Spectroscopic coordination unit
Status report

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On behalf of the Gaia spectroscopic community

Abstract: This report reviews the current status of the coordination unit "C6 Spectroscopic reduction" and presents the next steps and actions of the organization of the spectroscopic coordination unit.

1 Introduction

The processing of the Gaia data will be a complex task for many reasons, e.g.:

- The variety of information: astrometry, broad band photometry, medium band photometry and spectroscopy and their interdependency.
- The large number of sources observed: ~1 billion stars in astrometry and photometry and about ~100-150 millions stars in spectroscopy.
- The large number of epochs of observation: several tens for each instrument.

Because of the challenge represented by the Gaia data processing, several key demonstration studies (among which the “Gaia Data Access and Analysis Study” - GDAAS (Torra et al., 2005) and the “GRID tests” (Ansari et al., 2005)) have been conducted over the past years (some of them have started more than 10 years before the launch of the satellite).

Around beginning-mid-2006, the ESA will issue an Announcement of Opportunity (AO) for the definition and development of the whole operational Gaia data storage and processing structure. The scientific community, structured in a unique consortium (hereafter referred to as the Gaia Data Analysis Consortium or GDAC), should answer the AO and should start taking the responsibility for the development of the Gaia storage and analysis “pipeline” by ~mid-2006.

The GDAC will be responsible for all the aspects of the definition, development, test and execution of the storage, calibration and analysis of the Gaia data. The consortium is expected to be made of the order of a few hundreds people. Harmonizing the interests of a few hundreds people to build a single consortium is a big task. The process has started late-2004 and should converge in time for the AO (early 2006). The steps of the realization of the GDAC conducted so far (as of 20 June 2005) are:

- The review of the interests of the community via the “Letters of Intent”.
- The definition by the Gaia Science Team (GST) of a preliminary structure for the Gaia Data Analysis Consortium. The current proposal (as of 20 June 2005), revised by the Data Analysis Consortium Committee (DACC – see below for the term of reference of the DACC), is to divide the realisation of the Gaia storage and processing structure among seven thematic groups called coordination units (CU):
    - C1 Overall system architecture
    - C2 Data simulations
    - C3 Core processing
    - C4 Object processing (i.e. double and multiple systems, solar system objects, classification and parameterization).
    - C5 Photometric reduction
    - C6 Spectroscopic reduction
    - C7 Catalogue access and scientific exploration

  Each coordination unit is divided in several Development Units (DU). Each development unit is in charge of a particular aspect of a coordination unit. The GDAC would be coordinated by the Data Analysis Consortium Executive (DACE).

The GDAC structure is in definition and optimization phase and the picture presented here may still evolve. As an example, a new coordination unit "classification and parameterization" has been proposed at the joint RVS/photometry/classification workshop held in Barcelona from 27 to 29 April 2005. This coordination unit has been then transformed in the coordination unit "C4 object processing" at the first meeting of the DACC.

- The appointment by the Gaia Science Team of a new group: the Data Analysis Coordination Committee (DACC). The DACC is responsible for the definition and optimization of the detailed structure of the Gaia Data Analysis Consortium (whose overall structure is presented above). The DACC should complete its work early-mid 2006 and will then be dissolved and replaced by the Data Analysis Consortium Executive. The first meeting of the DACC has been held 16-17 June at ESTEC (Bailer-Jones & Mignard, 2005).

This report reviews the current status of the coordination unit "C6 Spectroscopic reduction" and presents the next steps and actions of the organization of the spectroscopic coordination unit. Section 2 presents the agenda of the organization of the spectroscopic CU. Section 3 presents the structure and responsibilities of the coordination unit. Section 4 presents a draft work breakdown structure (WBS) for the spectroscopic processing and a synthesis of the interests of the Gaia spectroscopy community. Section 5 lists the short term actions.

2 Agenda of the formation of the spectroscopic CU

The general agenda of the formation of the coordination unit "C6 Spectroscopic reduction" is the following:

- <u>February 2005: Definition of the first draft Work Breakdown Structure (WBS) of the spectroscopic tasks</u>. A revised version, modified following the discussions of the joint RVS/photometry/classification workshop held in Barcelona late-April 2005, is presented in this report (Sect. 3.2 and 4).

- <u>Mid-April 2005: Synthesis of the "Letters of Intent" related to spectroscopy</u>. It allowed reviewing the interests of the community, to size the strengths (number of FTE) of the community, to identify the topics/tasks which interest one or several teams, to identify the tasks which are not yet covered. It also allowed identifying new institutes interested to join the Gaia spectroscopy community.

- <u>27-29 April 2005: Barcelona joint RVS/photometry/classification workshop</u>. The main objectives of the workshop were:
    - Discuss and agree on a proposal for the responsibilities and for the structure of the coordination unit "C6 spectroscopic reduction". The proposal is presented in section 3.
    - Discuss, revise and agree on the overall work breakdown structure of the spectroscopic data processing. It is presented in section 3.
    - Review, update and detail (with respect to the "Letters of Intent") the proposals of the different institutes concerning their involvement in the

spectroscopic processing. The updated synthesis of the interests of the community is presented in section 4.

- May 2005 to early-2006: Definition of the detailed organization of the spectroscopic CU. This covers several aspects:
    - Define the detailed list of data (e.g. synthetic spectra, or catalogue) or algorithms (e.g. derivation of the radial velocity of bright early type stars) that should be delivered by each development unit.
    - For each data or algorithm to be provided, describe precisely the data or algorithm, i.e. for an algorithm: method, input data, output data, …
    - For each data or algorithm to be provided, define the deliverables and reporting, development and test data, test plan, agenda and work load.
    - Find volunteers for the modules not covered, homogenize the proposals/interests of the different teams/people and check the consistency between the proposed number of FTE and the estimated work load.
    - Define the people responsible for the delivery of each data or algorithm.

  The detailed definition and organization of the development units will be performed, for a large part, development unit per development unit, via mail discussions with the people interested by the concerned development unit. A list of people interested has been made for each development unit. It is presented in section 4. If you are interested to participate in the activity of a development unit and if your name is not yet in the list, please register by sending a mail to David Katz (david.katz@obspm.fr), Marc Cropper (msc@mssl.ucl.ac.uk) and Ulisse Munari (munari@pd.astro.it).

- Early-mid 2006: Release of the Gaia Spectroscopic Processing Development Plan. The development plan should present the coordination unit structure and should describe in details the spectroscopic work breakdown structure: list of development units and detailed list of data and algorithms to be provided by each development unit (including for each data or algorithm: description, deliverables and reporting, development and test data, test plan, agenda and people responsible).

3 Responsibilities and structure

3.1 Responsibilities of the CU Spectroscopic reduction

The proposed responsibilities of the coordination unit "C6 spectroscopic reduction" are:

- Database and processing architecture:
    - Define the architecture for the storage and access to the spectroscopic data and spectroscopy related data (e.g. radial velocity).
    - Define the architecture of the spectroscopic calibration tasks and of the spectroscopic analysis tasks.
    - Support the implementation, the tests and the operational use of the spectroscopic data storage and access structure.

Note: Several options are foreseen for the hardware (storage and processing) structures. They range from a fully centralized system (where all the data are stored and processed in a single location) to a partly distributed system (where some of the coordination units would have a local database and would execute some of the processes in local) with scenarios "in between". The DACC is currently conducting a study to assess the option the best adapted to the specificity of the Gaia data flow and to the strong interdependency of the Gaia data. So far, no definitive choice has been made, but the use of local processing centres (e.g. one for photometric processing, one for spectroscopic processing, one for "objects" processing) seems promising. If the solution of a spectroscopic centre is finally adopted then the coordination unit C6 will also have the responsibility for the storage and processing of the data.

- Calibration and analysis algorithms:
    - Define and develop the spectroscopic data calibration and analysis algorithms (including the scientific and engineering robustness/optimization stages).
    - Support the implementation, the tests and the operational use of the algorithms of calibration and analysis of the spectroscopic data.
    - Responsible for the final spectroscopic scientific performance.

Note: If the solution of a spectroscopic centre is finally adopted, the coordination unit C6 will also have the responsibility to run the algorithms.

Note: Following the discussions of the Barcelona workshop, it was recommended that the responsibilities of the coordination unit "C6 spectroscopic reduction" in term of spectra processing, were: the extraction of the spectra, the calibration of the spectra, the derivation of the radial velocities, the detection and characterization of the spectroscopic multiple systems and of the variable stars. It was recommended that the classification and parameterization of the sources (using the astrometric, photometric and spectroscopic data) be the responsibility of an independent coordination unit "Classification and parameterization"). This recommendation has been validated by the DACC. The DACC has also included the responsibilities for double and multiple systems (the case of the spectroscopic binaries is discussed in Sect. 3.2) and for solar system objects in this coordination unit which has then been renamed "C4 Object processing".
The responsibilities transferred (with respect to the February draft work breakdown structure) to the CU "C4 Object processing" are mainly: the discrete classification, the determination of the stellar atmospheric parameters, the derivation of the stellar individual abundances, the stellar diagnostics (e.g. Be phenomenon, mass loss, …) and the derivation of the properties of the interstellar medium (velocity and integrated reddening) from the 862 nm Diffuse Interstellar Band (DIB).

- Simulations:
    - Develop the modules for the simulation of the RVS spectrograph. Those modules will be integrated in the GAIA simulator (Luri et al., 2005) and its components GASS (Masana et al., 2005) and GIBIS (Babusiaux, 2005).

- Support and/or run simulation programs to produce synthetic RVS-like spectra for the development and tests of the storage structure and of the calibration and analysis algorithms.

- Auxiliary data:
    - Compute, observe and improve auxiliary data necessary for the calibration and analysis of the spectroscopic data. If needed the computation and acquisition of auxiliary data may continue during or after the mission period.

Note: Following the discussions of the Barcelona workshop, it has been decided that the scientific ground follow-up was not the responsibility of the coordination unit C6 spectroscopic reduction.

3.2 Structure of the CU Spectroscopic reduction

The discussions of the Barcelona workshop led to the following proposal for the coordination unit “C6 Spectroscopic reduction”:

- The coordination unit C6 is one of the components of the Gaia Data Processing Consortium (one out of 7, as of 20 June 2005).
- The coordination unit C6 is an international group made of different Eurpean institutes.
- Its responsibilities are divided in several thematic development units (10 development units as of June 2005). Each development unit is responsible for a series of work packages (work packages can be e.g., auxiliary data, piece of software, …). Several institutes can participate to a given development unit and an institute can participate to several development units (as well as to several coordination units).
- The development unit DU1000 is responsible for the coordination, quality control and communication of the coordination unit C6.
- Each development unit has a development unit coordinator.

Figure 1 shows a schematic view of the structure of the coordination unit “C6 Spectroscopic reduction” in the framework of the Gaia Data Processing Consortium. It presents the 10 development units. For sake of clarity of figure 1, only for the three first development units, has an arbitrary number of individual work packages been represented (in reality all the development units are subdivided in a series of work packages). The list of work packages per development unit (as of 20 June 2005) is presented in section 4. The list of work packages of each development units is expected to be significantly refined, detailed and modified over the coming months.

The list of development units presented in Fig. 1 integrates the recommendations expressed at the Barcelona workshop. With respect to the previous list of development units (early April 2005), the main changes are:

- The “algorithm verification” DU has been merged with the “coordination of the coordination unit” DU.
- The “classification and parameterization” and “diagnostics and peculiar objects” DUs are now under the responsibility of an independent coordination unit: C4 Object processing.

- The derivation of the properties of the interstellar medium via the analysis of the 862.0 nm Diffuse Interstellar Band (DIB) is now under the responsibility of the CU C4 Object processing.
- The "Science Alert" DU has been considered as not under the responsibility of the CU C6 Spectroscopic Reduction.
- The "Background and interstellar medium" DU has been renamed "spectra extraction & background modelling" and is now only devoted to the extraction of the spectra and to the modelling and subtraction of the background (whereas previously, it was also including the analysis of the 862.0 nm DIB).

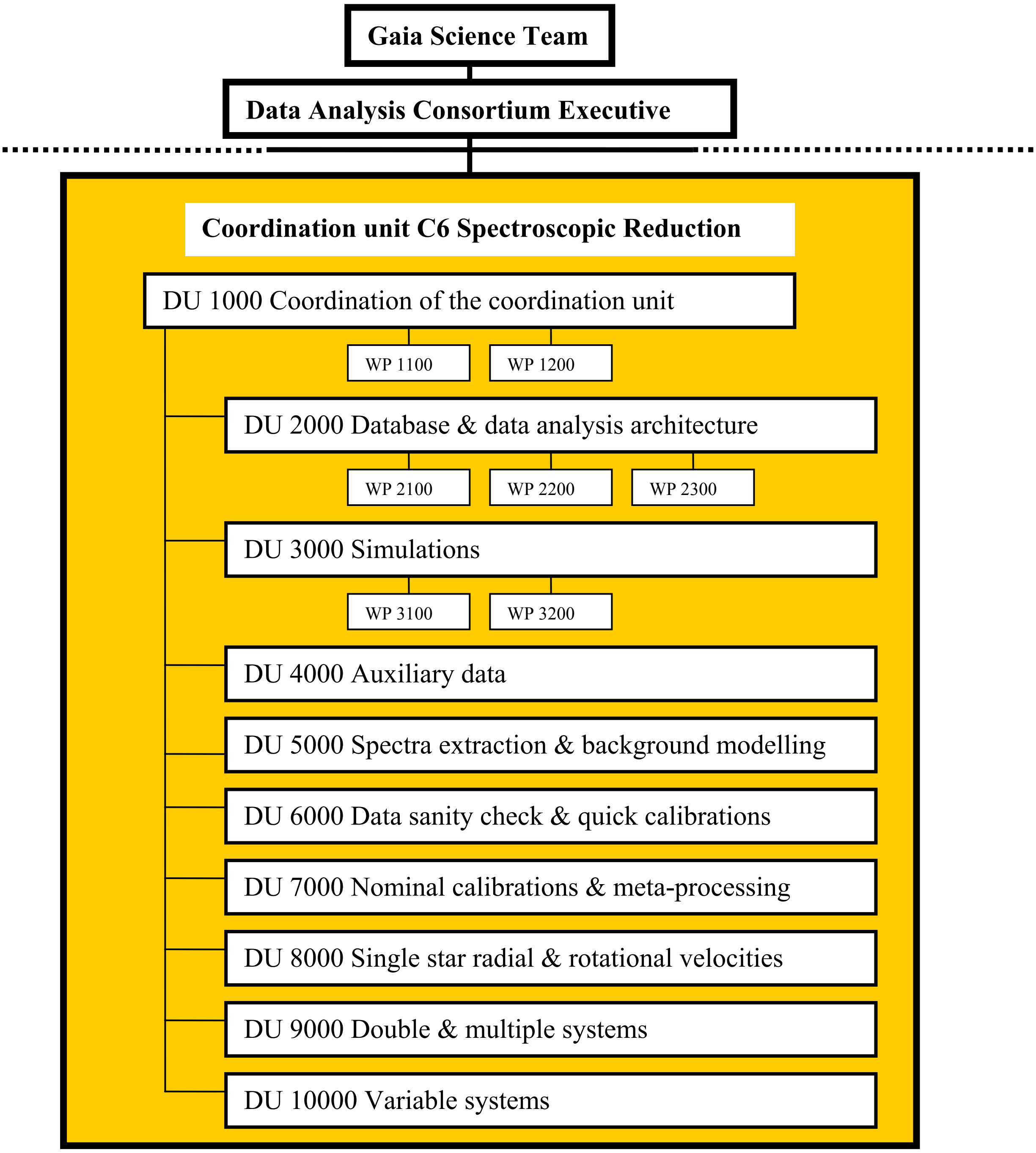

Figure 1: Schematic view of the structure of the coordination unit "C6 Spectroscopic reduction" in the framework of the Gaia Data Processing Consortium. For sake of

clarity, only for the three first development units, has an arbitrary number of individual work packages been represented (in reality all development units are subdivided in a series of work packages).

The Coordination Unit C4 Object processing is responsible for the analysis of the double and multiple systems. Yet, some facets of the analysis of spectroscopic binaries may present strong similarities with the rest of the spectroscopic processing: e.g. derivation of the radial velocities in SB2 systems. The two Coordination Units will discuss during the next months to define the "optimal" distribution of responsibilities between them.
For the near future, the definition of the work to be performed to analyse the spectroscopic binaries will be conducted under the auspice of the Coordination Unit C6 Spectroscopic Reduction as development unit DU9000 Double & multiple systems.

In the current GDAC scheme, the responsibilities of the analysis of the "variable stars" are spread over the three coordination units (according to the appropriate facets of the variability): C3 Core processing, C5 Photometric reduction and C6 Spectroscopic reduction.

4 Work breakdown structure and first review of interests

The subsections below present the main broad tasks (broad work packages: e.g. define the architecture of the calibration tasks, provide specific auxiliary data, provide specific programs) to be performed by each Development Units. One of the short time aims of the preparation of the Coordination Unit "C6 Spectroscopic Reduction" is to replace these broad work packages by detailed lists of more focused "smaller" work packages ("elementary" deliverables). For example, the work package WP3100 "Simulate RVS instrument" should be replaced by the list of more focused "smaller" work packages: "compute field of view to focal plane coordinates transformations", "simulate vignetting", "simulate CCD charge trapping/detrapping", … (and many others).

The subsections below also summarize the interests of the community with respect to the different development units. The names of the people that have expressed an interest for particular development unit(s) or for particular broad work package(s) within development units(s) are listed following the appropriate work package (if defined) or in the sections "interests to be defined" of each development units (if interests were expressed for a development unit in general). Are also listed the institute and the FTE foreseen (when defined).
This summary has been extracted from the Letter of Intents (LoIs) and updated following the presentations made at the April Barcelona joint-workshop. Misunderstanding of some LoIs or Barcelona presentations may have led to some errors in the summary below (apology to the concerned people if this is the case). The readers are therefore invited to check that the information listed below are correct and to contact David Katz (david.katz@obspm.fr), Mark Cropper (msc@mssl.ucl.ac.uk) and Ulisse Munari (munari@pd.astro.it) to correct any error. In particular, please check that:

- Your name is listed for each development unit and/or work package you are interested in (both in DU #### members and in the table(s)).
- That your name is not listed for a development unit or work package you are not interested in.

4.1 DU 1000 Coordination of the Coordination Unit

DU 1000 members: Gomez, Katz, Sartoretti, Turon

Task		People	Institute	FTE
WP1100	Definition & follow-up of agendas	Katz, Turon, Sartoretti, Gomez	Paris	0.5
WP1200	Follow-up of the development of modules & quality control	Katz, Turon, Sartoretti, Gomez	Paris	0.7
WP1300	Communication: synthesis reports, meetings, web site	Katz, Turon, Sartoretti, Gomez	Paris	0.4

4.2 DU 2000 Database & data analysis architecture

DU 2000 members: Baruffolo, Becciani, Bigot, Ferraro, Huc, Pasian, Pastore, Pichon, Porceddu, Smareglia, Steinmtetz, Thévenin, Vidal-Madjar, Volpicelli, Zachei

Module		People	Institute	FTE
Interests to be detailed		Baruffolo, Pastore Becciani Ferraro Porceddu Steinmetz [grid processing] Vidal-Madjar et al. [data mining and visualisation tools] Volpicelli Zacchei, Smareglia, Pasian	Padova Catania Roma Cagliari Postdam IAP Torino Trieste	
WP2100	Overall structure, data flow & interfaces (external/Gaia & internal/RVS)	Huc et al. Thévenin, Pichon, Bigot	CNES Nice	
WP2200	Database architecture	Huc et al.	CNES	
WP2300	Coordination with CU3 for initial data treatment			
WP2400	Architecture of the data analysis modules: data flow & sequencing	Huc et al. Thévenin, Pichon, Bigot	CNES Nice	0.70
WP2500	Algorithm integration & operational tests	Huc et al.	CNES	

4.3 DU 3000 Simulations

DU 3000 members: Alta-Mirano, Cropper, Luri, Malkov, Masana, Sartoretti, Viala

Module		People	Institute	FTE
Interests to be detailed		Cropper Luri, Alta-Mirano, Masana [Telemetry level] Malkov	MSSL Barcelona Moscow	 2.5
WP3100	RVS instrument (optics, detectors & electronics)	Sartoretti, Viala [Pixel level]	Paris	0.50
WP3200	RVS data	Sartoretti, Viala [Pixel level]	Paris	0.50
WP3300	On-board RVS processing			
WP3400	On-ground RVS processing			

4.4 DU 4000 Auxiliary data

DU 4000 members: Andretta, Bigot, Boer, Bonifacio, Busa, Castelli, Crifo, Floquet, Frémat, Girard, Gomez, Hestroffer, Hubert, Jasniewicz, de Laverny, Lebre, Lebreton, Mauron, Munari, Neiner, Oliviero, Pagano, Piau, Pichon, Plez, Recio-Blanco, Soubiran, Steinmetz, Terranegra, Thévenin, Zorec, Zwitter

Module		People	Institute	FTE
Interests to be detailed		Bonifacio, Castelli Terranegra, Gomez, Andretta, Oliviero	Trieste Naples	
WP4100	Atomic & molecular data	Bigot, Thévenin Busa, Pagano [Ca IRT chromospheric active stars] Frémat, Zorec [hot stars] de Laverny, Recio-Blanco, Mauron [All + C stars]	Nice Catania Bruxelles / IAP Nice / GRAAL	0.35 0.10
WP4200	Atmospheric models	Bigot, Thévenin, Pichon, Lebreton, Piau [3D, NLTE, magnetic field] Busa, Pagano [Ca IRT chromospheric active stars] Frémat, Zorec [NLTE hot stars without emission] de Laverny, Recio-Blanco, Mauron [All + C stars] Plez, Lebre & Pollux team [All + cool stars]	Nice / Rennes Catania Bruxelles / IAP Nice / GRAAL GRAAL	0.70 0.10 0.20
WP4300	Synthetic reference spectra	Bigot Busa, Pagano [Ca IRT chromospheric active stars] Frémat, Zorec [NLTE hot stars without emission] de Laverny, Recio-Blanco,	Nice Catania Bruxelles / IAP Nice / GRAAL	 0.10

		Mauron [All + C stars] Plez, Lebre & Pollux team [All + cool stars] Soubiran, Girard [validation]	GRAAL Bordeaux	0.20
WP4400	Observed reference spectra	Boer Hubert, Neiner, Floquet [hot emission stars] de Laverny, Recio-Blanco, Mauron [All + C stars + Census of C stars] Munari, Zwitter [RAVE] Plez, Lebre & Pollux team Soubiran, Girard Steinmetz [RAVE]	OHP Paris Nice / GRAAL Asiago / Ljubljana GRAAL Bordeaux Postdam	0.10 0.15
WP4500	Photometric reference stars	Mauron, de Laverny [C stars]		0.05
WP4600	Radial velocity reference stars	Crifo Jasniewicz Steinmetz [RAVE]	Paris GRAAL Postdam	0.25 0.20
WP4700	Asteroids	Hestroffer [Ephemerides] Jasniewicz Zwitter et al.	IMCCE GRAAL Ljubljana	0.15
WP4800	Catalogue of reference parameters (Teff, logg, [Fe/H])	Soubiran, Girard	Bordeaux	

4.5 DU 5000 Spectra extraction & background correction

DU 5000 members: Mulas, Porceddu

Module		People	Institute	FTE
WP5100	Spectra extraction			
WP5200	Background correction	Porceddu, Mulas (TBC)	Cagliari	
WP5210	Modelling of the background generated by extended sources			
WP5220	Modelling of the background generated by point-like sources			
WP5230	Background subtraction			

4.6 DU 6000 Data sanity check & quick calibrations

DU 6000 members: Bastian, Cropper, David

Module		People	Institute	FTE
WP6100	Coordination with CU3	Bastian	ARI	
WP6200	First Look [Science quick look, First look pre-processing, detailed first look]			
WP6300	Calibrations for on-board processing	Cropper David	MSSL Antwerp	

4.7 DU 7000 Nominal calibrations & meta-processing

DU 7000 members: Cropper, David, Guerrier, Holland, Jordan

Module		People	Institute	FTE
Interests to be detailed		Holland et al.	Brunel / Leicester	
WP7100	Spectroscopic Global Iterative Solution-SGIS			
WP7110	Architecture: data flow & sequencing	Guerrier	Paris	0.25
WP7120	Characterization of the sources	Cropper	MSSL	
WP7130	Selection of the calibration sources	Guerrier	Paris	0.25
WP7200	Calibration & filtering modules	Jordan [commissioning]	ARI / LSW	
WP7210	CCD offset and response calibration & CCD defects mapping	Cropper Holland (TBC)	MSSL Brunel (TBC)	
WP7220	Cosmic rays filtering	Cropper	MSSL	
WP7230	PSF profile calibration	Cropper	MSSL	
WP7240	Wavelength calibration	Cropper David Guerrier	MSSL Antwerp Paris	0.50
WP7300	Data meta-processing			
WP7310	Apply calibrations			
WP7320	Spectra “co-addition”	David	Antwerp	

4.8 DU 8000 Single star radial & rotational velocities

DU 8000 members: de Boer, Bonifacio, Cropper, David, Frémat, Gomboc, Lanza, di Marcantonio, Martayan, Royer

Module		People	Institute	FTE
Interests to be detailed		De Boer Bonifacio, di Marcantonio David [systematic errors due to mismatch and instrumental effects] Gomboc [rotational velocity]	Bonn Trieste Antwerp	
WP8100	Early type stars	Cropper Frémat, Martayan Royer	MSSL Bruxelles/Paris Paris	0.50 0.10
WP8200	Late type stars & asteroids	Cropper Lanza et al. Royer	MSSL Catania Paris	0.50 0.10
WP8300	Low signal to noise stars	Cropper David Royer	MSSL Antwerp Paris	0.50 0.05

4.9 DU 9000 Double & multiple systems

DU 9000 members: Cropper, Gomboc, Halbwachs, Jauregi, Lanza, Malkov, Manimanis, Milone, Munari, Niarchos, Pourbaix, Prsa, Vidrih, Wilson, Zwitter

Module		People	Institute	FTE
Interests to be detailed		Halbwachs Malkov Manimanis Milone Niarchos Pourbaix Wilson	Strasbourg Moscow Athens Calgary Athens Bruxelles Univ. of Florida	
WP9100	Coordination with binaries in CU4			
WP9200	Detection of multiplicity	Munari Zwitter, Prsa, Gomboc, Jauregi, Vidrih et al.	Asiago Ljubljana	
WP9300	Derivation of radial velocities	Cropper Lanza et al. Munari Zwitter, Prsa, Gomboc, Jauregi, Vidrih et al.	MSSL Catania Asiago Ljubljana	0.5
WP9400	Characterization of the system (atmospheric parameters)	Lanza et al. Malkov Munari Zwitter, Prsa, Gomboc, Jauregi, Vidrih et al.	Catania Moscow Asiago Ljubljana	
WP9500	Derivation of orbital elements	Munari Pourbaix	Asiago Bruxelles	

4.10 DU 10000 Variable systems

DU 10000 members: Aerts, Blomme, de Cat, Chadid, Eyer, Fabregat, Gosset, Hubert, Mathias, Neiner, Prsa

Module		People	Institute	FTE
Interests to be detailed		Aerts, Gosset, Blomme Chadid Eyer Mathias Prsa	Leuven Nice Genève Nice Ljubljana	
WP10100	Detection of variability	Fabregat, de Cat, Neiner [early type stars]	Valencia/Leuven/Paris	
WP10200	Search for period	Hubert, Neiner [early type stars]	Paris	

4.11 Summary of the interests of the community: conclusions

In general, the tasks proposed by the spectroscopic community are consistent with and fit in the spectroscopic work breakdown structure. In several cases, several teams have volunteered for the same work package. This is absolutely not a problem. Over the coming months we will work on the harmonization of those similar proposals: e.g. having activities performed in parallel (if it is useful: e.g. to validate a very difficult task), or merge the proposals, or redirect a proposal toward another uncovered activity.

The numbers of FTEs volunteered in the Letters of Intents were often global estimates for several work packages. In order to check that the work packages will be properly taken care of, we need to know the number of FTE volunteered by each team work package per work package (see Sect. 5 Next steps and actions). We should be careful, that a long list of names does not necessarily means a large number of FTE (this uncertainty should be lifted as soon as possible).

It should be emphasized that the level of quality and robustness that we aim to achieve for the on-ground processing requires a significant commitment by the members of the Gaia consortium. The minimum useful commitment is of the order of 20% of one person time (on a given work package) and it is important that a significant number of people commit 50% of their time or more. People who have volunteered for less than 0.2 FTE per task should aim to contribute for 0.2 FTE per task (or more).

Many teams have expressed their interest for development units in general. These interests should now be detailed at the level of the work package (see Sect. 5 Next steps and actions).

Two areas lack, for the moment, enough volunteers:

- DU5000 Spectra extraction & background modelling
- WP6200 First Look

These two areas are of extreme importance for the processing of the spectroscopic data. Volunteers are invited to contact David Katz (david.katz@obspm.fr), Mark Cropper (msc@mssl.ucl.ac.uk) and Ulisse Munari (munari@pd.astro.it).

5 Next steps and actions

The main aims for the coming months are to:

- Define in more details the work packages to be delivered by each coordination unit: with more detailed lists of more focused "smaller" work packages: e.g. replace "Simulate RVS instrument" by:
    - "compute field of view to focal plane coordinates transformations"
    - "simulate vignetting"
    - "simulate CCD charge trapping/detrapping"
    - … (and many others).
- Refine the level of details of the interests of the community in a consistent way with respect to the increasing level of details of the description of the work packages.

To achieve these two goals, the readers are invited to perform the following actions:

- Check that all the information concerning them are correct and contact us in case of error.
- Teams listed in the sections "interests to be detailed" should define more precisely the work package(s) they are willing to contribute to (at least with the level of details presented in the present document and in more details if possible).
- Number of volunteered FTE for each work packages should be provided (if not already defined).
- Teams which have volunteered for particular work package should define in more details what they plan to deliver.
- All readers are invited to comment on the present work breakdown structure and propose detailed lists of more focused work packages.
- Volunteers for DU5000 Spectra extraction & background modelling and WP6200 First Look should contact us.

Questions, additional information, comments and revisions should be send to David Katz (david.katz@obspm.fr), Mark Cropper (msc@mssl.ucl.ac.uk) and Ulisse Munari (munari@pd.astro.it).

The organization of the coordination unit C6 Spectroscopic Reduction and the spectroscopic work breakdown structure will be two of the main topics of the next RVS workshop which will be held in Cambridge on 15 and 16 September 2005: http://www.ast.cam.ac.uk/meetings/rvs10/index.html

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