

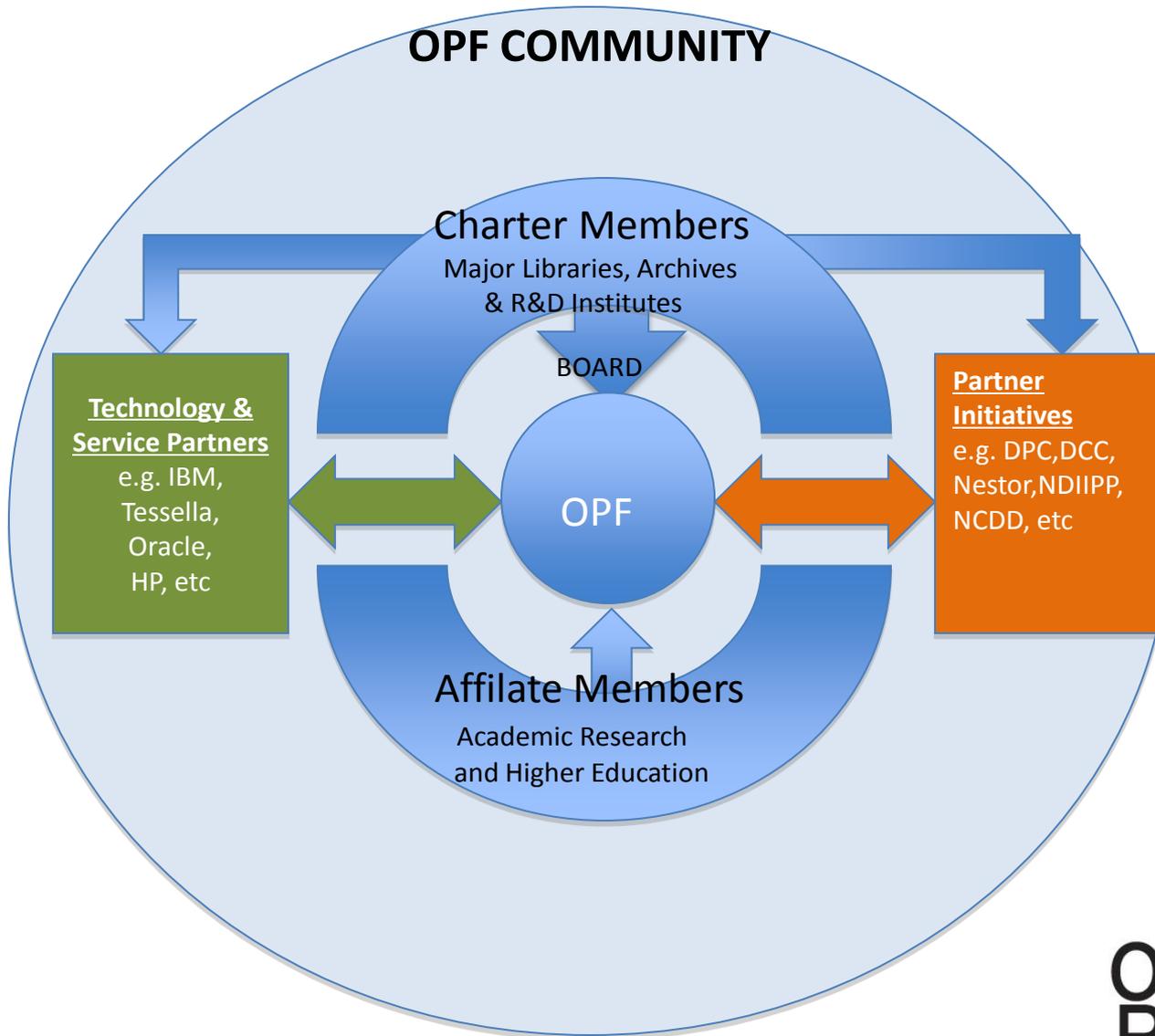


# Plato Preservation Planning

Bram van der Werf

# Problem Statement

- Today major memory institutions, despite being the major stakeholders and thought leaders in the field of long term access and digital preservation, suffer from fundamental lack of mature tools and production services
- Commercially available standard solutions do not fit the specific requirement for a long-term strategy while bespoke custom made solutions are too costly



# OPF COMMUNITY

## Charter Members

Major Libraries, Archives  
& R&D Institutes

BOARD

OPF

## Affilate Members

Academic Research  
and Higher Education

### Technology & Service Partners

e.g. IBM,  
Tessella,  
Oracle,  
HP, etc

### Partner Initiatives

e.g. DPC, DCC,  
Nestor, NDIIPP,  
NCDD, etc

# About OPF and its Products & Services

- Meet digital preservation needs of archives and libraries at national scale.
- Are focused on practical solutions.
- Provide functional products and services, which are open, extensible and non proprietary.

# OPF provides stewardship

- Assure development & maintenance of a comprehensive DP tools and long term access services (Requirements)
- R&D outcome, mature prototypes & demonstrators (Process e.g. RUP, SCRUM)
- Support relevant Open Source initiatives
- Academic Research & Higher Education, work on an academic HE curriculum for DP
- Promote partnerships (technology & services business), take-up and sustain

# Requirements & Collaboration

- Practitioners Community
  - [www.openplanetsfoundation.org](http://www.openplanetsfoundation.org)
  - Wiki
  - Expert blogs
- Developers Collaboratory
  - [www.opf-labs.org](http://www.opf-labs.org)
  - Version management, issue tracking, continuous integration, peer reviewing, knowledge base/wiki

# Long term access Challenges

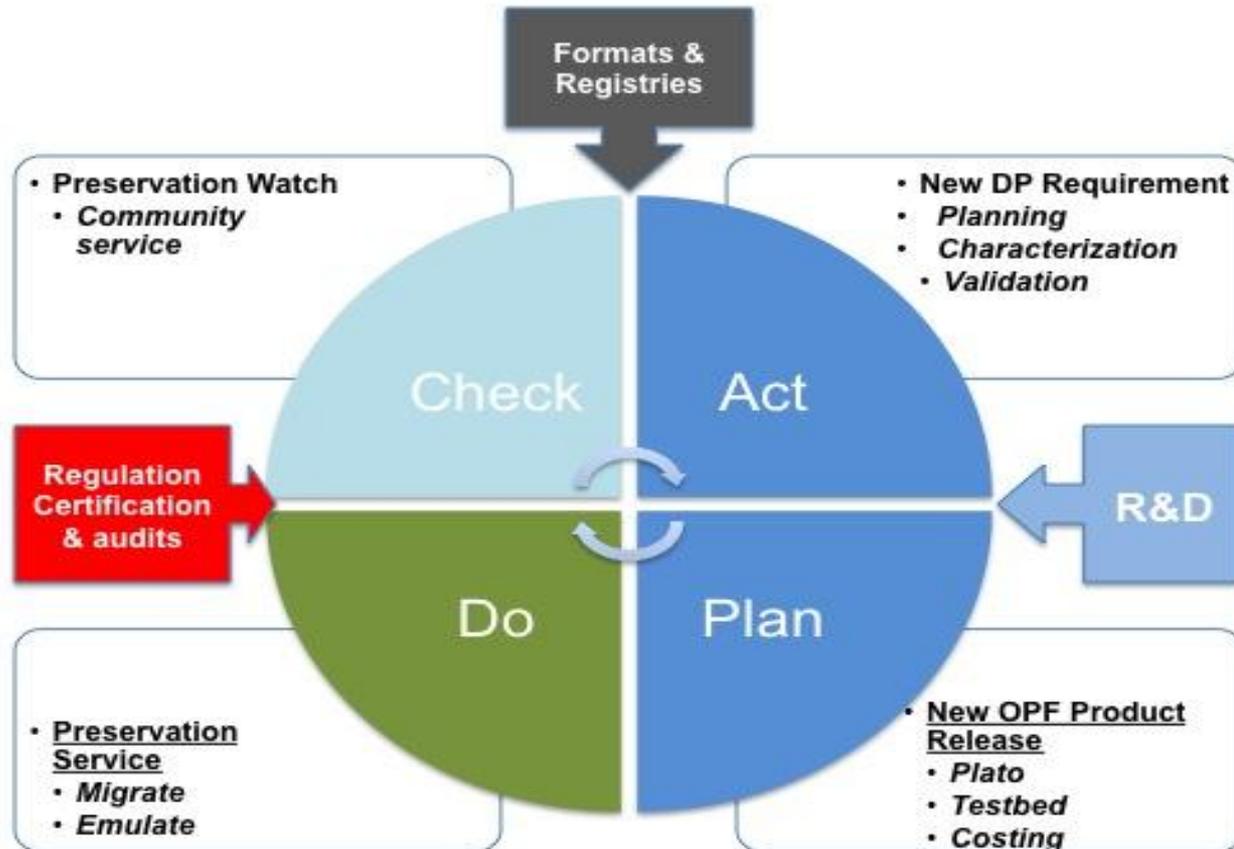
- Bit preservation, digital longevity
- Rendering of formats
- Increased complexity of objects (databases, web-archiving, games, etc)
- “Tsunami” of digital objects
  
- Solutions?!?!?!
  - Storage, cloud solutions, etc, etc....
  - Emulation, migration
  - standardization

Long Term Access &  
Preservation

VS

Industrial Innovation

# The Deming PDCA Circle



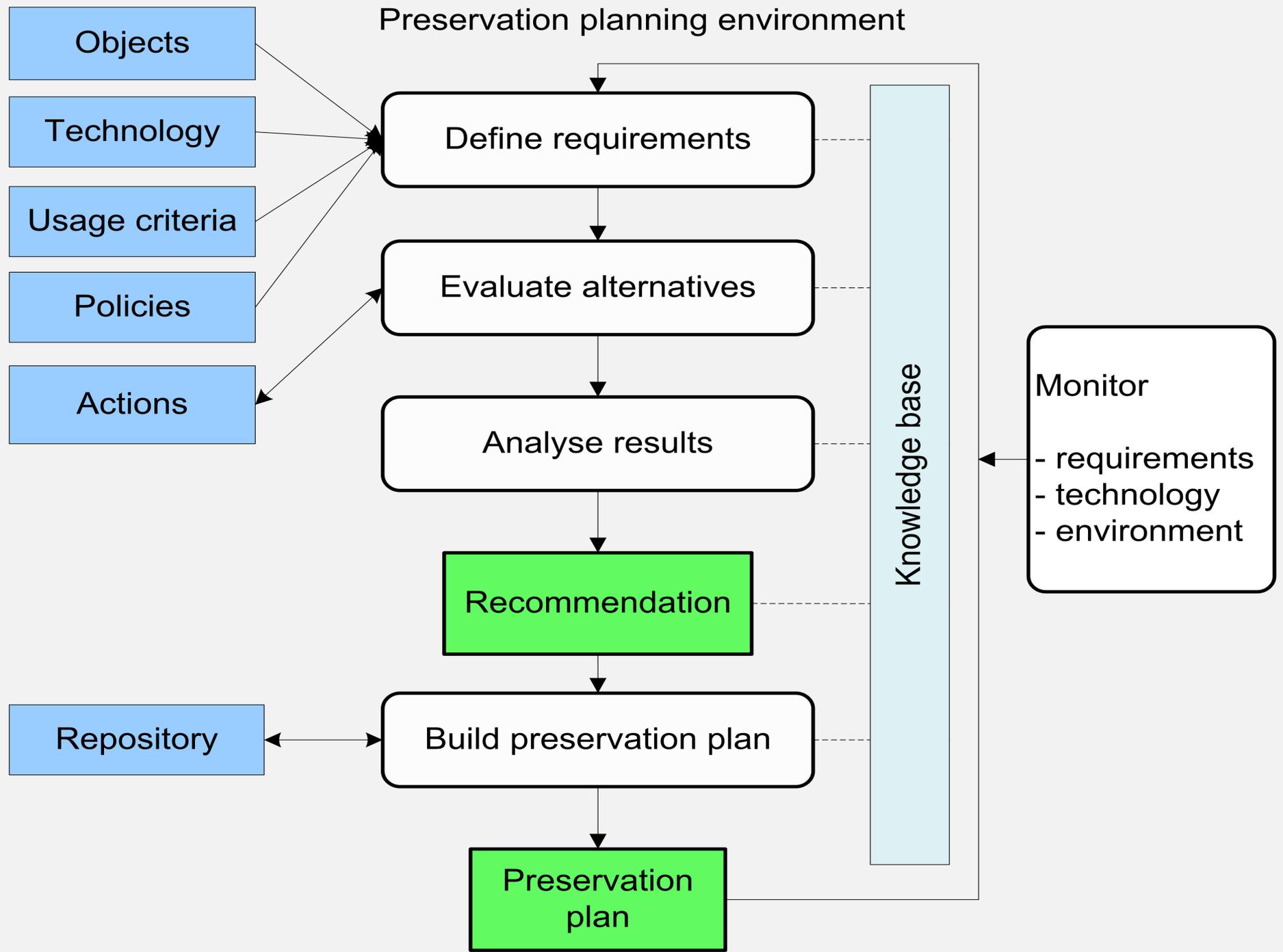
# The Planets Planning Tool Plato

- Web based planning tool implementing the Planets preservation planning workflow
- Publicly available
- Automation of the planning process
  - Integration of registries and services for
    - File format identification
    - Preservation action (migration, emulation...)
    - Characterisation and comparison
- Knowledge base to support planning

# What is a preservation plan?

- ‘A **preservation plan** defines a series of preservation actions to be taken by a responsible institution to address an identified risk for a given set of digital objects or records (called collection).’
- The Preservation Plan takes into account the preservation policies, legal obligations, organisational and technical constraints, user requirements and preservation goal. It also describes the preservation context, the evaluated alternative preservation strategies and the resulting decision for one strategy, including the rationale of the decision.

# Preservation planning environment



# The Developers View on the process

- Got to the online Plato Tool

# How to enter Plato Online Prototype

<http://www.ifs.tuwien.ac.at/dp/plato>



[Introduction](#)

[Documentation](#)

[Case Studies](#)

[Events](#)

[History](#)

## Introduction

### What is Plato?

The fast changes of technologies in today's information landscape have considerably shortened the lifespan of digital objects. Digital preservation has become a pressing challenge. Different strategies such as migration and emulation have been proposed; however, the decision for a specific tool e.g. for format migration or an emulator is very complex. The process of evaluating potential solutions against specific requirements and building a plan for preserving a given set of objects is called preservation planning. So far, it is a mainly manual, sometimes ad-hoc process with little or no tool support. The planning tool **Plato** is a decision support tool that implements a solid preservation planning process and integrates services for content characterisation, preservation action and automatic object comparison in a service-oriented architecture to provide maximum support for preservation planning endeavours.

This software is licensed under the [CC-GNU LGPL](#) version 2.1 or later. The source code can be downloaded from our [project repository](#)

**Plato 2.1 has been released now!**

[Click here to enter Plato.](#)

### What's new?

Plato 2.1 was released in November 2009, two years after the first public release of Plato. The complete history of releases is given on the history page (upper right).

The main new features of this release are:

- **Objective tree editors and knowledge base.** We have redesigned the user interface for the objective trees and come up with a much easier to use and much faster editor for the knowledge base.
- **Jhove.** We have integrated [Jhove](#), including a neat visual side-by-side comparison feature for migrated sample objects to support visual evaluation.
- **Quality-aware migration services** We have made a prototype registry containing quality-aware migratino services available through Plato, featuring automated evaluation of some of the requirements. These migration service measure quality and performance (time and memory) and provide this information together with the result. Corresponding publications about this technology can be found on the documentation page.
- **Navigation structure.** We have introduced a *home screen* providing a central point of entry.
- **Executable preservation plan.** Plato 2.1 creates an executable preservation plan in XML, which can be run in the Planets workflow execution engine.
- **Service Integration.** Updated access to Planets migration services.
- **Scalability.** Previously, it was not feasible to upload large sample objects to create a preservation plan, due to memory limitations. We have worked on this issue and are now supporting sample objects sets up to (roughly) 200MB per plan.
- **Policy definition.** You can now define your policies once and each preservation plan you create will be using these policies.

### Feedback and browser compatibility

Did you encounter any bugs? In this case, please submit bug reports and comments on our [GForge homepage](#).

For information regarding browser compatibility and known issues, please [click here](#).

[Click here to enter Plato.](#)

# Plato Welcome Page



## Home

Welcome to the Home screen of Plato. You can always reach this screen by clicking on the polar bear in the upper left.

**1 Actions**

**2**

**3**

**4**

**5**

## Information

### How to start?

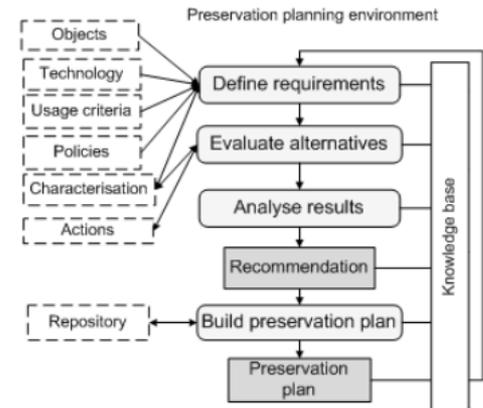
If you are unsure to how to get started, we recommend to do the following:

1. Take a look at the definition of the preservation plan at the documentation page,
2. Read through the description of the preservation planning procedure (below), and then
3. Create a *demo plan* in the list of plans, and walk through the steps to familiarise yourself with the procedure and tool.
4. If you have any questions, comments, or ideas, please [let us know!](#)

Below you find an abstracted diagram of the principal structure of the Planets preservation planning environment.

The planning procedure is completely supported by Plato, relying on a variety of information sources and services. When you load a plan, you will find four menu items on the top which correspond to the four planning phases:

1. Define requirements,
2. Evaluate alternatives,
3. Analyse results, and
4. Define preservation plan.



[More about the planning workflow](#)

# List of Preservation Plans



## Load Plan

Showing my preservation plans:

| ID | Name                   | Description   | Author          | Action                              | Report |
|----|------------------------|---|-----------------|-------------------------------------|--------|
| 52 | TIFF images collection | Preservation plan for our collection of TIFF files we've scanned between 1999 and 2002. | Hannes Kulovits | <input type="button" value="Load"/> |        |

Create a new plan:

Create a new demo plan for me:

Load plan from file:

1

2

3

4

# Navigation



PLANETS Preservation Planning Tool (*Plato*)



[\[logout Hannes\]](#) [\[feedback\]](#) [\[help\]](#)

Plan | Define Requirements :: Evaluate Alternatives :: Analyse Results :: Build Preservation Plan | MY DEMO PLAN: Scanned yearbooks archive

- Define Basis
- Define Sample Records
- Identify Requirements

# Unsaved Changes



- Define Basis
- Define Sample Records
- Identify Requirements
- Status
- Description
- Policies

## Identification

|                       |  |   |
|-----------------------|--|---|
| Identification Code:  | ARCH-COLL_1299   | ? |
| Document types:       | The material excluded from the scope of a yearbook.  | ? |
| Plan name:            | MY DEMO PLAN: Scanned yearbooks archive  | ? |
| Plan description:     | This is a DEMO plan for scanned yearbook material that has recently (end 2008) been transferred from LTO tape to HDD storage on the Digital Preservation Team's SAN storage unit for content stabilization. We want to evaluate the file format for the master images and ensure that it is suitable for long term preservation. | ? |
| Responsible planners: | Hannes Kulovits, Christoph Becker  | ? |
| Organisation:         | The State and University Library   | ? |

The page at <http://olymp.ifs.tuwien.ac.at:8080> says:

There are unsaved changes, please save or discard the changes first.

OK

# Loading a Preservation Plan



◆ The project you loaded has reached the state Weights Set. Therefore you have been directed to the subsequent workflow step.

1

## Analyse Results

Aggregation method:

| Select                   | Alternative |
|--------------------------|-------------|
| <input type="checkbox"/> | PDF/A ToolA |
| <input type="checkbox"/> | PDF/A ToolB |

Show

| Focus   | Name | Result |
|---|------|--------|
| Please select an aggregation mode and alternatives to be displayed. |      |        |

## Recommendation

Recommendation:

Reasoning:

?

Save recommendation

Generate final report



# Creating a new preservation plan



## Create Preservation Plan

Plan name:  ? \*

Plan description:  ? \*

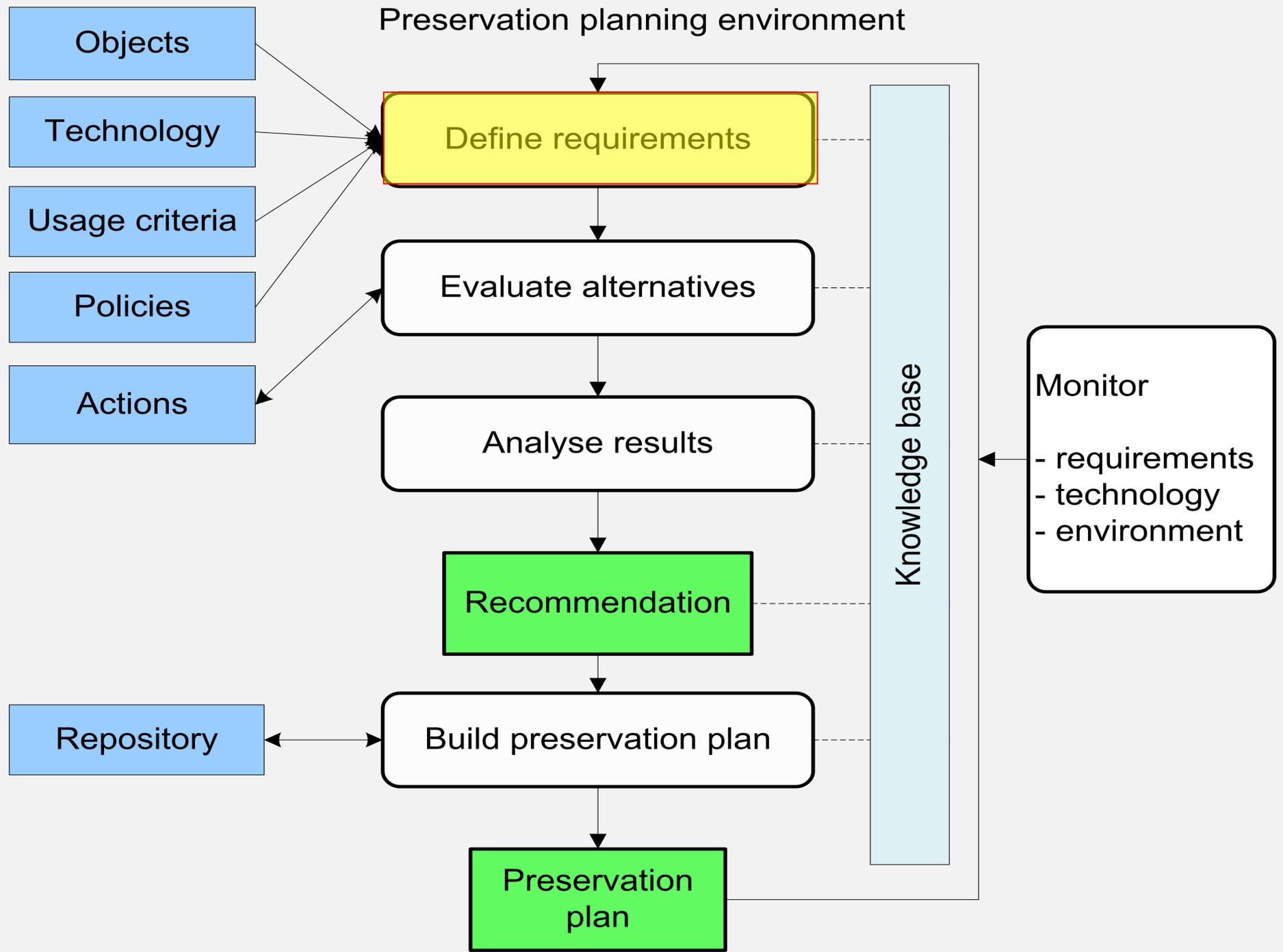
Responsible planner:  ? \*

Organisation:  ? \*

Private:

1

# Preservation planning environment



# Define Basis: Identification

## [ ] Identification

|                       |   |   |
|-----------------------|---|---|
| Identification Code:  | ARCH-COLL-1299  |    |
| Document types:       | The material exclusively consists of GIF masters, each a scanned page or part of a yearbook.  |    |
| Plan name:            | MY DEMO PLAN: Scanned yearbooks archive   |  * |
| Plan description:     | This is a DEMO plan for the user 'kulovits'. The preservation plan looks at the yearbook material that has recently (end 2008) been transferred from LTO tape to HDD storage on the Digital Preservation Teams SAN storage unit for content stabilization. We want to evaluate the file format for the master images and ensure that it is suitable for long term preservation. |  * |
| Responsible planners: | Hannes Kulovits, Christoph Becker   |  * |
| Organisation:         | The State and University Library  |  * |

# Define Basis: Status

## [?] Status

|  |   |   |
|--|---|---|
| Mandate (e.g. Mission statement):                        | The mission of The State and University Library is to preserve our states cultural heritage in the form of any publication, whether it is printed or recorded, for the future.  |    |
| Planning purpose:  | The purpose of this plan is to find a strategy on how to preserve this collection for the future, i.e. choose a tool to handle our collection with. The tool must be compatible with our existing hardware and software infrastructure, to install it within our server and network environment. The files haven't been touched for several years now and no detailed description exists. However, The State and University Library has to ensure its accessibility for the next years. |    |
| Designated community:                                    | General public.   |    |
| Applying policies:                                       | See policy model.   |    |
| Relevant organisational procedures and workflows:        | Library account is needed for access.   |    |
| Contracts and agreements specifying preservation rights: | Copyright held for the physical material. Legal mandate implies that transforming logical representation of the content is allowed.   |  |
| Reference to agreements of maintenance and access:       | None.   |  |

# Define Basis: Description

## [?] Description

Relations to other plans:

This is our first plan.



### Active Trigger

New Collection

Periodic Review

Changed Environment

Changed Objective

Changed Collection Profile

### Description

Changed hardware environment: carrier refresh from LTO tape to HDD (on the Digital Preservation Team SAN). We see this as a very good opportunity to look at the file format for the master images and ensure that it is suitable for long term preservation.



# Define Basis: Policies

How can I define a policy tree?

3

## [+] Policies

Expand all

|   |   |
|---|---|
| PP/2 Policy requirements  |   |
| Environment component   |   |
| Preservation action   |   |
| Reconstruction  |   |
| Replacement   |   |
| Preservation action must create platform independent objects  | N |
| Digital objects for which there is no printed backup must be preserved  | Y |
| Before ingesting in the preservation system, documents must be put in quarantine for 28 days                          | N |
| Preservation actions shall be accompanied with formal documentation specified in the preservation strategy procedures | Y |
| Preservation action must be without compression unless no information loss occurs                                     | Y |
| Prefer preservation actions which are more stable   | Y |
| Prefer preservation actions which are better supported  | Y |
| Prefer preservation actions which produce target outputs which satisfy the main user needs                            | N |
| Preservation action shall optimise the use of space for storage purposes  | N |
| Preservation actions must be compatible with the medium most appropriate for the task the digital resource performs   | N |

## Upload Freemind XML

Browse...

Upload File



2

You can base your policy tree on the template which you can download [>here<](#).

1

Further information on how you can specify a tree using Freemind can be found [>here<](#).

# Define Sample Records: Collection Profile

## Define Sample Records

[Collection Profile](#)  
[Sample Records](#)

### [+] Collection Profile

|                                  |   |   |
|----------------------------------|---|---|
| Collection ID:                   | <input type="text" value="Yearbook-collection-TSL-1200"/>   |  |
| Description:                     | <input 1965-1989."="" bil-revyen".="" contains="" in="" part="" published="" the="" this="" type="text" value="The first part of the yearbook collection of the Danish car periodical " yearbooks="" years=""/>   |  |
| Type of objects:                 | <input type="text" value="This part of the collection consists of GIF files."/>   |  |
| Number of objects:               | <input type="text" value="9000"/>   |  |
| Expected growth rate:            | <input type="text" value="No magazines have been scanned since 2006 and when the scanning is resumed then they will be scanned directly to the preservation format TIFF. Thus, the future growth of one magazine per year will not be related to this preservation plan."/> |  |
| Retention period (time horizon): | <input type="text"/>  |  |

# Define Sample Records: Sample Records

## [?] Sample Records

Description of sample records: The sample pages are taken from the 1965, 1971, 1977, 1983 and 1989 year books. The quality of these pages is quite similar and so is it for the rest of this part of the collection as it was scanned as one batch. However, the sample images were selected from different years in order to increase the probability for differences in the image quality, as the paper and/or print quality of the magazines may have changed over the years.

### Sample Record

Full name:  ? \*

Short name:  ? \*

Has data:  0.08 MB

Original technical environment:  ?

Description:  ?

### Object Format

PUID:  ?

Name:  ?

Version:  ?

Mime-type:  ?

Extension:  ?





XCDL Description:

?

What is XCDL?



Save



Discard changes



Save and proceed

Add new record without file

Upload new record

?

# Identify Requirements: Objective Tree

## [ ] Knowledge base

4

## [ ] Objective Tree

Edit:

[Expand all](#)

### Node

- Yearbook objectives
  - Object characteristics
  - Technical characteristics
  - Process Characteristics
  - Costs

| Edit | Single | Scale | Restriction | Unit | Mapping |
|------|--------|-------|-------------|------|---------|
|      |        |       |             |      |         |

1

## [ ] Descriptive Information

Description:



## [ ] Uploads

3

You can replace the current objective tree with a tree specified in Freemind format by uploading it here. Bear in mind that this replaces your current tree!

[How can I specify trees in XML?](#)

Does the tree have Units?

2

If you want to continue working on the tree in Freemind, you can download the current objective tree as mindmap file for Freemind. Bear in mind that automated measurement mappings are lost during this procedure. Please save the tree before downloading it.

# Using a template

[↑] Knowledge base

Load a template tree

Save current tree as template

1

Please select the template to use from the knowledge base

Close

How can I use the template library?

- Public Templates Root
  - Minimee evaluation tree
  - High-level requirements
  - Website preservation requirements
    - Record characteristics
    - Technical characteristics
    - Infrastructure characteristics
    - Process characteristics
  - Electronic theses

# Using a fragment (1/2)

**[+] Objective Tree**  
Edit:

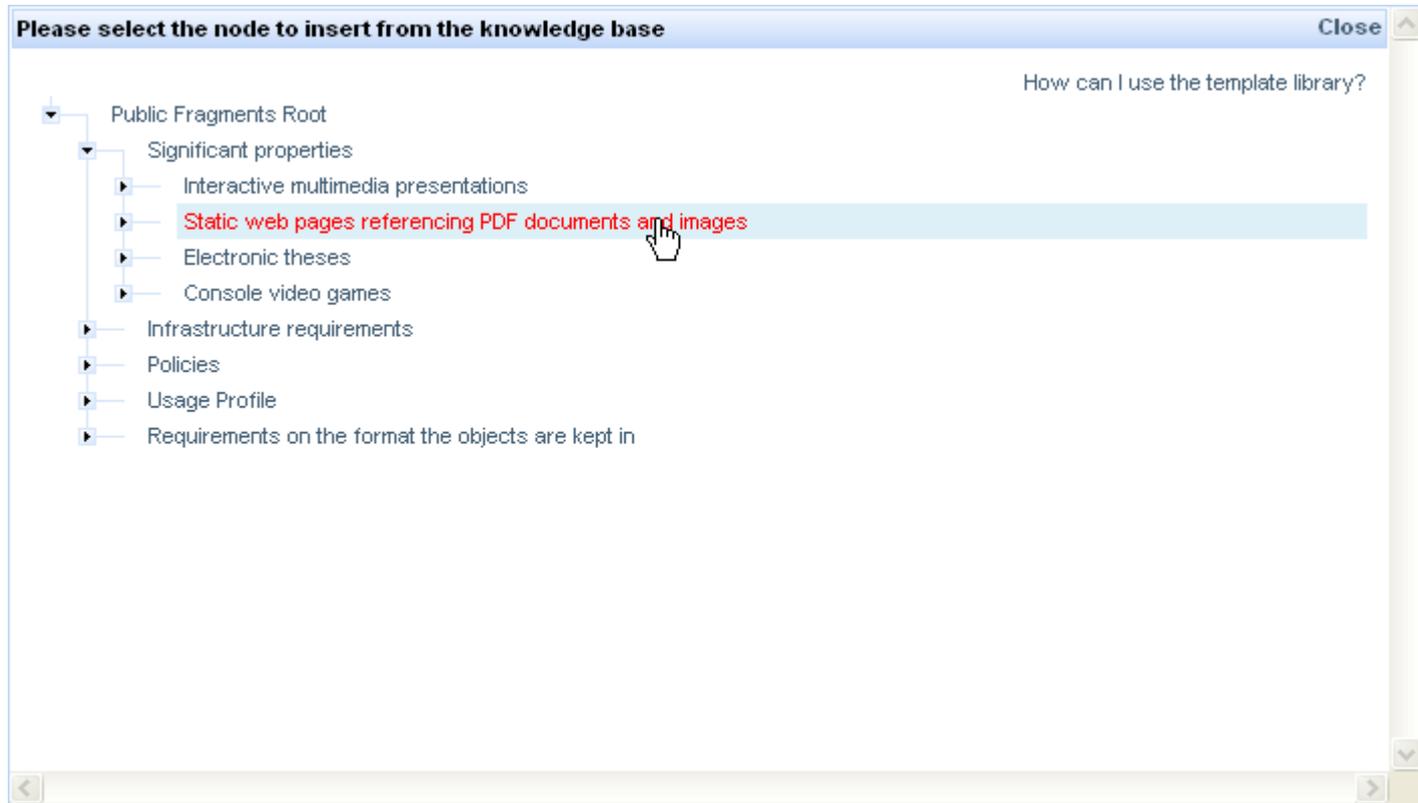
[Expand all](#)

| Node                        | Edit | Single | Scale | Restriction | Unit | Mapping |
|-----------------------------|------|--------|-------|-------------|------|---------|
| ▼ Yearbook objectives       |      |        |       |             |      |         |
| ▶ Object characteristics    |      |        |       |             |      |         |
| ▶ Technical characteristics |      |        |       |             |      |         |
| ▶ Process Characteristics   |      |        |       |             |      |         |
| ▶ Costs                     |      |        |       |             |      |         |

Save this branch

Insert fragment at this node

# Using a fragment (2/2)



# Saving a template

**[+] Objective Tree**  
Edit:  ▼  
[Expand all](#)

| Node                        | Edit | Single          | Scale             | Restriction    | Unit                         | Mapping |
|-----------------------------|------|-----------------|-------------------|----------------|------------------------------|---------|
| ▼ Yearbook objectives       |      | Add a leaf node | Add an inner node | Save this tree | Insert fragment at this node |         |
| ▶ Object characteristics    |      |                 |                   |                |                              |         |
| ▶ Technical characteristics |      |                 |                   |                |                              |         |
| ▶ Process Characteristics   |      |                 |                   |                |                              |         |
| ▶ Costs                     |      |                 |                   |                |                              |         |

1

# Saving a template

Please select a target node in the knowledge base Close

How can I use the template library?

You can change name and description of the tree before saving.

Yearbook objectives

To complete the operation and store the tree, select the target node in the library to which you want to add the tree. The popup window will close, and a copy of your tree is stored in the public library and accessible to all users.

---

- Public Templates Root
  - Minimee evaluation tree
  - High-level requirements
  - Website preservation requirements
  - Electronic theses

1

# Saving a fragment

**[+]** Objective Tree

Edit:  ▾

[Expand all](#)

| Node                        | Edit | Single | Scale | Restriction     | Unit                 | Mapping |
|-----------------------------|------|--------|-------|-----------------|----------------------|---------|
| Yearbook objectives         |      |        |       |                 |                      |         |
| Object characteristics      |      |        |       |                 |                      |         |
| Image quality               |      |        |       | s/Acceptable/No | <input type="text"/> |         |
| Content identical           |      |        |       | s/No            | <input type="text"/> |         |
| Text quality identical      |      |        |       | s/Acceptable/No | <input type="text"/> |         |
| Image color space identical |      |        |       | s/No            | <input type="text"/> |         |
| Technical characteristics   |      |        |       |                 |                      |         |
| Process Characteristics     |      |        |       |                 |                      |         |
| Costs                       |      |        |       |                 |                      |         |

1

# Saving a fragment

**Please select a target node in the knowledge base** Close

How can I use the template library?

You can change name and description of the fragment before saving.

To complete the operation and store the tree, select the target node in the library to which you want to add the tree. The popup window will close, and a copy of your tree is stored in the public library and accessible to all users.

Object characteristics

Save name and description

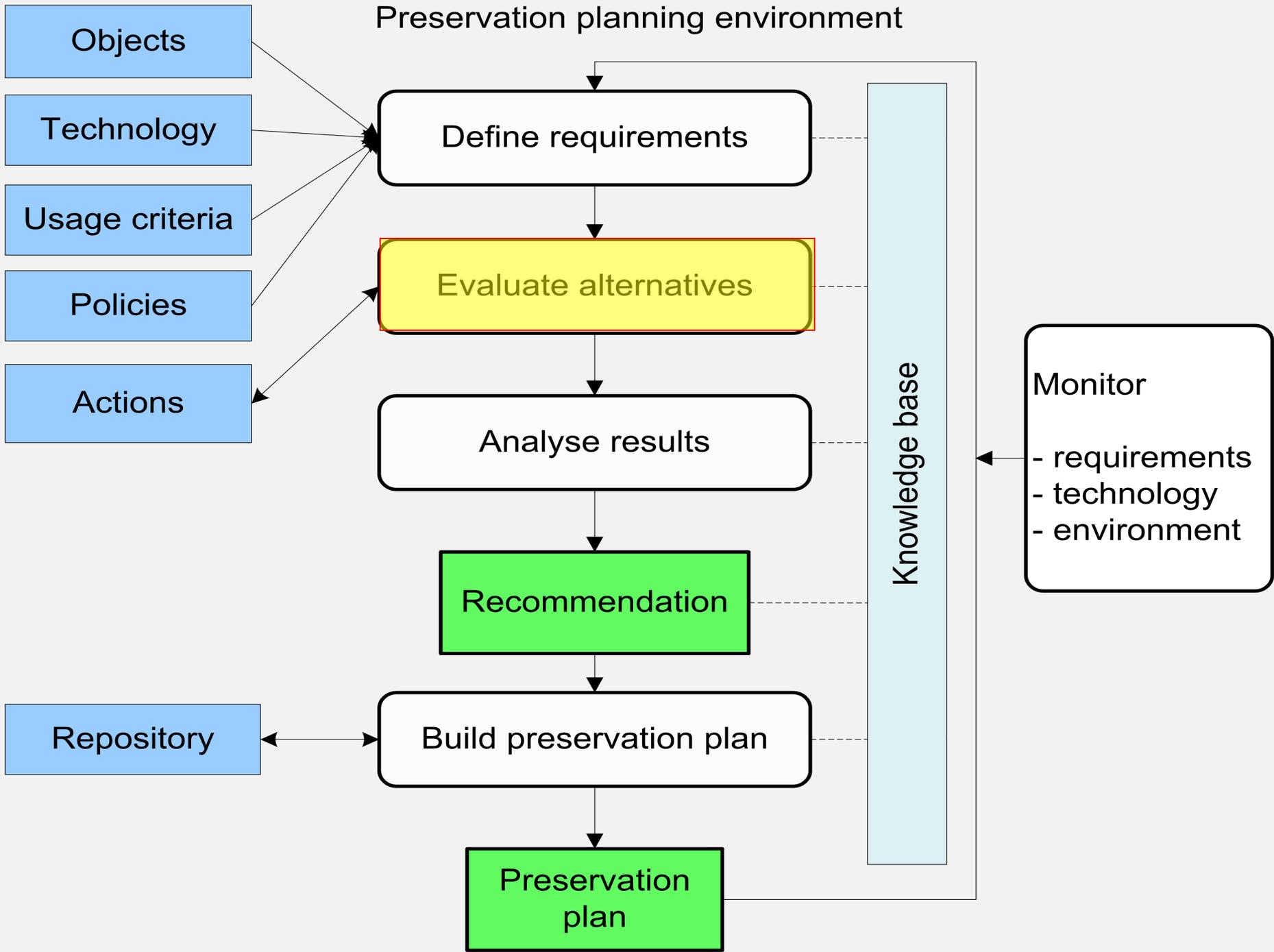
- Public Fragments Root
  - Significant properties
  - Infrastructure requirements
  - Policies
  - Usage Profile
  - Requirements on the format the objects are kept in

1

2

3

# Preservation planning environment



# Defining Alternatives

## Define the alternatives to consider for the plan

| ID  | Name                                   | Description  | Remove                 |
|-----|--|--|------------------------|
| 510 | <a href="#">GIF &gt; BMP</a>           | GIF>JP2>TIF>BMP using service at: <a href="http://apollon.ifs.tuwien.ac.at:7080/axis/services">http://apollon.ifs.tuwien.ac.at:7080/axis/services</a>      | <a href="#">Remove</a> |
| 511 | <a href="#">GIF &gt; TIF</a>           | GIF>JP2>TIF using service at: <a href="http://apollon.ifs.tuwien.ac.at:7080/axis/services">http://apollon.ifs.tuwien.ac.at:7080/axis/services</a>          | <a href="#">Remove</a> |
| 512 | <a href="#">GIF &gt; Text</a>          | GIF>JP2>TIF>PDF>Text using service at: <a href="http://apollon.ifs.tuwien.ac.at:7080/axis/services">http://apollon.ifs.tuwien.ac.at:7080/axis/services</a> | <a href="#">Remove</a> |
| 513 | <a href="#">ImageMagick GIF&gt;PNG</a> | Migration to PNG using ImageMagick 6.3.7 08/21/08 Q16, installed on a Ubuntu 8.10 machine.   | <a href="#">Remove</a> |

[Add new Alternative](#)

## Create alternatives from applicable services

Sample Maserati\_\_Karif.gif has the following format: Graphics Interchange Format, version 1989a.  
You can look up preservation services that are able to handle this object type in the following registries:

MiniMEE  
[Show Services](#)

Planets Service Registry  
[Show Services](#)

CRiB at TU-Wien  
[Show Services](#)

# Adding a new alternative

Define the alternatives to consider for the plan

| ID  | Name                | Description  | Remove                                |
|-----|---------------------|--|---------------------------------------|
| 612 | GIF > BMP           | GIF>JP2>TIF>BMP using service at: <a href="http://apollon.ifs.tuwien.ac.at:7080/axis/services">http://apollon.ifs.tuwien.ac.at:7080/axis/services</a>      | <input type="button" value="Remove"/> |
| 613 | GIF > TIF           | GIF>JP2>TIF using service at: <a href="http://apollon.ifs.tuwien.ac.at:7080/axis/services">http://apollon.ifs.tuwien.ac.at:7080/axis/services</a>          | <input type="button" value="Remove"/> |
| 614 | GIF > Text          | GIF>JP2>TIF>PDF>Text using service at: <a href="http://apollon.ifs.tuwien.ac.at:7080/axis/services">http://apollon.ifs.tuwien.ac.at:7080/axis/services</a> | <input type="button" value="Remove"/> |
| 615 | ImageMagick GIF>PNG | Migration to PNG using ImageMagick 6.3.7 08/21/08 Q16, installed on a Ubuntu 8.10 machine.   | <input type="button" value="Remove"/> |

## Alternative

**Name of alternative:**   \*

**Description of alternative:**   \*

**Reason for considering:**  

**Description of configuration:**  

**Indicator of necessary resources:**  

# Defining Alternatives: Service Registries

## Define the alternatives to consider for the plan

| ID  | Name                | Description  | Remove                 |
|-----|---------------------|--|------------------------|
| 510 | GIF > BMP           | GIF>JP2>TIF>BMP using service at: http://apollon.ifs.tuwien.ac.at:7080/axis/services       | <a href="#">Remove</a> |
| 511 | GIF > TIF           | GIF>JP2>TIF using service at: http://apollon.ifs.tuwien.ac.at:7080/axis/services           | <a href="#">Remove</a> |
| 512 | GIF > Text          | GIF>JP2>TIF>PDF>Text using service at: http://apollon.ifs.tuwien.ac.at:7080/axis/services  | <a href="#">Remove</a> |
| 513 | ImageMagick GIF>PNG | Migration to PNG using ImageMagick 6.3.7 08/21/08 Q16, installed on a Ubuntu 8.10 machine. | <a href="#">Remove</a> |

[Add new Alternative](#)

## Create alternatives from applicable services

Sample Maserati\_Karif.gif has the following format: Graphics Interchange Format, version 1989a.  
You can look up preservation services that are able to handle this object type in the following registries:

The screenshot shows a web interface for defining alternatives. On the left, there is a sidebar with logos for MiniMEE, Planets Service Registry, and CRIB at TU-Wien. Each logo has a 'Show Services' button below it. A red box labeled '1' highlights the 'Show Services' button for the Planets Service Registry. A green arrow points from this button to a table of preservation actions. The table has three columns: 'Preservation Action', 'Target Format', and 'Info'. It lists six actions, all using ImageMagick or GraphicsMagick to migrate GIF to other formats (PNG, TIF, JPG). A red box labeled '2' highlights the entire table. Below the table is a button labeled 'Create alternatives for selected services'.

| Preservation Action                                 | Target Format | Info  |
|---|---------------|---|
| <input type="checkbox"/> GIFtoPNG (ImageMagick)     | PNG           | Migration of GIF to PNG with ImageMagick    |
| <input type="checkbox"/> GIFtoTIFF (ImageMagick)    | TIF           | Migration of GIF to TIF with ImageMagick    |
| <input type="checkbox"/> GIFtoJPG (ImageMagick)     | JPG           | Migration of GIF to JPG with ImageMagick    |
| <input type="checkbox"/> GIFtoPNG (GraphicsMagick)  | PNG           | Migration of GIF to PNG with GraphicsMagick |
| <input type="checkbox"/> GIFtoTIFF (GraphicsMagick) | TIF           | Migration of GIF to TIF with GraphicsMagick |
| <input type="checkbox"/> GIFtoJPG (GraphicsMagick)  | JPG           | Migration of GIF to JPG with GraphicsMagick |

# Take the Go decision

## Take the Go decision

Alternatives that shall not be subject to evaluation can be discarded below.

| Discard                  | Name                | Description  |
|--------------------------|---------------------|--|
| <input type="checkbox"/> | GIF > BMP           | GIF>JP2>TIF>BMP using service at: <a href="http://apollon.ifs.tuwien.ac.at:7080/axis/services">http://apollon.ifs.tuwien.ac.at:7080/axis/services</a>      |
| <input type="checkbox"/> | GIF > TIF           | GIF>JP2>TIF using service at: <a href="http://apollon.ifs.tuwien.ac.at:7080/axis/services">http://apollon.ifs.tuwien.ac.at:7080/axis/services</a>          |
| <input type="checkbox"/> | GIF > Text          | GIF>JP2>TIF>PDF>Text using service at: <a href="http://apollon.ifs.tuwien.ac.at:7080/axis/services">http://apollon.ifs.tuwien.ac.at:7080/axis/services</a> |
| <input type="checkbox"/> | ImageMagick GIF>PNG | Migration to PNG using ImageMagick 6.3.7 08/21/08 Q16, installed on a Ubuntu 8.10 machine.   |

## Decision

Go 

Reason for Decision: As far as we know most libraries use TIFF at present so we want to take a look at that and evaluate it with our data. Furthermore we consider migrating to [BMP](#) and [JPEG](#). We also take a look at migrating to "text" as it seem to be an option as it's offered by the service registry.  \*

Action Needed: Set up a machine with [ImageMagick](#) installed so we can carry out the experiments. All the other can be carried out using the web services.  \*

# Develop Experiments

## Develop experiments

| Registry   | Alternative            | Description  |
|--|------------------------|--|
|   | GIF > BMP              | Description: We use the web services provided for this.   |
|  |                        | Settings:   |
|   | GIF > TIF              | Description: We use the web services provided for this.   |
|  |                        | Settings:   |
|   | GIF > Text             | Description: We use the web services provided for this.   |
|  |                        | Settings:   |
|  | ImageMagick<br>GIF>PNG | Description: Install current version of <a href="#">ImageMagick</a> on the Linux ( <a href="#">Ubuntu 8.10</a> ) machine. Most current version of <a href="#">ImageMagick</a> package available is <a href="#">ImageMagick 6.3.7 06/04/09 Q16</a> . Once the package is installed we use 'convert' to convert from <a href="#">GIF</a> to <a href="#">JPEG</a> .  |
|  |                        | Settings:   |

# Run Experiments

| Alternative  | Description  |                             |        |        |                     |   |                             |                    |  |                             |                    |   |                             |                              |   |                             |
|--|--|-----------------------------|--------|--------|---------------------|---|-----------------------------|--------------------|--|-----------------------------|--------------------|---|-----------------------------|------------------------------|---|-----------------------------|
| <br>GIF > BMP  | <table border="1"><thead><tr><th>Record</th><th>Status</th><th>Report</th></tr></thead><tbody><tr><td>Maserati__Karif.gif</td><td></td><td><a href="#">Edit Report</a></td></tr><tr><td>Morgan__Plus_8.gif</td><td></td><td><a href="#">Edit Report</a></td></tr><tr><td>Morris__Marina.gif</td><td></td><td><a href="#">Edit Report</a></td></tr><tr><td>Morris__Marina_1,8_Coupé.gif</td><td></td><td><a href="#">Edit Report</a></td></tr></tbody></table>      | Record                      | Status | Report | Maserati__Karif.gif |  | <a href="#">Edit Report</a> | Morgan__Plus_8.gif |   | <a href="#">Edit Report</a> | Morris__Marina.gif |    | <a href="#">Edit Report</a> | Morris__Marina_1,8_Coupé.gif |    | <a href="#">Edit Report</a> |
| Record   | Status   | Report                      |        |        |                     |   |                             |                    |  |                             |                    |   |                             |                              |   |                             |
| Maserati__Karif.gif  |   | <a href="#">Edit Report</a> |        |        |                     |   |                             |                    |  |                             |                    |   |                             |                              |   |                             |
| Morgan__Plus_8.gif   |   | <a href="#">Edit Report</a> |        |        |                     |   |                             |                    |  |                             |                    |   |                             |                              |   |                             |
| Morris__Marina.gif   |   | <a href="#">Edit Report</a> |        |        |                     |   |                             |                    |  |                             |                    |   |                             |                              |   |                             |
| Morris__Marina_1,8_Coupé.gif   |   | <a href="#">Edit Report</a> |        |        |                     |   |                             |                    |  |                             |                    |   |                             |                              |   |                             |
| <br>GIF > TIF  | <table border="1"><thead><tr><th>Record</th><th>Status</th><th>Report</th></tr></thead><tbody><tr><td>Maserati__Karif.gif</td><td></td><td><a href="#">Edit Report</a></td></tr><tr><td>Morgan__Plus_8.gif</td><td></td><td><a href="#">Edit Report</a></td></tr><tr><td>Morris__Marina.gif</td><td></td><td><a href="#">Edit Report</a></td></tr><tr><td>Morris__Marina_1,8_Coupé.gif</td><td></td><td><a href="#">Edit Report</a></td></tr></tbody></table>      | Record                      | Status | Report | Maserati__Karif.gif |  | <a href="#">Edit Report</a> | Morgan__Plus_8.gif |   | <a href="#">Edit Report</a> | Morris__Marina.gif |    | <a href="#">Edit Report</a> | Morris__Marina_1,8_Coupé.gif |    | <a href="#">Edit Report</a> |
| Record   | Status   | Report                      |        |        |                     |   |                             |                    |  |                             |                    |   |                             |                              |   |                             |
| Maserati__Karif.gif  |   | <a href="#">Edit Report</a> |        |        |                     |   |                             |                    |  |                             |                    |   |                             |                              |   |                             |
| Morgan__Plus_8.gif   |   | <a href="#">Edit Report</a> |        |        |                     |   |                             |                    |  |                             |                    |   |                             |                              |   |                             |
| Morris__Marina.gif   |   | <a href="#">Edit Report</a> |        |        |                     |   |                             |                    |  |                             |                    |   |                             |                              |   |                             |
| Morris__Marina_1,8_Coupé.gif   |   | <a href="#">Edit Report</a> |        |        |                     |   |                             |                    |  |                             |                    |   |                             |                              |   |                             |
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| Record   | Status   | Report                      |        |        |                     |   |                             |                    |  |                             |                    |   |                             |                              |   |                             |
| Maserati__Karif.gif  |   | <a href="#">Edit Report</a> |        |        |                     |   |                             |                    |  |                             |                    |   |                             |                              |   |                             |
| Morgan__Plus_8.gif   |   | <a href="#">Edit Report</a> |        |        |                     |   |                             |                    |  |                             |                    |   |                             |                              |   |                             |
| Morris__Marina.gif   |   | <a href="#">Edit Report</a> |        |        |                     |   |                             |                    |  |                             |                    |   |                             |                              |   |                             |
| Morris__Marina_1,8_Coupé.gif   |   | <a href="#">Edit Report</a> |        |        |                     |   |                             |                    |  |                             |                    |   |                             |                              |   |                             |
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| Record   | Status   | Report                      |        |        |                     |   |                             |                    |  |                             |                    |   |                             |                              |   |                             |
| Maserati__Karif.gif  |   | <a href="#">Edit Report</a> |        |        |                     |   |                             |                    |  |                             |                    |   |                             |                              |   |                             |
| Morgan__Plus_8.gif   |    | <a href="#">Edit Report</a> |        |        |                     |   |                             |                    |  |                             |                    |   |                             |                              |   |                             |
| Morris__Marina.gif   |   | <a href="#">Edit Report</a> |        |        |                     |   |                             |                    |  |                             |                    |   |                             |                              |   |                             |
| Morris__Marina_1,8_Coupé.gif   |   | <a href="#">Edit Report</a> |        |        |                     |   |                             |                    |  |                             |                    |   |                             |                              |   |                             |

 Run all experiments

# Evaluate Experiment

## Evaluate Experiment

What is the task here?

- Yearbook objectives
  - Object characteristics
    - Image quality
    - Content identical
    - Text quality identical
    - Image color space identical
  - Technical characteristics
  - Process Characteristics
  - Costs

Comments:

| Alternatives        | Sample                                  |   |   |   |
|---------------------|---|---|---|---|
|                     | Download 1                              | Download 2                              | Download 3                              | Download 4                              |
| GIF > BMP           | <input type="button" value="Download"/> | <input type="button" value="Download"/> | <input type="button" value="Download"/> | <input type="button" value="Download"/> |
| GIF > TIF           | <input type="button" value="Download"/> | <input type="button" value="Download"/> | <input type="button" value="Download"/> | <input type="button" value="Download"/> |
| GIF > Text          | <input type="button" value="Download"/> | <input type="button" value="Download"/> | <input type="button" value="Download"/> | <input type="button" value="Download"/> |
| ImageMagick GIF>PNG | <input type="button" value="Download"/> | <input type="button" value="Download"/> | <input type="button" value="Download"/> | <input type="button" value="Download"/> |

**Object characteristics > Image quality**  
Ordinal  
(Yes, Acceptable or No)

| Alternatives        | Results   | Comments             |
|---------------------|---|----------------------|
| GIF > BMP           | Maserati__Karif.gif Yes<br>Morgan__Plus_8.gif Yes<br>Morris__Marina.gif Yes<br>Morris__Marina_1,8_Coupe.gif Yes | <input type="text"/> |
| GIF > TIF           | Maserati__Karif.gif Yes<br>Morgan__Plus_8.gif Yes<br>Morris__Marina.gif Yes<br>Morris__Marina_1,8_Coupe.gif Yes | <input type="text"/> |
| GIF > Text          | Maserati__Karif.gif No<br>Morgan__Plus_8.gif No<br>Morris__Marina.gif No<br>Morris__Marina_1,8_Coupe.gif No     | <input type="text"/> |
| ImageMagick GIF>PNG | Maserati__Karif.gif Yes<br>Morgan__Plus_8.gif Yes<br>Morris__Marina.gif Yes<br>Morris__Marina_1,8_Coupe.gif Yes | <input type="text"/> |

1  
2  
3  
4

# Evaluate Experiment



PLANETS Preservation Planning Tool (*Plato*)

planets  
[logout user] [help]

Project | Define Requirements | Evaluate Requirements | Consider Results | ONB: electronic theses and dissertations

- ◆ Leaf Initial HW is not properly evaluated
- ◆ Leaf Running HW is not properly evaluated

## Evaluate Experiment

[Expand All](#) | [Collapse All](#)

ONB Master thesis

| Focus | Node                    |
|-------|-------------------------|
|       | ▼ONB Master thesis      |
| X     | ▶Object characteristic  |
| X     | ▶Technical charac.      |
| X     | ▶Process Characteristic |
| X     | ▼Costs                  |
| X     | ▼HW                     |
| X     | ▼Initial HW             |
| X     | ▼Running HW             |
| X     | ▶SW                     |
| X     | ▶Personell              |

Comments:

?

HW > Initial HW

| Alternative    | Single result | Comments |
|----------------|---------------|----------|
| PDF-A          | 5             | 0/5 *    |
| PDF-unchanged  | 5             | 0/5 *    |
| TIFF           | 5             | 0/5 *    |
| EPS            | 5             | 0/5 *    |
| JPEG2000       | 5             | 0/5 *    |
| RTF-acrobat    | 5             | 0/5 *    |
| RTF-convertdoc | 5             | 0/5 *    |
| TXT            | 5             | 0/5 *    |

HW > Running HW

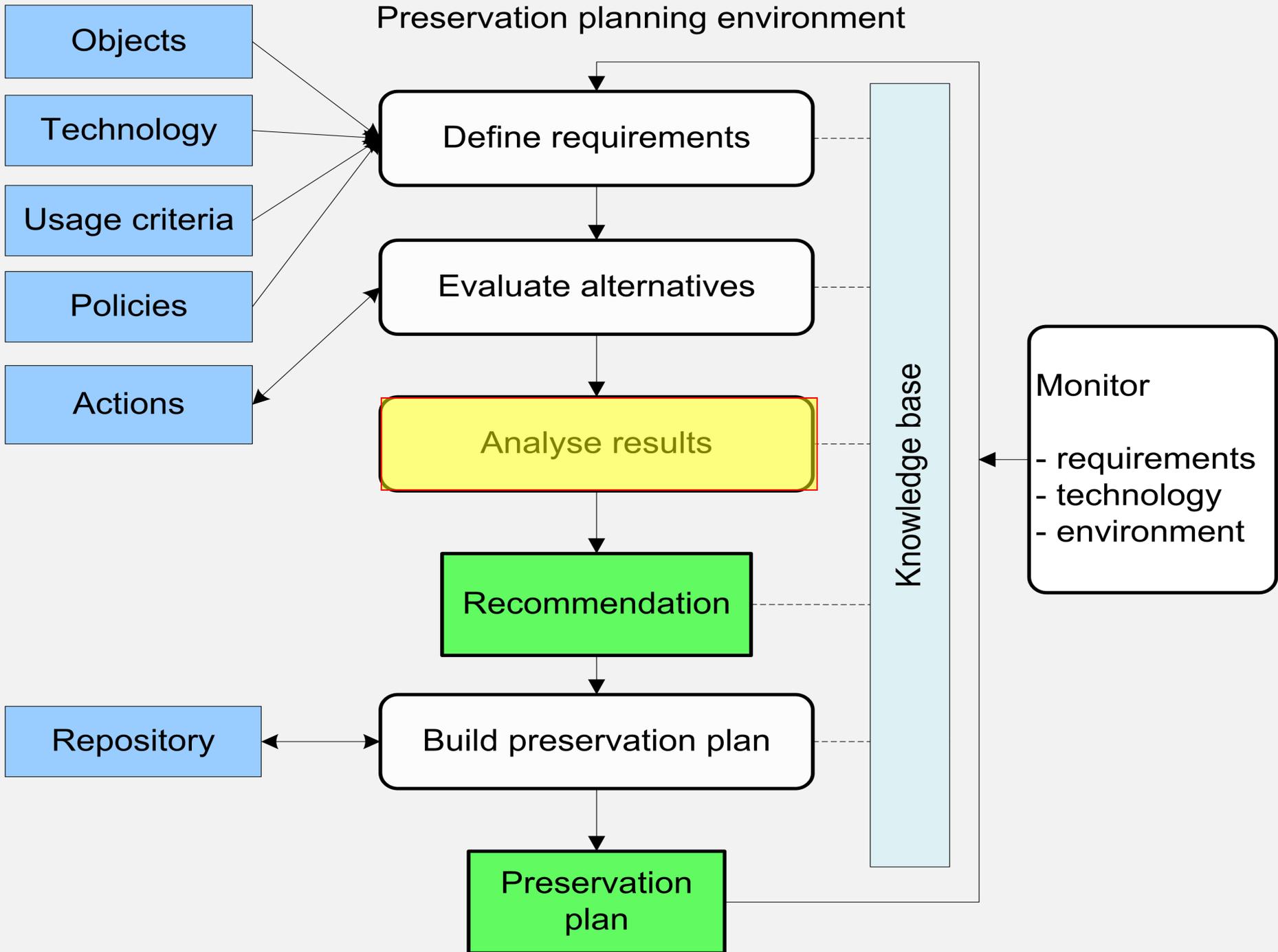
| Alternative    | Single result | Comments |
|----------------|---------------|----------|
| PDF-A          | 5             | 0/5 *    |
| PDF-unchanged  | 5             | 0/5 *    |
| TIFF           | 5             | 0/5 *    |
| EPS            | 5             | 0/5 *    |
| JPEG2000       | 5             | 0/5 *    |
| RTF-acrobat    | 5             | 0/5 *    |
| RTF-convertdoc | 5             | 0/5 *    |
| TXT            | 5             | 0/5 *    |

Approve All

Save | Discard changes | Proceed



# Preservation planning environment



# Transform Measured Values

## Transform Measured Values

What is this transformation and how does it work?

- Yearbook objectives
  - Object characteristics
    - Image quality
    - Content identical
    - Text quality identical
    - Image color space identical
  - Technical characteristics
  - Process Characteristics
  - Costs

Comments:

### Object characteristics > Image quality

| Ordinal Value | Target Value                        |
|---------------|-------------------------------------|
| Yes           | -> <input type="text" value="5.0"/> |
| Acceptable    | -> <input type="text" value="3.0"/> |
| No            | -> <input type="text" value="0.0"/> |

#### Aggregation mode:

- Worst result       Arithmetic mean

| Results             | 1   | 2   | 3   | 4   |
|---------------------|-----|-----|-----|-----|
| GIF > BMP           | Yes | Yes | Yes | Yes |
| GIF > TIF           | Yes | Yes | Yes | Yes |
| GIF > Text          | No  | No  | No  | No  |
| ImageMagick GIF>PNG | Yes | Yes | Yes | Yes |

1

2

# Set Importance Factors

## Set Importance Factors

Balance weights automatically

1

[How does the automatic balancing work?](#)



The balancing always refers to ONE level of the tree. The best way to do this balancing is to focus in on one level after the other and balance all leaves in this level.

### Importance Factors

[Yearbook objectives](#) > ...

| Name                        | Weight                              | Total weight | Lock                     | Performance |
|-----------------------------|-------------------------------------|--------------|--------------------------|-------------|
| Yearbook objectives         | 0 <input type="text" value="1"/>    | 1            | <input type="checkbox"/> |             |
| Object characteristics X    | 0 <input type="text" value="0.25"/> | 0.25         | <input type="checkbox"/> |             |
| Technical characteristics X | 0 <input type="text" value="0.25"/> | 0.25         | <input type="checkbox"/> |             |
| Process Characteristics X   | 0 <input type="text" value="0.25"/> | 0.25         | <input type="checkbox"/> |             |
| Costs X                     | 0 <input type="text" value="0.25"/> | 0.25         | <input type="checkbox"/> |             |

2

# Analyze Results

## Results: Weighted multiplication

Result-Tree with all Alternatives, Aggregation method: Weighted multiplication

### Node

### Results

Yearbook objectives

|                          |      |  |
|--------------------------|------|--|
| GIF > BMP:               | 0.00 |  |
| GIF > TIF:               | 3.77 |  |
| GIF > Text:              | 0.00 |  |
| ImageMagick GIF>PNG:4.58 |      |  |

## Results: Weighted sum

Result-Tree with all Alternatives, Aggregation method: Weighted sum.

**This tree contains only strategies that do not have knock-out evaluation criteria; see above**

### Node

### Results

Yearbook objectives

|                          |      |  |
|--------------------------|------|--|
| GIF > TIF:               | 4.15 |  |
| ImageMagick GIF>PNG:4.74 |      |  |

[What is sensitivity analysis and how does it work?](#)

## Sensitivity analysis

Yearbook objectives

|                          |      |  |
|--------------------------|------|--|
| GIF > TIF:               | 4.15 |  |
| ImageMagick GIF>PNG:4.74 |      |  |

## Conclusion

### Recommendation

Recommendation:

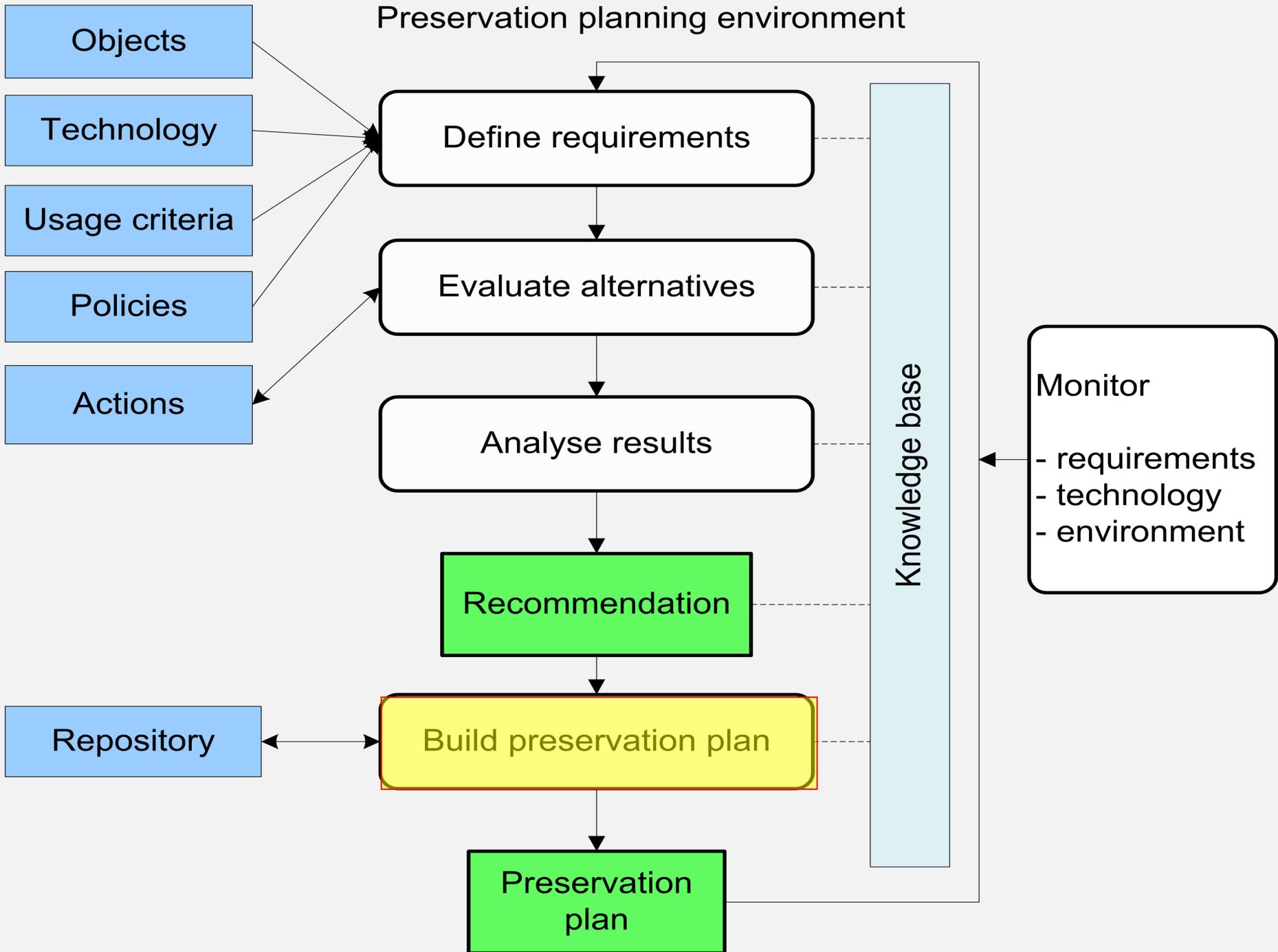
Reasoning: PNG obviously suits more our needs especially in terms of resulting files size which is an important requirement for us. However, we have to take into consideration, that, in this preservation plan, we evaluated converting to TIFF with this comfy web service.



Effects of applying this strategy: We have to convert all our GIF files to PNG. However, we will keep the GIF files for at least 6 months to be on the safe side in case anything goes wrong with the migration.



# Preservation planning environment



# Create executable plan

## Create executable plan

When  
What

### [?] When

Triggers and conditions: We start to migrate our collection beginning of November this year.



Validate and QA: We use compare functions of [ImageMagick](#) and [GraphicsMagick](#) to validate the migrated files. We only consider the migration as successful if both tools assert that source and target file are equal.



### [?] What

Tool: ImageMagick@apollon

Location of records: /media/disk1/archive/2199/

Parameters for tool: No specific configuration settings. We use the command 'convert'.



### [?] Executable Preservation Plan

Please click on the following link to download the executable preservation plan:

[executable-preservation-plan.xml](#)

1

# Define preservation plan

**[?] Estimate of costs**

| Life Costmodel  | TCO (Total Cost of Ownership) Model |
|---|-------------------------------------|
| CIG (Integrate new solution): -                       | TCO: 9.500                          |
| CPE (Perform preservation action): -                  |                                     |
| CQA (Quality assure action): -                        |                                     |
| CRM (Record preservation action metadata): -          |                                     |
| <b>Preservation action total (CIG+CPE+CQA+CRM): -</b> |                                     |
| Reingest: -   |                                     |

Currency: EUR

Remarks: For putting this plan into action we don't need to buy any new hardware. We estimate 1 person month at EUR 4.500 including overheads. Based on our TCO calculations another EUR 5.000,-- come from existing hardware and software. We don't use the Life cost model yet but are planning to. We thus left the cost factors in

**[?] Monitoring**

Person responsible for execution: Pete McPlan

Person responsible for monitoring: Bob Servant

| Active                              | Trigger                    | Description  |
|-------------------------------------|----------------------------|--|
| <input checked="" type="checkbox"/> | Periodic Review            | After one year we will review the preservation plan. |
| <input type="checkbox"/>            | Changed Environment        |  |
| <input type="checkbox"/>            | Changed Objective          |  |
| <input type="checkbox"/>            | Changed Collection Profile |  |

# Validate preservation plan

## Validate plan for MY DEMO PLAN: Scanned yearbooks archive

Report creation date: Nov 26, 2009 6:23:12 PM

[Display Changelogs](#)

**Plan name** MY DEMO PLAN: Scanned yearbooks archive

**Current state** Plan Defined

**Plan description** This is a DEMO plan for the user 'kulovits'. The preservation plan looks at the yearbook material that has recently (end 2008) been transferred from LTO tape to HDD storage on the Digital Preservation Teams SAN storage unit for content stabilization. We want to evaluate the file format for the master images and ensure that it is suitable for long term preservation.

**Responsible planners** Hannes Kulovits, Christoph Becker

**Organization** The State and University Library

- [Identification and Status](#)
- [Institutional setting](#)
- [Collection and Sample Records](#)
- [Requirements](#)
- [Alternatives](#)
- [Go-Decision](#)
- [Experiments](#)
- [Evaluation & Transformation](#)
- [Results: Weighted multiplication](#)
- [Results: Weighted sum](#)
- [Conclusion and Decision for Preservation Strategy](#)
- [Preservation Action Plan](#)
- [Costs](#)
- [Monitoring](#)
- [Approval](#)

### Identification and Status

**Identification code** ARCH-COLL-1299

**Planning purpose** The purpose of this plan is to find a strategy on how to preserve this collection for the future, i.e. choose a tool to handle our collection with. The tool must be compatible with our existing hardware and software infrastructure, to install it within our server and network environment. The files haven't been touched for several years now and no detailed description exists. However, The State and University Library has to ensure its accessibility for the next years.

**Plan relations** This is our first plan.

| Triggers | Trigger                      | Description  |
|----------|------------------------------|--|
|          | Changed hardware environment | carrier refresh from LTO tape to HDD (on the Digital Preservation Team SAN). We see this as a very important step for the master images and ensure that it is suitable for long term preservation. |

### Plan Approval



Approve this plan

# How about practitioners?

- The Danish Royal Library
  - <http://www.scribd.com/doc/35456618/Royal-Library-of-Denmark-Use-of-Planets>
- On the web...
  - <http://e-records.chrisprom.com/?p=1082>

# A Tool is but a Tool

- Prevents re-inventing the wheel
- Improves sharing of best practices
- Supports the training & learning process

– BUT WE NEED CONTENT TO FEED TOOLS

# OPF focus for 2011

