AWOB, an Astronomer's Workbench

Jai Won Kim, Gerard Lemson, Wolfgang Voges, Nataša Bulatović, Ulla Tschida, Malte Dreyer

Talk: Andreas Vogler, MPDL, June 09, 2011

Table of Contents

Digital publications allow a good data-mining

Get
- flux
- spectrum
- do an SFB profile
- etc.

to classify sources

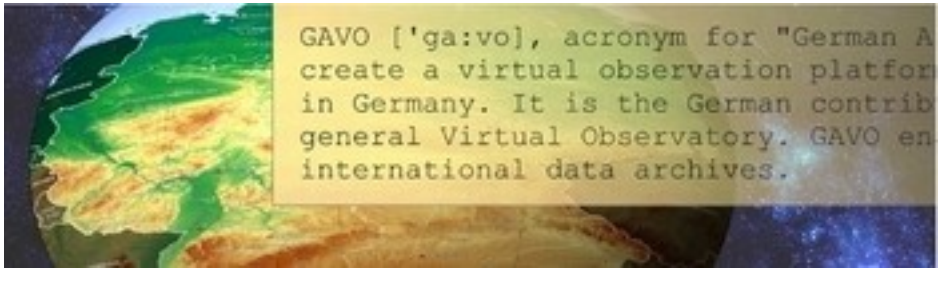
The edge-on spiral Galaxy NGC 4631
and its companion NGC 4627

What is AWOB (in Few Words)?

AWOB, the Astronomer's Workbench, is a WEB based publication-information-communication-collaboration-data-platform which helps scientific working groups of any size to enhance the communication and to share resources, data, results, publication texts etc. throughout the whole scientific life cycle.

The data in e-publications are standardised, thereby allowing long term archiving of the data, the annotation of metadata as well as easy access of digital outcomes by other scientists.

The AWOB project has a duration of 3 years and is based on experiences made by the German Astrophysical Virtual Observatory (GAVO) and the MPDL. The AWOB project takes advantage of the experiences gained by MPDL's eSciDoc and other projects. Where appropriate, existing solutions will be used.

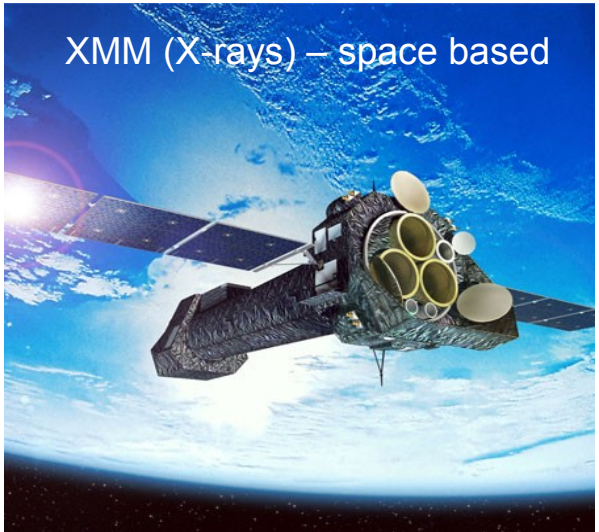


MAX PLANCK digital library

Situation and Challenge in Today's Astronomy

- Projects can include hundreds of collaborators, often spread out over the globe (large groups due to expensive large telescopes, satellites, super clusters for computing)
- Sharing resources (e.g., data products, images, or texts for publications) can be cumbersome
- If one group wants to use the „digital results“ (e.g., a calibrated image) of another group, an exchange and a detailed description of the underlying data is necessary

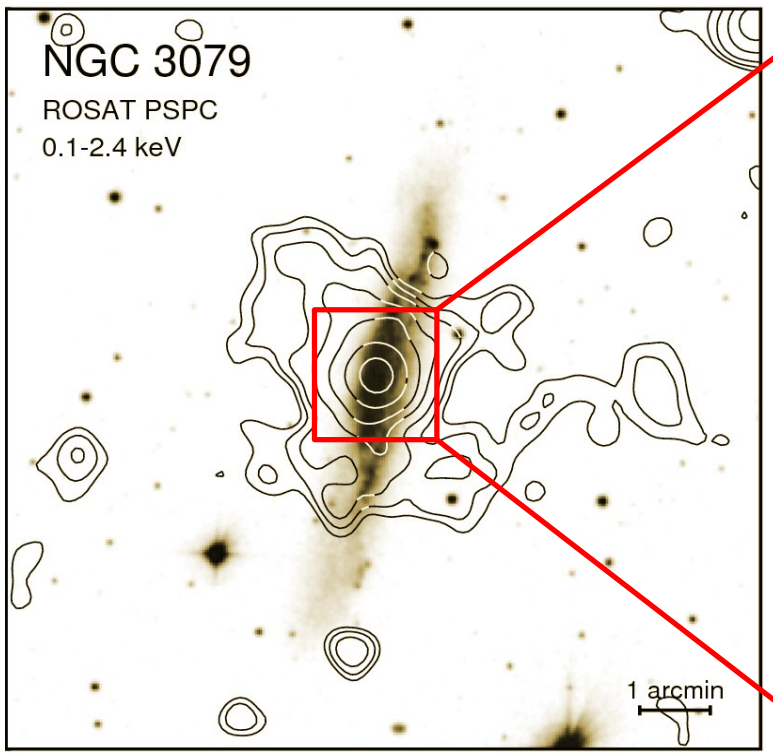
Examples for observatories:



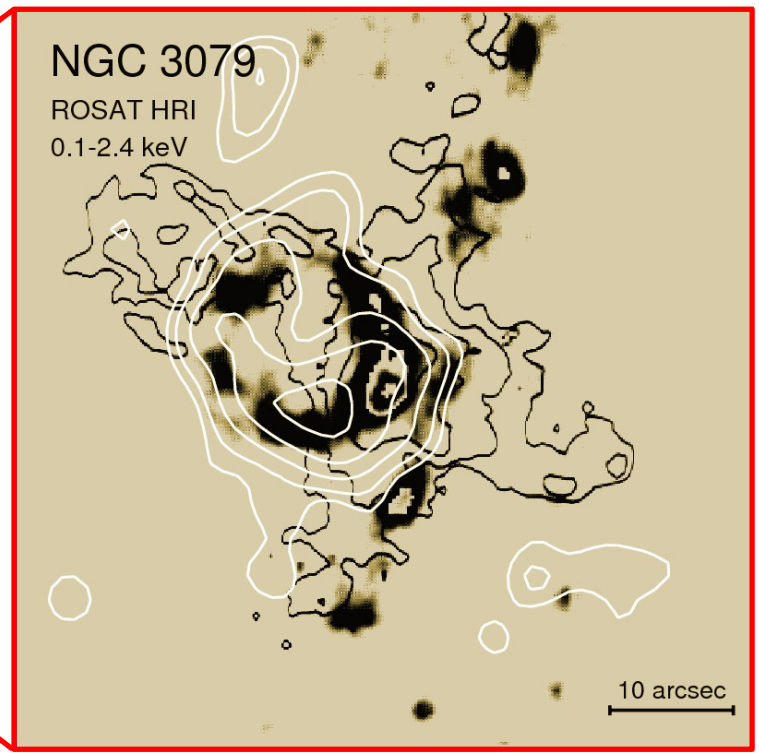
Multi Wavelengths Observations

Multi wavelengths observations allow a holistic view of objects.
E-publications are a perfect basis for them!

Example: An optical, X-ray, radio and Hα view of the edge-on spiral galaxy NGC 3079



NGC 3079: Optical image and X-rays (contours)



The central super bubble: Hα image, X-rays (white contours) and radio (black contours)

References:

Optical image:
ESO/DSS2

X-rays:
Pietsch et al. (1997)

Radio and Hα:
Veilleux et al. (1994)

The Central Super Bubble of NGC 3079: A False-Colour Image

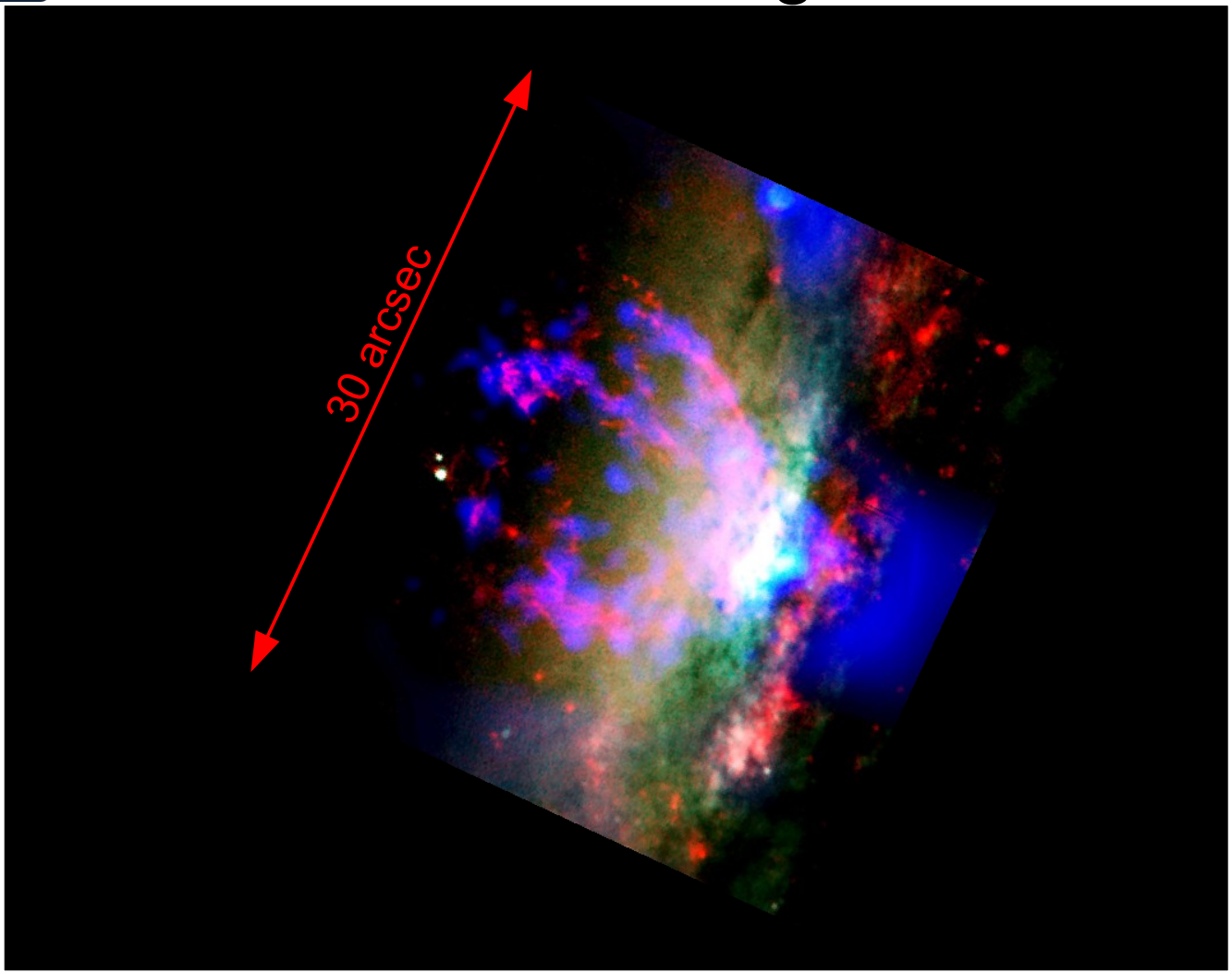


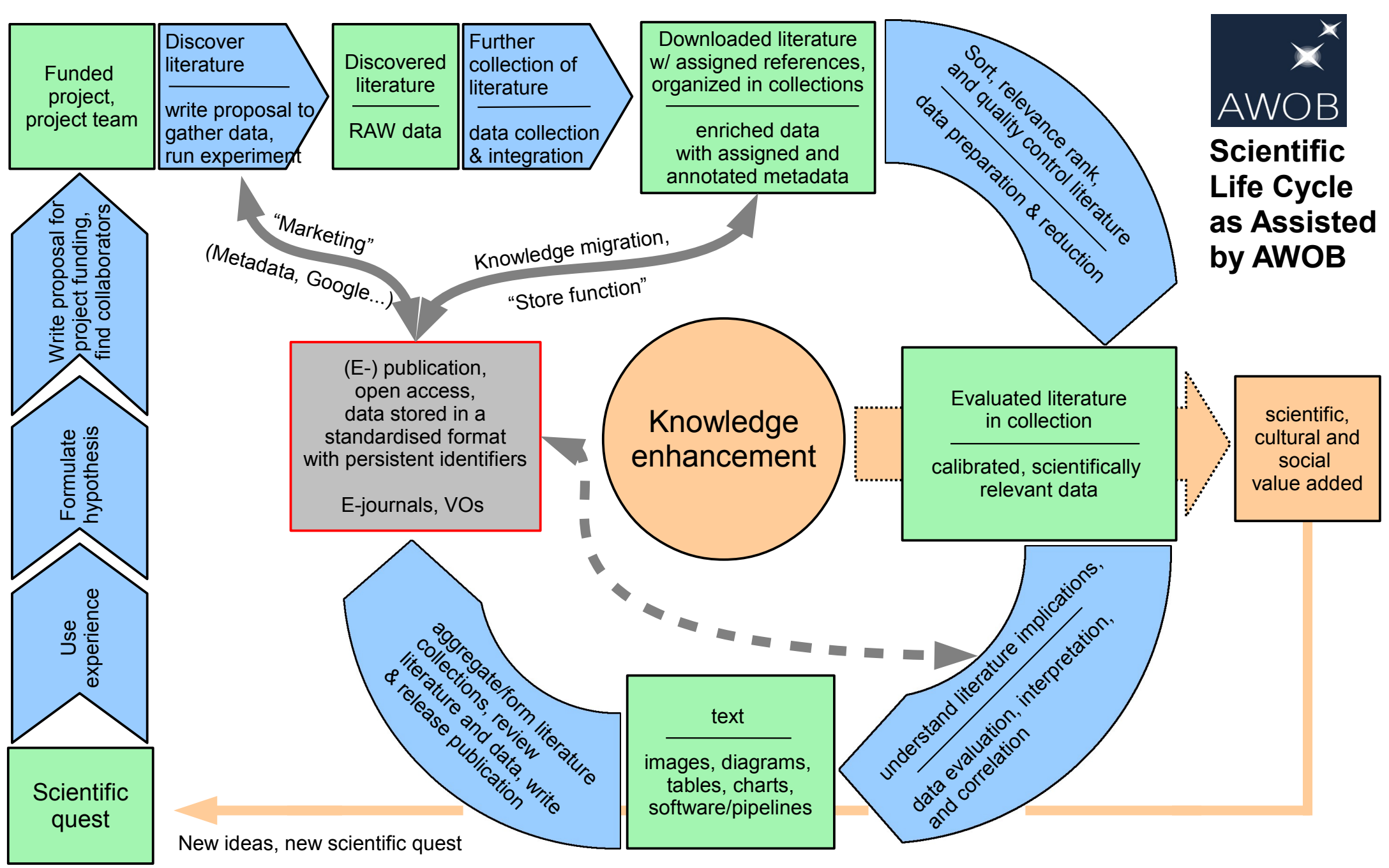
Image rotated, so that North is to the top

Showcase Life Cylce of Science in Astrophysics

A typical scientific life cycle in Astrophysics is scetched in the following transparency

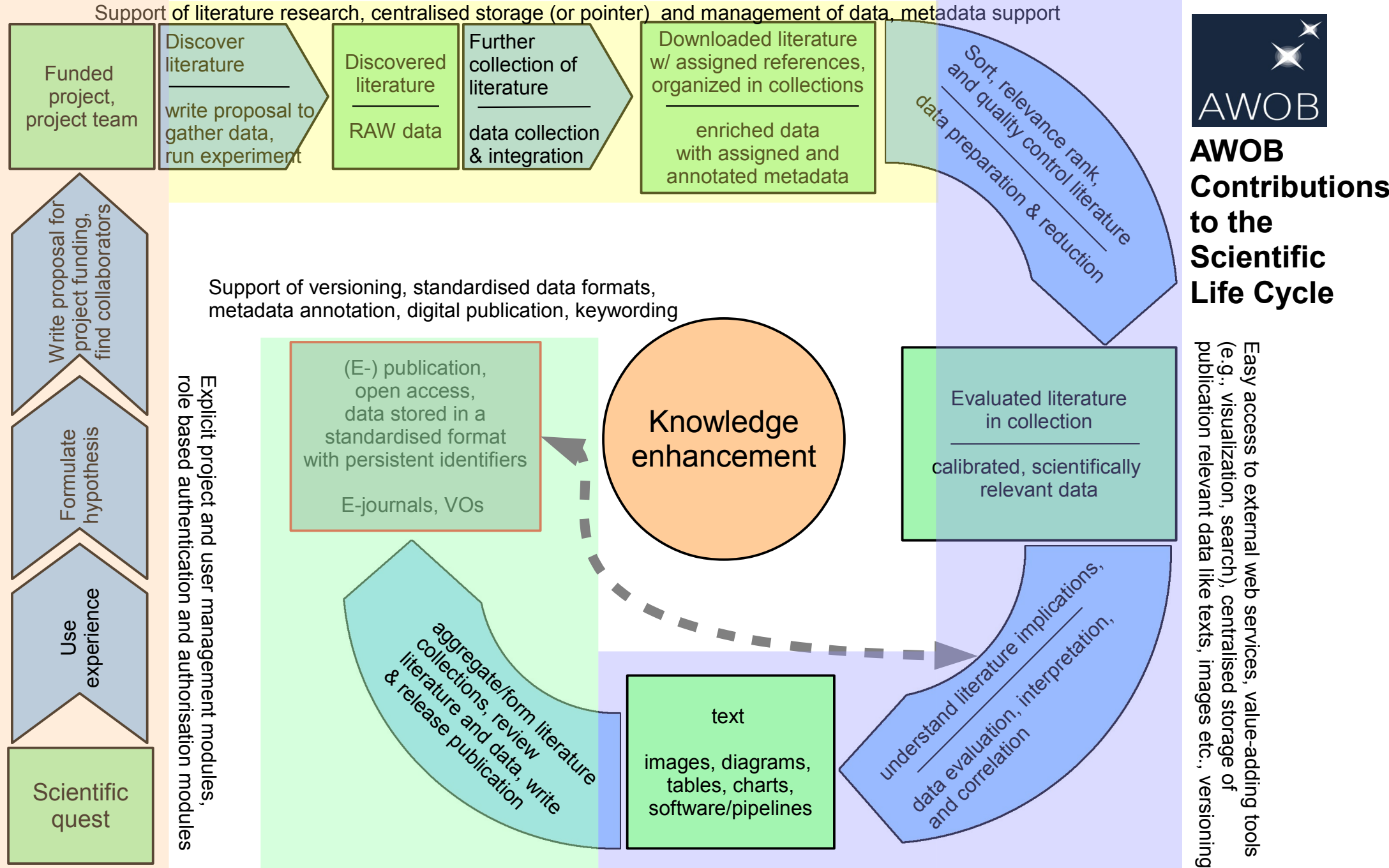
It may contain:

- Finding partners for a scientific quest
- Doing literature research
- Writing proposals for funding and observation time
- data/literature preparation, evaluation, interpretation
- writing a publication
- publishing as e-publication and to Virtual Observatories (VOs)


Funded project, project team
Discover literature
write proposal to gather data, run experiment
Discovered literature
RAW data
Further collection of literature
data collection & integration
Downloaded literature w/ assigned references, organized in collections
enriched data with assigned and annotated metadata
Sort, relevance rank, and quality control literature
data preparation & reduction
AWOB
Scientific Life Cycle as Assisted by AWOB
Write proposal for project funding, find collaborators
Formulate hypothesis
Use experience
Scientific quest
"Marketing"
(Metadata, Google...)
Knowledge migration,
"Store function"
(E-) publication, open access, data stored in a standardised format with persistent identifiers
E-journals, VOs
Knowledge enhancement
Evaluated literature in collection
calibrated, scientifically relevant data
scientific, cultural and social value added
aggregate/form literature collections, review literature and data, write & release publication
text
images, diagrams, tables, charts, software/pipelines
understand literature implications,
data evaluation, interpretation, and correlation
New ideas, new scientific quest

How AWOB May Assist the Scientific Life Cycle

The overlap of the AWOB features with the showcase life cycle is demonstrated in the next transparency


Support of literature research, centralised storage (or pointer) and management of data, metadata support
Funded project, project team
Discover literature
write proposal to gather data, run experiment
Discovered literature
RAW data
Further collection of literature
data collection & integration
Downloaded literature w/ assigned references, organized in collections
enriched data with assigned and annotated metadata
Sort, relevance rank, and quality control literature
data preparation & reduction
Write proposal for project funding, find collaborators
Formulate hypothesis
Use experience
Scientific quest
Support of versioning, standardised data formats, metadata annotation, digital publication, keywording
Explicit project and user management modules, role based authentication and authorisation modules
(E-) publication, open access, data stored in a standardised format with persistent identifiers
E-journals, VOs
Knowledge enhancement
Evaluated literature in collection
calibrated, scientifically relevant data
aggregate/form literature collections, review literature and data, write & release publication
text
images, diagrams, tables, charts, software/pipelines
understand literature implications,
data evaluation, interpretation, and correlation
Easy access to external web services, value-adding tools (e.g., visualization, search), centralised storage of publication relevant data like texts, images etc., versioning
AWOB
AWOB Contributions to the Scientific Life Cycle

Astronomer's Workbench: Requirements

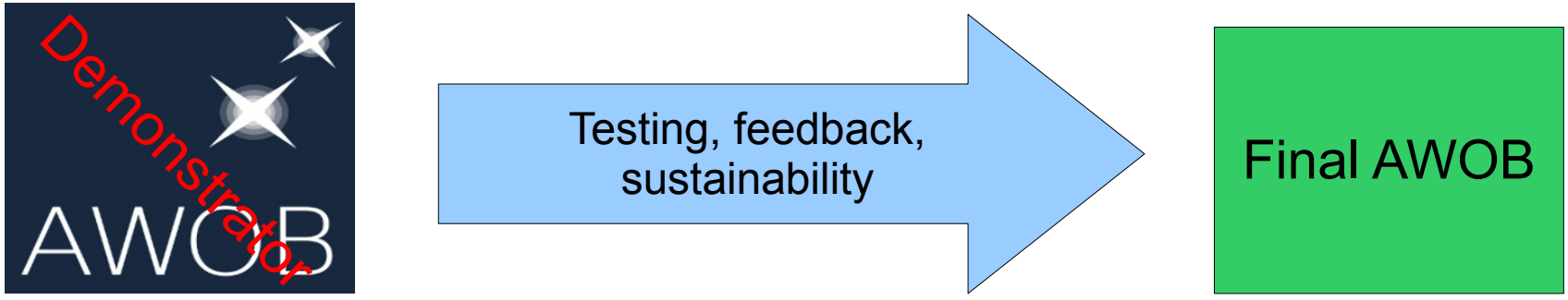
Build a publication-information-communication-collaboration-data-platform assisting the scientists throughout the whole scientific life cycle.

The AWOB platform will contain the following main functional components:

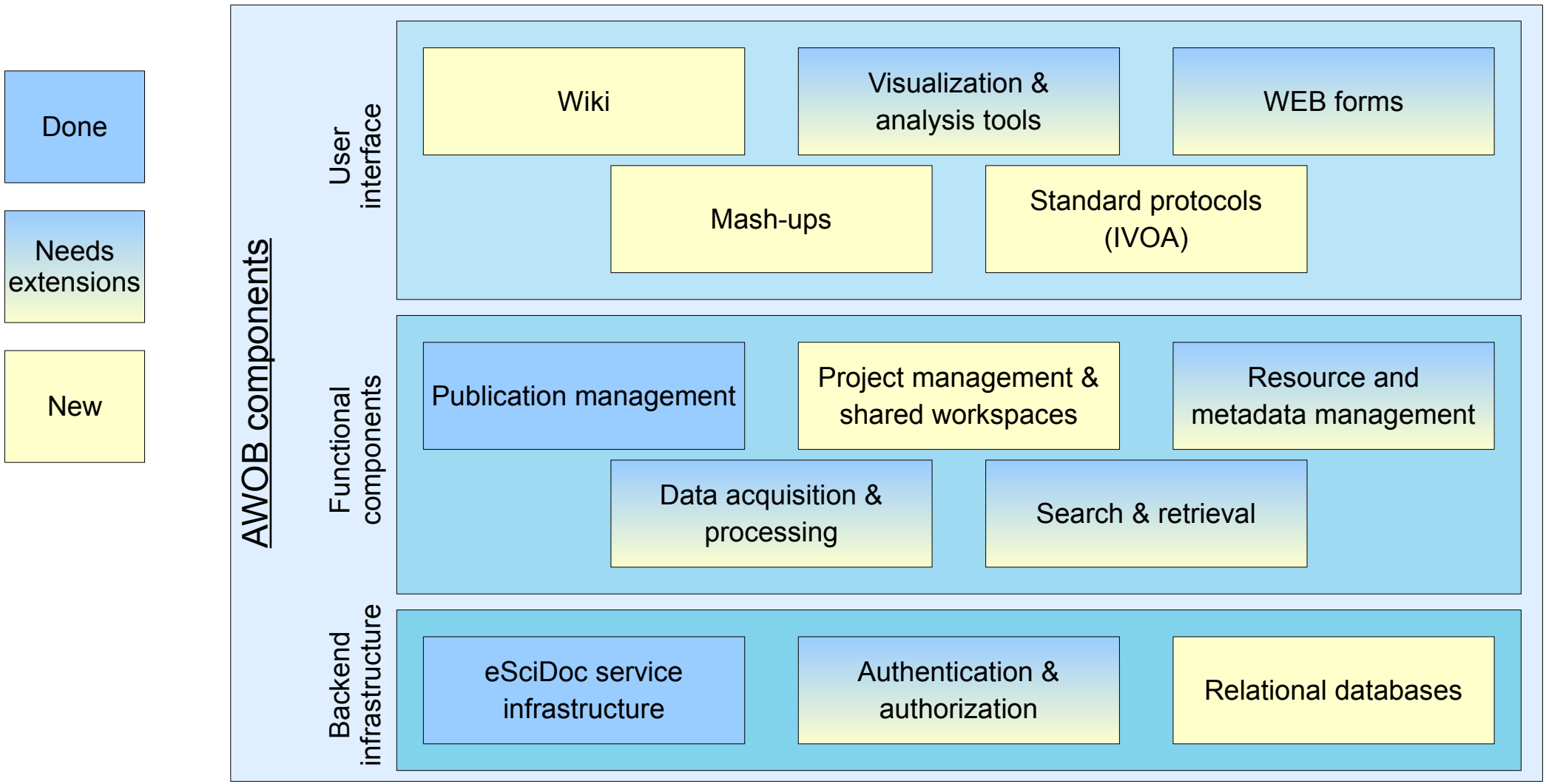
- Project and user management modules
- Role based authentication and authorisation for restricting access to the project resources
- Centralised storage (pointer) and management of the shared data
- Value-adding tools such as search, visualisation and analysis
- Easy access to external web services
- Meta-data extraction and annotation for publication
- One-click e-publication of data

AWOB Approach

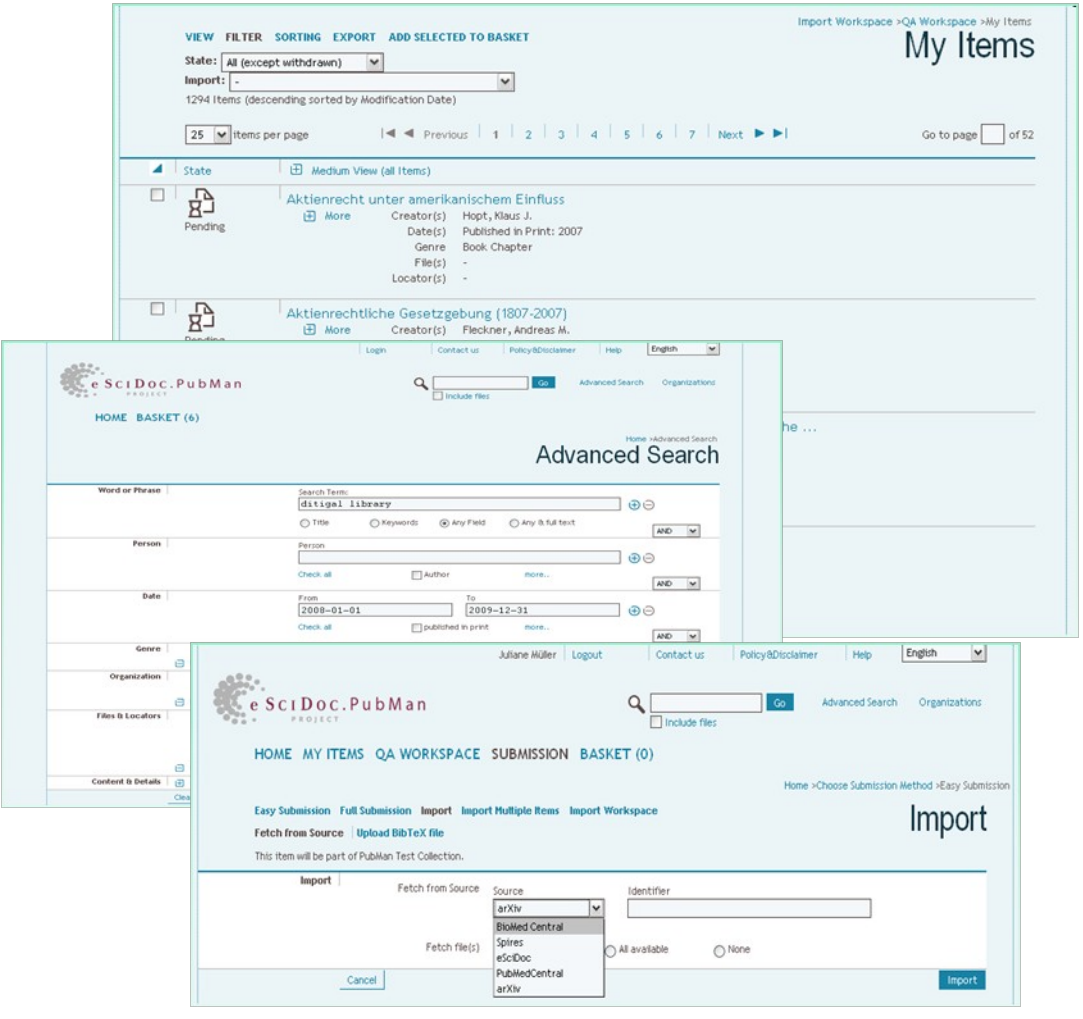
- Build a demonstrator of the workbench
- Close cooperation of developers and scientists from MPE/MPA
- Develop further versions integrating feedback from a larger scientific community. Provide documentation and training for interested scientists.
- Final release of AWOB after 36 months. Brainstorming on sustainability already in a relative early phase.



AWOB: Provisional architecture



PubMan: Management of Publications

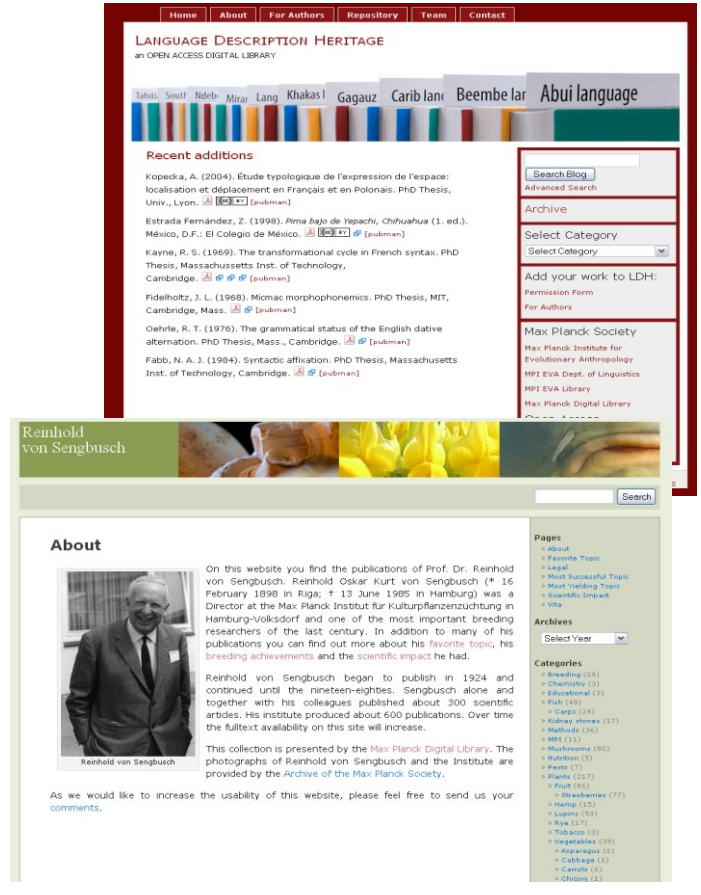


Data reuse and repurpose

PubMan

WordPress

Plug-in



The Three Phases

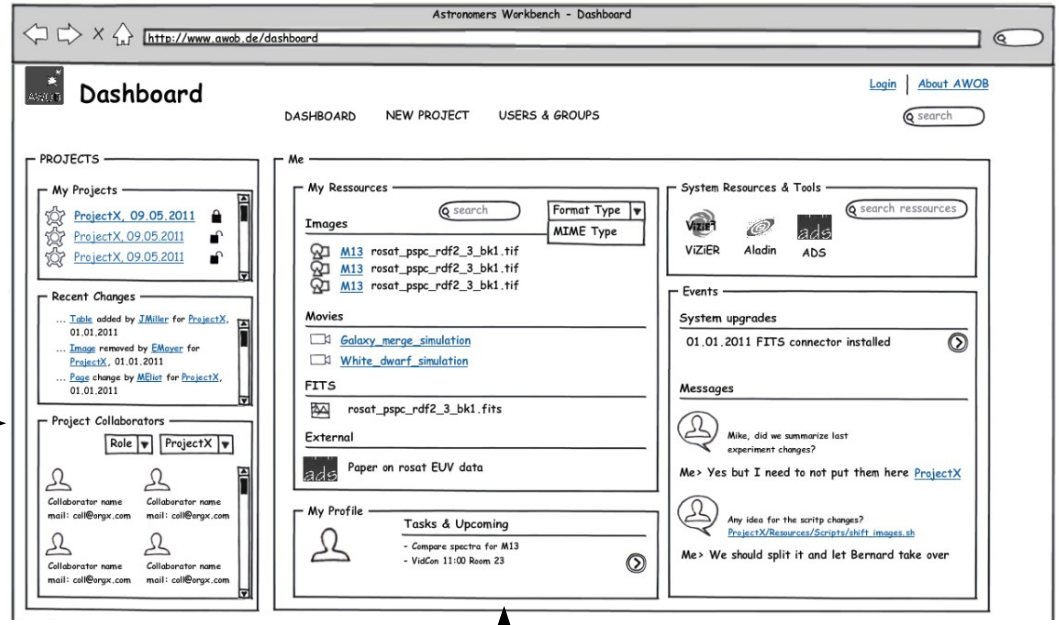
Phase 1: Building a demonstrator and subsequent first release.

Phase 2: Outreach to the astrophysical community. Gather and integrate feedback.

Phase 3: Further extensions. Training on AWOB for MPG and other external communities.

Phase 1: Towards a First Release

Use cases



Mock-up

Software design

Liferay > Andreas Vogler > What AWOB is about

By Natasa Bulatovic | 3 Comments | Flag

Add this to...

Your Rating Average (1 Vote)

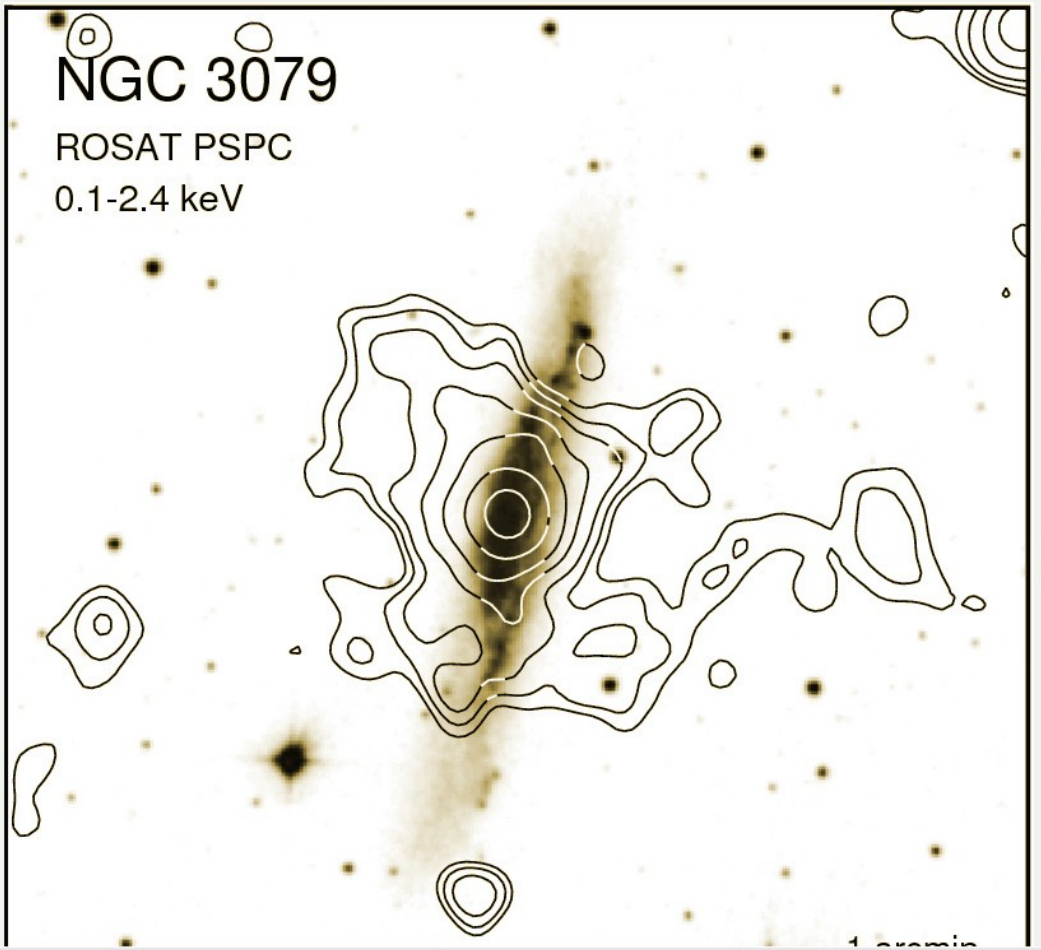
AWOB Demonstrator Based on Liferay

Indeed, we should blog!!

26/05/11 20:10

Edit Permissions Delete

Hi friends, we should write a lot here ! ! ! !



Language

Tag Cloud

awob colab first blog! liferay mpdl non-helpful comment the quicker the better

Image Gallery

Images Home | Recent Images | My Images

Search

Folders

Folder	# of Folders	# of Entries	
Wild and beautiful Galaxies starring as models	0	0	Actions

Showing 1 result.

Images

Showing 4 results.

n3079_1

n3079_2

Images Home

Permissions
Add Folder
Add Image
View Slide Show
Access from Desktop

Tools

Aladin

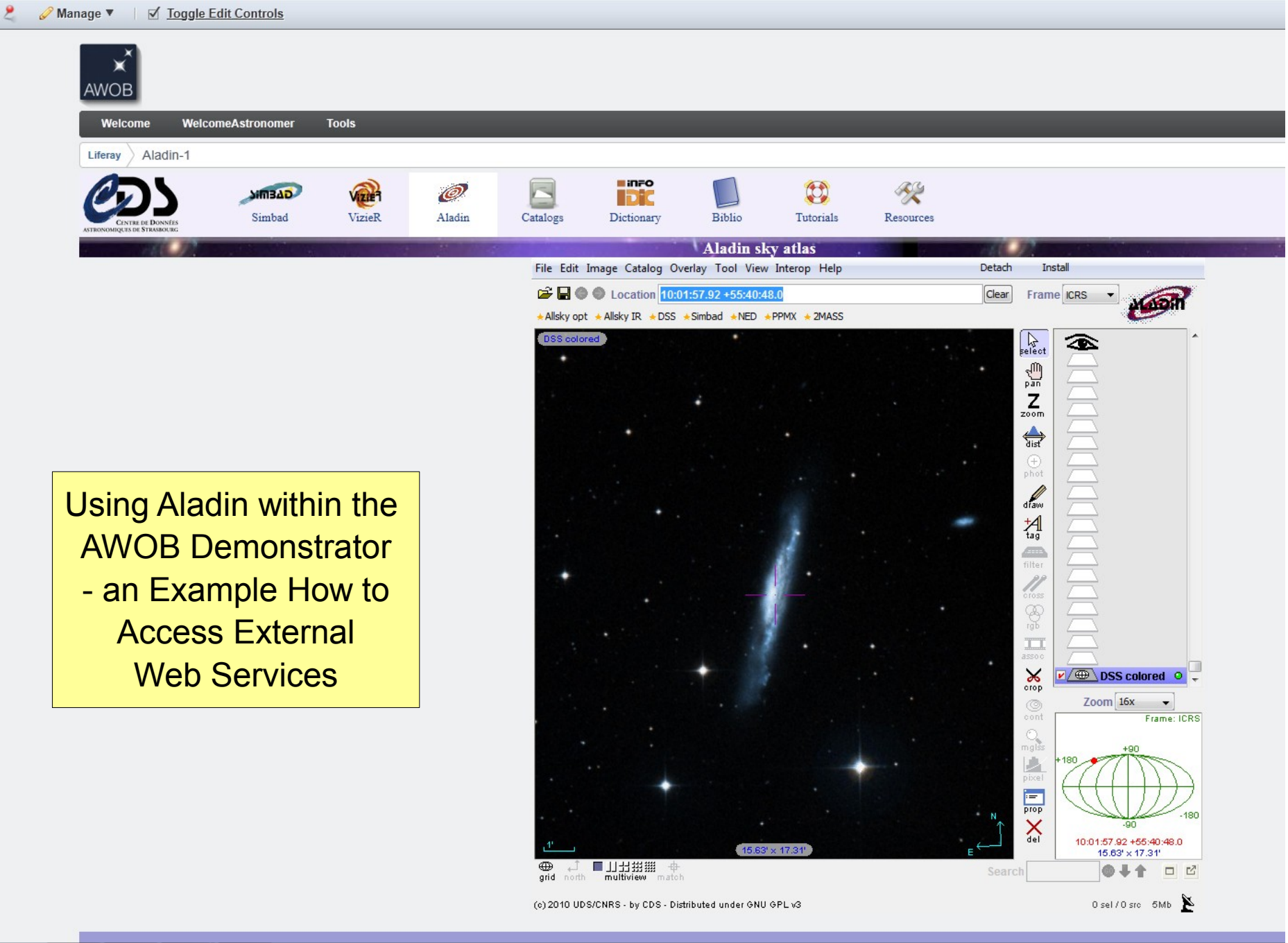
Aladin MyADS Service VIZIER Sloan

Search

ngc 3079 Everything

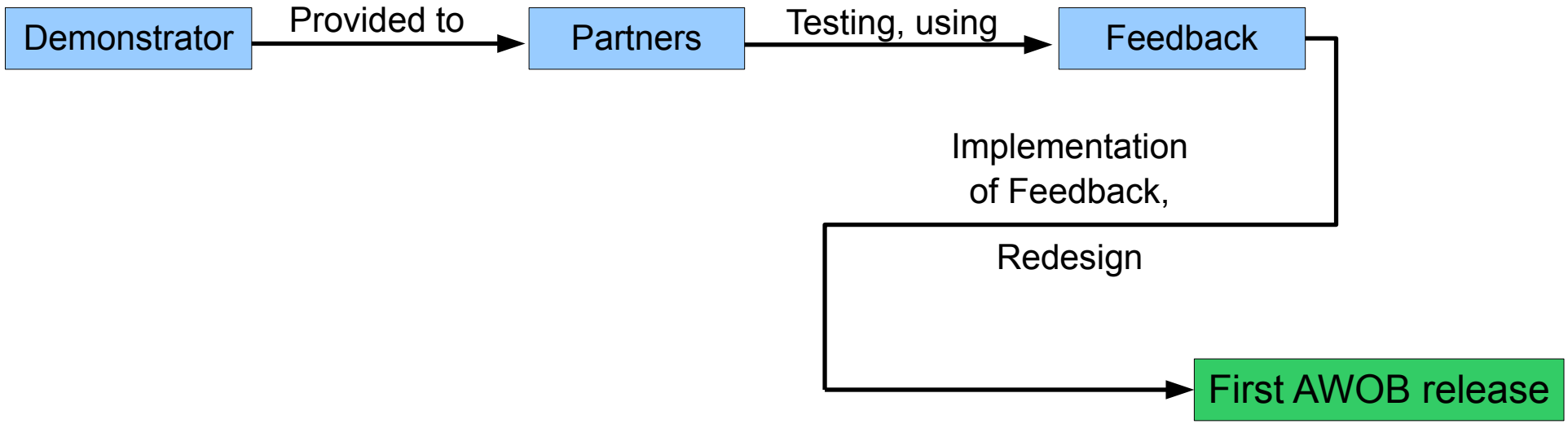
Andreas Vogler.

Settings



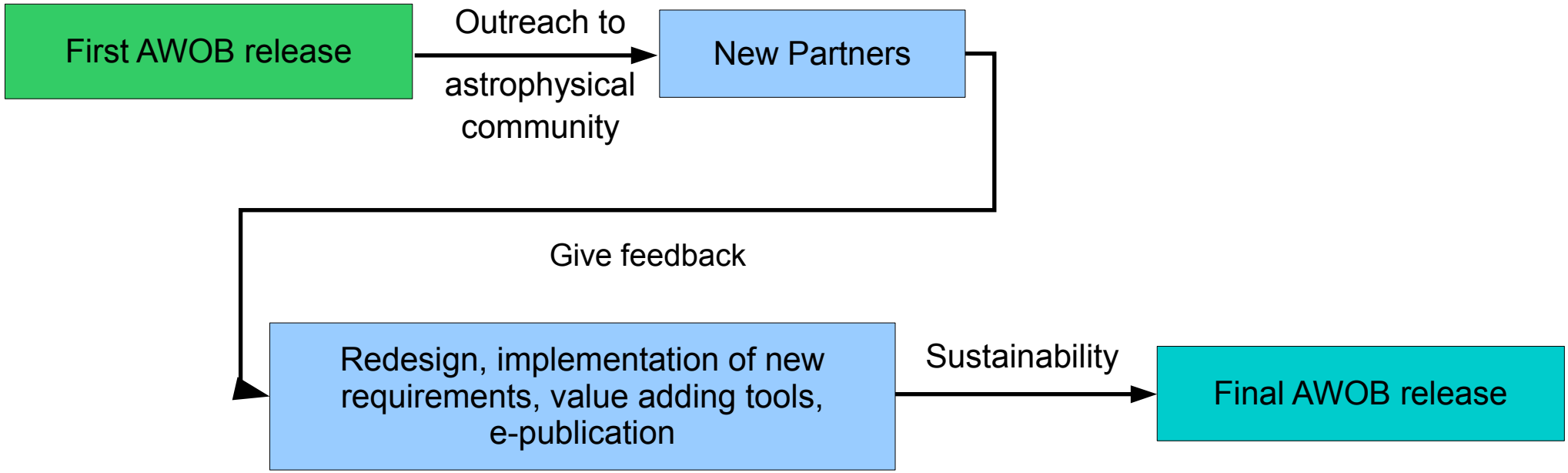
Using Aladin within the AWOB Demonstrator - an Example How to Access External Web Services

From the Demonstrator to the First Release



Phase 2+3: Active Outreach and the Final AWOB Release

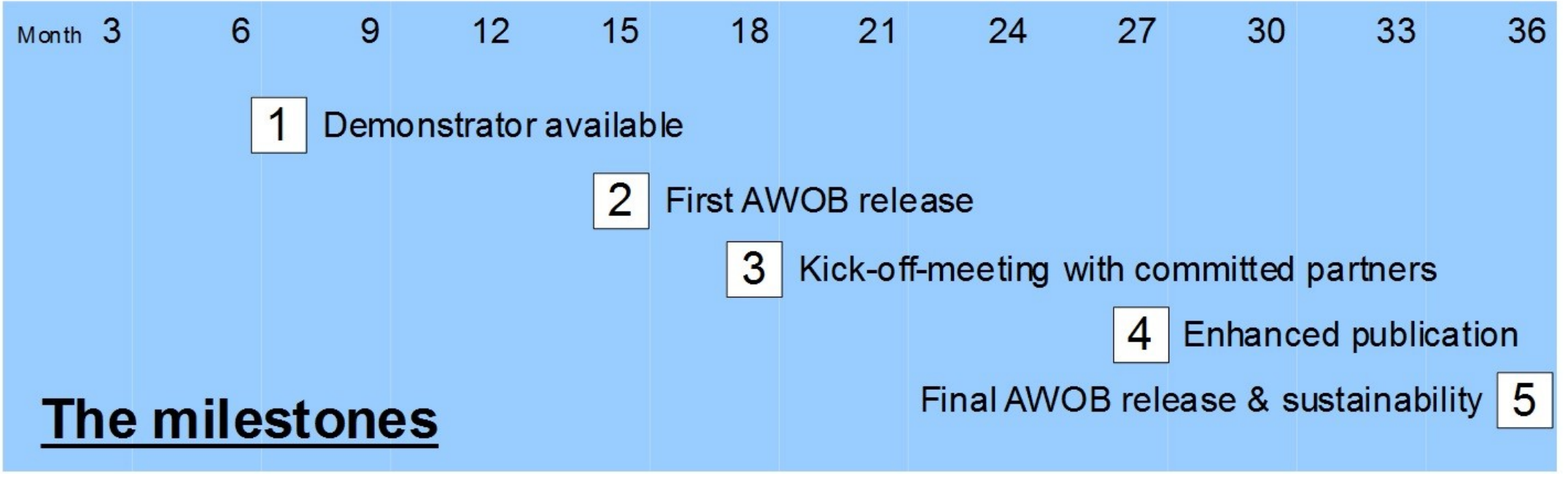
- Active outreach to the astrophysical community
- Integration of feedback on content, usability, and additional requirements
- Additional tools, e-publication, interfaces to external systems...



Final AWOB Release

- Supporting the whole scientific life cycle
- Generic approach
- Presentation of AWOB on conferences/workshops
- Training/support of scientists

Milestones


Month 3 6 9 12 15 18 21 24 27 30 33 36
1 Demonstrator available
2 First AWOB release
3 Kick-off-meeting with committed partners
4 Enhanced publication
Final AWOB release & sustainability 5
The milestones

Where Are We?
Important Construction Places for the Next Weeks/Few Months

Wochen 0

4

8

- Project started eight weeks ago
- Kick off meeting four weeks ago
- From use cases to drafts, puplic content in CoLab, evaluation of xWiki, Liferay, Sakai etc.
- Project homepage, e.g. awob.mpg.de
- Building the demonstrator

Who is AWOB?

Software, (G)UIs	Associated Scientists	Project coordinators	Methodology, ideas, structures
Natasa Bulatovic *	Gerard Lemson	Andreas Vogler *	Frank Sander *
Vlad Makarenko *	Frank Haberl	Wolfgang Voges	Malte Dreyer *
Sveto Koychev *	Alexis Finoguenov		Kristina Koller *
Rupert Kiefl *	Marat Gilfanov		
	et al.		
Jaiwon Kim			

* means: member of the MPDL

The edge-on spiral galaxy NGC 253
© R. Jay GaBany