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Dissemination report 2

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Dissemination report 2

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Abstract: *The report reviews dissemination task completion for project months 18-36*

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Preface

The report is the second of a series of three such reports, deliverable under the ADAS-EU project, which summarise dissemination of ADAS capabilities during the period.

H P Summers
January 27, 2012

Chapter 1

Overview and milestones DSM2

The second ADAS-EU course took place at the EFDA-JET Facility, Culham Laboratory, UK. As discussed in report DISSEM1, the problem of the lack of facilities (sufficient UNIX terminals running IDL) at Fz Jülich continued - hence the choice of Culham Laboratory. Details are in chapter 2: section 2.1 and associated appendices.

As indicated in report DISSEM1, there has been a wish for extra courses, following the ADAS-EU course pattern, but outside Europe, for those, especially PhD students, who cannot travel to Europe in large numbers. Also, there was a specific request from the ITER Organisation for a course to be given at Cadarache, tuned to current ITER needs and interests. This indicates some change in the pattern of the best way to implement the support action in this area. It was decided to respond to these special needs and requests, albeit with a corresponding increase in the commitment of staff time.

The course was given at Auburn University, Alabama 6-9 July 2010, taught by ADAS/University of Strathclyde trained scientists in the USA (Dr. Stuart Loch, Dr. Connor Ballance and Dr. Adam Foster) and with the help of ADAS staff (Dr. Martin O'Mullane). The event improved the already good relationship with staff at Auburn University. The course was slightly shorter than the standard at three working days, with some ADAS-EU core course material replaced by special sessions on electron impact processes and their calculation - a special interest at Auburn and a topic on which University of Strathclyde staff engaged in ADAS and ADAS-EU have considerable strength. It is noted that, since the course was outside Europe, no costs were attributed to ADAS-EU budgets, although ADAS-EU course materials were used. Nonetheless, the event reflected well on ADAS-EU and Europe and its contribution to the international fusion agenda. It does lead to enhanced flow of fundamental atomic data into ADAS databases from the USA.

The ITER course was a three day event, presented in its entirety by Dr. Martin O'Mullane. In this case, the initial part of the standard ADAS-EU course was given, but later parts became quite ITER specific responding to individual local needs. This was effective and well received, particularly because of Dr. O'Mullane's familiarity with ITER activities, especially spectroscopic diagnostic development. It has already led to increased direct cooperation between ADAS and ITER. This course was also helpful in demonstrating that a targeted course, with flexibility, can be handled by a single ADAS/ADAS-EU specialist.

The next full ADAS-EU course was originally scheduled for around Oct. 2011. In light of the 2009 course in Germany and the continuing hosting difficulties at Jülich, it was agreed to take the 2011 course to Conzorzio RFX, Padova, Italy. This gives fair weighting to Southern Europe, with the unexpected advantage of having Italian and Spanish speakers on the ADAS-EU staff. Timing for Oct. 2011 proved difficult because of RFX operations, so it was agreed to change the date to 25-30 Mar. 2012. This unfortunately will place two courses in 2012, the fourth being planned for CEA Cadarache in Oct 2012. The first circular of the Padova ADAS-EU course has been issued, but there is no report of it in the present time period.

A substantial number of visits to European institutions took place in the period Jul 2010 - Dec. 2011. A pattern has developed which is a little different from that expected in the original ADAS-EU conceptual planning. The ADAS-EU sub-contracting, in most cases led to quite strong interactions, with a shared interest between contracting University staff and ADAS/ADAS-EU/University of Strathclyde staff in moving forward on some of the difficulties of the underlying physics. This is additional to the immediate, well-defined deliverables, but consistent with the intention of using such

fiducial data to refine approximate methods used by ADAS. Some visits have been in this context. Secondly, on the plasma theoretical side, the pattern in Europe and elsewhere is for the formation of integrated modelling groups, who hold periodic meetings to align and assemble component activities. Atomic modelling and data are a part of these, with ADAS the preferred path for its provision, so formal connections have been made. Such connections and visits in Europe have been pursued as ADAS-EU dissemination actions, but with travel funding not necessarily necessary from ADAS-EU budgets. The ADAS/ADAS-EU/University of Strathclyde staff travel then travel under this mixed parentage. For completeness some of these travel reports are included here, even though they have not drawn on ADAS-EU travel funds. Finally, there has been a substantial number of visits to ITER. Dr. O'Mullane has carried this activity completely. It has led to deep ADAS engagement in the performance prediction/targetting of ITER spectroscopic diagnostics. We have followed this course enthusiastically, since it fits in very well with the general requirement that ADAS-EU should support ITER. For these visits, in some cases ITER Organsiation has ameliorated the travel fund costs to ADAS-EU, so making a fairer all round balance. Relevant travel reports have been included here although the travel funding may not have come from ADAS-EU budgets. Details are in chapter 2: section 2.2 and associated appendices.

It is concluded that the dissemination plans of ADAS-EU and the associated spread of European atomic physics influence in the fusion plasma world are continuing to progress well.

Chapter 2

Work package reports

2.1 Work packages 20-1-2 and 20-2-2

The second ADAS-EU course took place at the EFDA-JET Facility, Culham Laboratory, UK. Attendees came from as far away as Korea, but the preponderance was from the UK. EFDA-JET provided excellent facilities, with the use of a lecture/discussion room adjacent to the JET control room. Also, since JET was undergoing its EP2 upgrade, the course was able to use the spectral diagnostics terminals in the control room. EFDA-JET is gratefully acknowledged for providing excellent facilities for the course. Details are in chapter 2: section 2.1 and associated appendices.

The course was widely advertised in association with the ADAS Workshop circulation lists and displayed on the ADAS-EU and ADAS web sites. The first announcement document is attached in Appendix A [1]. The number of external participants was limited to ten by IPP Garching resources leaving headroom for some local IPP participants. The course was oversubscribed. The complete list of participants, including the tutors is attached in Appendix ?? [1]. The participants were principally from Europe but included persons from as far away as Korea, India and the USA. There were four internal IPP Garching participants.

The principal presenters of the course were the ADAS-EU senior staff, Prof. Hugh Summers, Dr. Martin O'Mullane and Dr. Allan Whiteford. They were supported by shorter presentations from Prof. Nigel Badnell, Department of Physics, Strathclyde University on fundamental atomic structure and collision cross-section calculations and by Dr. Dmitri Borodin, Fz Juelich on application to plasma modelling codes. Prof. Badnell and Dr Borodin each attended for two days of the course in its second week. The working agenda is attached in Appendix A [2]. A pattern evolved of a lecture of 1.5 hours at the beginning of the morning. Further practical instruction in the late morning was followed by hands-on sessions through into the late afternoon. The formal day's work ended with a round table discussion of around one hour. This was an opportunity for each participant to expand on their research interests and allowed the tutors and participants to explore how ADAS could assist.

The complete set of course material are attached in Appendix ?? [1] - [35]. These materials have been made available on the ADAS-EU web site.

Final shared appraisal of the course at its end was very positive. Participants felt it would be good to have some follow up. A number of scientific engagements did take place at the course which have led to new on-going work.

2.2 Work package 21-1-2 and 21-2-2

There have been six external support visits completed in months 19-36 of ADAS-EU, listed below.

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In light of the delay in the employment of the PDRAs, assistance was given in these visits by the ADAS-EU managers - Prof. Hugh Summers and Dr. Martin O'Mullane. It is anticipated that in the next period, the PDRAs will be able to implement external visits and support at the frequency specified in the ADAS-EU contract.

2.3 Work package 26-4-2

The work package task comprises the preparation of this report.

Appendix A

ADAS data formats