VAMDC

Virtual Atomic and Molecular Data Centre

D1.7

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Revised Annual VAMDC Project Plan 3

Version 0.1

Grant agreement no: 239108

Combination of Collaborative Projects & Coordination and Support Actions

Project Information

Project acronym: VAMDC

Project full title: Virtual Atomic and Molecular Data Centre

Grant agreement no.: 239108

Funding scheme: Combination of Collaborative Projects & Coordination and Support Actions

Project start date: 01/07/2009

Project duration: 42 months

Call topic: INFRA-2008-1.2.2 Scientific Data Infrastructure

Project web sites: http://www.vamdc.eu

http://voparis-twiki.obspm.fr/twiki/bin/view/VAMDC/WebHome

Consortium:

Beneficiary Number *	Beneficiary name	Beneficiary short name	Country	Date enter project**	Date exit project**
1(coordinator)	Centre National de la Recherche Scientifique	CNRS	France	Month 1	Month 42
2	The Chancellor, Masters and Scholars of the University of Cambridge	CMSUC	UK	Month 1	Month 42
3	University College London	UCL	UK	Month 1	Month 42
4	Open University	OU	UK	Month 1	Month 42
5	Universitaet Wien	UNIVIE	Austria	Month 1	Month 42
6	Uppsala Universitet	UU	Sweden	Month 1	Month 42
7	Universitaet zu Koeln	KOLN	Germany	Month 1	Month 42
8	Istituto Nazionale di Astrofisica	INAF	Italy	Month 1	Month 42
9	Queen's University Belfast	QUB	UK	Month 1	Month 42
10	Astronomska opservatorija	AOB	Serbia	Month 1	Month 42
11	Institute for Spectroscopy RAS	ISRAN	Russian Federation	Month 1	Month 42
12	Russian Federal Nuclear Centre All-Russian Institute of Technical Physics	RFNC-VNIITF	Russian Federation	Month 1	Month 42
13	Institute of Atmospheric Optics	IAO	Russian Federation	Month 1	Month 42
14	Corporacion Parque Tecnologico de Merida	CPTM	Venezuela	Month 1	Month 42
15	Institute of Astronomy of the Russian Academy of Sciences	INASAN	Russian Federation	Month 1	Month 42

French Participants under CNRS (Partner 1)			
Name of the French Partners	**CNRS**	**Third Party**	**Scientific Contact Person**
LPMAA, UMR7092	DR2	Université Pierre et Marie Curie	M.L. Dubernet (PI)
LUTH, UMR8102	DR5	Observatoire de Paris	E. Roueff (to be Added during Period3)
LERMA, UMR8112	DR5	Observatoire de Paris	S. Sahal-Bréchot & C. Zeippen
VOPARIS Data Centre, UMS 2201	DR5	Observatoire de Paris	P. Le Sidaner
LAB, UMR5804	DR15	Université de Bordeaux I	V. Wakelam
LPG/IPAG, UMR5109/UMR5274	DR11 DR6	Université Joseph Fourier Université de Bourgogne	B. Schmitt V. Boudon
ICB, UMR5209	DR6	Université Champagne-Ardenne	V. Tyuterev
GSMA, UMR6089	DR14	Université Paul Sabatier	C. Joblin
CESR/IRAP, UMR5187/UMR5277			

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Work Package no.: WP1-MGT

Work Package title: Management Work Package I

Leader: CNRS

Lead beneficiary: CNRS

Dissemination level: PU

Nature: Document

No of pages (incl. cover):

Abstract	The objective of D1.7 is to describe VAMDC Revised Annual Project Plan 3. It includes the overall project plan as well as the individual packages plans for Period 4. It provides work details, name of people in charge of board, workpackages, tasks.

Versioning and Contribution history

Version	Date	Reason for modification	Modified by
V0.1	**July 2012**	**Individual Plans provided for WP2 to WP6**	**EPT Team**
V0.1	**July 2012**	**Making of D1.7**	**M.L. Dubernet, Y. A. Ba**

Final Version (v0.5) released by		Circulated to	
Name	Date	Recipient	Date
M.L. Dubernet	September 2012	Mr Bodo	September 2012

EXECUTIVE SUMMARY

The field of atomic and molecular science provides a wealth of data that is used and applied across a wide range of scientific and technological applications. Indeed the progress in many scientific and technological areas is underpinned by the availability of accurate quantitative information on the collisional properties and spectroscopic characteristics of interacting species Atomic and molecular data are indispensable for such diverse applications as astrophysics, atmospheric science, the development of fusion energy, semiconductor manufacturing and other plasma based technologies, the lighting industry, detection and remediation of pollutants (and increasingly the detection of explosives and biological agents as may be used in terrorism) and is essential for understanding many biological processes including modelling radiation damage in cellular systems for therapy treatment. Scientists working with atomic and molecular data are therefore providing foundation for the new era of research – the era of e-sciences. However it is widely recognised that there remain several major challenges to developing a robust and integrated infrastructure that can be used by the widest possible user community. The existing problems can be divided into two categories: (1) data completeness and quality assessment and (2) data interface including problem specific tools for data mining. Today those issues are tackled by a number of data centres but they are highly focussed on specific applications and non-flexible. Thus, there is a strong need to:

1 Develop close links between the user communities, the data producers and data centres based on modern technology.
2 Establish better international coordination in order to promote atomic and molecule data compilation and database activities, avoid duplication of efforts and ensure the use of the best available data.

The Virtual Atomic and Molecular Data Centre (VAMDC) aims at building a secure, documented, flexible, easily accessible and interoperable e-infrastructure for AM data. The VAMDC will be built upon the expertise of existing AM databases, data producers and service providers with the specific aim of creating an infrastructure that on one hand can directly extract data from the existing depositories while one the other hand is sufficiently flexible to be tuned to the needs of a wide variety of users from academic, governmental, industrial communities or from general public both within and outside the ERA. The project will address the building of the core consortium, the deployment of the infrastructure and the development of specific software as well as providing a forum for training of potential users and dissemination across the ERA. It is expected that VAMDC becomes a European legal entity during the course of the project.

Central to this aim is the task of overcoming the current fragmentation of the EU atomic and molecular database community. VAMDC will accomplish it:

- through the development **of the largest and most comprehensive atomic and molecular e-infrastructure** to be shared, fed and expanded by all EU A&M scientists and
- **by providing a major distributed European infrastructure** which can be accessed, referenced and exploited by the wider European Research community.

In fulfilling these aims the VAMDC project will organise a series of **Networking Activities (NAs)** laying the foundations for a long-lasting and self-sustaining Infrastructure. NAs are specifically aimed at

- Engaging data providers
- Coordinating activities amongst existing database providers
- Ascertaining and responding to the needs of different user communities
- Providing training and awareness of the VAMDC across the international community and community of planetary sciences in Europe.

The main output of the VAMDC is the provision of the VAMDC e-science platform delivered through a set of three Service Activities (SAs)

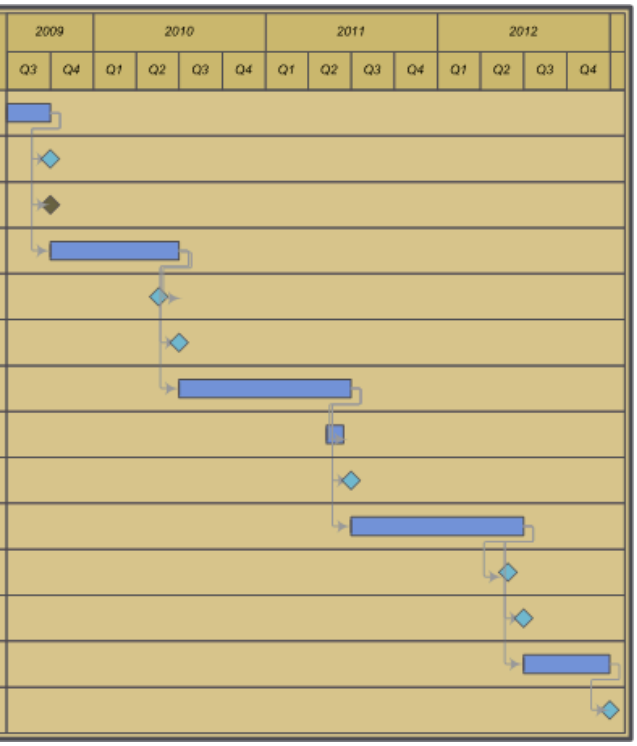
The interoperability and thus the building of an e-science platform on atomic and molecular data require both technical research and development activities as well as scientific involvement of the producers community in order to define specifications, to prepare and to document their data. **VAMDC's Joint Research Activities (JRAs)** will develop this infrastructure improving the breadth and quality of facilities, models, software tools and services offered.

The major aim of VAMDC e-infrastructure is to provide an integrated access to the comprehensive set of A&M databases needed for research across the European Research Area. Management is provided by **WP1.** The core of the project is the creation of two focused services to provide 24/7 access to a large remote service facility e-infrastructure- the **Virtual Atomic and Molecular Data Centre (VAMDC) -** dedicated to the archiving, manipulation and modelling of data collected from past and future A&M research. The two central work packages are therefore WP4 (SA1) VAMDC Service Deployment: WP5 (SA2) VAMDC Infrastructure Support. Although all the databases chosen for inclusion in the E-infrastructure already are operational (see 1.2), several research projects are required to combine them into a single access infrastructure. Thus SAs will 'roll out' over the course of the project as the JRAs improve the services of the integrated infrastructure. The JRAs are: JRA1 (WP6) Ensuring interoperability of the databases; JRA2 (WP7) Developing tools to publish A. & M. Data and JRA3 (WP8) Developing new mining and Integration Tools. It should be stressed that since this is a call for **a Collaborative Project and Coordination and Support Action for ICT based e-Infrastructure** we do not offer a fully functional e-infrastructure at the start of the project but rather will develop the e-infrastructure throughout the project integrating JRAs and SAs whilst being informed both by data provider and user communities (NA1 and NA2). Indeed the whole project will be critically reviewed by a user and expert committees, serving also as an advisory board that will influence the future direction of VAMDC both during the course of the 42 months project and, crucially, beyond as VAMDC becomes a self sustaining infrastructure with a leading role in the ERA. Thus the project is inherently dynamic and responsive but at the end of the programme will have created a unique e-infrastructure that we wish to be the preeminent service to the International A&M community and its disparate user community.

INTRODUCTION

The project time plan has been arranged on the following schedule; A Three month 'kick-off' or set up period during which both the scientific and administrative programme will be further defined, milestones reviewed and approved, crucially relevant staff appointed and briefed (only WP1, WP2, WP3 are active). At the end of the Kick-off phase, the project detailed work program for Cycle 1, and the Project Web site is available. The main project time plan is then arranged in three cycles, with the project's progress reviewed at the end of each cycle. The first cycle is designated as lasting 9 months, the other two operating over 12 months. A Final Phase of 6 months is planned during which the VAMDC e-infrastructure is envisaged to be a fully active service for 3 months, with a final wrap-up of 3 months where only WP1, WP2, WP3, WP4,WP5 will be active.

ID	TASK NAME	Start	End
1	VAMDC Kick-Off Phase	Month 1	Month 3
2	Internal VAMDC Website	Month 1	Month 2
3	Project Plans for all WPs	Month 3	Month 3
4	VAMDC Cycle 1 – NA-SA-JRA	Month 4	Month 12
5	Revised Plans for all WPs 1	Month 10	Month 10
6	Report to EU 1	Month 12	Month 12
7	VAMDC Cycle 2 – NA-SA-JRA	Month 13	Month 24
8	Revised Plans for all WPs 2	Month 22	Month 22
9	Report to EU 2	Month 24	Month 24
10	VAMDC Cycle 3 – NA-SA-JRA	Month 25	Month 36
11	Revised Plans for all WPs 3	Month 34	Month 34
12	Report to EU 3	Month 36	Month 36
13	VAMDC Final Phase	Month 37	Month 42
14	D1.5 Final Report to EU	Month 42	Month 42



1. PROJECT MANAGEMENT

VAMDC is a complex project involving 15 administrative partners representing 24 teams from 6 European Union member states, Serbia, the Russian Federation and Venezuela. It embraces on the one hand scientists from a wide spectrum of disciplines in atomic and molecular (AM) Physics with a strong coupling to the users of their AM data (astrochemistry, atmospheric physics, plasmas) and on the other hand scientists and engineers from the ICT community used to deal with deploying interoperable e-infrastructure.

The project has several dimensions:

- **Networking Activities** will coordinate the infrastructure activities among all trans-disciplinary fields) both within the ERA and externally through direct partnerships with the Russian Federation, Serbia and Venezuela. The NAs will link VAMDC to

other international projects relevant to VAMDC (e.g. Astrogrid, ITER and Europlanet) thus creating a world-wide e-science environment for atomic and molecular data. NA1 will interact with other data providers and ICT teams from both EU and non-EU countries in order to ensure the most comprehensive and inclusive development of the infrastructure. NA2 will disseminate VAMDC services and facilities by engaging and obtaining feedback from anticipated users such as the astrophysics, atmospheric, fusion, ICT communities. The NAs will also have a political role defining the policies of the infrastructure.

- **Service Activities (SAs)** will create a unique, state of the art e-infrastructure, the **Virtual Atomic and Molecular Data Centre (VAMDC)** for both A&M data producers and users through the availability of major databases in an interoperable format, the maintenance of services allowing publications of small datasets by producer's teams, the maintenance of registries and dictionaries, the maintenance of nodes listing the needs for the various communities (in relation with other EU initiatives) and the creation of a GRID environment for codes and databases.
- **Joint Research Activities (JRAs)** will build the complete set of "tools" necessary to create the VAMDC e-science platform, creating new specifications and creating/adapting/integrating new software.

The success of the project will depend on the effective management and integration of these diverse elements while the programme of work calls for an efficient management structure, designed to deal with the strong interdisciplinary aspect of the project, as well as with all administrative and technical aspects. Management of the technical aspects of the programme is particularly important since the project is focused on delivering the SAs services to support both Partners and external users. This is considered fundamental if VAMDC is to build-up of a community of users capable of taking advantage of the developed know-how and of exploiting it for their own specific goals.

The key values of the management approach we have adopted are:
• **Excellence**. At every level and in every part of the project, we are driven by a commitment to scientific excellence in everything we do. All project activities will be monitored and benchmarked against international standards of scientific excellence under the supervision of the Project Management and Strategic Advisory Boards.
• **Inclusiveness**. To maintain the engagement and commitment of all participants, we believe it is essential that they should feel a sense of shared ownership and responsibility for the project as a whole, not just the part with which they may be directly involved. Agenda and minutes of all project meetings will be available in a private area of the project website. All participants will be encouraged to contribute ideas and opinions on issues under discussion in the Executive and Project Management Board. Users will contribute recommendations to the User and Producer Advisory Committee.
• **Responsiveness**. Resources must be targeted where they will have the greatest impact and used in the most effective way to achieve the project's goals. The proposed structure will therefore ensure close oversight of the individual project elements and the ability to redirect resources as changing circumstances may require. By devolving operational control to the Work Packages we will ensure effective use of resources. At the level of the project as a whole, the Strategic Advisory Board will play an important role in reviewing the achievements and future direction of the project.

• **Transparency**. Decisions must be made, and be seen to be made, against clear and relevant criteria for the benefit of the project as a whole after necessary consultation with those concerned. A professional Project Manager will ensure the availability of up to date and consistent information to inform the decisions of the Project Management Board and the Executive Board.
• **Timeliness**. Decisions must be made in a timely manner or opportunities will be lost. The combination of a devolved structure operating under a strong Executive Team will ensure this.
• **Accountability**. The scientists and others implementing the project must have clear roles, responsibilities and lines of reporting to ensure the effective delivery of the project to time and budget. We have embedded these values at all levels of the project management structure.

2. IMPLEMENTATION PLAN

2.1 Management Structure

The variety of tasks to be carried out within VAMDC, the diverse nature of atomic and molecular processes, the diverse user communities, and the necessary links to other international project requires a good level of coordination as well as harmonisation and control both over the development of research activities and the provision of services. The management scheme has been designed accordingly. The main elements of the structure are:

VAMDC Executive Board (VEB): Comprising the Coordinator of the Network, a Project Manager (to be funded by the e-infrastructure and based at the Coordinator's institute), a scientific co-chair and a technical co-chair. The Executive Board will act as the 'daily' project management team with responsibility for monitoring the progress of the VAMDC e-infrastructure and ensure decisions taken at the Project Management Board are implemented. Such a small team is necessary to deliver clear and decisive management on short time scales. The VEB will also act as the direct point of contact for the Commission. The VEB will be delegated necessary powers by the VPB to act on issues that require immediate response but will be answerable for such actions to the VPB.

It comprises the following members:

- M. Doronin (from P3), VAMDC Project Manager
- M.L. Dubernet, VAMDC Coordinator
- N. Mason, Scientific Deputy Coordinator
- N. Piskunov, Scientific Deputy Coordinator
- N. Walton, Technical Deputy Coordinator

VEB pages are at http://voparis-twiki.obspm.fr/twiki/bin/view/VAMDC/MgtVeb

VAMDC Project Board (VPB)

This Board will be the major strategic decision-making body and will have the prime responsibility for ensuring the success of the project and compliance with the terms of the EU Contract. Membership will consist of:

- one representative from each legal entity signing the contract (Contractual Legal Entity: CLE) , i.e. the nominated 'Scientist in charge' as defined by the contract,
- representatives of the departments within a CLE when they have quite distinct roles within the proposal,
- representatives of members of a CLE when it is composed of several members, each of which being a separate legal entity (eg CNRS).

The VPB has final control of the budget and the allocation of tasks and resources. The VPB will meet twice a year face-to-face and at other times (as required) by teleconference and will be chaired by the Coordinator. List of VPB members are given in Annexe 6 of Consortium Agreement.

VAMDC Project Board pages are at http://voparis-twiki.obspm.fr/twiki/bin/view/VAMDC/MgtVpb

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Name	Partner #	Partner
Tanya Ryabchikova	15	INASAN
Luis Nunez	14	CPTM
Claudio Mendoza	14	IVIC/CPTM
Valery Perevalov	13	DAS/IAO
Alexander Fazliev	13	CIIS/IAO
Peter Loboda	12	RFNC-VNIITF
Alexander Ryabtsev	11	ISRAN
Milan S. Dimitrijevic	10	AOB
Tom Millar	9	QUB
Giacomo Mulas	8	Cagliari-INAF
Giuseppe Leto	8	Catania-INAF
Stephan Schlemmer	7	KOELN
Nikolai Piskunov	6	UU
Friedrich Kupka	5	UNIVIE
Nigel Mason	4	OU
Len Culhane	3	MSSL/UCL
Jonathan Tennyson	3	DPA/UCL
Helen Mason	2	DAMPT/CMSUC
Nicholas Walton	2	IAO/CMSUC
Vladimir Tyuterev	1	CNRS/UMR 6089
Christine Joblin	1	CNRS/UMR 5187
S. Sahal-Bréchot	1	CNRS/UMR 8112

Pierre Le Sidaner	1	CNRS/UMS 2201
Bernard Schmitt	1	CNRS/UMR 5109
ML Dubernet	1	CNRS/UMR 7092
Vincent Boudon	1	CNRS/UMR 5209
Valentine Wakelam	1	CNRS/UMR 5804
Evelyne Roueff	1	CNRS/UMR 8102

Strategic Advisory Board (SAB).

The SAB will bring together influential international scientists, producers and users of data, as well as representative from international standardisation organisations, with interests relevant to the project, but who are independent of it. It will ensure that the project is engaged with and responsive to developments in Europe and non-EU countries. It will have an important role in ensuring the project achieves its intended impacts in terms of structuring the European Research in connection with non-EU initiatives and International standards, having the power to co-opt/appoint members from other EU/non EU projects with whom VAMDC wishes to engage. It may also elect selected users of VAMDC e-infrastructure to ensure their feedback on service provision and future service development.

It comprises the following members:

- Prof. M. Asplund, Director Max Planck Institute for Astrophysics, Garching, Germany
- Prof. B. Braams, International Atomic Energy Agency, Nuclear Data Section, Atomic and Molecular Data Unit, Vienna, Austria
- Prof. P. F. Bernath, The University of York, Department of Chemistry, UK
- Prof. L. Rothman, Harvard University, Smithsonian Centre for Astrophysics, Atomic and Molecular Division, USA
- Steven Newhouse, EGI-InSPIRE Project Director, EGI.eu, Amsterdam, Netherlands
- Prof. M. Ohishi, National Astronomical Observatory of Japan, Astronomy Data Center, Tokyo, Japan
- Prof. Ph. Garrigues, Institut des Sciences Moléculaires,UMR CNRS5255, Universite de Bordeaux I, France

Strategic Advisory Board pages are at

http://voparis-twiki.obspm.fr/twiki/bin/view/VAMDC/MgtSab

Executive Project Team (EPT)

The Executive Project Team includes the leaders of all WPs: the Dissemination and Training (WP3) activities, the Service Deployment (WP4) and Infrastructure Support (WP5) activities, and all Joint Research Activities (WPs 6, 7, 8). In case of need, each WP leader may be represented at Team meetings by a nominated deputy with voting rights. The EPT will be chaired by the VAMDC Technical Coordinator who is a member of the Project Board and who will appropriately advise the VPB on the technical validity and relevance of the project strategic plans. The Executive Project Team is the core of the management structure from the technical point of view, making sure that the project WPs have a common view and that planned work is well coordinated with other similar international projects. The EPT is planned to be quite operative, thus it will have monthly teleconference meetings (more if necessary) as well as bi-annual face-to-face meetings. The EPT will collect reports from SAs and JRAs and prepare the annual technical reports for the VPB. The Project Coordinator will have a standing invitation to participate in the meetings.

Role	Name	Partners
Chair	N. Walton	CMSUC (2)
Co-Chair	N. Piskunov	UU (6)
WP3 Leader/ deputy Leader	N. Mason / F. Kupka	OU(4), UNIVIE(5)
WP4 Leader/ deputy Leader	G. Rixon / A. Shih	CMSUC(2), CNRS: UMS (1)
WP5 Leader/ deputy Leader	P. Le Sidaner / K. Benson	CNRS: UMS (1), UCL: MSSL (3)
WP6 Leader/ deputy Leader	M.L. Dubernet / S. Schlemmer	CNRS:LPMAA (1), KOLN (7)
WP7 Leader/ deputy Leader	N. Piskunov / U. Heiter	UU (6)
WP8 Leader/ deputy Leader	J. Tennyson / D. Witherick	UCL: PA (3)

Communication and Training Committee (CTC)

The CTC will organise a series of dissemination and training actions in WP3. The CTC will be composed of the Partners involved in WP3 and chaired by the WP3 leader. Its Chair is a member of the EPT, she/he has the right to attend the VPB and to speak to issues raised by the CTC.

Role	Name	Partners
Chair	N. Mason	OU (4)
Co-Chair	F. Kupka	UNIVIE (5)
Members	C. Mendoza	CNRS (1), CMSUC (2), UCL (3), UU (6), AOB (10), CPTM (14), INASAN(15)
	N. Walton	
	G. Rixon	
	N. Piskunov	
	M.S. Dimitrijevic	
	T.A. Ryabchikova	
	K. Benson	
	M.L. Dubernet	

2.2 Management Roles

VAMDC Executive Board

Role	Name	Partners
Project Coordinator	M.L. Dubernet	CNRS : LPMAA
Scientific Deputy Coordinator	N. Mason	OU (3)
Technical Deputy Coordinator	N. Walton	CMSUC (2)
Project Manager	M. Doronin (from P3)	CNRS (1)

Work package Leaders

WP Number	WP Leader	WP deputy leader	Partners
WP1: MGT	M.L. Dubernet		CNRS:LPMAA (1)
WP2: NA1	N. Walton	N. Piskunov	CMSUC (2) / UU(1)
WP3: NA2	N. Mason	F. Kupka	OU (4) / UNIVIE (5)
WP4: SA1	G. Rixon	A. Shih	CMSUC (2)/ CNRS: UMS(1)
WP5: SA2	P. Le Sidaner	K. Benson	CNRS:UMS (1) / CMSUC (2)
WP6: JRA1	M.L. Dubernet	S. Schlemmer	CNRS: LPMAA(1)/ KOLN (7)
WP7: JRA2	N. Piskunov	U. Heiter	UU (6) / UU(6)
WP8: JRA3	J. Tennyson	D. Witherick	UCL (3) / UCL (3)

The key roles within the VAMDC management structure are:

The VAMDC Project Coordinator. The Project Coordinator will have overall executive responsibility for the project and will provide leadership. Professor Marie-Lise Dubernet (CNRS) will fill this position. The Coordinator chairs the Project Board and she will have a standing invitation to participate in the meetings at the EPT. The Coordinator will have prime responsibility for representing the project externally, including liaison with the European Commission..

The Scientific Deputy Coordinator. The Scientific Deputy Coordinator reports to the Coordinator and has prime responsibility for ensuring the scientific coherence of the project and the quality of its outputs. (S)he will work closely with the Work Packages leaders on scientific matters and on planning the future direction of the project. The Scientific Deputy Coordinator will also work closely with the Strategic Advisory Board to assure quality of delivery. The Scientific Deputy Coordinator will be a leading scientist appointed by the VAMDC Project Board on the recommendation of the Coordinator from the partners and will have to be able to commit a substantial fraction of his/her time per week to VAMDC business.

The Technical Deputy Coordinator. (S)he is in charge of the overall coordination of the various technical activities and he is the Chair of the Executive Project Team (EPT). For maximum efficiency in communication s(he) will be the co-chair of the S/T Coordination Work Package (WP2: NA1).

Project Manager. The Project Manager has detailed oversight of all Work packages. (S)he will ensure regular monitoring of progress against milestones and budgets, giving early warning of areas where problems may occur. The Project Manager will be the project's Chief Operating Officer, preparing agenda for the VAMDC Project Board and EPT and implementing their decisions, including the distribution of the EU Grant and the compilation of reports and other data required by the European Commission. The Project Manager will be appointed by the Coordinator and will be employed by the Coordinator's organisation.

Work packages Leaders. Work packages leaders will have day-to-day responsibility for achieving the milestones and deliverables of their Work packages within agreed time scales and budgets. They will monitor and report progress through the Project Manager and identify issues that may impact the project as a whole. With the Scientific Director, WP Leaders will assure the quality of deliverables. To mitigate risk and share work loads each WP also has a deputy appointed.

Chair of the Communication and Training Committee. The chair of the Communication and Training Committee (Professor N J Mason (OU)) is the Leader of the Dissemination and Training (WP3) Work package. He has the usual duties of a work package leader (see above) with coordination, timely deliverables and reports to the Project Board. He will also be responsible for proposing yearly dissemination and training actions for approval to the VAMDC Project Board. Once approved these actions will be implemented the following year.

To minimise costs, meetings will be held via teleconference whenever appropriate, although at least three meetings of each group are planned to be face-to-face.

2.3 Description of Beneficiaries (Institute and Key People) – Period 3

Beneficiary Number	Beneficiary name	Beneficiary short name	Key People
1(coordinator)*	Centre National de la Recherche Scientifique	CNRS	See List Below
2	The Chancellor, Masters and Scholars of the University of Cambridge	CMSUC	N. Walton, G. Rixon, A. Akram, G. Del Zanna, H. Mason, E. Gonzalez-Solares, J. Lewis
3	University College London	UCL	J. Tennyson, L. Culhane, D. Witherick, P. Yuen, K. Benson, C. Hill, R.BArber
4	Open University	OU	N. Mason, B. Sivaraman, B.J. Harker, Mr Binu Nair
5	Universitaet Wien	UNIVIE	F. Kupka, W.W. Weiss, T. Lueftinger, + students for Annual Meeting
6	Uppsala Universitet	UU	N. Piskunov, E. Stempels, S. Regandell, T. Marquart, Ulrike Heiter
7	Universitaet zu Koeln	KOLN	S. Schlemmer, T. Giesen, H.

			Mueller, C. Endres,
8	Istituto Nazionale di Astrofisica	INAF	A. Costa, A. Giuffrida, A. Saba, G. Mulas,, G. Leto, M. E. Palumbo, P. Massimino, M. Munari
9	Queen's University Belfast	QUB	T. Millar, K. Smith
10	Astronomska opservatorija	AOB	Milan S. Dimitrijevic, Andjelka Kovacevic, Zoran Simic,Darko Jevremovic, Luka Ch. Popovic, Veljko Vujcic, Jovan Aleksic
11	Institute for Spectroscopy RAS	ISRAN	A. Ryabtsev, R. Kildiyarova
12	Russian Federal Nuclear Centre All-Russian Institute of Technical Physics	RFNC-VNIITF	P.A. Loboda, S.A. Gagarin; S. V. Morozov, V.V. Popova, L. Talantova
13	Institute of Atmospheric Optics	IAO	V.I. Perevalov, A.Z. Fazliev, R.V. Kochanov, A.I. Privesentsev, N.A. Lavrentiev, A.V. Kozodoev,
14	Corporacion Parque Tecnologico de Merida	CPTM	C. Mendoza, L. Nunez, Efraín Gatuzz, Jesús Quiroz
15	Institute of Astronomy of the Russian Academy of Sciences	INASAN	T. Ryabchikova, Y. Pakhomov

French Participants under CNRS (Partner 1)			
Name of the French Partners	**CNRS**	**Third Party**	**Key People**
LPMAA, UMR7092	DR2	Université Pierre et Marie Curie	M.L. Dubernet (PI), L. Nenadovic, M. Doronin, F. Kosmala, S. Tacine, F. Francois, Yaye Awa Ba
LUTH, UMR8102	DR5	Observatoire de Paris	E. Roueff, F. Le Petit
LERMA, UMR8112	DR5	Observatoire de Paris	S. Sahal-Bréchot, C. Zeippen, F. Delahaye, N. Moreau
VOPARIS DIO, UMS2201	DR5	Observatoire de Paris	P. Le Sidaner, A. Shih
LAB, UMR5804	DR15	Université de Bordeaux I	V. Wakelam
LPG, UMR5109, IPAG, UMR5274	DR11	Université Joseph Fourier	B. Schmitt, A. Damien, P. Bollard, (L. Bonal), M. Gorbacheva
ICB, UMR5209	DR6	Université de Bourgogne	V. Boudon, Wenger, Surleau, Gabard
GSMA, UMR6089	DR6	Université Champagne-Ardenne	V. Tyuterev, A. Barbe, L. Dumont, D. Bonhommeau, M. Rotger, Yaye Awa Ba, Yuri Babikov, G. Rekik
CESR, UMR5187 – now IRAP, 5277	DR14	Université Paul Sabatier	C. Joblin, K. Demyk, A. Simon, A. Walters, T. Louge, H. Sabbah, J.-M. Glorian

1.1 Management of Risk

NA WPs: Risk assessment

The risks related to the VAMDC project that have been identified are stored in a Risk Register, assessed and classified using the fairly standard following scheme:

- likelihood of occurrence (1 = very unlikely to 4= highly likely)
- likely impact (1 = minimal impact, 4 = disastrous)

The product of (likelihood of occurrence * likely impact) provides the risk factor (ranging from 1 (minimal risk) to 16 (extremely high risk).

Risks with a highest risk factor are the ones on which attention should be mostly focused. For each identified risk a mitigation action is provided. The Risk Register will be maintained throughout the project, in the sense that it is periodically verified, to add new risks or to update the risk factors: if the mitigation actions are performed successfully, risks may be retired from the Register. Risks associated with NA programme have been assessed as follows:

Risk	Consequences	Mitigation Action
Risk NA-R1: **Failure to reach agreement on the policies and strategies for the project** Likelihood of occurrence=1 Impact=3 **Risk Factor = 3**	Discussions within the Board and the Executive Project Team will not lead to a shared vision of the project's policies and strategies, hampering the possibility of a unified view of the project.	Different technical solutions may be pursued, with a close eye on allowing interoperability between them. This solution has a higher cost in terms of person-power. In Period 3 we have not detected such issue.
Risk NA-R2: **Failure to achieve cross-activity coordination** Likelihood of occurrence=1 Impact=3 **Risk Factor = 3**	Failure to achieve consensus within the governing teams of the project, or limited collaboration may hampering the possibility of achieving a set of results sharing the same technical solutions. This would lead to possible misuse or duplication of efforts	Special care will be taken to ensure that the NA1,2 and SAs/JRAs activities work in good agreement, since SAs/JRAs depend on NA1,2 decisions: this will be enforced by periodic one-one meetings via teleconference. As for other work-packages, special meetings via teleconference for the VPB and EPT will be set whenever a problem between/among work-

		packages arises. Cross-activity coordination has been performed mainly through mail and through the technical meetings organised on a regular basis
Risk NA-R3: **Lack of convergence between the scope of training and the real needs of the communities** Likelihood of occurrence=1 Impact=3 **Risk Factor = 3**	If the scope of the training activities is too vague or too general, not in line with the real needs of the users and developers communities, there will be few attendances to the training events and their impact will be limited	VAMDC partners are involved in producing, collecting, diffusing AM data, as well as in technological developments. Most partners have a long experience of organizing conferences and tutorials for AM data. Among all the boards and committees, it shall be easy to identify the needs and requirements for such events so there is little risk that the scope of these workshops/tutorials is not adequate. Tutorials have been provided either at meetings for producers of data, or individually at small collaborative meetings (CMSUC, CNRS) for providers and users.

The identified risks for the Network Activities of the VAMDC project have risk factors up to 3, with mitigation actions in all cases that would limit the impact of such risks. **The overall level of risk of the VAMDC Network Activities has decreased during Period 3.**

SA List of risks and mitigation actions

The identified risks for the Services Activities of the VAMDC project have risk factors up to 8, with mitigation actions in all cases that would limit the impact of such risks. The overall level of risk of the VAMDC Services Activities is low.

Risk	Consequences	Mitigation Action
Risk SA-R1: **Not enough human resources to perform the Services**	Some of the tasks within these Service Activities could require more person-power then currently	Services Activities will need to be prioritized by decision of the VPB and technical advice from the EPT,

Activities Likelihood of occurrence=2 Impact=3 **Risk Factor = 6**	planned. This would lead to a overall delay in deployment of resources. The output of the VAMDC services activities would be limited by the funded and contributed person-power.	to make sure resources are directed first to what is more important. If necessary, partners involved in Service Activities could seek through their own funding to increase their contributed person-power to be able to cope with the extra work-load. This has been the case in P3. Partners have contributed through other sources of funding.
Risk SA-R2: **Lack of convergence between the scope of the Service Activities and the real needs of the communities** Likelihood of occurrence=2 Impact=3 **Risk Factor = 6**	Groups in charge of Service Activities may opt to choose technical solutions which are in contrast with the needs or experiences of the user communities.	The plan for the deployment of the Service Activities will need to be clearly defined and agreed by the Board under technical advice from the EPT, where a match between user needs and services provided will be made. Bottom up information from users will be provided through the CTC and Task 3 of WP2 In Period 3, we have not detected such issue
Risk SA-R3: **Lack of interest of the Scientific Community for deploying their resources in the VAMDC infrastructure** Likelihood of occurrence=2 Impact=4 **Risk Factor = 8**	If the Scientific Community (both EU and non-EU) is not interested in porting their resources to the VAMDC e-infrastructure, the VAMDC project will loose a big fraction of its interest.	Through the SAB and the EPT the VAMDC project will make sure to stay close to the user communities. Moreover through the dissemination and training in EU and non-EU countries, the VAMDC project informs, encourages and trains new users. The partnership with non-EU countries is crucial to the future acceptance of the VAMDC platform at a wide world level. Databases owners of Lund Atomic Database, DREAM/DESIRE Databases, the EU COST Program Nano-IBCT in Austria have implemented VAMDC standards. Others are part of new SUP@VAMDC project ot extend VAMDC to the world.

The identified risks for the Services Activities of the VAMDC project have risk factors up to 8, with mitigation actions in all cases that would limit the impact of such risks. The overall level of risk of the VAMDC Services Activities is low.

List of JRA risks and mitigation actions

Risk	Consequences	Mitigation Action
Risk JRA-R1: Failure to reach coordination in the development of standards Likelihood of occurrence=3 Impact=3 **Risk Factor = 6**	Service interfaces deployed at nodes are not interoperable. Standards cannot be implemented at some nodes.	Engage data publishers during development of standards to check feasibility. During standards definition, make low-cost prototypes of the services and deploy them for tests. We have diminished the impact of this risk by linking the acceptance of standards to the implementation process. Therefore we answer rapidly the data providers needs.
Risk JRA-R2: VAMDC standards duplicate work in existing user communities (including external developments made during VAMDC project) Likelihood of occurrence=3 Impact=2 **Risk Factor = 6**	Wasted effort; possible extra development to adapt VAMDC infrastructure to work with external software.	Send VAMDC delegates to external standards bodies (e.g. IVOA, EuroPlanet). We believe that no other developments are currently going on. We have done a lot of dissemination in EU infrastructure projects, in scientific conference (for users and for producers), showing our objectives and achievements. The fact that many groups and networks are going to collaborate with VAMDC during the SUP@VAMDC project shows that this risk is very low.
Risk JRA-R3: registry-mining protocol defeated by incomplete/inaccurate metadata Likelihood of occurrence=3 Impact=2 **Risk Factor = 6**	Users fail to discover and use all appropriate resources. Users waste time with inappropriate resources.	Ensure that data publishers understand the metadata schemata; provide extensive documentation. Allow publishers to enter their own metadata to avoid errors in transcription; provide a good UI for this. Implement automatic checks of registry consistency and correctness that can be run frequently. The portal and the TAPVAlidator tool helps to diminish the risk. P3 has seen an increase of the tests performed with portal and TAPValidator Tool
Risk JRA-R4: data-mining tools are complex and	These tools are under used; researchers miss opportunities.	Provide good documentation with many examples of use and clear

difficult to use Likelihood of occurrence=4 Impact=2 **Risk Factor 8**	Researchers misunderstand the constraints on using the tools and derive incorrect results.	statement of domain of applicability. Perform usability tests of tools with sample groups of users. Consider providing simplified UIs for common uses of the tools. SPECTCOL Tool has been tested extensively with users and user requirements have been included. KOELN has designed a portal specific to ISM users.

The identified risks for the Joint Research Activities of the VAMDC project have risk factors up to 8, with mitigation actions in all cases that would limit the impact of such risks. The overall level of risk of the VAMDC Joint Research Activities is low.

3. WORK PACKAGES SUMMARY

Work package list

Work package No	Work package title	Type of activity	Lead beneficiary No	Person-months	Start month	End month
WP1	MGT: Project Management	MGT	1	58	1	42
WP2	NA1: Science/Technical Coordination of the network	COORD	1 + 2	62	1	42
WP3	NA2: Dissemination and Training	COORD	4	91	3	42
WP4	SA 1: Infrastructure Deployment	OTHER	2	219	3	42
WP5	SA 2: Support to the Infrastructure	OTHER	1	158	3	42
WP6	JRA1: Interoperability	RTD	7	96	3	42
WP7	JRA2: Publishing Tools	RTD	6	65	3	42
WP8	JRA3: New mining and Integration Tools	RTD	3	72	3	42
	TOTAL			821		

3.1 Management and Networking Activities

3.1.1 Overall Strategy and General Description

The ensemble of Networking Activities (NAs) aims to foster a culture of cooperation between A&M scientists, database providers and data users throughout Europe. Three WPs are planned;

WP1 (MGT): Project Management
WP2 (NA1): Science/Technical Coordination of the network
WP3 (NA2): Dissemination and Training

WP1 is centred on Management and direction of the overall infrastructure programme and therefore is mainly concerned with the internal management of VAMDC. This includes responsibility for the finance control of the project, reporting to the EU, and formal packaging of deliverables. The second WP (NA1) provides the scientific and technical direction necessary for the operation of the VAMDC e-infrastructure developing its structures and integrating with other data services, while WP3 (NA2) provides the interface of VAMDC to the wider user community, being responsible for training and dissemination. The objectives of NA1,2 are: to coordinate the infrastructure's activities among all trans-disciplinary fields (atomic and molecular physics, users such as the astrophysics, atmospheric, fusion, ICT communities); to develop a coherent research community within the EU and to create a direct partnership to key external communities in both the Russian Federation and central and southern America via Venezuela: to link VAMDC to other international projects relevant to VAMDC; to interact with non-partner teams from other EU and non-EU countries in order to take the largest possible approach to the development of the infrastructure: to disseminate VAMDC achievements and to get feedback from data provider and users on the content and operation of VAMDC. The NAs will therefore have both a practical and a political role in defining the policies and evolution of the infrastructure.

Each Work Package is under responsibility of one partner apart from WP2 (where a co-lead is envisaged reflecting the dual role science/technical of this WP). WP1 (CNRS, the project Chair), WP2 (CNRS/CMSUC) and WP3 (OU). The WP/NA work programmes are defined by a series of preset tasks each of which have allocated partners (See Tables 1.3.c). During the initial Kick-off phase of the project (Project months 1-3) only WP1, WP2 and WP3 will be active. At the end of the Kick-off phase, WP2 produces the project detailed work program for Cycle 1 whilst WP1, WP3 provide the Project Web site for both internal circulation of information and external dissemination of the projects aims and objectives. All WPs produce regular reports of their progress. As part of the WP2/NA1 activities, the reports are assessed by the Executive Project Team. The Executive Project Team then proposes a plan for future activities to the Board.

Concertation Activities
The project will actively participate in concertation initiatives and meetings related to the e-Infrastructures and other related areas including the participation and contribution in relevant working groups established under the above initiative. The objective of the concertation activity is to optimise synergies between projects and the collective impact and value of the programme.

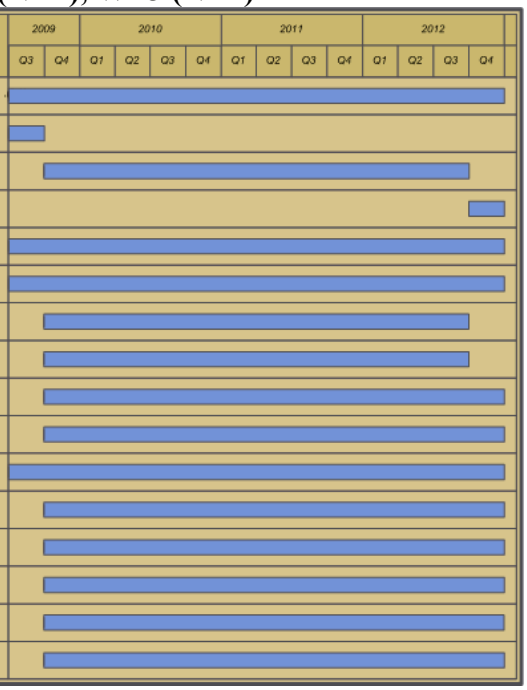
The project will also provide input for relevant European Commission initiated dissemination activities (e.g. press releases, news bulletins, brochures, success stories, posters, web-based publications, multimedia material etc). In this context the project's dissemination-messages will also reflect its broader societal and economic impact. The project's dissemination material in relation to the above goal will be regularly updated to provide the latest version of its status and achievements. This will be reflected in deliverable D1.1 (to be updated every month).

3.1.2 Timing of work packages and their components

In the following, the timing of the project overall organisation is presented as Gantt charts

Gantt Chart for WP1 (MGT), WP2 (NA1), WP3 (NA2)

ID	TASK NAME	Start	End	Start	End
1	**WP1: MANAGEMENT**	Month 1	Month 42	01/07/2009	31/12/2012
2	Task1:VAMDC Kick-Off Phase	Month 1	Month 3	01/07/2009	30/09/2009
3	Task2: Project Management	Month 3	Month 39	30/09/2009	01/10/2012
4	Task3: Termination of Project	Month 39	Month 42	01/10/2012	31/12/2012
5	**WP2: S/T Coordination**	Month 1	Month 42	01/07/2009	31/12/2012
6	Task1: Internal Technical Activities	Month 1	Month 42	01/07/2009	31/12/2012
7	Task2: Connection to External Technical Project	Month 3	Month 39	30/09/2009	30/09/2012
8	Task3: Collect user/producer specifications	Month 3	Month 39	30/09/2009	30/09/2012
9	Task4: Policies concerning Standards	Month 3	Month 42	30/09/2009	31/12/2012
10	Task5: Policies concerning publication in VAMDC	Month 3	Month 42	30/09/2009	31/12/2012
11	**WP3: Dissemination and Training**	Month 1	Month 42	01/07/2009	31/12/2012
12	Task1: Coordination	Month 3	Month 42	30/09/2009	31/12/2012
13	Task2: Organisation of Networking Events	Month 3	Month 42	30/09/2009	31/12/2012
14	Task3: Organisation Scientific Workshops	Month 3	Month 42	30/09/2009	31/12/2012
15	Task4: Organisation of Training Tutorials	Month 3	Month 42	30/09/2009	30/12/2012
16	Task5: Service&Prototype Releases	Month 3	Month 42	30/09/2009	31/12/2012



3.2 Services Activities

3.2.1 Overall Strategy and General Description

The key objective of the two Service Activities (SA1, SA2) is to provide access to an inclusive range of high quality data and applications services to the research community. The VAMDC partners represent major data producers. By integrating their existing and, importantly, future resources through the standard VAMDC infrastructure

the wider community of diverse end users will gain enhanced access to this eco-system of fundamental scientific data. The SA activities will ensure the availability of these major data resources in interoperable formats, the maintenance of services allowing publications of small datasets by producer's teams, the maintenance of registries and dictionaries, the maintenance of nodes listing the needs for the various communities (in relation with other EU initiatives). These services will be delivered by use of the latest virtual observatory and grid e-science infrastructures. Extensions to the core infra-structure will be prototyped during the course of VAMDC and deployed operationally by the SA1.

To allow the project VAMDC to achieve its objectives related to the provision of services to the community of AM data producer and users, two areas of work related to Service Activities have been identified:

WP4: SA1 – Infrastructure Deployment
WP5: SA 2 - Support to the Infrastructure (led by CNRS)

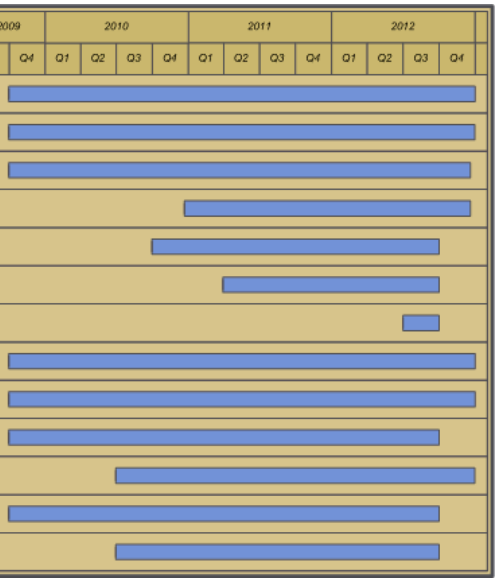
SA1 (led by CMSUC) provides users with access to the assembled A&M databases. This involves implementing standard outputs for the AM databases, finding the resources by interrogating registries, using querying and pipeline tools. SA1 is supported by SA2 (led by CNRS) which provides the necessary support for operating the e-infrastructure itself, although to any user entering the e-infrastructure portal only one SA (the VADMC) will be apparent.

SA1 and SA2 will start immediately after the Kick-off phase of the project, in which the project detailed work program for Cycle 1 is defined, with different starting time for the various tasks.
SA WPs (and their sub-WPs) produce respectively mid-term and final reports one month before the end of each one-year Cycle. Their reports are assessed by the Executive Project Team which prepares respectively a mid-term and final activity report. The plan is revised at the end of Cycle 1, 2 and an updated plan is produced for the following Cycle, subject to the agreement of the Executive Project Team and approval of the Board. A final report is produced at the end of the project.

3.2.2 Timing of work packages and their components

Gantt Chart for WP4 (SA1), WP5 (SA2)

ID	TASK NAME	Start	End	Start	End
1	**WP4: Infrastructure Deployment**	Month 3	Month 42	30/09/2009	31/12/2012
2	Task1: Standard Access to AM data	Month 3	Month 42	30/09/2009	30/12/2012
3	Task2: Standard Access to Numerical Codes	Month 3	Month 42	30/09/2009	19/12/2012
4	Task3: Implementing Registries	Month 18	Month 42	22/12/2010	19/12/2012
5	Task4: Augmenting VODesktop	Month 15	Month 39	30/09/2010	30/09/2012
6	Task5: Publishing desktop software	Month 21	Month 39	30/03/2011	30/09/2012
7	Task6: Expansion of the infrastructure	Month 36	Month 39	01/07/2012	30/09/2012
8	**WP5:Support to the Infrastructure**	Month 3	Month 42	30/09/2009	31/12/2012
9	Task1: Maintenance and Monitoring	Month 3	Month 42	30/09/2009	31/12/2012
10	Task2: Grid Operation	Month 3	Month 39	30/09/2009	30/09/2012
11	Task3: Support to « users »	Month 12	Month 42	30/06/2010	30/12/2012
12	Task4: Preservation of digital data and ressources	Month 3	Month 39	30/09/2009	30/09/2012
13	Task5: QA of data and resources	Month 12	Month 39	30/06/2010	30/09/2012



4.1 Joint Research Activities

4.1.1 Overall Strategy and General Description

The objectives of the JRAs are to build the complete set of "tools" necessary to create an e-science platform for the exchange of atomic and molecular data, creating new specifications and creating/adapting/integrating new software.

The three Joint Research Activities Work Packages are defined as follows:

WP7: JRA1 Interoperability (led by UU)
WP8: JRA2 Publishing Tools (led by IAO)
WP9: JRA3 New mining and Integration Tools (led by UCL).

JRA 1 (led by UU) will define the standards necessary to build an interoperable infrastructure. It will improve and extend the current data models and XML schema in order to describe the structure of data, build dictionaries containing the most usual terminology in order to allow for easy cross-matching, design access protocols and query languages, define the structure of registries.

JRA2 (led by IAO) will provide generic tools partly using the standards developed in JRA1 in order to help producers of A&M data to publish their sets into the VAMDC infrastructure. JRA2 will develop the software that will be deployed within the VAMDC infrastructure. Some of these software will be associated to the standards developed in JRA1. The general software made available to the community will be accessible via the VAMDC technical web-site.

JRA3 (led by UCL) will develop new mining and integration tools allowing cross-matching or/and cross-federation of heterogeneous resources and application services wrapping

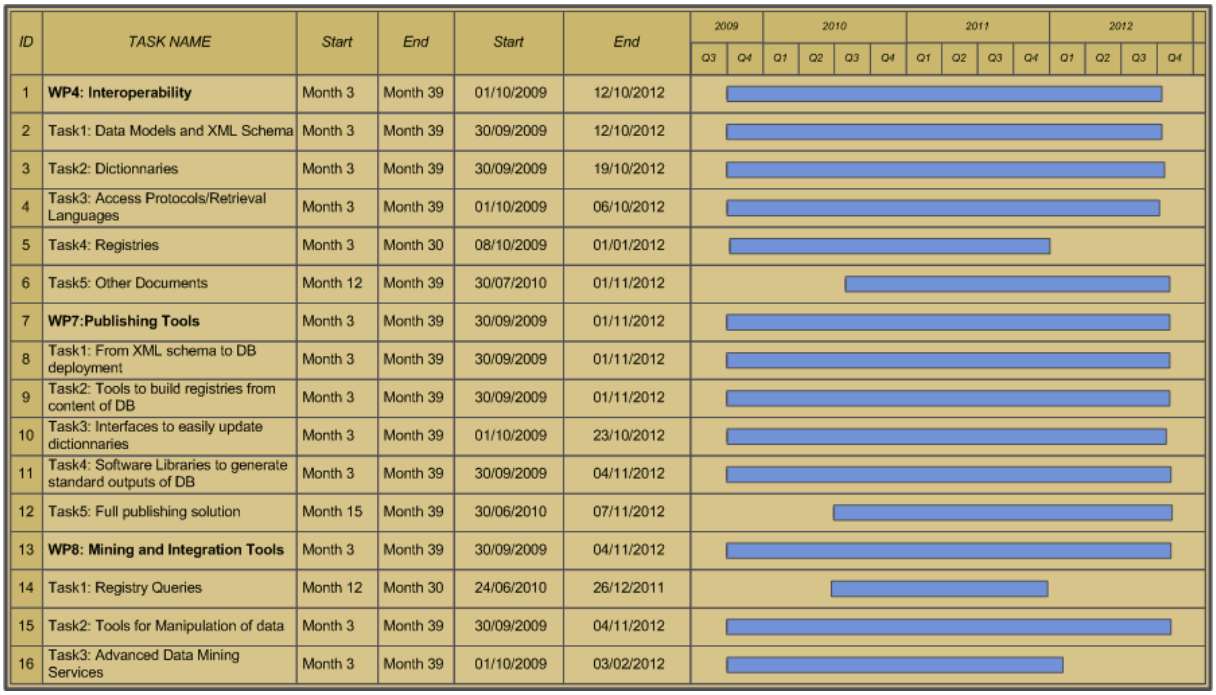
complex work flows combining AM data access, manipulation, and integration into user processing chains.

Since JRAs are necessary for the development of the SA WPs , these JRAs will start immediately after the Kick-off phase of the project. Since it is essential to ensure that JRAs deliver their tools on time (or the SA deployment will be hampered) in addition to producing both mid-term and final reports, three monthly updates will be prepared and assessed by the Executive Project Team which can recommend any required changes in JRS work programme and management.

4.1.2 Timing of work packages and their components

Gantt Chart for WP6 (JRA1), WP7(JRA2), WP8(JRA3)

ID	TASK NAME	Start	End	Start	End
1	**WP4: Interoperability**	Month 3	Month 39	01/10/2009	12/10/2012
2	Task1: Data Models and XML Schema	Month 3	Month 39	30/09/2009	12/10/2012
3	Task2: Dictionnaries	Month 3	Month 39	30/09/2009	19/10/2012
4	Task3: Access Protocols/Retrieval Languages	Month 3	Month 39	01/10/2009	06/10/2012
5	Task4: Registries	Month 3	Month 30	08/10/2009	01/01/2012
6	Task5: Other Documents	Month 12	Month 39	30/07/2010	01/11/2012
7	**WP7:Publishing Tools**	Month 3	Month 39	30/09/2009	01/11/2012
8	Task1: From XML schema to DB deployment	Month 3	Month 39	30/09/2009	01/11/2012
9	Task2: Tools to build registries from content of DB	Month 3	Month 39	30/09/2009	01/11/2012
10	Task3: Interfaces to easily update dictionnaries	Month 3	Month 39	01/10/2009	23/10/2012
11	Task4: Software Libraries to generate standard outputs of DB	Month 3	Month 39	30/09/2009	04/11/2012
12	Task5: Full publishing solution	Month 15	Month 39	30/06/2010	07/11/2012
13	**WP8: Mining and Integration Tools**	Month 3	Month 39	30/09/2009	04/11/2012
14	Task1: Registry Queries	Month 12	Month 30	24/06/2010	26/12/2011
15	Task2: Tools for Manipulation of data	Month 3	Month 39	30/09/2009	04/11/2012
16	Task3: Advanced Data Mining Services	Month 3	Month 39	01/10/2009	03/02/2012



4. SUMMARY OF DELIVERABLES

List of Deliverables – to be submitted for review to EC

MGT & NA Deliverables List

Del. no.	Deliverable name	WP no.	Lead bene-ficiary	*Estimated indicative person-months*	Nature	Dissemination level	Delivery date
D1.1	VAMDC Website	1	CNRS	1	O	PU	DONE
D1.2	VAMDC Project Plan	1	CNRS	1	R	PU	DONE
D2.1	Science/Technical Plan	2	CMSUC/CNRS	2	R	PU	DONE

D3.1	Dissemination/Training Plan	3	OU	2	R	PU	DONE
D2.2	Science/Technical Report 1	2	CMSUC/CNRS	12	R	PU	DONE
D3.2	Dissemination/Training Report 1	3	OU	7	R	PU	DONE
D1.3	Revised Annual VAMDC Project Plan 1	1	CNRS	9	R	PU	This document
D3.3	Level 1 Service Prototype	3	CMSUC/UU	12	O	RE	DONE
D3.4	Annual Project Meeting 1	3	OU	4	O	PU	DONE
D1.4	VAMDC Budget & Review Report to EU 1	1	CNRS	9	R	CO	DONE
D2.3	Science/Technical Report 2	2	CMSUC/CNRS	18	R	PU	22
D3.5	Dissemination/Training Report 2	3	OU	7	R	PU	22
D1.5	Revised Annual VAMDC Project Plan 2	1	CNRS	9	R	PU	22
D3.6	Level 2 Service Prototype	3	CMSUC/UU	12	O	RE	22
D3.7	Annual Project Meeting 2	3	CMSUC	4	O	PU	24
D1.6	VAMDC Budget & Review Report to EU 2	1	CNRS	9	R	CO	24
D2.4	Science/Technical Report 3	2	CMSUC/CNRS	18	R	PU	34
D3.8	Dissemination/Training Report 3	3	OU	7	R	PU	34
D1.7	Revised Annual VAMDC Project Plan 3	1	CNRS	9	R	PU	34
D3.9	Level 3 Service Prototype	3	CMSUC/UU	13	O	PU	34
D3.10	Annual Project Meeting 3	3	UNIVIE	4	O	PU	36
D1.8	VAMDC Budget & Review Report to EU 3	1	CNRS	9	R	CO	36
D3.11	VAMDC Service Release	3	CMSUC/UU	12	O	PU	40
D2.5	Final Science/Training Report	2	CMSUC/CNRS	12	R	PU	41
D3.12	Final Annual Meeting	3	CNRS	4	O	PU	42
D3.13	Final Dissemination/Training Report	3	OU	3	R	PU	42

D1.9	Final Review and Budget Report of VAMDC to EU	1	CNRS	2	R	CO	42

SA Deliverables List

Del. no.	Deliverable name	WP no.	Lead bene-ficiary	*Estimated indicative person-months*	Nature	Dissemination level	Delivery date
D4.1	Infrastructure Deployment Plan	4	CMSUC	9	R	PU	DONE
D5.1	Service Support Plan	5	CNRS	8	R	PU	DONE
D4.2	Infrastructure Deployment Report 1	4	CMSUC	40	R	PU	DONE
D5.2	Service Support Report 1	5	CNRS	30	R	PU	DONE
D4.3	Infrastructure Deployment Report 2	4	CMSUC	60	R	PU	22
D5.3	Service Support Report 2	5	CNRS	50	R	PU	22
D4.4	Infrastructure Deployment Report 3	4	CMSUC	80	R	PU	34
D5.4	Service Support Report 3	5	CNRS	40	R	PU	34
D4.5	Final Infrastructure Deployment Report	4	CMSUC	30	R	PU	41
D5.5	Final Service Support Report	5	CNRS	30	R	PU	41

JRA Deliverables List

Del. no.	Deliverable name	WP no.	Lead bene-ficiary	*Estimated indicative person-months*	Nature	Dissemination level	Delivery date
D6.1	Interoperability Plan	6	KOLN/CNRS	2	R	PU	DONE
D7.1	Publishing Tools Plan	7	UU	2	R	PU	DONE
D8.1	Mining/Integration Tools Plan	8	UCL	2	R	PU	DONE
D6.2	Interoperability Report 1	6	KOLN/CNRS	20	R	PU	DONE
D7.2	Publishing Tools Report 1	7	UU	10	R	PU	DONE

D8.2	Mining/Integration Tools Report 1	8	UCL	10	R	PU	DONE
D6.3	Interoperability Report 2	6	KOLN/CNRS	40	R	PU	22
D7.3	Publishing Tools Report 2	7	UU	20	R	PU	22
D8.3	Mining/Integration Tools Report 2	8	UCL	20	R	PU	22
D6.4	Interoperability Report 3	6	KOLN/CNRS	20	R	PU	34
D7.4	Publishing Tools Report 3	7	UU	23	R	PU	34
D8.4	Mining/Integration Tools Report 3	8	UCL	25	R	PU	34
D6.5	Final Interoperability Report	6	KOLN/CNRS	14	R	PU	41
D7.5	Final Publishing Tools Report	7	UU	10	R	PU	41
D8.5	Final Mining and Integration Tools Report	8	UCL	15	R	PU	41

5. SUMMARY OF MILESTONES AND REVIEWS

5.1 Milestones

List and schedule of milestones

Project Management

Milestone no.	Milestone name	WPs no's.	Lead beneficiary	Delivery date from Annex I [1]	*Comments*
M1.1	Kick-off meeting	WP1	CNRS	Month 3	Full reports available to participants. Summary TALKS published on Website
M1.2	Project & Budget Plan Approval	WP1	CNRS	Month 3	DONE
M1.3	VPB meetings	WP1	CNRS	Months 3,10, 22, 34, 42	First 2 meetings DONE
M1.4	SAB meetings	WP1	CNRS	Months 9, 21, 33	Months 9 postponed to Months 15
M1.5	Revised Project & Budget Plan Approval	WP1	CNRS	Months 10, 22, 34	NOT YET for Period 1

[1] Month in which the milestone will be achieved. Month 1 marking the start date of the project, and all delivery dates being relative to this start date.

M1.6	Approval of Final Project Report & Budget	WP1	CNRS	Month 42	

S/T Coordination of the Network

M2.1	Approval of WP Plan	WP2	CMSUC/CNRS	Month 3	DONE
M2.2	EPT meetings	WP2	CMSUC/CNRS	Months 3, 10, 16, 22, 28, 34, 38, 42	ALL DONE FOR PERIOD 1 (every 2 months) – see WIKI -
M2.3	Approval of Revised WP WorkPlan	WP2	CMSUC/CNRS	Months 10, 22, 34	APPROVED FOR PERIOD 2
M2.4	Approval of Final WP Reports	WP2	CMSUC/CNRS	Month 42	

Dissemination and Trainings

M3.1	CTC meetings	WP3	OU/UNIVIE	Months 10, 22, 34, 42	Minutes of Meetings on Internal Website - DELAYED
M3.2	Review of Conferences/Schools	WP3	OU/UNIVIE	Months 10, 22, 34	Agenda and Training material of workshops on Public Website – NOT AVAILABLE YET
M3.3	Review of Regional Tutorials	WP3	OU/UNIVIE	Months 10, 22, 34	Agenda and Training material of workshops on Public Website – NOT AVAILABLE YET

Service Deployment

M4.1	Deployment of Data Access	WP4	CMSUC	Months 10, 22, 34, 42	STARTED in PERIOD 1 – SEE REPORT WP4
M4.2	Deployment of Infrastructure	WP4	CMSUC	Months 10, 22, 34, 42	STARTED IN PERIOD 1 – SEE REPORT WP4
M4.3	Evaluation of Available Software	WP4	CMSUC	Months 10, 22, 34, 42	Testing by Users Panels of prototype software – INTERNAL TEST -
M4.4	Open Call for New Resources	WP4	CMSUC	Month 24	Text of Call Available on Public Website

Infrastructure Support

M5.1	Deployment of Monitoring	WP5	CNRS	Months 10, 22, 34, 42	STARTED in PERIOD 1
M5.2	Deployment of Help Desk	WP5	CNRS	Months 10, 22, 34, 42	NOT SCHEDULED UP TILL PERIOD 2 – Months 10 is an error in Annexe-I
M5.3	Deployment of Grid Operation	WP5	CNRS	Months 10, 22, 34, 42	Testing by Users Panels of prototype software – DELAYED TO PERIOD 2
M5.4	Deployment of Preservation and QA	WP5	CNRS	Months 10, 22, 34, 42	Text of Call Available on Public Website

Interoperability

M6.1	Technical Meetings	WP6	UU	Months 5,10, 16, 22, 28, 34, 40, 42	Minutes. Presentations on internal Website – DONE FOR PERIOD 1– SEE WIKI
M6.2	Evaluation of standards releases	WP6	UU	Months 10, 22, 34	INTERNAL EVALUTION IN PERIOD 1 – SEE WIKI

Tools to publish A&M Data

M6.1	Technical Meetings	WP7	UU	Months 5,10, 16, 22, 28, 34, 40, 42	Minutes. Presentations on internal Website – DONE FOR PERIOD 1– SEE WIKI
M6.2	Evaluation of softwares	WP7	UU	Months 10, 22, 34	INTERNAL EVALUATION IN PERIOD 1 – SEE REPORT WP7

New Mining and Integration Tools

M6.1	Technical Meetings	WP8	UU	Months 5,10, 16, 22, 28, 34, 40, 42	Minutes. Presentations on internal Website – DONE FOR PERIOD 1 – SEE WIKI
M6.2	Evaluation of softwares	WP8	UU	Months 10, 22, 34	INTERNAL EVALUTION IN PERIOD 1 – See REPORT WP8

5.2 Planning of Reviews

Tentative schedule of project reviews

Review no.	**Tentative timing, i.e. after month X = end of a reporting period** [2]	***planned venue of review***	***Comments , if any***
1	After project month: 12	**13**	Level 1 Service Prototype available from PM 10 on internal Web-Site – WILL BE AVAILABLE FROM MONTH 15

[2] Month after which the review will take place. Month 1 marking the start date of the project, and all dates being relative to this start date.

2	After project month: 24	**25**	Level 2 Service Prototype available from PM 22 on internal Web-Site
3	After project month: 36	**37**	Level 3 Service Prototype available from PM 34 on internal Web-Site
4	After project month: 42	**43**	Final VAMDC Service Release available from PM 40

6. Status at the end of Period 3, General Plan For Period 4

As described in the section "Progress of Work per Workpackage", the VAMDC project has fullfilled the critical objectives of Period 3. The work related to Solid Spectroscopy tasks was slowed down as explained in section E.2; but this task should be performed in Period 4 as the environment is now mature.

Critical Objectives of Period 1:
The critical objectives of Period 1 were to start a very basic infrastructure (WP4, WP5) through the registration of resources, the availability of GRID for calculations, the monitoring and mirroring of services. The project needed to agree on the standards for the exchange of A.&M. data (WP6), to develop publishing (WP7) and mining tools (WP8) based on these standards. It had to deal with dissemination towards users and producers of A. & M. data (WP3) as well as staying in contact and benefiting from/to other technical projects (WP2).

Critical Objectives of Period 2:
The critical objectives of Period 2 were to build an interoperable infrastructure (WP4) through the registration of services having implemented standard data access layers (databases or numerical codes). In order to reach those goals the project still needed to agree on the standards for the exchange of A.&M. data (WP6) as agreement had not been fully reached in Period 1, to develop the related publishing software (WP7) and mining tools (WP8) based on these standards. It needed to invent procedure (WP2) for release of standards so that 26 nodes could implement the same software at the same time with the same version. Period 2 was a first step towards the external public through providing documentation about the VAMDC infrastructure (WP5) and providing Quality Assurance Tools (WP5). It had to deal with dissemination towards users and producers of A. & M. data (WP3) as well as staying in contact and benefiting from/to other technical projects (WP2).

Status at the end of Period 2
As described more in details in the section "Progress of Work per Workpackage", WP2 has kept in touch with IVOA, EuroPlanet and with the GAIA consortium. Obviously these actions benefit to VAMDC through feedbacks from users of A. & M. users as well as keeping in touch with technical developments in other projects. These actions shall be continue in Period 3. Another aspect to WP2 was to put together policies related to standards and publication in VAMDC (tasks 4 & 5). Some recommendations have been adopted concerning publication by partners as it is necessary to control communication. As long as we find some new issues more work will be done on publication policies in Period 3. In Period 2 the process for adoption of standards have been adopted and the releases processes defined (a document is currently being drafted). In Period 2 we used results the WP2 census in all the development

workpackages (WP6 to WP8). WP3 has involved a lot of dissemination worldwide in Asia, Russia, new European countries, South America, USA and within many different communities of producers and users of A. &M. data. The characteristic of Period 2 is the start of training for internal VAMDC users and for external users concerning GRID technology. WP4 has mainly involved deployment of a level 2 infrastructure for most of the databases in VAMDC with implementation of registries and of the standards developed in WP6 to WP8. For Period 2 we have 16 databases implemented at an interoperable level, but with different levels of quality. WP4 has developed a UI consisting in a portal: "A user is able to visit the portal and browse the set of VAMDC register resourses in a structured manner. Thus for instance, the user can easily discover which resources have infor,mation specific to, for instance, a specific ion or molecule. The user is then able to construct a query which is sent to all resources with relevant information. For example, the user might be interested in transitions over a specific wavelength range (a typical astronomical use case) - one simple wavelength bounded query is then sent to all resources with data in that wavelength region, with results returned to the user in standard XSAMS format. Simple tools are provided to translate XSAMS into a number of alternative data formats to aid visualisation of the output data ». In Period 3 WP4 will deliver a level 3 service with improved services for all resources among the VAMDC partners and will make a call for external databases. It should be noted that an external database has been implemented during Period 2 as a test case of publishing tools in WP7. In P1 WP5 had put together the monitoring system and implemented it for a limited number of services, it had organised the access to the GRID at Paris Observatory. In P2 WP5 has organised tutorials on GRID, put together documentation/tutorial information in "Description of the Infrastructure", has drafted the procedure for the mirroring and the monitoring systems, has developed a quality assessment tool (TAP-VALIDATOR) in order to test services. In Period 3 WP5 will extend the monitoring system to more services, negociate access to the GRID for VAMDC users and concretise the mirroring system. In Period 2 WP6 has worked towards publishing publicly the first release of standards : data model with VAMDC-XSAMS (a modification of XSAMS) and SSDM for Solid Spectroscopy, query language (VSS1), registry, dictionaries. At the end of Period 1 WP7 had tackled the creation of publishing tools through the use of a generic platform and through the development of home-made applets, but no useable tools were publicly available at the end of Period 1. In Period 2 WP7 has focused on improving, documenting those tools and making them available to the users (they are internal deliverables). Obviously those tools implement the standards defined in WP6. WP8 Task 1 is completed since end of P1 because we have adopted IVOA standards. In Period 1 WP8 had focused on designing a tool for handling XSAMS outputs (Task 2). In Period 2 WP8 has focused on meeting users' needs (study of non LTE-media) by extending the tool to cross-match/cross-federate spectroscopic and collisional data (SPECTCOL tool), has fully documented this tool for users and for further extensions. In P3 no work is planed for SPECTCOL apart from light update. In Period 2 WP8-T2 has also focused on solving the matching problem between gas phase and solid spectroscopy for planetology and interstellar medium applications. It was decided that solid spectroscopic databases would make an internal matching of keywords for relevant quantities. This work will continue in P3. In Period 3 WP8 has made progresses towards complex mining with the design of Taverna Plugins compatible with VAMDC. In Period 3 this task will be publicly available and tested in real use cases.

Critical Objectives of Period 3:
The critical Objectives of Period 3 were:

- Consolidate Infrastructure :
  - Upgrade of standards
  - Upgrade of softwares
  - Internal testing
- Beta testing of Infrastructure
  - Node Software/Standards with New producers (Extend VAMDC to new DB)
  - Infrastructure : integration of our standards and procedures in user applications
  - Portal, Cross-Federation software
- Extend VAMDC through answer to EU call

Status at the end of Period 3:

WP1: Recurrent problem with transfering grant to partner CTPM (problems are on the side of their bank) leading to a lot of waste of time by CNRS administration offices. Reporting by nodes was performed in due time (delays were correctly explained and negociated with the coordinator). Some re-allocation of funds has been done between INASAN and IAO for the organisation of the Russian Regional Meeting.
Extension of VAMDC has been done through a new EU project: SUP@VAMDC that will extend to new users, to close fields, to new countries. This project starts in December 2012 for 2 years (CSA-SA project).
Politically: The "project" VAMDC is becoming a "VAMDC Consortium" and we are currently working on proposing an ERIC. P4 might show some progress.
Operational Organisation has started (see the different teams proposed below) and will be formalized in P4.

WP2: Contact with other infrastructure : EuroPlanet through the involvement of VAMDC partners who are involved in planetology. For EuroPlanet the interoperability is not clear since they are far behind VAMDC in terms of achievements. For HELIO the connection goes through specific applications at MSSL/CMSUC linked to the CHIANTI database. For IVOA there is a larger exposure. And the discussion at Interop in Puna has led the VAMDC coordinator to believe that interoperability in terms of common agreed standards is impossible with other infrastructures. Interoperability can only be achieved through implementing our standards in their tools or vice-versa. This conclusion has led to the inclusion of our standards in the SPECVIEW tool that is intensively used in the USA by IVOA. Feedbacks from astrophysical users have led to improvement of our own tools such as SPECTCOL in order to meet the users requirements. INASAN/ISRAN have worked on getting feedbacks concerning users of atomic data. These feedbacks are used to improve the nodes deployments and the portal.

WP3: Dissemination among many user fields and new producers. In particular the continuous dissemination action towards the Radiation Community (OU node) has already led to extension of VAMDC to new databases (IDEAD and RADAM). A Regional Meeting has been organised in Central Europe by Serbia (AOB Node with participation from UNIVIE and OU node) that led to a maximum exposure of VAMDC. Many conferences mentioning VAMDC and/or proceedings have been produced (see the list in this document), some included Tutorials. The Russian Regional Meeting with Tutorials has been organised in June/July 2012 (report will be in P4). Various tutorials have been offered to individual users.

The Dissemination activity will be continued through a "Outreach Team" and the tutorial activities will continue through a "Training Team" that will provide help to new producers and to users.

WP4: Level-3 Release contains the resources made available to users in VAMDC period 3. The actual release point is March-April 2012. Level-*n* releases combine VAMDC standards for data access, software implementing those standards, and installations of the software at VAMDC nodes. The level-3 release uses the 2011.12 standards and provides 20 databases following those standards. Extension of VAMDC to other databases (IDEAD) has started and is already visible from the development portal. Some delays have occurred with the solid spectroscopic database at LPG that should be open in P4. The Solid State Database has been our internal exposure to interoperability with a field that is close to the majority of VAMDC databases, but that requires another way of describing data. Interoperability goes through tools and adaptation of their outputs to VAMDC standards. At the end of Period 3, this poses the political problem of defining WHAT IS VAMDC. This is a problem that will be solved in the next project.

At the end of Period 3 libraries in JAVA have been designed to handle all processes within VAMDC (registration, parsing XSAMS, etc). These libraries are currently used in the portal, in the SPECTCOL tool, in the implementation of BASECOL/KIDA, in the IVOA SPECVIEW tool. Those libraries will be published in P4. Their recent use in SPECVIEW (external tool) shows that VAMDC has achieved its goal of interoperability between infrastructure.

WP5: At the end of P3 we have a TAPVAlidator Tool that allows to check the output of databases. The quality assurance on wiki provides some guidance about quality assurance requirements (http://voparis-twiki.obspm.fr/twiki/bin/view/VAMDC/Sa2T5QaReq). Quality assurance has been a matter of individual activity at nodes, apart from the activity of INASAN on atomic data.

Replication is not complete yet but in good progress. Support has made progresses with different material made available (http://www.vamdc.eu/usersupport). It will be continued in P4 and in the next SUP@VAMDC project.

A "Service Team" that will include WP5 activities will be created in order to ensure that the VAMDC infrastructure is working properly.

WP6-WP7-WP8: All the JRA activities have led to improvements of standards, node software in Python or Java and user tools (SPECTCOL). All this work has led to release of 2011.12 standards and related software and to the preparation of the next release in P4 (2012.07). Some first examples of tavern workflows have been done. This leads the path to intensive data scientific applications.

In the next future all new developments of standards and software will be handled by a "Innovation Team" and by a "Software Team".

7. WP1 ACTIVITIES DESCRIPTION

WP1 is MGT: Project Management

6.1 WP1 Objectives

The VAMDC e-Infrastructure involves 15 partners participants from 6 European Union member states (the CNRS partner involves 6 geographically distributed legal entities), partners in ICPC countries: the Russian Federation, Serbia and Venezuela and external partners in the US. The project will co-ordinate two large Networking programmes; three joint research projects and two supply service activities internally involving some 300 users/providers, and externally providing a transformational set of new services to a wide external audience, during its 42 months programme. The success of the VAMDC e-infrastructure will therefore crucially depend on the effective management and integration of these different elements. The Objective of Work Package 1 is therefore to provide the necessary management structure to implement the VAMDC e-Infrastructure including: handling all administrative matters with respect to EU regulations: assembling and submitting reports, overseeing the audit of the finances, arranging meetings with appropriate staff in Brussels. WP1 will also be responsible for establishing and implementing the higher level strategy of the infrastructure.

WP1 is lead by M.L. Dubernet (CNRS(1)/LPMAA), coordinator of VAMDC.

6.2 Project Management and monitoring

The Management structure will include a number of Boards, each with well defined remits and responsibilities. The designated Boards are VEB, VPB, SAB as described in section 2.1.

The three main tasks of WP1 are the initial establishment of the management structure and its support communication tools, the regular operation of this structure, and its termination at the end of the project together with the delivery of the final reports.

WP1 Leader	M.L. Dubernet (CNRS/LPMAA)	
Task Number	Leader	Other Partners
1	ML. Dubernet	
2	ML. Dubernet/ M. Doronin for part of P4	All others
3	ML. Dubernet	

Task1: Initial establishement of the management structure and tools

Project Months 1 -3 will be entirely devoted to the set-up of the working structure. First, the core of the executive team (Project Coordinator and Project Manager) will be set-up at the coordinating institute (CNRS/LPMAA), and the team will open the project's Central Web Page at CNRS/VOPARIS Data Centre. The Executive Board will establish communication with all consortium members and prepare the project kick-off meeting which will take place at PM 3. The kick-off meeting will include meeting of the VPB, which will choose the SAB and approve the VAMDC project plan.

Task2: Project Management

Following the 'kick off meeting' the project will enter its phase of regular yearly operations, with annual Project Board (10, 22, 34, 42) and SAB (9, 21, 33) meetings. Detailed annual and final reports (PM 12, 24, 36, 42) will be prepared by the Executive Board for presentation to the Board. The report will include review of all the NA, SA and JRAs and include recommendations and comments by the SAB. The report will be reviewed and ratified by the Project Board for transmission to the Commission. Budgetary reports will be assembled by the Project Manager on the Executive Board with particular attention to detailing the spend patterns in the past year and making forecasts for forthcoming year. Should it be necessary to alter spend patterns in forthcoming year the Executive Board will make recommendations to the VPB for their approval. Detailed information on reporting is given below in 6.4.
Detailed annual Project Plans will be prepared by the VEB after gathering all WPs individual project Plans, for presentation to the Board.
Templates for deliverables (reports, plans), internal documents and guidelines will be disseminated.

In other aspects, each WP will monitor the different aspects of its activities. This monitoring is part of the WP internal reports, and will be assessed by the EPT and the VPB.

Task3: Termination of the project

At the end of the project the last task will be the production and delivery to the Commission of the final report and budget.

6.3 Maintenance of the Risk Register and of the Self-Evaluation Matrix

The Risk Register has been reviewed and approved by the VPB. It is maintained by the VEB. The VEB will assure the maintenance of the Self-evaluation Matrix for each Work Package (the self-evaluation matrix is updated on line on our WIKI at http://voparis-twiki.obspm.fr/twiki/bin/view/VAMDC/VamdcPlan in WP1 section). The self-evaluation matrix is compiled in a PDF document, reviewed and approved by the VPB during board meetings.

6.4 Reporting for Period 3

Here is a list of documents and reports to be produced during the project and their draft Table of Contents:

WP Plans (D2.1, D3.1, D4.1, D5.1, D6.1, D7.1, D8.1) to be included in the Project Plan (D1.2)

- A description of the Work package activities

Project Plan and Revised Project Plans (D1.2, D1.3, D1.5, D1.7 – WP1)

- A description of the project objectives;
- A description of the Project management;

- A summary of Work Packages, deliverables and milestones;
- A description of the Work packages activities;
- A presentation of the effort distribution;
- An estimated budget breakdown per Work Package.

WP Reports (as indicated in WP activities description) to be included in Budget & Review Report to EU (D1.4, D1.6, D1.8, D1.9)

- A description of the Work package activities

Budget & Review Report to EU (D1.4, D1.6, D1.8, D1.9)

One part of this report is a Periodic activity report, containing:

- A publishable executive summary;
- A description of the project objectives and major achievements during the reporting period;
- An updated version of the Self-evaluation Matrix;
- A description of the Consortium Management;
- A description of the Project Management;

The second part is a Periodic management report, containing:

- A justification of major cost items and resources;
- Financial statement per activity for the contractual reporting period (form C);
- A summary financial report.

The last part of this report is the periodic report on the distribution of the Community's contribution. It shows the distribution of funds made by the coordinator to beneficiaries during the reporting period.

7. WP2 ACTIVITIES DESCRIPTION

WP2 is NA1: Science/Technical Coordination of the network

7.1 WP2 Objectives

NA1 provides the scientific and technical work necessary for the operation of the VAMDC e-infrastructure developing its structures and integrating with other data services and placing the VAMDC in a more global context. NA1 will also provide effort for VAMDC to participate and interact with external infrastructure and standards groups such as EGEE, Euro-VO and the IVOA.

The organisation of WP2/NA1, and the technical coordination of the network, is overseen by the VAMDC Executive Project Team (EPT)

The EPT includes WPs leaders (WP2 to WP8). The EPT will have monthly teleconference meetings as well as bi-annual face-to-face meetings. It will collect reports from the SAs and JRAs and prepare the annual technical reports for the VPB. The EPT will be chaired by the

VAMDC Deputy (Technical) Coordinator who is a member of the VAMDC Project Board and will advise the VPB on the technical validity and relevance of the project strategic plans.

WP2 leader is CMSUC (2), with co-leadership by CNRS(1)

7.2 WP2 Milestones and Deliverables

Milestones

M2.1	Approval of WP Plan	WP2	CMSUC/CNRS	Month 3	DONE
M2.2	EPT meetings	WP2	CMSUC/CNRS	Months 3, 10, 16, 22, 28, 34, 38, 42	OCCUR in FACT EVERY 2 months
M2.3	Approval of Revised WP WorkPlan	WP2	CMSUC/CNRS	Months 10, 22, 34	DONE FOR PERIOD 1
M2.4	Approval of Final WP Reports	WP2	CMSUC/CNRS	Month 42	

Deliverables

D2.1 Science / Technical (S/T) Plan (PM 3)

Annual reports will provide publicly available summaries of the activity of the EPT for each project year.

D2.2 S/T Report to be included in report to EU– Year 1 (PM 10)
D2.3 S/T Report to be included in report to EU– Year 2 (PM 22)
D2.4 S/T Report to be included in report to EU – Year 3 (PM 34)
D2.5 Final S/T Report to be included in final report to the EU (PM41)
Annual S/T Plan revisions included in Revised Annual VAMDC Project Plans – Year 1,2,3

Internal deliverables for year 1 activities are listed below.

7.3 WP2 Tasks Description

Work Description as in Annexe I

Task 1: Internal Technical Activities (lead by CMSUC(2), all partners)
Task 1 deals with cross disciplinary technical coordination, identification and evaluation of proposed generic tools, preparation of plans for testing and benchmarking activities. This task also includes the organisation of the EPT meetings.

Task 2: Connection to External Technical Project (lead by CMSUC(2), partners 1,3,4,14)

Task 2 deals with coordination with IVOA (International Virtual Observatory Alliance), Euro-VO, the IDIS Data service of the Europlanet EU Research Infrastructure, EGEE (European Grid E-science Environment). The EPT will host annual small focussed meetings/workshops where relevant people from the external projects will be invited to present the status of their achievements. The EPT will assess the degree of interoperability with those projects, which will in turn influence the output of task 1.

Task 3: Collect the users and producers specifications (lead by INASAN(15), all partners)
The EPT will gather users/producers requirements by a number of techniques such as questionaires, small face-to-face meetings and so forth.

Task 4: Policies concerning Standards (lead by CNRS(1), all partners)
Task 4 will define, review and update the way standards will be adopted and to that effect it will interact with organisations promoting standards, e.g. external projects cited in task 2, NIST project for defining units in XML schema. Other organisations will be identified during the project if they happen to be relevant to VAMDC.

Task 5: Policies concerning publication in VAMDC (lead by CNRS(1), all partners)
Other missions of the EPT are to define, update and maintain the policies concerning the publication of resources in VAMDC.

7.4 WP2 Tasks Description for Period 3

WP2 Leader	N. Walton (CMSUC(2)), N. Piskunov(UU(6))	
Task Number	Leader	Other Partners
1	N. Walton (CMSUC)	All others
2	N. Walton (CMSUC)	All others
3	T. Ryabchikova (INASAN)	All others
4	E. Roueff (CNRS/LUTH)	All others
5	E. Roueff (CNRS/LUTH)	All others

VAMDC
Period 4 WP2 NA1 Plan

Period: 01/07/2012 – 31/12/2012
WorkPackage: 2 NA1: Science/Technical Coordination
WorkPackage Leader and co-Leader:
UCAM (N A Walton) and UU (N Piskunov)/M.L. Dubernet (CNRS)
Participants in the WorkPackage:
CNRS, CMSUC, UCL, OU, UU, KOLN, QUB, IVIC, INASAN

Part 1

Objectives and details for each task in Period 4

This activity provides scientific and technical coordination for VAMDC. It interacts closely with NA2, with cross membership of the EPT and CTC.

Task 1: Internal Technical Management:

1.1) The EPT meetings continue to be held once every two months. All EPT meetings are fully minuted at http://voparis-twiki.obspm.fr/twiki/bin/view/VAMDC/Na1Ept
1.2) NA1 will organise representation at partner VAMDC related meetings. All presentations at external meetings are available at http://www.vamdc.eu/publications
1.3) The use of the VAMDC standard tool set and procedures will be finalised. Full details available at http://voparis-twiki.obspm.fr/twiki/bin/view/VAMDC/Na1T1Tools
1.4) Use of the Quality Assurance procedures developed in year 3 will be assessed and formalised by a document in P4.

Task 2: External Coordination:

Project representatives will coordinate with relevant external partners, directly and through EC organised events. These partners include those from the technology area (e.g. EGI, Virtual Observatory) and the science area. As examples:

- Europlanet and IDIS at European Planetary Science Congress Madrid Sept 23-28 2012: www.epsc2012.eu/information/general_information.html
- RADAM community (RADAM database) IBCT Nano meeting Madrid November 7-9 201, http://nano-biomed.iff.csic.es/QSMC2012/index.htm

The list of external coordination meetings and notes is kept at http://voparis-twiki.obspm.fr/twiki/bin/view/VAMDC/Na1T2

Task 3: User/ Producer specifications:
User/Producer requirements from end of Period 3 have been included in July 2012 VAMDC standards releases. Some User/ Producer specification activities will certainly occur because of the number of dissemination activities. Those specifications will be considered by the consortium after the completion of the VAMDC funded project.

Task 4: Standards Policies:

This activity will centre on the formation of a working group to access the optimum manner in which to curate standards developed within VAMDC. In particular the curation of the XSAMS standard had continued in Year 3, will continue in Year 4, and might continue after completion of the project. This will be a decicion taken at the board meeting in November 2012 (if possible).

Task 5 Publications Policies:

The VAMDC publication policy is available at: http://voparis-twiki.obspm.fr/twiki/bin/view/VAMDC/VamdcPolPub It will be reviewed and updated as required in P4.

8. WP3 ACTIVITIES DESCRIPTION

WP3 is NA2: Dissemination and Training

8.1 WP3 Objectives

Our objective is to attract new participants to the e-infrastructure, i.e. producers and users of data.
The key objective of the training and dissemination activity is to ensure that principle stakeholders are engaged in the development and implementation of the VAMDC E-infrastructure. This Work package will therefore provide for:
a) Dissemination of VAMDC services at national, EU and non-EU levels
b) Training of producers & users at master, PhD and professional levels (both academic and non-academic users)
Specifically this work package provides for:
1) An annual meeting, which showcases the work of the e-infrastructure, supports networking and scientific communication, and becomes the conference of choice for users and providers of atomic and molecular data
2) Organize topic based scientific workshops, twice a year, to bring together proposers, users and providers of A&M data to discuss data needs and how VAMDC can meet those needs.
3) Arrange teaching tutorials (on-line and face to face) on the VAMDC e-infrastructure

8.2 WP3 Milestones and Deliverables

Milestones

M3.1	CTT meetings	WP3	OU/UNIVIE	Months 10, 22, 34, 42	Minutes of Meetings on Internal Website
M3.2	Review of Conferences/Schools	WP3	OU/UNIVIE	Months 10, 22, 34	Agenda and Training material of workshops on Public Website
M3.3	Review of Regional Tutorials	WP3	OU/UNIVIE	Months 10, 22, 34	Agenda and Training material of workshops on Public Website

Deliverables

D3.1 Dissemination and Training (D&T) Plan (PM 3)
D3.2 Annual D&T Report to be included in report to EU – Year 1 (PM 10)
Annual reports will provide publicly available summaries of the activity of the WP for each project year. Report will include a list of meetings/conferences attended to disseminate

VAMDC to other communities. Annual reports will be for examined by the VAMDC Project Board.
D3.3 VAMDC Level 1 Service Prototype (PM10)
D3.4 VAMDC Annual Project Meeting 1 at OU (4) (PM12)
An annual meeting will be organized at the end of each year of the project
D3.5 Annual D&T Report to be included in report to EU – Year 2 (PM 22)
D3.6 VAMDC Level 2 Service Prototype (PM22)
D3.7 VAMDC Annual Project Meeting 2 at CMSUC (2) (PM24)
D3.8 Annual D&T Report to be included in report to EU – Year 3 (PM 34)
D3.9 VAMDC Level 3 Service prototype (PM34)
D3.10 VAMDC Annual Project Meeting 3 at UNIVIE (5) (PM36)
D3.11 VAMDC Service Release (PM40)
D3.12 VAMDC Final Annual Project Meeting at CNRS (1) (PM42)
D3.13 Final Report of Dissemination and Training to be included in final report to the EU (PM42)
The final report will include a reflexive analysis of the effectiveness of the WP, and proposals for future activities beyond the lifetime of the project. This deliverable will be organized under Task 1.

Annual D&T Plan revisions included in Revised Annual VAMDC Project Plans – Year 1,2,3

8.3 WP3 Tasks Description

Description of work as In Annnexe I

This activity provides the conduit for communicating both the aims and results of the VAMDC e-infrastructure. Dissemination activities are aimed at VAMDC's users, the wider European science community, European industrial stakeholders and policy makers. It is intended to provide an attractive platform to exchange and present results, develop new ideas and to network with other data providers and e-infrastructures. This will be accomplished by organizing a high profile annual meeting, being represented at other appropriate conferences and hosting a series of targeted topical workshops and teaching tutorials.

NA2 therefore consists of four tasks:
1) Coordination
2) Organizing an annual meeting and arranging representation at other relevant meetings
2) Organizing themed scientific workshops
3) Organizing training tutorials

Task 1: Coordination (Chair OU(4), Deputy Chair UW_A(5))

Dissemination activities will be a pre-requisite for all VAMDC's activities. Therefore each NA, SA and JRA will nominate a member to prepare the necessary material for disseminating the aims, objectives and results of these activities. Dissemination across the project will be coordinated by the **Communication and Training Committee (CTC).** The role of the communication and training committee is to propose a list of dissemination and training actions, to organize the general events

linked to this project and to compile records of actions. It will be composed of NA2 partners and chaired by the WP3 leader (OU). The CTC will organise the communication and training section of the VAMDC web-site. This section will hold all records of dissemination and training actions and the CTC will be responsible for updating this section with announcements, news, proceedings, and presentations.

Task 2: Organisation of annual international conference and VAMDC's representation at other relevant meetings

Annual meeting The CTC will organise an annual international conference focused on the VAMDC e-infrastructure, its resources and services. The programme committee will be chaired by OU with UNIVIE as deputy. It will be aimed at users, producers and developers. It will include both academic and non-academic users. This major event will be held each year in a different part of the EU and proceedings will be published (both on line and subject to discussions with scientific publishers in hardcopy – note the UK Institute of Journal of Physics Conference Series have expressed interest in publishing such proceedings).

It is VAMDC's ambition that this meeting become a conference of choice for A&M database providers and for A&M data users (We wish at least one meeting to be combined with the international ICAMDATA conference).The conference will therefore aim to attract a wide audience including many of the key stakeholders we wish to engage with (industrialists, politicians, media). The Conference will also be the location of many of the VAMDC e-infrastructure's necessary management meetings.

Dissemination via EU national and international existing conferences

Yearly the CTC will establish a list of national and international conferences where oral presentations and demonstrations on VAMDC will be valuable. These national and international conferences will usually be conferences of producers and users. AOB will be responsible for collating the information and arranging with other partners VAMDC presence at such meetings. The CTC will accordingly prepare suitable display material (in electronic format and hard copy) for display at such meetings which can be *used by any of the VAMDC partners.*

Organisation of "regional" tutorials

Since the VAMDC e-infrastructure is planned as an international activity and includes international partners the CTC will also prepare a list of tutorials that will be held in non-EU countries in order to spread the knowledge and practice of the VAMDC infrastructure. These tutorials will be organised by our non-EU partners (CPTM, INASAN, IAO, AOB) and will be aimed at people from those "regions".

Task 3: Scientific workshops

Central to the aims of the VAMDC is the formation of an infrastructure that responds to the needs of its user communities since the major impact of the e-infrastructure will be its adopting by scientific and technology communities. Therefore in order to ascertain the requirements of current and potential VAMDC communities and in order to inform the project we will host a series of themed workshops with such communities. These meetings may be stand alone or more usefully as part of the user community's own conference/meetings programme (through arranged VAMDC sessions). It is anticipated that two such meetings would be per year. Administration of these meetings will be arranged by the CTC.

Proposed topics follow those identified in Section 3 (Impact) and include; The astronomical and planetary science Community (with sessions held at the Euro planet RI meeting, SF2A, IAU meetings); The atmospheric science community (in collaboration with one of the HITRAN database meetings); The technology plasma community (at its European meeting ESCAMPIG); The fusion community (as part of the IAEA meetings for ITER itself part of the EURATOM programmed); The Lighting industry (hosted by Philips ltd) and the radiation sciences community (possibly in

collaboration of GEANT meeting and the EU RADAM conference series). Each of the following partners will organize (and when necessary host) one or more such workshops; OU (plasma and radiation sciences); UCL and IAO (atmospheric science and Hitran); CMSUC, AOB, CNRS (astronomy and planetary science); UNIVIE and OU (fusion (with IAEA) and lighting).

Task 4: Training Tutorials

CMSUC and UCL will prepare material for the partners to use in training workshops both in their own countries and internationally. These tutorials will be focused in developing a user's competence to use the e-infrastructure and to interface it into their own operating systems; Short training sessions will be integrated into the Annual meeting. All partners will be required to nominate one member who will be able to 'train' and/or provide support for their national users. Our non EU partners (CPTM, INASAN, IAO) will also prepare a self-studying e-tutorial for VAMDC users who can not attend such tutorials. We (OU,UCL) will also prepare an e-tool for general public/more general stakeholders such that they can take a virtual guided tour of VAMDC including its current status: statistics, content, geography of clients and producers etc.

Task 5: VAMDC Service & Service Prototype Release

CMSUC, UU and CNRS will lead the coordinated release of the annual VAMDC prototype service. This will lead to the final release of the VAMDC service infrastructure. The annual prototypes will be reviewed at the yearly project meetings and available for assessment alongside the VAMDC annual reports.

The prototype services will contain the following functionality:

Level 1: Preliminary VAMDC service with simple data access to the core VAMDC data resources
Level 2: Enhanced interoperable data access to VAMDC data resources, all resources accessible
Level 3: Interoperable VAMDC data access with VAMDC tools available (client side or server side accessible via through workflow enactment engines)
VAMDC Service: Final full service, including access to resources from the wider community (through the SA1 / Task 6 community call).

8.4 WP3 Tasks Description for Period 3

WP3 Leader	N. Mason (OU)	
Task Number	Leader	Other Partners
1 Coordination	N J Mason (OU)	F. Kupka (UNIVIE)
2 Annual meetings	N J Mason (OU)	All partners involved in WP3
3 Scientific Workshops	N J Mason (OU)	All partners involved in WP3
4 Training Tutorials	N Walton (CMSUC)	UCL; CPTM, INASAN, IAO
5 VAMDC Service	N Walton (CMSUC)	UU - CNRS

VAMDC
Period 4 WP3 NA2 Dissemination plan

Period: 01/07/2012 – 31/12/2012
WorkPackage: Working Group 3
WorkPackage Leader and co-Leader: OU (N J Mason) and UNIVIE (F Kupka)

Participants in the WorkPackage: CNRS, CMSUC, UCL, OU, UNIVIE, UU, KOLN, AOB, IAO, IVIC, INASAN

Part 1

Objectives and details for each task in Period 4

This activity provides the conduit for communicating both the aims and results of the whole VAMDC e-infrastructure. Dissemination activities are aimed at VAMDC's users, the wider European science community, European industrial stakeholders and policy makers. It is intended to provide an attractive platform to exchange and present results, develop new ideas and to network with other data providers and e-infrastructures. This is to be accomplished by organizing a high profile annual meeting, being represented at other appropriate conferences and hosting a series of targeted topical workshops and teaching tutorials.

Task 1: Coordination Dissemination across the project is coordinated by the Communication and Training Committee (CTC) whose role is to propose a list of dissemination and training actions, to organize the general events linked to this project and to compile records of actions. It is composed of NA2 partners and chaired by the WP3 leader (OU), the CTC has been established and is responsible for the communication and training section of the VAMDC web-site.

The CTC website holds all records of dissemination and training actions and the CTC will be responsible for updating this section with announcements, news, proceedings, and presentations. From 2011 the CTC produces a newsletter ((editors F. Kupka, T. Rank-Lueftinger of Vienna node).

Nigel J Mason (Chair, workshops)
Claudio Mendoza (Regional workshops)
Friedrich Kupka (Vice-Chair) (Host 3rd annual meeting)
Nicholas Walton and Guy Rixon (VAMDC service and prototype release, Host 2nd annual meeting)
N. Piskunov (user tutorialsand Prototype release)
M.S. Dimitrijevic (Regional workshops)
T.A.Ryabchikova (Regional workshops)
K Benson (tutorials)
ML Dubernet (Communication)

Task 2: Organisation of annual international conference and VAMDC's representation at other relevant meetings

The final VAMDC Annual meting is Scheduled for Paris on 14th to 16th November 2012.

Members of the CTC and other project members will continue to attend both national and international conferences where they made oral presentations and demonstrations on VAMDC.

* HITRAN Meeting at Reims, September 2012-07-24
* Spectroscopy meeting in Prague, September 2012-07-24
* Joint IAEA-NFRI Technical Meeting on Data Evaluation for Atomic, Molecular and Plasma-Material Interaction Processes in Fusion, Sept 4-7, 2012
* IAU meeting in Beijing, Invited talk at Sp15 session, August 2012

Task 3: Scientific workshops
A scientific workshop is organised by VAMDC/NIST after the ICAMDATA Conference at NIST, 5th October 2012. The objective is to present VAMDC to the USA community and start collaboration that will be pursued with the SUP@VAMDC project.

Task 4: Training Tutorials

The training material at http://vamdc.eu/usersupport includes documents, snapshots, videos to help using the portal and using the Taverna workflows. Some other tutorials help users to use the GRID or to register a service.
In P4 a more complete FAQ for the VAMDC consortium will be provided.
A Regional Tutorial is organized in Russia combined with High Rus 2012 meeting (Russia, July 2012) - http://voparis-twiki.obspm.fr/twiki/bin/view/VAMDC/RussiaTut

Task 5 VAMDC Service & Service Release. CMSUC, UU, CNRS will lead the coordinated release of the Final Level VAMDC service that should be available at the Final Project meeting in November 2011. This final Release will be based on the standards released in July 2012 (r12.07) followed by upgrades of all software and tools. The Final Release will in addition to the usual release propose a working model for the VAMDC consortium outside the scope of the funded VAMDC project (WP1 activities: Frist draft for statutes, CONSORTIUM website for long term sustainability, Organise Consortium in a sustainable mode with different boards and "Teams")

9. WP4 ACTIVITIES DESCRIPTION

WP4 is SA 1: Infrastructure Deployment

9.1 WP4 Objectives

To provide Data Access via a homogeneous environment where the distributed user community can retrieve AM resources through a standard interfaces. This involves

implementing standard outputs for the AM databases, finding the resources by interrogating registries, using querying and pipeline tools.

WP4 leader is CMSUC (2)

9.2 WP4 Milestones and Deliverables

Milestones

M4.1	Deployment of Data Access	WP4	CMSUC	Months 10, 22, 34, 42	
M4.2	Deployment of Infrastructure	WP4	CMSUC	Months 10, 22, 34, 42	
M4.3	Evaluation of Available Software	WP4	CMSUC	Months 10, 22, 34, 42	Testing by Users Panels of prototype software
M4.4	Open Call for New Resources	WP4	CMSUC	Month 24	Text of Call Available on Public Website

Deliverables

D4.1 Infrastructure Deployment Plan (PM 3)
D4.2 Infrastructure Deployment Report to be included in report to the EU – Year 1 (PM 10)
D4.3 Infrastructure Deployment Report to be included in report to the EU – Year 2 (PM 22)
D4.4 Infrastructure Deployment Report to be included in report to the EU – Year 3 (PM 34)
D4.5 Final Report of Service Deployment to be included in final report to the commission (PM41)

Annual Infrastructure Deployment Plan revisions included in Revised Annual VAMDC Project Plans – Year 1,2,3

9.3 WP4 Tasks Description

Description of work as in Annexe I (possibly broken down into tasks)

The VAMDC infrastructure will be designed as an homogeneous environment where any AM producer or "community" users will be able respectively to publish their AM data or to retrieve and manipulate those data. The AM producers range from atomic physics to molecular physics handling complex molecules, solids and surfaces. The communities encompass astrophysics users from very different areas: stellar, galaxies, interstellar medium (those application areas are handled by the IVOA and Euro-VO projects), planetology and small bodies of the solar system (EuroPlanet Project), solar-earth system (EGSO and SPASE projects), atmospheric users (studies of earth atmosphere), environmental and combustion chemistry, fusion physics and industrial applications. The IVOA community is the most advanced project as far as building an interoperable infrastructure for astronomy and we will

use some of their achievements, i.e. standards, tools, services when those are relevant to the project.

Task 1: Standard access to AM data (lead by CMSUC(2), all SA1 partners)
We will provide standard service interfaces to AM databases. JRA1 will define these interfaces and this task is to implement them on the existing databases held by each VAMDC node. Participants at all nodes will be involved.

Task 2: Standard access to numerical codes (lead by CNRS(1), with partners (5), (6))
Where a VAMDC node has a useful numerical code for AM analysis or modeling, we will make it available as a service. These services will provide a uniform way of launching the codes and recovering their outputs. This task is complementary to the grid adaptation of code in SA2: the codes run on resources contributed by the node owners and need not be made portable to an external grid.

Task 3: Implementing registries (lead by UCL(3) with partners (1), (6), (12))
The registry facilities defined by JRA1, and implemented with the software produced by JRA2, must be populated with information. This task gathers the meta data for the services at each node and adds it to the registries.

Task 4: Augmenting VODesktop (lead by UCL(3))
The EuroVO's VODesktop is a generic interface for the virtual observatory. It allows access to all VObs data, plus launching numerical codes and sharing of data between desktop visualization tools. We will adapt A-M desktop applications to work with VODesktop and the underlying VObs applications environment.

Task 5: Publishing desktop software (lead by CNRS(1), with partner (5))
We will collect and make available to end users chosen A-M applications for the desktop.

Task 6: Expansion of the infrastructure (co-lead by CNRS(1) and CMSUC(2) with (5), (6))
Once the core infrastructure is deployed, new resources will be included in the infrastructure via an open call to producers of AM resources. Those new resources will need to be deployed and tested within the infrastructure. Task 6 will be devoted to the technical inclusion and testing of these new AM resources. The choice of these resources will be made in NA1 by the VPB by the EPT.

9.4 WP4 Tasks Description for Period 3

WP4 Leader	G. Rixon (CMSUC)	
Task Number	Leader	Other Partners
1	G. Rixon (CMSUC)	All partners
2	C. Mendoza (CTPM)	CMSUC (2), CNRS (1), UU (6) + others TBD
3	K. Benson (UCL)	CNRS (1), UU (6), RFNC-VNIITF (12)
4	A. Akram (CMSUC)	UU(6)
5	G. Rixon (CMSUC)	All other partners
6	TBD (CNRS) – not cycle 2	TBD

VAMDC
Period 4 WP4 SA1 Deployment plan

Period: 01/07/2012 – 31/12/2012
WorkPackage: WP4 SA1 Deployment
WorkPackage Leader and co-Leader: G. Rixon and A. Shih
Participants in the WorkPackage: CNRS, CMSUC, UCL, OU, UNIVIE, UU, KOLN, INAF, RFNC-VNIITF, IAO, IVIC

Part 1

Objectives and details for each task in Period 4

Task 1: access to data

1.1 We will complete the installation of VAMDC-TAP services for databases provided by VAMDC partners and by external databases. Update to latest release of standards r12.07.

1.2 Establish production services for solid-spectroscopy data (Task delayed to P4)

Task 2: access to codes

2.1 Provide a wrapper for using the well-known[3] 'Cloudy' code with VAMDC data. This serves as a worked example of codes acting as clients of VAMDC services.

No further work on running codes as web services.

Task 3: registry

Update registry with new standards release.

Task 4: user interfaces

Upgrade web portal : http://portal.vamdc.eu to latest release of standards r12.07 and to new portal species database.

Task 5: distribution of desktop software

Acquire and make available the following software with latest upgrades

5.1 format converters to connect to established tools & codes;
5.2 XSAMS-merging utility;
5.3 plotting and visualization software;
5.4 data-mining software from WP8.
Libraires in JAVA will be provided by M Doronin in order to facilitate implementation of VAMDC standards in user tools

Task 6: expansion of the network

With the databases provided by VAMDC partners well established, we can begin to establish VAMDC standards at sites outside the VAMDC project.
6.1 Identify external databases that can be added by the end of period 4.
6.2 Liaise with external data-providers to determine what support they need for deployment.
6.3 Assist the external data-providers in making prototype data-services.

It was not intended that data-services for all external data-providers be completed during period 3. This work will naturally continue through period 4 and after the close of the

[3] Cloudy is a spectral-synthesis code for modelling the interstellar medium: see http://www.nublado.org/ .

10. WP5 ACTIVITIES DESCRIPTION

WP5 is SA 2: Support to the Infrastructure

10.1 WP5 Objectives

SA2 provides support for the delivery of the VAMDC e-infrastructure to users and producers (SA1) . SA2 will be responsible for the maintenance and monitoring of the core infrastructure;
Implementing Grid technology within the VAMDC: providing direct support to the users of the scientific data infrastructure as they enter the VAMDC portal and for the preservation and storage of digital data.

WP5 Leader is CNRS(1)

10.2 WP5 Milestones and Deliverables

Milestones

M5.1	Deployment of Monitoring	WP5	CNRS	Months 10, 22, 34, 42	
M5.2	Deployment of Help Desk	WP5	CNRS	Months 10, 22, 34, 42	
M5.3	Deployment of Grid Operation	WP5	CNRS	Months 10, 22, 34, 42	Testing by Users Panels of prototype software
M5.4	Deployment of Preservation and QA	WP5	CNRS	Months 10, 22, 34, 42	Text of Call Available on Public Website

Deliverables

D5.1 Service Support Plan (PM 3)
D5.2 Infrastructure Support Report to be included in report to the EU– Year 1 (PM 10)
D5.3 Infrastructure Support Report to be included in report to the EU – Year 2 (PM 22)
D5.4 Infrastructure Support Report to be included in report to the EU – Year 3 (PM 34)
D5.5 Final Report of Service Support to be included in final report to the commission (PM41)
Annual Service Support Plan revisions included in Revised Annual VAMDC Project Plans – Year 1,2,3

10.3 WP5 Tasks Description

Description of work As in Annexe I(possibly broken down into tasks)
Task1: Maintenance and monitoring of the core infrastructure (CNRS(1), all SA2 partners)

The core infrastructure will include partners who maintain existing databases and services. All the actors will be in charge of providing access to the databases/services deployed in SA1. The services include accessing the databases via different protocols, access to dictionaries and publishing registries. Task1 involves setting up the quality assurance of the infrastructure activities, service heartbeats and development and use of unit test packages. The monitoring activities will be implemented at VO-Paris Data Centre using the NAGIOS software. We will need to develop plugins specific to the various protocols which will need validation. Monitoring Software implemented at VOPARIS Data Centre will be distributed to regional centres.

Task 2: Grid Operations (CNRS(1))

The infrastructure includes the possibility to use the GRID technology in order to run numerical codes that produce AM data or that use AM data on hardware provided outside VAMDC. This is separate from and complementary to the execution of codes on hardware provided at VAMDC nodes (the latter facility is part of SA1). Task 2 will make selected codes useable on the grid. The work involves:

- making the codes executable on grid nodes, either by making the codes themselves portable or by packaging them in virtual machines;

- providing grid portals where the codes can be invoked and from which the results can be retrieved;

- negotiating access for VAMDC users with grid providers, especially with EGEE

Task 3: Support to "users" of the infrastructure (UCL(3) with partners (2), (12), (15))

"Users" of the infrastructure, meaning all people interacting with the infrastructure, will need to have access to information concerning the composition of the infrastructure, the services which are available, the procedures about how to enter the infrastructure, the procedures about how to implement the standards, how to use or adapt the various tools. The support to the "users" will be operated in Task 3 through the provision of on-line support materials, a help desk and a service providers/users forum where people could share best operation practice. We intend to produce a self-studying e-tutorial that can be incorporated in university courses on molecular and atomic physics, astronomy, energy systems, environment (etc). Also we intend to operate an e-tool for general public to take a virtual guided tour of VAMDC: statistics, content, geography of clients and producers, databases locations. Dissemination and Tutorials organized in WP3 will show and teach how to implement and use the infrastructure, will advertise all those tools. Note that the actual generation of the training materials and support events will be organised by WP3 (NA2).

Task 4: Preservation of digital data and resources (CNRS(1))

The Preservation of digital data and resources is one of the key aspect of sustainability. It is the purpose of SA3 to set up a system of preservation through archiving and mirroring. Some nodes will act as repositories: the nodes already supporting such preservation (nodes linked to VALD, CHIANTI, etc..), VOPARIS Data Centre which will act for most of CNRS resources and could be extended to other partners. The first proposed technology will be to create a virtual machine for a certain number of projects who will implement their resources and we will implement synchronisation. This first step of a mirroring site is the simplest approach and will be implemented during the whole project. During Phase 1 we will work at the EPT level in order to follow preservation activities in other areas. We will adjust our preservation policy accordingly in Phase 2.

Task 5: Quality Assurance of data and resources (CMSUC(2), with partners 3, 11, 12, 15)
Another crucial point is the reliability of the data transferred via the various protocols. The database providers are responsible for the entries in their own database. The usual and slow way of accessing data via classical web interface or via ftp obliges the user to understand the structure of the database, to read instructions in order to get the meaning, definition of columns and lines. An interoperable e-infrastructure will remove some of this verification process of the user. Therefore it is indispensable to check that all resources (core and new ones) use the protocols, standards in the best and reliable way. In Task 5 small groups of VAMDC people understanding the protocols/standards and the physics of the retrieved data will test the output of databases in order to check the good use of protocols, whenever there is a new release handling new cases.

10.4 WP5 Tasks Description for Period 3

WP5 Leader	P. Le Sidaner / K. Benson CNRS:UMS / UCL :MSSL	
Task Number	Leader	Other Partners
1	A.Shih (CNRS:UMS)	All
2	J. Bureau (CNRS: LPMAA)	All
3	K. Benson (UCL)	All
4	P. Le Sidaner (CNRS: UMS)	All
5	G. Rixon (CMSUC)	All

VAMDC WP5
Period 4 plan

Period: 01/07/2012 – 31/12/2012
WorkPackage: WP5/SA2 Support to the Infrastructure
WorkPackage Leader and co-Leader: CNRS (P. Le Sidaner),
Participants in the WorkPackage: CNRS, CMSUC, UCL, INAF, ISRAN, RFNC-VNIITF, IAO, INASAN.

Part 1

Objectives and details for each task in Period 4

In Period 4 WP5 will finalize the monitoring and mirroring, improve the user support through Task 3, finalize Q.A. The focus of WP5 is ensure reliability of the infrastructure.

Task 1 Maintenance and monitoring of the core infrastructure :
Continuation through P4
1.1 Using the monitoring system already in place:

- Install new services when they become available, using registry information.
- Finalize the documentation from the question coming from data provider.
- Install monitoring of service compliance using the software package of validation and writing a dedicate plugin but without mailing alert to the provider.

1.2 Promote statistics on reliability of services

Task 2 Grid Operations
Continuation through P4
2.1 Assist user getting EGI certificate and access facilities to the VOrg A&A and the node Observatoire de Paris
2.2 Assist user in launching code to the grid

Task 3 Support to "users" of the infrastructure

3.1 Maintain and help people to use the Help Desk install in period 2 using Request Tracker (RT). Follow the status of problem until the solution.

3.2 RT keeps a permanent record of issues raised. From this, a list of frequently-asked questions has started to be compiled during periods 2 and 3. The FAQ must be made more complete and general in P4.

3.3 Finalise Display of statistics and locations of VAMDC nodes

Task 4 Preservation of digital data and resources

4.1 Finalise replication of all VAMDCdatabases that are VAMDC registered

4.2 Write a documentation on preservation policy at VO Paris Data Centre for VAMDC data and services.

Task 5 Quality Assurance of data and resources
Formalise through a document the aspects of Quality Assurance of data and Resources. This document will not be final in P4 and will continue to be improved after completion of VAMDC support.

11. WP6 ACTIVITIES DESCRIPTION

WP6 is JRA1: Interoperability

11.1 WP6 Objectives

Define all standards necessary to build an interoperable infrastructure
WP6 Leader is KOLN with co-leader CNRS

11.2 WP6 Milestones and Deliverables

Milestones

M6.1	Technical Meetings	WP6	UU	Months 5,10, 16, 22, 28, 34, 40, 42	Minutes. Presentations on internal Website
M6.2	Evaluation of standards releases	WP6	UU	Months 10, 22, 34	

Deliverables

D6.1 Interoperability Plan (PM 3)
D6.2 Interoperability Report to be included in report to the EU – Year 1 (PM 10)
D6.3 Interoperability Report to be included in report to the EU – Year 2 (PM 22)
D6.4 Interoperability Report to be included in report to the EU – Year 3 (PM 34)
D6.5 Final Report of Interoperability to be included in final report to the commission (PM41)
Annual Interoperability Plan revisions included in Revised Annual VAMDC Project Plans – Year 1,2,3

11.3 WP6 Tasks Description

Description of work as in Annexe I (possibly broken down into tasks)

Task 1: Data Models and XML Schema (lead by CNRS(1), all JRA1 partners)
The current data models and XML schema are a description of atomic and molecular linelists for use in an astrophysical context and a description of atomic and molecular elementary processes. The documents have been designed by a small number of people, those documents are still in draft mode, do not cover all application fields and have not been discussed extensively among users and producers. These preliminary versions will be completed and extended in order to cover a wider range of species, a wider range of processes and will include the effect of the environment. For now we identify the following extensions:

- inclusion of solid, surface spectroscopy for interstellar medium and planetology
- inclusion of larger molecules such as PAH
- description of atomic and molecular line shapes arising from different sources

In connection to the user & producer board of NA2, more extensions will be considered if necessary. Through the Standards and Processes Committee all standards will be connected to International efforts of standardisation.

Task 2: Dictionaries (lead by QUB(9), all JRA1 partners)
In order to uniquely identify resources we will need to define and build dictionaries both general and specific to applications. At present we identify the following dictionaries:
- single identification of databases and services
- list of conventions (link to IUAPAC and other convention bodies)
- list of names of species (in relation with other fields such as chemistry)
- list of processes and coding of processes
- list of quantum numbers

Other lists will be identified during the course of the project in relation with activities in WP2 (NA2)

Task 3: Access Protocols and Query/Retrieval Languages (lead by UU(6), all JRA1 partners)
We will define protocols retrieving different types of resources: numerical data, libraries, documentation, references. Those protocols will cover asynchronous queries and the retrieval of huge sets of data. In a second step we will design a general query language allowing to access and retrieve any atomic and molecular data.

Task 4: Registries (lead by CNRS(1) with partner 6)
Registries provide a mechanism with which applications can discover and select resources--e.g. data and services--that are relevant for a particular scientific problem. We will start from the registries defined in the IVOA and see how to adapt and/or extend the documents to our own purpose. In particular we wish to implement ways of finding resources at various levels of granularity.

Task 5: Other Documents (lead by KOLN(7), all JRA1 partners)
Other basic definitions/standardisations might be necessary in order to find/identify resources and documents produced by the IVOA will be assessed in order to keep/adapt to our own needs.

11.4 WP6 Tasks Description for Period 3

WP6 Leader (co)	M.L. Dubernet (CNRS: LPMAA)/S. Schlemmer (KOLN)	
Task Number	Leader	Other Partners
1	M.L. Dubernet/L. Nenadovic (CNRS:LPMAA)	All partners
2	K. Smith (QUB)	All partners
3	G. Rixon (CMSUC)	UU (6), CNRS (1)
4	K. Benson (UCL)	UU (6), CNRS (1)
5	S. Schlemmer (KOLN)	All partners

VAMDC
P4 WP6 JRA1 Interoperability plan

Period: 01/12/2012 – 31/12/2012
WorkPackage: WP6 Interoperability
WorkPackage Leader and co-Leader: M.L. Dubernet (CNRS: LPMAA/LUTH) / S. Schlemmer (KOLN)
Participants in the WorkPackage: All Partners

Part 1

Objectives and details for each task in P4

Period 4 is the release of standards r12.07 in July 2012 with version VAMDC-XSAMS v1.0. Release of all documents under M. Doronin supervision as in P2 and P3

Task 1: Data Models and VAMDC-XML schema Documents (CNRS/LPMAA/LUTH)

1.1 VAMDC-XSAMS version 1.0 to be released in July 2012
- Small changes to the schema compared to version v0.3
- One big change = the VAMDCRegistryID identifier is added In July 2012

1.2 Schema for Solid Spectroscopy (CNRS/LPG)
The Solid Spectroscopy Data Model (SSDM) will continue its development and structure and will be released to its new version in P4.

Task 2: Dictionaries Documents (QUB)
The list below will be updated in the r12.07 release
2.1 List of Species (QUB, CNRS/LPMAA and partners)
2.2 List of Processes
2.3 List of Conventions
2.4 List of Quantum Numbers (UCL)
2.4 List of cases (UCL)
Documents available on http://www.vamdc.eu/documents/standards/

Note = Schema for the species database is re-designed by Ken Smith and made available in July 2012 for re-coding of portal (this database supports portal query).

Task 3: Access Protocols and Query/Retrieval Language Documents (CMSUC)
3.1 VAMDC-TAP (previous name XSAMS-TAP)
leader of document:
Upgrade with latest release if necessary 12.07.
Document available on http://www.vamdc.eu/documents/standards/
3.2 SQL based Query
leader of Document: G. Rixon
Update of SQL Query document if necessary with latest release. Document available on http://www.vamdc.eu/documents/standards/
Task 4: Registry Documents (UCL/MSSL)
4.1 Registration format for VAMDC-TAP
leader of document: K. Benson
Period 4 content: Upgrade of Registration document if necessary (http://www.vamdc.eu/documents/standards/registry/index.html).

12. WP7 ACTIVITIES DESCRIPTION

WP7 is JRA2: Publishing Tools

12.1 WP7 Objectives

Provide generic tools partly using the standards developed in JRA1 in order to help producers of A&M data to publish their sets into the VAMDC infrastructure.

WP7 Leader is UU(6)

12.2 WP7 Milestones and Deliverables

Milestones

M7.1	Technical Meetings	WP7	UU	Months 5,10, 16, 22, 28, 34, 40, 42	Minutes. Presentations on internal Website
M7.2	Evaluation of softwares	WP7	UU	Months 10, 22, 34	

Deliverables

D7.1 Publishing Tools Plan (PM 3)
D7.2 Publishing Tools Report to be included in report to the EU – Year 1 (PM 10)
D7.3 Publishing Tools Report to be included in report to the EU – Year 2 (PM 22)
D7.4 Publishing Tools Report to be included in report to the EU – Year 3 (PM 34)
D7.5 Final Report of Publishing Tools to be included in final report to the commission (PM41)

Annual Publishing Tools Plan revisions included in Revised Annual VAMDC Project Plans – Year 1,2,3

12.3 WP7 Tasks Description

Description of work as in annexe I (possibly broken down into tasks)

This WP will develop software that will be deployed within the VAMDC infrastructure. Some of these software will be associated to the standards developed in JRA1. The general software made available to the community will be accessible via the VAMDC technical web-site. Two alternative variants are being developed. The first one implies the design of software for the process of existing information resources transformation into standardized (tasks 2-4) forms set in JRA1. The second variant implies the design of a typical information system accessible via the Internet (task 5) and having an integrated tool developed in tasks 1-3. In this variant automatic generation of semantic metadata for uploaded information resources is realized, taking into account the restrictions imposed by formal models of molecules and atoms. All software will be documented.

During the course of the project additional software might be. The EPT will decide upon the new developments to be carried out by the partners involved in WP8.

The following software are aimed at enhancing scientific research through allowing easy and secure publication of A&M resources within the VAMDC infrastructure:

Task 1: Create/adapt tools to go from an DM/XML schema to a full database deployment

with generation of automatic administrative interface. ***(lead by CNRS(1) with (6))***
Task 2: Create/adapt tools to build registries from the content of databases ***(lead by CNRS(1) with (6))***
Task 3: Create/adapt interfaces to easily update dictionaries ***(lead by UU(6) with (1))***
Task 4: Develop software libraries using various languages allowing to easily generate output of already existing resources in standardized format ***(lead by RFNC-VNIIT(12) with(1), (6), (8))***
Task 5: Create tools to upload, modify, retrieve, compare, visualize and publish information in molecular spectroscopy ***(lead by IAO(13))***

12.4 WP7 Tasks Description for Period 3

WP7 Leader (co)		
Task Number	Leader	Other Partners
1	N. Piskunov (UU)	All others
2	Regandell (UU)	All others
3	N. Piskunov (UU)	All others
4	P. Loboda (RFNC-VNIIT)	All others
5	A. Fazlief (IAO)	All others

VAMDC
Period 4 WP7 JRA2 Plan

Period: 01/07/2012 – 31/12/2012
WorkPackage: 7 JRA2: Publishing Tools
WorkPackage Leader and co-Leader: UU (N. Piskunov and U. Heiter)
Participants in the WorkPackage: CNRS, UU, INAF, RFNC-VNIITF, IAO

Part 1

Objectives and details for each task in Period 4

This activity develops tools for adding new data to existing VAMDC databases and adding new databases to VAMDC. WP7 is naturally connected to other JRAs and SAs through the development of the Node Software and XSAMS. In addition, WP7 contributes to the work of the EPT and WP2.

Continuation and Wrap up of all these activities, with final release of the infrastructure (updates of all software/dictionary with latest release of VAMDC-XSAMS version 1.0)

Task 1: Node Software development − generation of a new VAMDC node

1.1. Assisting the deployment of the VSS2 across the participating databases through support of the Django-based Node Software.
1.2. Improving on-line documentation for the deployment procedures and tools.

1.3. Finishing documentation on publishing new data in VAMDC.
1.4. Documenting experience from data providers and arising issues encountered during deployment.
1.5. Participating in tutorials for data producers and participating databases.

Task 2: Registry population/updating from participating databases

2.1. The evolution of the User Interface will probably require an extension of the information stored in the registry. The corresponding tools will be provided as part of the final Node Software release.

Task 3: Dictionaries generation and updates
We will complete the documentation of the Node Software dictionaries. Currently the atomic and molecular parts are fully consistent with the VAMDC-XSAMS standard and the atomic part is fully documented.
3.1. Completing the documentation for the molecular part
3.2. Complete the dictionary for solids

Task 4: Data Import Tool

4.1. RFNC-VNIITF will complete the work on the tool for importing VAMDC-related bibliographic data as well as XSAMS-formatted data.

4.2 INAF will continue improvement of its tool on ingestion of quantum chemistry calculations for PAH

Task 5 Automatic Data Verification Tool

5.1. We will complete the testing of the Automatic Verification Tool developed at IAO.
5.2. The Tool will be incorporated into the final release of the Node Software.

13. WP8 ACTIVITIES DESCRIPTION

WP8 is JRA3: New mining and Integration Tools

13.1 WP8 Objectives

This JRA will develop extensions to the baseline infrastructure. Key objectives are the design of advanced data mining tools and the design of cross-matching and cross-federating tools, providing sophisticated integrated science services aimed at maximising the scientific utility to the end user community of the VAMDC services.

WP8 Leader is UCL(3)

13.2 WP8 Milestones and Deliverables

Milestones

M8.1	Technical Meetings	WP8	UU	Months 5,10, 16, 22, 28, 34, 40, 42	Minutes. Presentations on internal Website
M8.2	Evaluation of softwares	WP8	UU	Months 10, 22, 34	

Deliverables

D8.1 Mining and Integration Tools Plan (PM 3)
D8.2 Mining and Integration Tools Report to be included in report to the EU – Year 1 (PM 10)
D8.3 Mining and Integration Tools Report to be included in report to the EU – Year 2 (PM 22)
D8.4 Mining and Integration Tools Report to be included in report to the EU – Year 3 (PM 34)
D8.5 Final Report of Mining and Integration Tools to be included in final report to the commission (PM41)
Annual Mining & Integration Plan revisions included in Revised Annual VAMDC Project Plans – Year 1,2,3

13.3 WP8 Tasks Description

Description of work as in Annexe I (possibly broken down into tasks)

Through the activities of JRA1 and JRA2, the AM resources will be searchable and will provide information in a standardised way. The following step is to build the query protocols that will access those published AM data and then to design software that will handle and process those data.

Task1: Registry Queries (lead by CNRS(1) with (12))
We will need to use protocols to query the registries at a fine level of granularity. Indeed we don't wish to only find resources having implemented a type of service such as SSAP or TAP, but rather be able to select resources according to their content through key words. The purpose of Task 1 is to implement those protocols.

Task 2: Tools for Manipulation of Data (lead by KOLN(7) with (1))
Our queries will return data organised according to schemas defined in JRA1. Those schemas will be quite complex because they will reproduce all the scientific concept attached to the data. Therefore the handling of the XML files will be complex and will require specific tools. For now we identify too main generic tools: one performing cross-matching of data and one performing cross-federation of data. These tools are particularly difficult because they require to compare the content of many fields in the schema. Those generic tools will be made available for download in SA1 to the end users and developers. Support to adapt those tools to

specific applications will be provided in SA2. We plan to provide libraries to allow users to develop their own applications

Task 3: VAMDC advanced data mining services (lead by UCL(3))

With the deployment of a vast range of high value data services through the standard VAMDC infrastructure, this task will investigate optimal strategies to best mine these AM data resources to both advance the creation of new AM fundamental data, and by providing stream lined automated access to appropriate AM data targeted at specific user groups (for the astronomy community benefiting from the availability of high energy data from satellites such as Swift, XMM, Chandra, who require specific atomic data for high excitation species of elements such as iron). This task would investigate the provision of application services wrapping complex work flows combining AM data access, manipulation, and integration into user processing chains – e.g. in solar physics, astro-biology/ chemistry and so forth.

13.4 WP8 Tasks Description for Period 4

WP8 Leader (co)		
Task Number	Leader	Other Partners
1	Closed	
2	L. Nenadovic (CNRS/LPMAA)	CNRS/LPG
3	K. Benson (UCL/MSSL)	UCL, CNRS/LPG

VAMDC

Period four WP8 JRA3 New Mining and Integration Tools

Period: 01/07/2012 – 31/12/2012
WorkPackage: WP8 New Mining and Integration Tools
WorkPackage Leader and co-Leader: Jonathan Tennyson (UCL), Dugan Witherick (UCL)
Participants in the WorkPackage: UCL, CNRS, KOELN

Part 1

Objectives and details for each task in P4

3 Task 1: Registry Queries – task CLOSED – IVOA Standards

Task 2: Tools for the Manipulation of Data (leader: CNRS)

T2.1 SPECTCOL Tool is released. If more work is necessary because of user requirements and requests for more features (as has been done in P3), this will be part of WP4-Task 5 (desktop software)

T2.2 During period two, work began on adapting the GhoSST service to make it compatible with the VAMDC infrastructure; in period three, this development has

been delayed. In P4 we expect some solid spectroscopic data to be visible from VAMDC portal.

Solid-Gas data inter-comparison
o Proposition of a (limited) extension of the 'solid part' of XSAMS data model (Matter+constituent family/origin, species compound+state, adsorption…) in order to extend the data request ability for a wider range of solids/spectra in GhoSST.
o Test the query parameters allowing to retrieve spectra or band list data of same molecule/ion in same spectral range for both gas and molecular solid

Task 3: VAMDC Advanced Data Mining Services (leader: UCL)
In period three, the prototype plugin to the Taverna workflow engine has been developed and a tutorial is available on http://vamdc.eu/usersupport.

In P4 demonstration of the different use cases will be made and some more examples will be provided.

14. TOTAL EFFORT DISTRIBUTION DURING THE 42 MONTHS

Project number (acronym) : VAMDC - **239108**

First line is EC requested staff months of effort whilst the second line for each partner in () is number of contributed staff months of effort.

Partner number	Short Name	WP1 MGT	WP2 NA1	WP3 NA2	WP4 SA1	WP5 SA2	WP6 JRA1	WP7 JRA2	WP8 JRA3	Total PM Per Beneficiary
1	CNRS	15 (15)	6 (6)	0 (6)	33 (33)	27 (27)	18 (18)	6 (6)	6 (6)	111 (117)
2	CMSUC	0 (2)	3 (6)	9 (0)	18 (18)	18 (18)	0 (0)	0 (0)	0 (0)	48 (44)
3	UCL	0 (2)	3 (6)	3 (0)	18 (18)	12 (12)	0 (0)	0 (0)	18 (18)	54 (56)
4	OU	0 (2)	0 (2)	9 (9)	6 (6)	0 (0)	0 (0)	0 (0)	0 (0)	15 (19)
5	UNIVIE	0 (2)	0 (0)	8 (6)	3 (3)	0 (0)	0 (0)	0 (0)	0 (0)	11 (11)
6	UU	0 (2)	3 (3)	6 (2)	3 (3)	0 (0)	9 (9)	6 (6)	0 (0)	27 (25)
7	KOLN	0 (2)	3 (3)	1 (0)	4 (4)	0 (0)	5 (5)	0 (0)	8 (10)	21 (24)
8	INAF-OAC	0 (2)	0 (0)	0 (0)	9 (2)	3 (0)	3 (2)	8 (4)	0 (0)	23 (10)
9	QUB	0 (2)	3 (3)	0 (0)	0 (0)	0 (0)	6 (6)	0 (0)	0 (0)	9 (11)
10	AOB	0 (2)	0 (0)	6 (6)	0 (0)	0 (0)	3 (3)	0 (0)	0 (0)	9 (11)
11	ISRAN	0 (2)	0 (0)	0 (0)	0 (0)	9 (9)	0 (0)	0 (0)	0 (0)	9 (11)
12	RFNC-VNIITF	0 (2)	0 (0)	0 (0)	5 (0)	0 (5)	1 (2)	3 (2)	3 (3)	12 (14)
13	IAO	0 (2)	0 (0)	3 (3)	6 (3)	3 (3)	0 (0)	12 (12)	0 (0)	24 (23)
14	CPTM	0 (2)	3 (3)	8 (3)	18 (6)	0 (0)	3 (3)	0 (0)	0 (0)	32 (17)
15	INASAN	0 (2)	3 (3)	3 (0)	0 (0)	6 (6)	0 (0)	0 (0)	0 (0)	12 (11)
Total: EU+ Contributed	Staff months	58	62	91	219	158	96	65	72	821

Table of MP per WP during Period 1, Period 2, Period 3, 1+2+3

PLAN-REQ: Requested MP to EU as in Annexe I for 42 months
PLAN-C: Contributed MP from Nodes as in Annexe I for 42 months
PLAN-T: Total Effort as in Annexe I for 42 months
%-REQ: % of Requested MP to EU
%-C: % of Contributed MP from Nodes
%-TOTAL: % of Total Effort

	RTD	COORD	MGT	OTHER	TOTAL
PLAN-REQ	118,00	83,00	15,00	201,00	417,00
PLAN-C	115,00	70,00	43,00	176,00	404,00
PLAN-T	233,00	153,00	58,00	377,00	821,00
%-REQ-P1	25,01	28,90	11,13	24,48	25,03
%-C-P1	32,18	39,18	26,80	21,84	28,32
%TOTAL-P1	28,55	33,60	22,75	23,24	26,65
%-REQ-P2	53,03	35,54	36,33	40,45	42,89
%-C-P2	30,88	20,66	23,37	28,07	27,09
%TOTAL-P2	42,10	28,73	26,72	34,67	35,11
%-REQ-P1+P2	78,05	64,45	47,47	64,93	67,92
%-C-P1+P2	63,07	59,84	50,16	49,91	55,40
%TOTAL-P1+P2	70,65	62,34	49,47	57,92	61,76
%-REQ-P3	26,33	32,32	36,93	33,50	31,36
%-C-P3	28,34	22,58	14,16	23,24	23,61
%TOTAL-P3	27,32	27,86	20,05	28,71	27,55
%-REQ-P1,2,3	104,38	96,76	84,40	98,42	99,27
%-C-P1,2,3	91,40	82,41	64,33	73,15	79,01
%TOTAL-P1,2,3	97,97	90,20	69,52	86,62	89,30

Table of Requested MP per WP per Beneficiary during Period 3

Note: NA means Non Applicable – When MP is Requested though not planned in Annexe I, number of PM is indicated

	WP1	WP2	WP3	COORD	WP4	WP5	OTHERS	WP6	WP7	WP8	RTD	TOTAL	
CNRS	36,93	6,00	0,66PM	17,00	48,24	21,81	36,35	46,44	4,00	7,17	30,10	33,69	CNRS
CMSUC	NA	120,00	22,22	46,67	50,00	5,56	27,78	NA	NA	NA	NA	32,50	CMSUC
UCL	NA	12,00	95,00	53,50	81,67	37,67	64,07	3,04PM	NA	11,89	28,78	51,13	UCL
OU	NA	NA	8,33	8,33	0,00	NA	0,00	NA	NA	NA	NA	5,00	OU
UNIVIE	NA	NA	54,75	54,75	0,00	NA	7,67	NA	NA	NA	NA	41,91	UNIVIE
UU	NA	0,00	20,46	13,64	28,89	NA	28,89	23,47	17,25	NA	20,98	19,41	UU
KOELN	NA	35,00	0,00	26,25	0,00	NA	0,00	0,00	NA	0,00	0,00	5,00	KOELN
INAF	NA	NA	NA	NA	71,33	0,00	53,50	49,33	81,88	NA	73,00	62,83	INAF
QUB	NA	16,33	NA	16,33	NA	NA	NA	16,33	NA	NA	16,33	16,33	QUB
AOB	NA	NA	8,00	8,00	NA	NA	NA	13,33	NA	NA	13,33	19,44	AOB
ISRAN	NA	NA	NA	NA	NA	31,11	31,11	NA	NA	NA	NA	31,11	ISRAN
RFNC-VNIITF	NA	NA	NA	NA	12,00	NA	12,00	90,00	46,67	0,00	32,86	24,17	RFNC-VNIITF
IAO	NA	NA	0,00	0,00	41,67	0,00	27,78	NA	16,67	NA	16,67	18,75	IAO
CPTM	NA	0,00	65,13	58,64	6,33	NA	6,33	0,00	NA	NA	0,00	23,72	CPTM
INASAN	NA	27,33	45,00	36,17	NA	14,50	14,50	NA	NA	NA	NA	25,33	INASAN
	36,93	29,33	33,76	32,32	42,29	19,63	33,50	35,98	32,07	7,34	26,33	31,36	

Table of Contributed Effort per WP per Beneficiary during Period 3

Note: NA means Non Applicable and CONTR means "Contributed though not planned"

	WP1	WP2	WP3	coord	WP4	WP5	OTHERS	WP6	WP7	WP8	RTD	TOTAL	
CNRS	7,40	6,83	10,17	8,50	61,76	6,44	36,87	63,61	0,00	16,67	41,50	31,37	CNRS
CMSUC	25,00	8,33	NA	8,33	16,67	16,67	16,67	NA	NA	NA	NA	15,91	CMSUC
UCL	0,00	14,33	CONTR	16,67	0,00	0,58	0,23	CONTR	NA	0,33	0,33	2,02	UCL
OU	0,00	0,00	0,00	0,00	0,00	NA	0,00	NA	NA	NA	NA	0,00	OU
UNIVIE	33,00	NA	51,50	51,50	0,00	0,00	0,00	NA	NA	NA	NA	34,09	UNIVIE
UU	0,00	35,31	98,70	60,66	0,00	NA	0,00	0,00	0,00	NA	0,00	12,13	UU
KOELN	39,50	33,33	NA	33,33	50,00	NA	50,00	0,00	NA	10,00	6,67	19,96	KOELN
INAF	32,50	NA	NA	NA	89,00	NA	89,00	54,50	230,50	NA	171,83	127,40	INAF
QUB	0,00	0,00	NA	0,00	NA	NA	NA	4,50	NA	NA	4,50	2,45	QUB
AOB	50,00	NA	88,00	88,00	NA	NA	NA	76,67	NA	NA	76,67	78,00	AOB
ISRAN	0,00	NA	NA	NA	NA	31,11	31,11	NA	NA	NA	NA	25,45	ISRAN
RFNC-VNIITF	20,00	NA	NA	NA	NA	18,00	18,00	65,00	45,00	0,00	31,43	25,00	RFNC-VNIITF
IAO	25,00	NA	16,67	16,67	83,33	0,00	41,67	NA	33,33	NA	33,33	32,61	IAO
CPTM	0,00	0,00	0,00	0,00	14,17	CONTR	14,17	0,00	NA	NA	0,00	5,00	CPTM
INASAN	24,00	12,67	CONTR	12,67	NA	31,33	31,33	NA	NA	NA	NA	24,91	INASAN
	14,16	12,03	33,13	22,58	31,78	12,99	23,24	34,19	47,07	5,57	28,34	23,61	

Table of Total Effort per WP per Beneficiary during Period 3

Note: NA means Non Applicable and C-R means "Contributed and Requested though not planned"

	WP1	WP2	WP3	coord	WP4	WP5	OTHERS	WP6	WP7	WP8	RTD	TOTAL	
CNRS	22,17	6,42	21,17	11,33	55,00	14,13	36,61	55,03	2,00	11,92	35,80	32,50	CNRS
CMSUC	25,00	45,56	CONTR	33,89	33,33	11,11	22,22	NA	NA	NA	NA	24,57	CMSUC
UCL	0,00	13,56	NA	35,08	40,83	19,13	32,15	CONTR	CONTR	6,11	14,56	26,13	UCL
OU	0,00	0,00	4,17	3,75	0,00	NA	0,00	NA	NA	NA	NA	2,21	OU
UNIVIE	33,00	CONT	53,36	53,36	0,00	CONTR	3,83	NA	NA	NA	NA	38,00	UNIVIE
UU	0,00	17,65	40,02	30,43	14,44	NA	14,44	11,74	8,63	NA	10,49	15,91	UU
KOELN	39,50	34,17	NA	29,29	25,00	NA	25,00	0,00	CONTR	5,56	3,57	12,98	KOELN
INAF	32,50	NA	NA	NA	74,55	NA	58,57	51,40	131,42	NA	107,88	82,39	INAF
QUB	0,00	8,17	NA	8,17	NA	CONTR	CONTR	10,42	NA	NA	10,42	8,70	QUB
AOB	50,00	NA	48,00	48,00	NA	NA	NA	45,00	NA	NA	45,00	51,65	AOB
ISRAN	0,00	NA	NA	NA	NA	31,11	31,11	NA	NA	NA	NA	28,00	ISRAN
RFNC-VNIITF	20,00	NA	NA	NA	NA	18,00	15,00	73,33	46,00	0,00	32,14	24,62	RFNC-VNIITF
IAO	25,00	NA	8,33	8,33	55,56	0,00	33,33	NA	25,00	NA	25,00	25,53	IAO
CPTM	0,00	20,67	47,36	37,94	8,29	CONTR	8,29	0,00	NA	NA	0,00	17,22	CPTM
INASAN	24,00	20,00	CONTR	28,33	NA	22,92	22,92	NA	NA	NA	NA	25,13	INASAN
	20,05	19,56	33,52	27,86	37,68	16,27	28,71	35,09	38,99	6,43	27,32	27,55	

Table of Requested MP per WP per Beneficiary during Period 1+2+3

Note: NA means Non Applicable – REQ means Requested though not planned in Annexe I

	WP1	WP2	WP3	COORD	WP4	WP5	OTHERS	WP6	WP7	WP8	RTD	TOTAL	
CNRS	84,40	42,83	REQ	77,00	124,00	57,19	93,93	129,39	60,67	142,17	118,20	98,29	CNRS
CMSUC	NA	290,00	27,78	93,33	138,89	22,22	80,56	NA	NA	NA	NA	83,75	CMSUC
UCL	NA	127,67	106,67	117,17	185,06	52,42	132,00	REQ	REQ	29,72	92,39	117,15	UCL
OU	NA	NA	72,78	72,78	153,33	NA	153,33	NA	NA	NA	NA	105,00	OU
UNIVIE	NA	REQ	111,88	136,88	31,33	NA	119,00	NA	NA	NA	NA	132,00	UNIVIE
UU	NA	11,67	49,63	36,97	112,22	NA	112,22	106,80	125,59	NA	114,32	88,30	UU
KOELN	NA	112,00	63,00	99,75	79,75	NA	79,75	132,80	REQ	84,38	112,00	103,52	KOELN
INAF	NA	NA	NA	NA	128,67	0,00	96,50	87,87	119,38	NA	110,78	103,33	INAF
QUB	NA	94,10	REQ	106,80	NA	NA	NA	106,81	NA	NA	106,81	106,80	QUB
AOB	NA	NA	NA	135,13	NA	NA	NA	114,53	NA	NA	114,53	137,93	AOB
ISRAN	NA	NA	NA	NA	NA	94,33	94,33	NA	NA	NA	NA	94,33	ISRAN
RFNC-VNIITF	NA	NA	NA	NA	92,24	NA	92,24	311,38	204,50	0,00	132,12	115,51	RFNC-VNIITF
IAO	NA	NA	32,73	40,77	115,45	0,00	76,97	NA	62,55	NA	62,55	65,23	IAO
CPTM	NA	0,00	152,25	130,64	86,61	NA	94,22	19,33	NA	NA	19,33	99,72	CPTM
INASAN	NA	77,20	114,20	95,70	NA	68,43	68,43	NA	NA	NA	NA	82,07	INASAN
	84,40	105,11	92,74	96,76	126,43	54,26	98,42	138,78	102,62	58,94	104,38	99,27	

Note: Some adjustements have been made on P1 and P2 by some partners: For UCL it corresponds to a better reading of timesheets with slight changes between activities – overall it does not change much the total requested manpower. For OU it corresponds to a shift from contributed to requested manpower in P1 and P2 by about a month in each period for "Senior coordinating activities". Nigel Mason, being the coordinator of the WP3-Dissemination activity, this is totally justified.

Table of Total Effort per WP per Beneficiary during Period 1+2+3

Note: NA means Non Applicable and C-R means "Contributed and Requested though not planned"

	WP1	WP2	WP3	COORD	WP4	WP5	OTHERS	WP6	WP7	WP8	RTD	TOTAL	
CNRS	63,13	69,75	87,17	75,56	127,30	53,43	94,06	137,06	34,50	89,17	106,97	91,93	CNRS
CMSUC	25,00	135,56	CONTR	92,78	88,89	37,50	63,19	NA	NA	NA	NA	68,15	CMSUC
UCL	50,00	102,67	NA	106,50	119,51	43,00	88,91	CONTR	CONTR	23,30	65,62	82,50	UCL
OU	47,50	0,00	41,11	37,00	79,00	NA	79,00	NA	NA	NA	NA	52,44	OU
UNIVIE	172,50	CONTR	113,93	129,86	16,67	CONTR	66,17	NA	NA	NA	NA	116,36	UNIVIE
UU	35,00	51,82	70,65	62,58	67,78	NA	67,78	92,85	117,79	NA	102,82	85,34	UU
KOELN	118,50	106,67	NA	100,43	121,63	NA	121,63	104,40	CONTR	70,83	100,57	105,09	KOELN
INAF	172,50	NA	NA	NA	130,27	NA	102,36	98,52	169,75	NA	148,80	130,53	INAF
QUB	49,05	63,72	NA	70,07	NA	CONTR	CONTR	63,99	NA	NA	63,99	71,46	QUB
AOB	176,45	NA	175,13	175,13	NA	NA	NA	146,98	NA	NA	146,98	171,17	AOB
ISRAN	0,00	NA	NA	NA	NA	94,33	94,33	NA	NA	NA	NA	84,90	ISRAN
RFNC-VNIITF	71,51	NA	NA	NA	NA	83,00	87,62	290,19	216,36	0,00	139,46	114,29	RFNC-VNIITF
IAO	50,00	NA	33,03	37,05	132,52	0,00	79,51	NA	81,53	NA	81,53	73,86	IAO
CPTM	0,00	103,43	110,73	108,15	91,18	CONTR	103,64	9,67	NA	NA	9,67	89,47	CPTM
INASAN	101,20	59,63	CONTR	85,83	NA	70,33	70,33	NA	NA	NA	NA	79,08	INASAN
	69,52	89,35	90,78	90,20	108,19	56,73	86,62	126,39	115,54	44,22	97,97	89,30	

For Period 3, we see that the requested manpower is between 5% and 65%. The nodes around 20%-30% correspond to normal activity with continuity from P2 to P3; the nodes with very low requested manpower correspond to nodes where most of budget has been spent before P3. For the nodes with high requested manpower such as INAF, it corresponds to an increase in activity in P3 because of the complexity of data that INAF handles; indeed they had to wait in order to make progresses with their data in VAMDC (solid spectroscopy and complex molecules). Period 3 has been the year with stabilisation of standards, design and publication of VAMDC portal that allow to access the databases. In addition it has been a year with intensive dissemination. In Period 4 activity will concentrate on last release of standards and software, with stabilisation of databases and services, with preparing the VAMDC consortium for its production phase. The nodes that have no budget will contribute from their own funding.

The average MP (requested and contributed) of P3 is around 27% of the Effort given in Annexe I (see Table of Effort Above); this is in agreement with the estimation indicated at the end of Deliverable D1.2.

15. ESTIMATED BUDGET BREAKDOWN PER WORK PACKAGE FOR THE WHOLE PERIOD (42 MONTHS)

Following the **budget requested** to EU (and not the eligible costs) indicated in the Grant Agreement Preparation Forms from the 28-05-2009, which is in accordance with the budget breakdown indicated in Annexe B of the Grant Agreement, we can estimate the following breakdown of budget per workpackage:

	RTD	Coordination	Management	Others
WP1			187200	
WP2		238400		
WP3		349910		
WP4				877895
WP5				633368
WP6	252660			
WP7	171071			
WP8	189495			
TOTAL	613227	588310	187200	1511263

Deliverable D1.2 indicated the following: The estimated % for total requested EC contributions for Period 1 (Month 1 to 12) was about 24%, for Period 2 and 3 (each period is 12 months) are about 31% each, for last period (Month 37 to 42) is about 14%. The estimated breakdown per WP and per period can be obtained applying those coefficients to the above table.

Report on Period 1: 24% for Period 1 has been closely respected in average on the whole budget.

Report on Period 2: 33% for Period 2 has been closely respected in average with 50% in RTD, 26% in COORD, 21% in MGT and 31% in OTHERS. It should be noted that management has been extremely cheap in Period 2 because no senior time was requested for the coordinator.

Report on Period 3: 30% for Period 3 has been closely respected in average with 20% in RTD, 30% in COORD, 35% in MGT and 33% in OTHERS.

For Period 4 RTD activities are left with 4% of budget (in agreement with plans on RTD), COORD with 20% (last VAMDC Conference and last dissemination), MGT with 22% (for for wrap up and sustainability actions), OTHERS with 12% (for last upgrades of deployment and support). We believe that the goals of the project have already been reached and that P4 is a period of stabilisation and formatting properly last items.