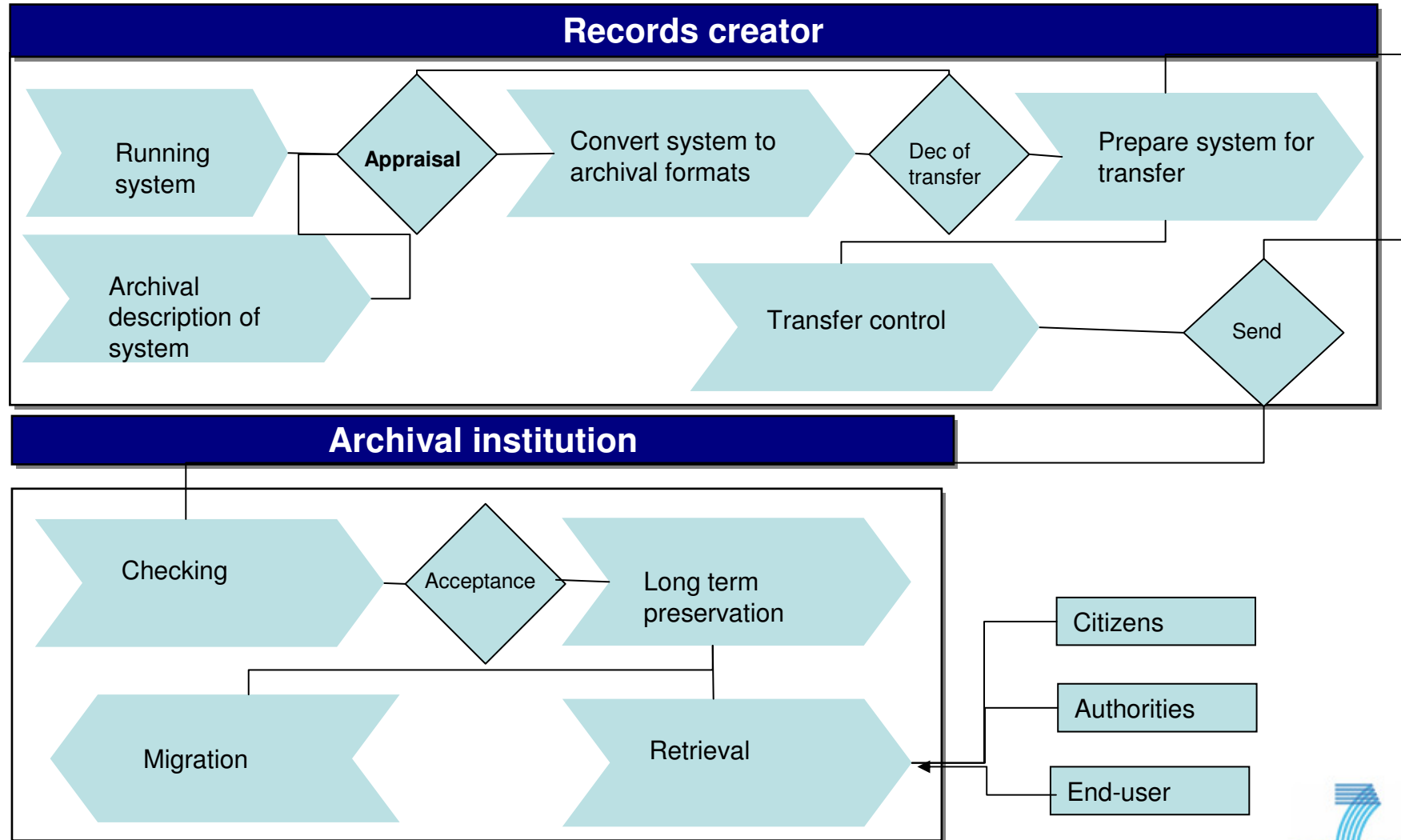
Intended application areas

- Submission and ingest of digital material
- Monitoring preservation
- Transfer between repositories



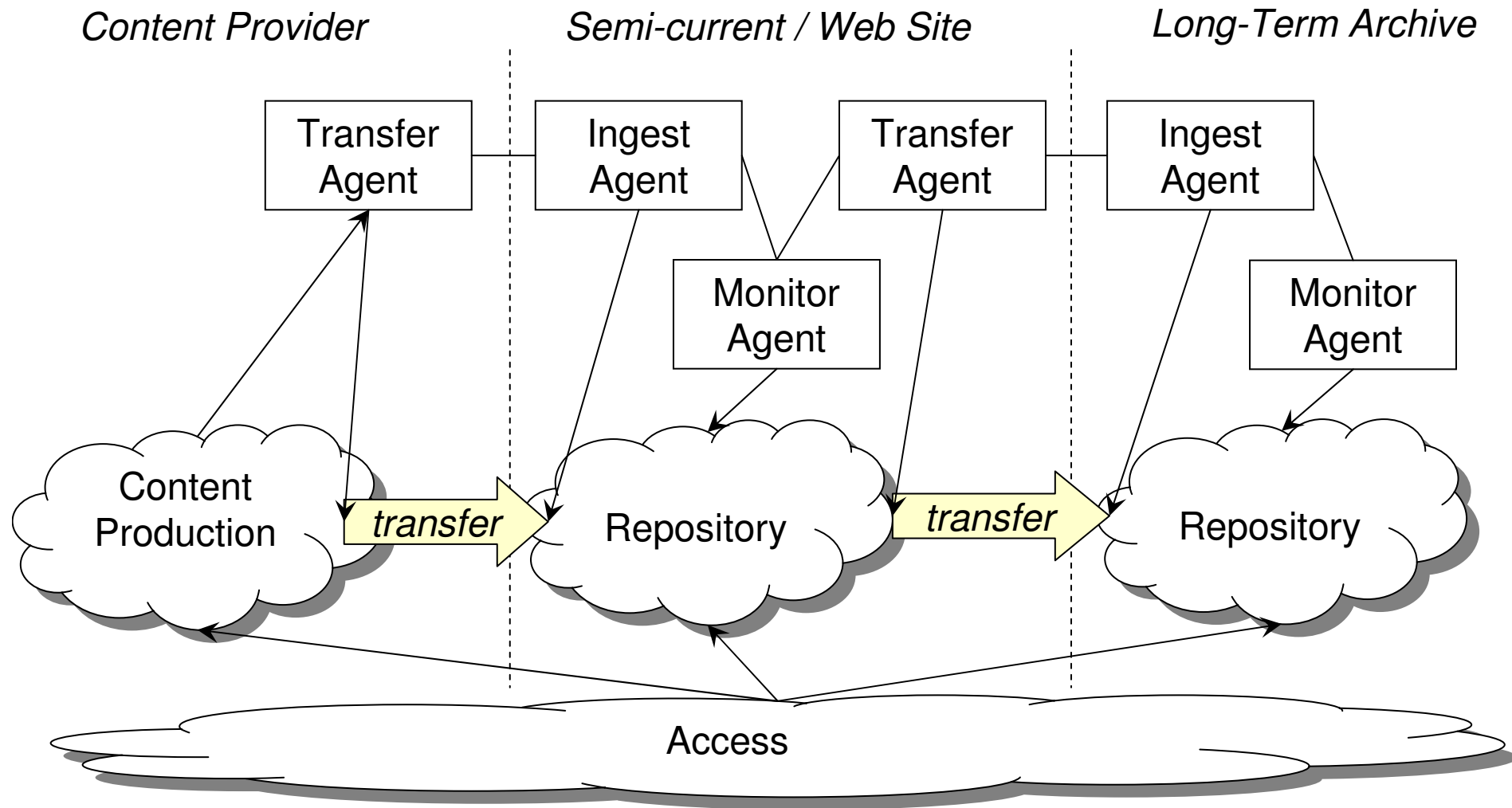


Today's Process in Archives





The PROTAGE Concept





Expected Results

- Allow content producers to create and publish in a preservation-compatible manner,
- provide digital repositories with means of further automating the preservation processes,
- facilitate seamless interoperation between content providers, libraries and archives, and end-users throughout Europe.





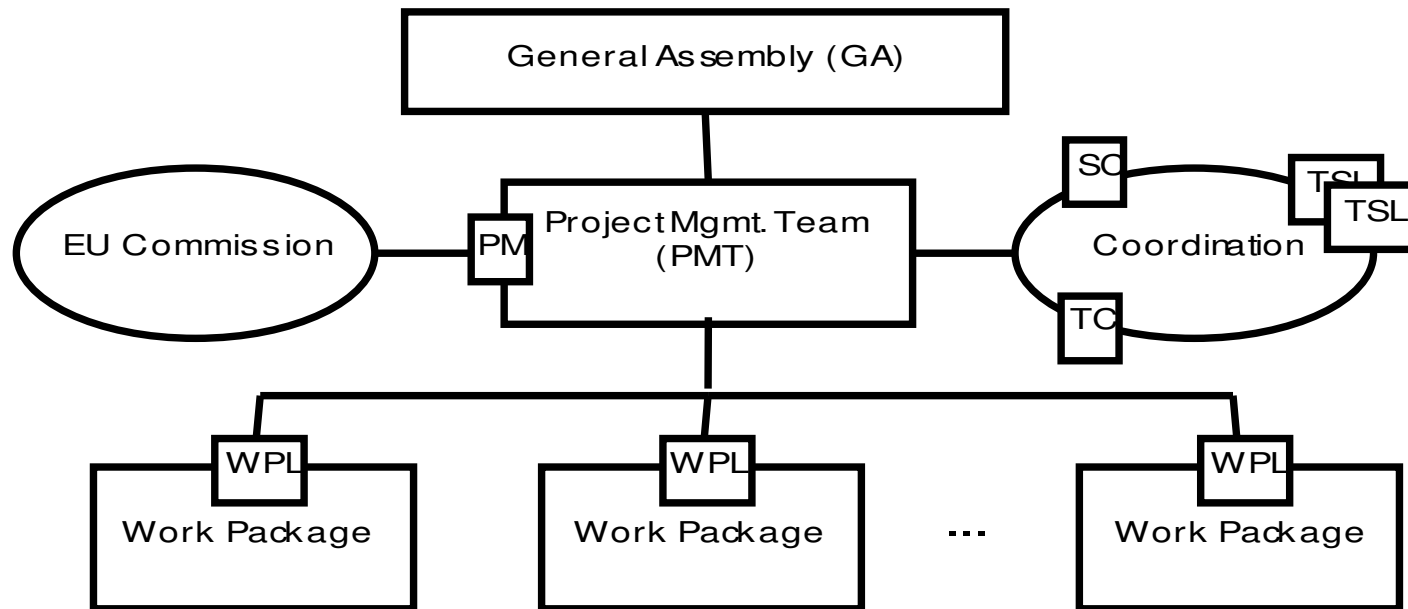
European Dimension

- Consolidates European research and competence
- Interoperability with other EU digital preservation projects
- Enables integrated operation of archives and libraries
 - format and functionality repositories
 - strategies for migration and redundancy
- Wide dissemination to European users
 - models, methods and tools
 - commercial solutions



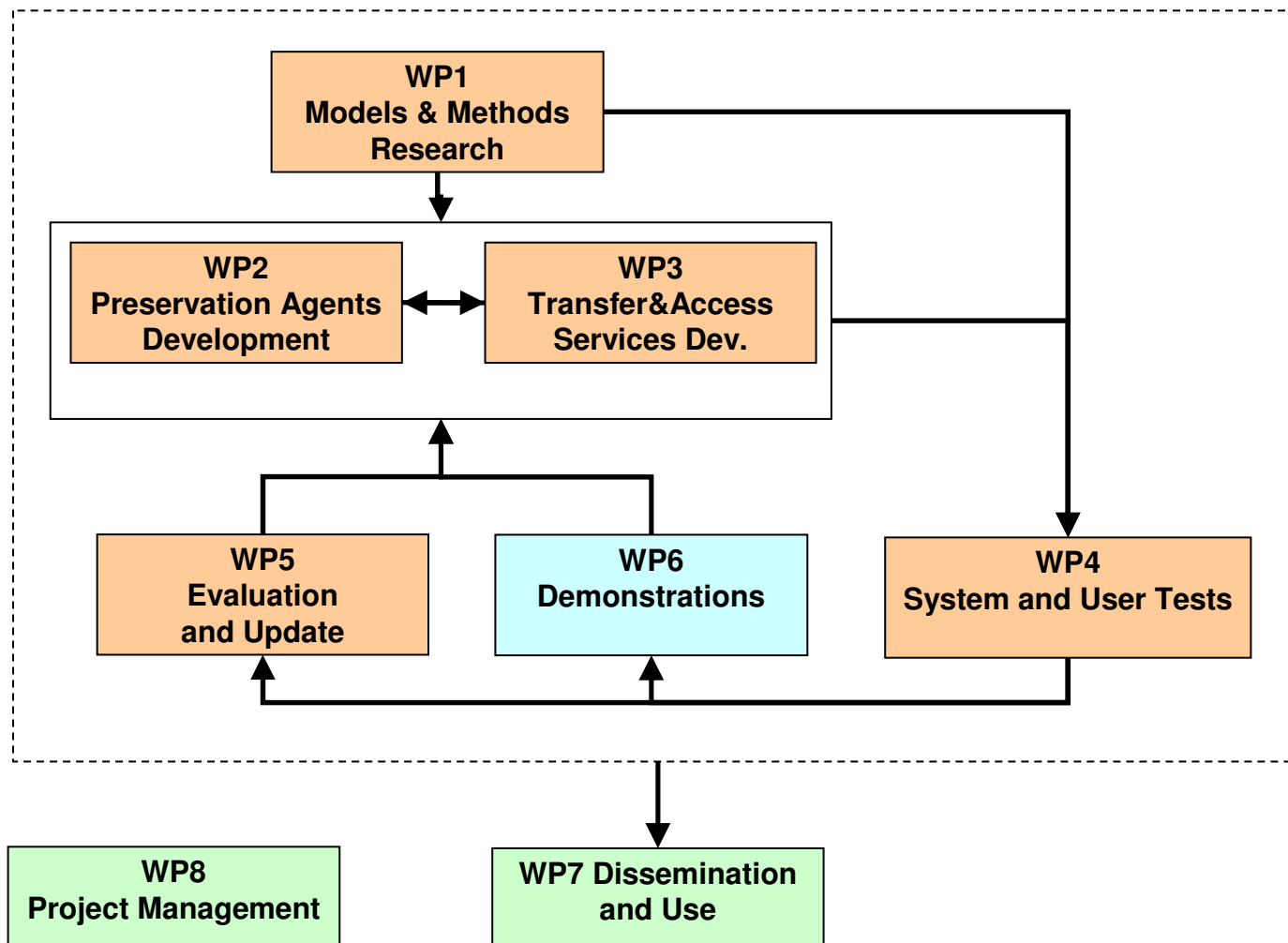


Project Management Structure





Work Packages



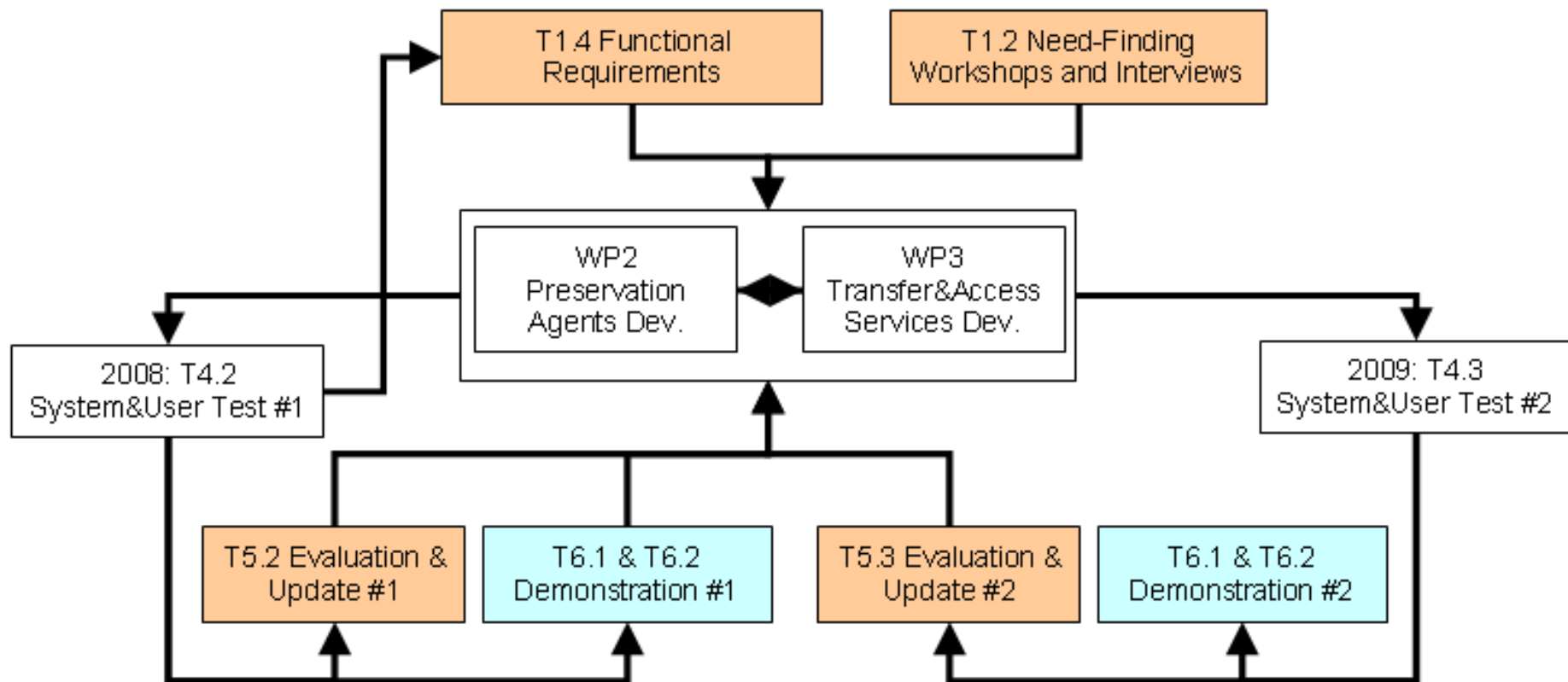


Milestones

Milestone no.	Milestone name	WPs no's.	Delivery date
1	Knowledge Framework	WP1, WP5, WP7	June 2008
2	Technical Specification	WP2, WP3	October 2008
3	Technical Feasibility	WP4, (WP5)	February 2009
4	Knowledge Update	WP1, WP5, WP6	June 2009
5	Second Prototype	WP2, WP3, WP6	October 2009
6	Exploitation Relevance	WP2, WP3, WP7	February 2010
7	Technical Validation	WP4, (WP5)	June 2010
8	Decision to Exploit	WP5, WP6, WP7	October 2010



Evaluation Tasks





Evaluation Focus I

Task/Test	Actor focus			Functionality focus			
	Producer	Archive	Individual	Monitoring and Planning	Pre-ingest	Transfer	Ingest
T1.2 Need Finding	✓	✓		•	••	••	••
T4.2 & T5.2 Test 1	✓	✓			••		
T6.1 & T6.2 Demo 1	✓	✓			••		
T1.4 Expert Workshop		✓	✓	••	•	•	•
T4.3 & T5.3 Test 2	✓	✓	✓	•••	••	••	••
T6.1 & T6.2 Demo 2	✓	✓		••	••••	••••	••••



Evaluation Focus II

Task/Test	Reliability	Usability	Efficiency	Maintainability	Portability
T1.2 Need Finding					
T4.2 & T5.2 Test 1	●	● ●	●		
T6.1 & T6.2 Demo 1		●			
T1.4 Expert Workshop	● ●	● ●	● ●	●	●
T4.3 & T5.3 Test 2	● ● ●	● ● ●	● ●		
T6.1 & T6.2 Demo 2		●	●	● ●	● ●



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