VAMDC

Virtual Atomic and Molecular Data Centre

D1.3

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Revised Annual VAMDC Project Plan 1

Version 0.4

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
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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 (Added during Period1)
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, UMR5109	DR11	Université Joseph Fourier	B. Schmitt
ICB, UMR5209	DR6	Université de Bourgogne	V. Boudon
GSMA, UMR6089	DR6	Université Champagne-Ardenne	V. Tyuterev
CESR, UMR5187	DR14	Université Paul Sabatier	C. Joblin

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Abstract	The objective of D1.3 is to describe VAMDC Revised Annual Project Plan 1. It includes the overall project plan as well as the individual packages plans for Period 2. 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	**17/08/2010**	**First Draft**	**M.L. Dubernet**
V0.2	**01/09/2010**	**Check of Leaders**	**J. Bureau**
V0.3	**08/09/2010**	**Inclusion of Individual Plans for each WP**	**M.L. Dubernet**

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Name	Date	Recipient	Date
M.L. Dubernet		Mrs Asero	

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.

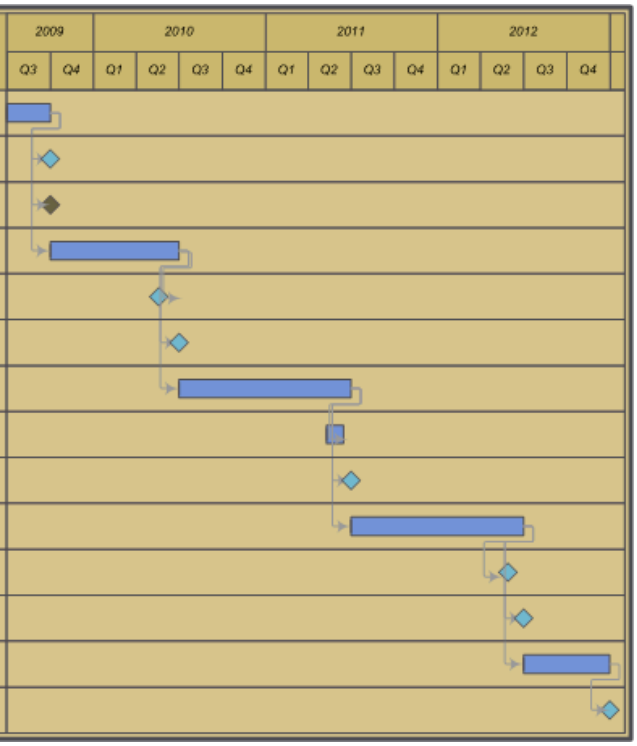
The major aim of VAMDC e-infrastructure is to provide an integrated access to the comprehensive set of A&M databases needed for research across the European Research Area. Management is provided by **WP1.** The core of the project is the creation of two focused services to provide 24/7 access to a large 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:

- J. Bureau, 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	
	V. Wakelam	

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	J. Bureau	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 2

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, Gonzalez-Solares, Lewis
3	University College London	UCL	J. Tennyson, L. Culhane, D. Witherick, P. Yuen, K. Benson, C. Hill
4	Open University	OU	N. Mason, B. Sivaraman
5	Universitaet Wien	UNIVIE	F. Kupka, W.W. Weiss, T. Lueftinger, C. Stuetz
6	Uppsala Universitet	UU	N. Piskunov, E. Stempels, K. Eriksson, S. Regandell, T. Marquart
7	Universitaet zu Koeln	KOLN	S. Schlemmer, T. Giesen, H. Mueller, Baum, Herberth, C. Endres
8	Istituto Nazionale di Astrofisica	INAF	A. Costa, A. Giufrida, F. Spinella, G. Mulas, G. Malloci, G. Leto, M.-E. Palumbo
9	Queen's University Belfast	QUB	T. Millar, K. Smith
10	Astronomska opservatorija	AOB	M. Dimitrijevic, L. Popovic, D. Jevremovic, Z. Simic, E. Bon, N. Milovanovic, A. Kovacevic
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
13	Institute of Atmospheric Optics	IAO	V.I. Perevalov, A.Z. Fazliev, S.A. Taskun, R.V. Kochanov, A.I. Privesentsev, N.A. Lavrentiev, A. Yu. Aklyostin, A.V. Kozodoev
14	Corporacion Parque Tecnologico de Merida	CPTM	C. Mendoza, J. Gonzalez

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), J. Bureau (Project Manager), L. Nenadovic, M. Doronin,), L. Kosmala, A.-M. Vasserot
LUTH, UMR8102	DR5	Observatoire de Paris	E. Roueff, F. Le Petit, F. Roy
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, J. Marchand,
LAB, UMR5804	DR15	Université de Bordeaux I	V. Wakelam
LPG, UMR5109	DR11	Université Joseph Fourier	B. Schmitt, A. Damien
ICB, UMR5209	DR6	Université de Bourgogne	V. Boudon, Wenger, Surleau, Gabard
GSMA, UMR6089	DR6	Université Champagne-Ardenne	V. Tyuterev, A. Barbe, Dumont, Bonhommeau, Rotger
CESR, UMR5187	DR14	Université Paul Sabatier	C. Joblin, K. Demyk, A. Simon, A. Walters

2.4 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**	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	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.

Likelihood of occurrence=2 Impact=3 **Risk Factor = 6** Likelihood of occurrence=4 **Risk Factor = 12**	unified view of the project.	We put this strategy into action for development of molecular part of XSAMS during Period 1 – Work in JRA1 (WP6) – We believe that this will allow us to reach an agreement in Period 2; thus reducing the Likehood of occurrence
Risk NA-R2: **Failure to achieve cross-activity coordination** Likelihood of occurrence=2 Impact=3 **Risk Factor = 6**	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.
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.

The identified risks for the Network Activities of the VAMDC project have risk factors up to 6, with mitigation actions in all cases that would limit the impact of such risks. **The overall level of risk of the VAMDC Network Activities is low.**

SA List of risks and mitigation actions

Risk	Consequences	Mitigation Action
Risk SA-R1: **Not enough human resources to perform the Services Activities**	Some of the tasks within these Service Activities could require more person-power then currently planned. This would lead to a overall delay in deployment of	Services Activities will need to be prioritized by decision of the VPB and technical advice from the EPT, to make sure resources are directed first to what is more important.

Likelihood of occurrence=2 Impact=3 **Risk Factor = 6**	resources. The output of the VAMDC services activities would be limited by the funded and contributed person-power.	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.
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
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.

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 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.

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).
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.
Risk JRA-R4: data-mining tools are complex and difficult to use Likelihood of occurrence=4 Impact=2 **Risk Factor 8**	These tools are under used; researchers miss opportunities. Researchers misunderstand the constraints on using the tools and derive incorrect results.	Provide good documentation with many examples of use and clear 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.

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)

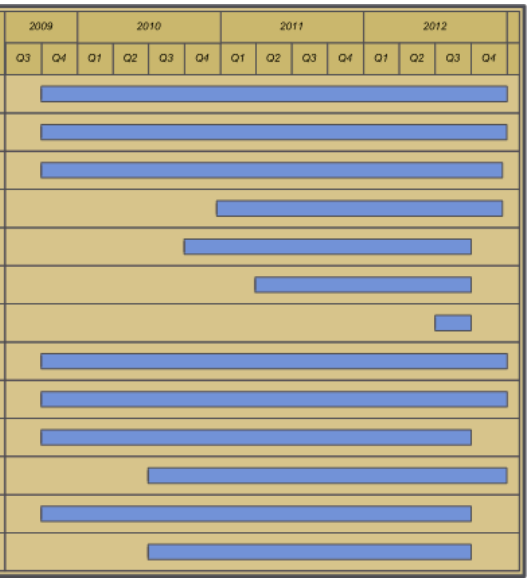
SA1 (led by CMSUC) provides users with access to the assembled A&M databases. This involves implementing standard outputs for the AM databases, finding the resources by interrogating registries, using querying and pipeline tools. SA1 is supported by SA2 (led by CNRS) which provides the necessary support 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.

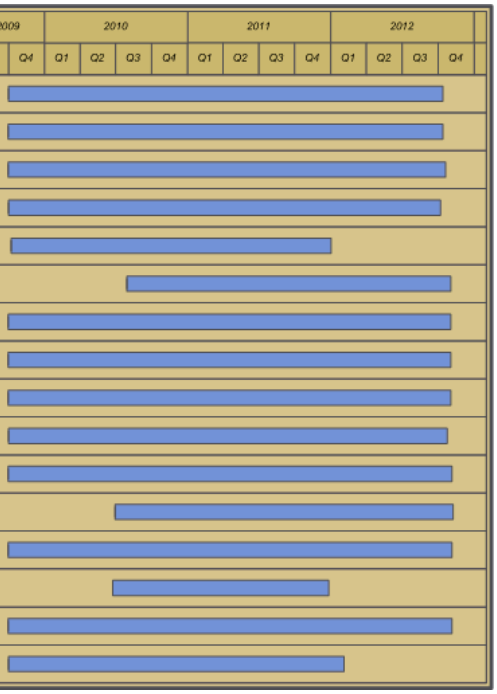
JRA3 (led by UCL) will develop new mining and integration tools allowing cross-matching or/and cross-federation of heterogeneous resources and application services wrapping complex work flows combining AM data access, manipulation, and integration into user processing chains.

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 beneficiary	*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

For Cycle 1: all deliverables, deliverables to EU and internal deliverables are listed on our WIKI at http://voparis-twiki.obspm.fr/twiki/bin/view/VAMDC/CycleOne

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
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

[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.

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	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

[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.

6. Status and General Plan For Period 2

As described in the section "Progress of Work per Workpackage" of Annual Report 1 and of Deliverables D2.2 to D8.2 (Reports for Period 1), the VAMDC project has fullfilled the critical objectives of Period 1. Some tasks were slowed down or delayed as explained in section E.2 (see Annual Report 1); but these tasks do not constitute the core of the project.

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).

As described more in details in the section "Progress of Work per Workpackage" of Annual Report, WP2 has kept in touch with IVOA, EuroPlanet and started contact 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 2. Another aspect to WP2 was to put together policies related to standards and publication in VAMDC (tasks 4 & 5). Some simple steps have been achieved, such as having a reference paper published in JQSRT. Obviously Period 2 will be more ambitious with Tasks 4 & 5 because many issues will be raised with adoption of standards and sustainability. WP2 has involved different census whose results will be fully exploited in Period 2. 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. No training has been offered since no useable tools were ready. Period 2 will work towards providing training for some selected sets of users and producers of A. & M. data. WP4 has mainly involved deployment of a level 1 infrastructure for a selected set of databases which served as test bench: VALD, XSTAR, BASECOL, CDMS, HITRAN with registries and implementation of standard outputs into the XML schema called XSAMS. WP4 involved access to numerical codes. In Period 2 WP4 intends to have both a level 2 service with improved services as well as a deployment of infrastructure for all resources among the VAMDC partners. WP5 has put together the monitoring system and implemented it for a limited number of services, has organised the access to the GRID at Paris Observatory but has not being able to put together the mirroring system because of lack of manpower (person in charge had an accident during the critical period). WP5 will extend the monitoring system to more services, negociate access to the GRID for VAMDC users and put together the mirroring system. WP5 will start the developements of Task 3 and task 5, i.e. "Support to Users" and "Quality Assessment". WP6 has worked a lot towards defining a new description of the molecular part of the XML schema: XSAMS and defining a schema for solid spectroscopy which is not totally included in XSAMS (Task 1). At the end of Period 1 WP6 has demonstrated that the new description of XSAMS molecular part is very useful. At the start of Period 2 we will decide whether this description will be adopted. Other Tasks of WP6 are dependent upon Task 1 and have merely been sketched in Period 1. Period 2 will see their full development. WP7 has tackled the creation of publishing tools through the use of a generic platform, through the development of home-made applets. No useable tools are publicly available at the end of Period 1. Period 2 will focus on improving, documenting those tools and making them available to the users. WP8 Task 1 is completed because we will

adopt IVOA standards (see related section). WP8 has therefore focused on designing a tool for handling XSAMS outputs (Task 2). It has been a useful work providing the equivalent of a "user testbench" in order to give feedbacks on the development of standards in WP6. This work is developed in parallel to WP7-T1 related to translation of information to/from XSAMS. Period 2 will focus on extending, documenting this tool in order to have it available for users. WP8-T2 will also focused on designing specification for a tool allowing handling both gaz phase and solid spectroscopy for planetology and interstellar medium applications. WP8 has not achieved anything about complex mining because this aspect requires a stable infrastructure and some stable standards (Task 3). We believe that WP8 Task 3 should be postponed up till Period 3. In Period 2 use-cases will be defined.

Management activities in Period 1 have been extremely heavy due to the complexity of the network with 15 partners and 9 french internal partners including interaction with 6 CNRS offices and 7 Third parties. During Reporting of Period 1, it accounted to exchanges of 50 mails per day, and for each french partner interaction with at least 3 to 4 administrative contacts. In Period 1, we nominated a permanent member of staff as Project Manager (part of his time) and the P.I. managed most of WP1. In Period 2 this cannot be the case anymore, and an additional Assistant Project Manager will be employed.

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/ J. Bureau	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 during the first board meeting. 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 2

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 2

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 2 WP2 NA1 Plan

Period: 01/07/2010 – 30/06/2011
WorkPackage: 2 NA1: Science/Technical Coordination
WorkPackage Leader and co-Leader:
UCAM (N A Walton) and UU (N Piskunov)
Participants in the WorkPackage:
CNRS, CMSUC, UCL, OU, UU, KOLN, QUB, IVIC, INASAN

Part 1

Objectives and details for each task in Year 2.

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. This will be important during year two where VSMDC will be able to demonstarte the availability of the Level One VAMDC service. All presentations at external meetinsg are available at http://voparis-twiki.obspm.fr/twiki/bin/view/VAMDC/TalksVamdc
1.3) In coordination with SA1, an update to the census of all VAMDC resources will be undertaken. This will be important in traking the development of deployed services against the total potential number of services available to VAMDC. It is anticipated that with the in creasing sophistication of the VAMDC service, a wider range of potential providers will become engaged.
1.4) The use of the VAMDC standard tool set and procedures will be reviewed. Full details available at http://voparis-twiki.obspm.fr/twiki/bin/view/VAMDC/Na1T1Tools
1.5) The quality assurance systems for VAMDC will be refined. In particular the use of defined testing procedures in the QA of deployed VAMDC services will be a focus of year 2 VAMDC technical workshops.

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 (e.g. Europlanet, HITRAN).

The list of external coordination meetings and notes is kept at http://voparis-

twiki.obspm.fr/twiki/bin/view/VAMDC/Na1T2

A range of technical and scientific workshops will be organised during year 2 of VAMDC.

Task 3: User/ Producer specifications:

INASAN will continue to lead the requirements gathering activities. During year 2, the focus will move to one of refining the initial specifications which were obtained during year 1. In particular there will be a refresh of the requirements survey carried ut in year 1. The focus will be in assessing use of the year one release as measured against the requirements. Further, the community will be surveyed to gather requirements needed in developing the more advanced VAMDC data and application services required in Year 3 of the 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 will be decided in year 2. It is currently hosted by the IAEA, but this will change in 2011.

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 during year 2.

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 2

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 two WP3 NA2 Dissemination plan

Period: 01/07/2010 – 30/06/2011
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 Year 2.

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 but did not meet in Year 1 annual meetings due to Travel disrpution. The CTC with member roles is as follows:

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)

The CTC website 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. This to be updated in year 2

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

The second annual meeting will be held in Cambridge in April 2011 organised by Nicholas Walton and Guy Rixon and the third in Vienna in 2012 possible with ICAMDATA meeting.
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.
The CTC is preparing suitable display material (in electronic format and hard copy) for display at such meetings which can be *used by any of the VAMDC partners.*
With the release of the VAMDC prototypoe regional workshops are to be arranged by non-EU partners (IVIC, INASAN, IAO, AOB).

VAMDC may participate in the proposed large exhibition dedicated to planetary science and astrochemistry as part of the International Year of Chemistry in Brussels in June 2011 supported by COST, ESF and in collaboration with Europlanet and LASSIE (EU ITN). O)ne day is dedicated to meetings and briefings with Commission and members of European Parliament whilst two days will be directed towards public exhibition.

Task 3: Scientific workshops
Three science workshops with users were arranged in Year 1 as per aim of the WP.
With the *radiation sciences communit*y held in collaboration with the EU RADAM conference series in Madrid June 30 to July 4. Using the opportunity arising from the 20th ESCAMPIG meeting discussions with *technological plasma community and lighting communities* were arranged.

In Year 2 Workshops with fusion community and discussiosn with the Alladin database will be arranged.
Workshops with the Astronomical and Planetary sciences community will be arranged, the latter with Europlanet the Research infrastructure. Collaborations with the HITRAN database will be developed/explored

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 once the service prototype is available.

Task 5 VAMDC Service & Service Prototype Release CMSUC and UU will lead the coordinated release of the annual VAMDC prototype service. This will lead to the final release of the VAMDC service infrastructure. The layout and content of the first prototype was reviewed at the first annual meetings and is expected to be available for assessment in September 2010.

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 2

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 two WP4 SA1 Deployment plan

Period: 01/07/2010 – 30/06/2011
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 Year 2.

The emphasis in period 2 is on the web services providing access to data. We shall deploy data-access services on all data-sets for which we have an applicable data-model (XSAMS) and web-service protocol (TAP, TAP-XSAMS). Data-sets of other, more-specialized types will receive their data-access services in period 3. We shall continue to develop UIs and the registry of resources to support use of the data-access services. We do not intend to provide general access to numerical codes during period 2, but shall instead develop the framework by which such access may be provided during period 3.

Task 1: access to data

TAP-XSAMS services will be deployed for all VAMDC data-sets in the deployment census for which the XSAMS model is suitable. This includes data-sets in existing databases (Task 1.6), for which the service implementation has to be fitted to the database schema and data sets currently stored in flat files (Task 1.5), for which the data will be ingested into relational databases using a standard schema (Task 1.4). A TAP-XSAMS implementation (in Python, based on the Django framework) was created in period 1. This implementation will be refined during period 2 and distributed to VAMDC sites as a complete package with all software dependencies (Task 1.7).

A prototype data-access service for the solid-state-spectroscopy data-model (SSDM) will be developed and deployed. This will support testing of SSDM and will inform the design, by WP6, of a standard data-access protocol for SSDM. The prototype is not expected to form part of the level-2 service release.

Task 2: access to codes

An existing, grid-enabled code (to be specified during period 2, as part of WP8 Task 3.1) will be adapted to takes its input data directly from VAMDC data-services (Task 2.2). This will serve as a demonstrator of how VAMDC might be exploited in large computations. It will not be part of the VAMDC core in the long term.

Services will be deployed to execute a code that is bound to a VAMDC data-set at the site where those data are stored (Task 2.1). This is a proof-of-concept installation for the code-execution technology, so the choice of code is not critical; Xstar and codes associated with CHIANTI are likely choices. Two such services will be deployed for a given code, one using AstroGrid Common Execution Architecture and one using SOAPlab2, so that we can compare the two systems.

Wider deployment of code-access services is deferred to period 3.

Task 3: registry

New services will be added to the registry as they are deployed (Task 3.4).

The registry contents will be cleaned up (Task 3.6) and reorganized around data-collections rather than individual services (Task 3.5). This will makes it easier to show scientifically-relevant views of VAMDC in the UIs.

Task 4: user interfaces

The web portal produced in period 1 will be refined. Its navigation will be simplified, and the scientific focus improved (Task 4.5). A user interface for the TAP-XSAMS services will be added (Task 4.4). Features of particular scientific interest will be added, such as the ability to raise equivalent data from many VAMDC datasets and to merge or compare them. Whereas the period-1 portal was an engineering tool, the portal at the end of period 2 can be regarded as a prototype of the eventual science-portal.

An interface to the TAP-XSAMS services will be added to VODesktop (Task 4.3) and to Taverna (Task 4.6).

Task 5: distribution of desktop software

A list of useful and desirable applications will be drawn up during period 2 (Task 5.2). Some items from this list may be distributed during period 2, but we expect the major distributions to happen in period 3, after the data-access services mature.

VAMDC's generic UIs (extended versions of VODesktop and Taverna) will be made available to VAMDC users.

Task 6: expansion

No activity planned in period 2.

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 2

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 two plan

Period: 01/07/2010 – 30/06/2011
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 Year 2.

Year 2 for the WP5 is dedicated to strengthen the infrastructure and to setup bases for a reliable system.

Task 1 Maintenance and monitoring of the core infrastructure :

1.1 Using the monitoring sytem already in place:

- install new services when they become available, using registry information
- contact each service to allow them to receive problems alert and have access to the web portal. The policy should be site dependent (number of contacts receiving alert, number of contacts to acknowledge problem alert or to schedule downtime ...)
- provide information and help on nagios uses and open account to all relevant VAMDC people

3 Follow the standards development of data access protocols in order to monitor them properly.

4 Make development of dedicated plugins for these protocols.

1.2 Promote statistics on reliability of services

Task 2 Grid Operations

2.1 Evolution of Portal :

promote a portal to launch code, make a how to and propose on-line documentation to submit code.

2.2 Promote access to Observatoire de Paris Node:

This service will need different steps and have to be validated:

- Access to EGEE certificate, this will be done locally by the local entity. explanation and How-To need to be provided
- Access to Astronomy & Astrophysics Vorg, the approval will be made by C. Loomis.
- Access to Observatoire de Paris UI machine to submit job. This will be made also in two steps : first getting an account to access SSH gateway of the Observatory then opening an account on the UI machine.

2.3 Possibly, create a VAMDC Vorg – This last step might delayed up till Period 3. All depends upon progresses in Period 2

Task 3 Support to "users" of the infrastructure

3.1 Technical support to users and to service providers will be provided by email. The issue-tracking system RT will be installed at Paris Observatory to manage this email traffic. RT allows incoming messages to be sorted and copied to the appropriate pool of experts for resolution.

3.2 During period 2, groups of experts will be formed to respond to particular types of issues, by consultation with other work packages. Probably areas of expertise are question to developers, technical problem in service deployment, technical end-user problems.

3.3 RT keeps a permanent record of issues raised. From this, a list of frequently-asked questions will be complied during periods 2 and 3.

3.4 Within the project, code will be stored in various repositories: some is already in the public GitHub repository and a Subversion repository is available at the Paris observatory. The Redmine code-tracking product will be installed at the Paris observatory to give a common view of these repositories from a single point on the WWW.

Task 4 Preservation of digital data and resources

- Ensure replication of the 3 other test databases
    - Coordination with Scientific and Technical contact to see modality for replication. Firstly with the 4 candidates where Table Access Protocol are available.
    - Construct virtual machines adapted to the service requirement
    - Open access to make an efficient mirror : construct replication
    - Define with each data provider and scientific responsible for the policy related to updating the mirror.
- Extend it to other new candidates
- Follow the protocols "Data Access Layer" on VAMDC to ensure miror for databases compliant to this protocol.
- In coordination with the person responsible for each database, register the mirror service in Local Astrogrid Registry. Define policy for technical responsibility on mirror service
- Use of tape archive for saving Virtual machine in order to allow a backup recovery in case of major injury.

Task 5 Quality Assurance of data and resources

5.1 Set up technical validation of web-services to check:

- provision of mandatory features;
- provision of optional features;
- correct syntax for request parameters (e.g. the names for query languages and output formats);
- correct syntax of results (e.g. XML outputs must be well-formed and schema-valid);
- correct handling of errors (e.g. error documents in TAP must be VOTables).

These checks detect problems in implementation or deployment and will be run occasionally by WP5 staff.

5.2 Set up monitoring of web-service availability. A service is "available" if it is both running and connected to its resources (e.g. databases), so availability checks imply simple queries to the service. The tests should be made regularly, by an automated system that discovers services from the registry.

5.3 Extract, from the early service-deployments, a list of good practices that reduce the chance of errors in later deployments

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 2

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
Period two WP6 JRA1 Interoperability plan

Period: 01/07/2010 – 30/06/2011
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 Year 2.

Period 2 will be the period where standards documents will be officially available through a public with regular updates.

Task 1: Data Models and XML schema Documents (CNRS/LPMAA/LUTH)
1.1 Investigation of XSAMS
This part continues while implementation of XSAMS is happening.
Period 1 has seen development of "case-by-case" - Period 2 will have 3 aspects: 2 technical and 1 political
technical aspects:
continue to improve XSAMS using inputs from VAMDC partners (over period 2)
choose between the different versions of molecular XSAMS: this issue should be solved about January 2011.
political issue:
who should be the reference body for XSAMS (IAEA or VAMDC). This issue should be solved about November 2010

1.2 Schema for Solid Spectroscopy (CNRS/LPG)
The Solid Spectroscopy Data Model (SSDM) will continue its development and structure.
In Period 1 we have added most of the keywords to fully describe solid samples through their layers, materials, constituents and species as well as some types of spectroscopic experiments and their products. And we started the optimization of the structure of SSDM.

In period 2 we will further improve the overall structure of SSDM, complete the band list DM and develop some extensions (natural materials, ...). A meeting is planned to finalize a first stable version.
It is now clear that the SSDM cannot be unified with XSAM(S). So we will study "mapping" between SSDM and XSAMS to be able to make some intercomparison between gas and solid phase data. And make scientific specifications for intercomparison and interoperability tools.

1.3 Schema for PAH (leader: INAF + CNRS/CESR)
Investigation of suitability of XSAMS for PAH data, Organisation of a workshop together with CESR partners, Identification of missing/desirable functionalities, Draft document have been done in Period 1.
Period 2: Inclusion of PAH in XSAMS to be finalized in order to allow start of implementation by February 2011

1.4 Schema for Line Shapes related to pressure broadening (Leader UCL with participants CNRS/GSMA, ICB, IAO, CFA)
Preliminary studies have been done in Period 1
Period 2: Propose a standard after discussion with wide panel of specialists ; discussion whether it should be combined with Atomic line shape standard

1.5 4 Schema for Atomic Line Shapes (Leader Yuri Ralchenko from NIST with participants AOB, LERMA/CNRS)
Period 2: Propose a standard and discussion with molecular physicists

Task 2: Dictionaries Documents (QUB)
2.1 List of Species (QUB, CNRS/LPMAA and partners)
Names: make decision about standardized names
In Period 1, Studies of InchI was made for identification of species, but some drawbacks were identified
Period 2: continue investigation of InchI in order to uniquely identify species
SSDM will check compatibility with solids and will adopt and integrate this nomenclature
2.2 List of Processes
Period 1: list of processes of IAEA was adopted - Period 2: improve the list if necessary
2.3 List of Conventions
Period 2: Nothing was done - Period 2: to be done if necessary
2.4 List of Quantum Numbers (UCL)
Period 2: a proper list of quantum SHOULD be made and adopted across all schemas
The specific problem of definition and quantification of vibration modes in solids (some types being fully specific) will be addressed for inclusion in SSDM and drawing an equivalence schema with Quantum numbers in XSAMS.
2.4 List of cases (UCL)
In Period 1, list of cases was designed (see report P1)
Period 2: check the list, improve and complete while implementation is carried out -

Task 3: Access Protocols and Query/Retrieval Language Documents (CMSUC)
3.1 TAP-XSAMS
leader of Document : G. Rixon
Period 2 content: refine the existing standard to deal with issues found in implementation.
Add any optional query-languages and formats (e.g. the format for solid-spectroscopy data, if

that is to be handled by this kind of service). Note any allowed variations between services implementing this protocol

3.2 SQL based Query

leader of Document: G. Rixon

Period 2 content: formalize the definition of VSS1 currently on the wiki web. Consider a possible VSS2 which allows a greater sub-set of SQL. Specify a language for queries on solid-spectroscopy data.

3.3 Service protocol for solid-spectroscopy

leader of document: G Rixon

Period 2 content: draft a service specification, probably similar to TAP-XSAMS, for services that emit SSDM data.

Task 4: Registry Documents (UCL/MSSL)

4.1 Registration format for TAP-XSAMS

leader of document: K. Benson

Period 2 content: if variations in features between TAP-XSAMS instances are allowed by the protocol standard, define how these differences are annotated in the registration. Define an XML schema, for a special type of IVOA Capability structure, to hold these annotations. Consider how the data content might be described in these annotations.

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)

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 2

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 WP7
Period two plan

Period: 01/07/2010 – 30/06/2011

WorkPackage: WP7/JRA2 Publishing Tools
WorkPackage Leader and co-Leader: UU (N. Piskunov)
Participants in the WorkPackage: CNRS, CMSUC, RFNC-VNIITF, IAO, INASAN, UNIVIE, KOLN, QUB

Part 1

Objectives and details for each task in Year 2.

Year 2 for the WP7 is dedicated to the full implementation of the Publishing Tools plan finalized during the first year. We have established the two paths for publishing data in VAMDC: through existing VAMDC nodes and by deploying a new node. We have created and tested a prototype tool for importing data and for generating a new open-source database. We tested several open-source databases and selected MySQL as a recommended option although we will support other database software. While the Django-based tool offers plenty of flexibility for the format of the imported data the proto-type is not fully compliant with the VAMDC interface. The missing aspects are related to the work and standards established by other work packages and they are related to the dictionaries and registries. Thus the goal for WP7 in year 2 is to convert the prototype to a fully functional framework capable of importing and registering the new A&M data in VAMDC.

Task 1: Automatic generation of a new VAMDC node from a new data.

- Testing the prototype functionality with real-case data sets (VALD3 and Lund Atomic Data Centre, UU: Regandell, Marquart, Stempels, possibly CDMS and HITRAN).
- Converting the prototype into a production tool.
- Documenting the import procedures (UU: Heiter, Marquart, Stempels).

Task 2: Adding and testing the automatic registry update functionality

This work will be performed in close collaboration with WP6 and WP8.

Task 3: Dictionary manipulation and verification tools

Data import and registry integration require the publisher to describe the new data with two dictionaries: one related to the data content and the other to the query language functionality. We will provide tools for generating those dictionaries interactively with automatic compliance verification. (UU: Regandell, Stempels, possibly CNRS)

Task 4: Data presentation tools

The WP7 python interface based on the Django framework is one of a few interfaces developed within VAMDC JRAs. In this period we will test, compare and document these tools. This work will have the wide participation from other WPs and VAMDC nodes (UU, UNIVIE, INASAN, RFNC-VNIITF. KOLN, CNRS, QUB).

Task 5: Data quality control

The initial content of Task 5 aimed at creating tools to upload, modify, retrieve, compare, visualize and publish information in molecular spectroscopy is now complete (IAO). One of the important result is the automatic data consistency control based on quantum mechanical selection rules. In Year 2 we will investigate generalisation of this tool to in order to include it into the final WP7 product (IAO: Fazliev).

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 2

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 two WP8 JRA3 New Mining and Integration Tools

Period: 01/07/2010 – 30/06/2011
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 Year 2.

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

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

T2.1 Improvement of Prototype of Data cross-identification software based on current XSAMS schema (link with JRA1/JRA2) handling more type of data (extending further than energy levels comparison) and Connection to Astrophysical Users - Inclusion of Tool in user applications –

T2.2 Define specifications both scientific and technical for a software tool allowing to handle both gas spectroscopy and solid spectroscopy data - Connection to Astrophysical and Planetology Users

Task 3: VAMDC Advanced Data Mining Services (leader: UCL)

The objectives of Task 3 of WP8, the development of VAMDC advanced data mining services, rely on the deployment of the basic infrastructure of VAMDC (registry, data-access services). Wide-scale deployment of the data-mining services is deferred to Period 3.

In Period 2, we shall develop in detail the use cases (query of gas phase data and/or solid spectroscopy data) to be implemented in Period 3. One or more of these cases will
be implemented by WP4 (task 2.2 in that WP) during period 2 to establish
the techniques.

14. TOTAL EFFORT DISTRIBUTION

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

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 during Period 1
%-C: % of Contributed MP from Nodes during Period 1
%-TOTAL: % of Total Effort during Period 1

	RTD	COORD	MGT		OTHER	TOTAL
PLAN-REQ	118	83	15		201	417
PLAN-C	115	70	43		176	404
PLAN-T	233	153	58		377	821
REQ-P1	30,08	25,23	3,55		49,74	108,59
C-P1	36,45	26,19	9,64		37,90	110,17
TOTAL-P1	66,52	51,41	13,19		87,63	218,76
%-REQ	25,49	30,39	23,67		24,74	26,04
%-C	31,69	37,41	22,43		21,53	27,27
%TOTAL	28,55	33,60	22,75		23,24	26,65

Table of Requested MP per WP per Beneficiary during Period 1

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	23,7	40,7	REQ	53,2	13,3	11,0	12,3	41,3	29,2	32,3	37,1	22,7
CMSUC	NA	50,0	5,6	16,7	38,9	0,0	19,4	NA	NA	NA	NA	18,8
UCL	NA	112,3	0,0	56,2	40,0	0,0	24,0	REQ	REQ	7,1	23,2	27,3
OU	NA	NA	24,4	24,4	113,3	NA	113,3	NA	NA	NA	NA	60,0
UNIVIE	NA	REQ	4,6	29,6	11,3	NA	11,3	NA	NA	NA	NA	24,6
UU	NA	0,0	12,5	8,3	16,7	NA	16,7	16,7	25,0	NA	20,0	15,7
KOELN	NA	57,0	63,0	58,5	64,8	NA	64,8	22,8	REQ	0,0	17,8	34,5
INAF	NA	NA	NA	NA	36,2	0,0	27,2	25,2	0,0	NA	6,9	17,5
QUB	NA	11,1	REQ	23,8	NA	NA	NA	23,8	NA	NA	23,8	23,8
AOB	NA	NA	69,8	69,8	NA	NA	NA	50,2	NA	NA	50,2	63,3
ISRAN	NA	NA	NA	NA	NA	17,7	17,7	NA	NA	NA	NA	17,7
RFNC-VNIITF	NA	NA	NA	NA	20,2	NA	20,2	96,4	57,8	0,0	38,6	30,9
IAO	NA	NA	16,1	24,1	32,1	0,0	21,4	NA	20,9	NA	20,9	21,5
CPTM	NA	0,0	29,6	21,5	48,4	NA	48,4	19,3	NA	NA	19,3	36,4
INASAN	NA	25,7	8,0	16,9	NA	24,1	24,1	NA	NA	NA	NA	20,5
	23,7	45,8	23,0	30,4	35,5	7,7	24,7	37,1	25,8	9,2	25,5	26,0

Table of Contributed MP per WP per Beneficiary during Period 1

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	11,5	62,3	32,7	47,5	16,8	27,9	21,8	29,8	8,0	2,5	20,0	22,6
CMSUC	0,0	25,0	CONTR	58,3	11,1	16,7	13,9	NA	NA	NA	NA	19,3
UCL	0,0	64,5	NA	64,5	48,2	25,0	38,9	CONTR	CONTR	9,9	29,0	37,1
OU	27,5	0,0	5,0	4,1	4,7	NA	4,7	NA	NA	NA	NA	6,7
UNIVIE	74,0	CONTR	32,8	36,7	2,0	CONTR	13,3	NA	NA	NA	NA	37,1
UU	12,5	8,3	12,5	10,0	8,3	NA	8,3	45,6	76,7	NA	58,0	38,8
KOELN	39,5	34,7	NA	34,7	26,0	NA	26,0	36,0	CONTR	0,0	37,3	35,3
INAF	80,0	NA	NA	NA	23,5	NA	23,5	50,0	0,0	NA	16,7	30,7
QUB	19,0	0,0	NA	0,0	NA	CONTR	CONTR	0,0	NA	NA	0,0	16,4
AOB	56,5	NA	69,8	69,8	NA	NA	NA	51,8	NA	NA	51,8	62,5
ISRAN	0,0	NA	NA	NA	NA	17,7	17,7	NA	NA	NA	NA	14,5
RFNC-VNIITF	26,5	NA	NA	NA	NA	0,0	0,0	77,1	89,2	0,0	47,5	27,5
IAO	0,0	NA	0,0	0,0	0,0	0,0	0,0	NA	42,2	NA	42,2	22,0
CPTM	0,0	133,9	0,0	66,9	29,0	CONTR	37,9	0,0	NA	NA	0,0	37,0
INASAN	60,2	16,1	CONTR	24,1	NA	7,2	7,2	NA	NA	NA	NA	21,5
	22,4	43,2	31,6	37,4	20,9	22,3	21,5	37,6	54,8	5,2	31,7	27,3

Table of Total Effort per WP per Beneficiary during Period 1

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	17,6	51,5	45,2	49,4	15,0	19,5	17,0	35,5	18,6	17,4	28,5	22,7
CMSUC	0,0	33,3	CONTR	30,6	25,0	8,3	16,7	NA	NA	NA	NA	19,0
UCL	0,0	80,4	NA	60,3	44,1	12,5	31,5	C-R	C-R	8,5	26,1	32,3
OU	27,5	0,0	14,7	13,3	59,0	NA	59,0	NA	NA	NA	NA	30,2
UNIVIE	74,0	C-R	16,7	32,6	6,7	CONTR	12,3	NA	NA	NA	NA	30,9
UU	12,5	4,2	12,5	8,9	12,5	NA	12,5	31,1	50,8	NA	39,0	26,8
KOELN	39,5	45,8	NA	48,3	45,4	NA	45,4	29,4	C-R	0,0	28,3	34,9
INAF	80,0	NA	NA	NA	33,9	NA	26,6	35,1	0,0	NA	10,3	21,5
QUB	19,0	5,6	NA	11,9	NA	CONTR	CONTR	11,9	NA	NA	11,9	19,8
AOB	56,5	NA	69,8	69,8	NA	NA	NA	51,0	NA	NA	51,0	62,8
ISRAN	0,0	NA	NA	NA	NA	17,7	17,7	NA	NA	NA	NA	15,9
RFNC-VNIITF	26,5	NA	NA	NA	NA	0,0	10,1	83,5	70,4	0,0	43,0	29,1
IAO	0,0	NA	8,0	12,1	21,4	0,0	12,8	NA	31,5	NA	31,5	21,7
CPTM	0,0	66,9	21,5	37,6	43,6	CONTR	45,8	9,7	NA	NA	9,7	36,6
INASAN	60,2	20,9	CONTR	19,3	NA	15,7	15,7	NA	NA	NA	NA	21,0
	22,7	44,3	26,3	33,6	29,1	15,1	23,2	37,4	39,2	7,2	28,5	26,6

For Period 1 we see that some MP has been shifted among activities because of scientific necessity. This does not change the financial issues. Some issues might be considered for OU and AOB where a large % of MP has contributed and the consortium will ensure that their deliverables are met: one should note that they should be mostly involved in Dissemination and forthcoming MP can be contributed only.
For Period 1, we note as well, a lot of coordination work from CNRS, very much linked to the central role of scientific coordination by the P.I. (co-leader of WP2) and her close collaborators in Period 1. Some MP is requested in Period 1 in WP3 (whereas not planned): this is linked to Annual Meeting attendance and preparation.

The average MP (requested and contributed) is around 26% of the Effort given in Annexe I (see Table of Effort Above); this is in agreement with the estimation of 24% indicated at the end of Deliverable D1.2.

For Period 2, we estimate that all activities will be around 25-30% of Initial MP except "OTHERS" which should reach 40% because of the increase of deployment and support activities. For Period 3, RTD should decrease, other activities should be at same level as Period 2. For Period 4 (wrap-up period), we would expect very little activity in RTD, COORD and some activity in OTHERS and MGT.

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.

For Period 2, 4 and 4 we estimate that spending patterns will roughly follow requested MP as indicated in the previous paragraph.
For Period 2 contributed staff will participate more in the activities where budget has been spent more rapidly in Period 1, i.e. WP2 and WP6. We think that WP2 has been largely underestimated because the network is very large and complex and require a lot of coordination. WP6 has had a huge activity in Period 1 because other RTD activities depend closely on the outcome of WP6.