

## APE 2012: Academic Publishing in Europe

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# A short report from the International Conference: “Semantic Web, Data & Publishing” \*

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(preceded by the Education and Training Course: “Hands on! Exchange of experiences & updates on technologies” on 23 January 2012)*

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### Day 1

#### *Welcome and opening addresses*

Welcoming speakers and participants, Dr. Christian Sprang (German Association of Publishers and Booksellers, Frankfurt am Main), highlighted in his **greetings** that ‘Academic Publishing in Europe’ has built a reputation by providing a forum for all stakeholders to be heard, interact and envision solutions that benefit scholarly communication. The ongoing necessity and possibility for stakeholders to continue the discussion has been stressed by the PEER Economics report, which investigates the costs associated with the large-scale deposit of stage-two research outputs (Green OA) – for publishers and repositories.<sup>1</sup> APE, being held in Berlin for the seventh time, constitutes a unique forum in Germany and Europe.

In the **opening address**, Michael Mabe (CEO, International Association of STM Publishers, The Hague and Oxford), emphasized that the system of scholarly communication shows basic continuity – as demonstrated by major studies over the past years [1–5]. Nevertheless, scholarly communication has also shifted, because its digital products are malleable, can be copied and are subject to mash-ups. The boundary between the legitimate and the illegitimate is somewhat blurred. Hence, control over access and distribution is a critical issue. Open access, initially, as open access publishing was one possible

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<sup>1</sup> Publishing and the Ecology of European Research – <http://www.peerproject.eu/>.

solution (among others). However, the subsequent focus on green open access – without a clear business model – was sub-optimal, with access and distribution mechanisms highly controversial. Further still, as the PEER Project has shown, large-scale green open access solutions are quite labour intensive and messy. On the other hand, publishers are developing new and sustainable business models to meet the varying expectations of stakeholders.

In the **first keynote**, Derk Haank (CEO, Springer Science+Business Media, Doetinchem) spoke about *The Past, the Present, and the Future of STM Publishing*. He emphasized that with the Internet, scholarly communication and publisher services have been getting better and would be getting better still. Customer satisfaction has much improved. Scholarly publishing will continue to grow in terms of volume and usage, creating new opportunities. One of these opportunities are the emergent markets. Another opportunity is open access publishing, particularly in the life sciences. However, overall, the cost per article in the subscription-based model is decreasing, while in open access publishing it is going up. This is interesting to note vis-à-vis the funding challenge scholarly communication faces. The volume is going up, but budgets are limited or shrinking. Consequently, one would expect that the price must come down. Mr. Haank emphasized that the majority of leading publishers are European. Hence, the institutions of the European Union should listen more.

The subsequent discussion highlighted features of big subscription deals, such as the trend to integrate all content in a single database, high levels of usage, and decreasing unit costs. Big deals simplify transactions as all services are included in one price. E-books are now also part of subscription deals. Even though technological solutions have been essential, Mr. Haank stressed that investments are driven by a business case in which the publishing of content remains the core aspect.

In the **second keynote**, Prof. Dr. Jean-Claude Burgelman (DG Research, European Commission, Brussels) spoke about *Research and Innovation. From web 2.0 to Science 2.0? The Potential of ICT to Change the Modus of Science and Research*. He emphasized that much change in science is technology-driven, and that this type of change feeds on itself: Computation technologies have enabled data-intensive science, which, in turn, requires further innovation when analyzing and archiving the data. By default, the modus operandi is open and public, because at this new scale and level of intensity global, cooperation is necessary, including the involvement of citizens or crowd sourcing. In this public space, entry costs and barriers are low, so that new players, including private and commercial ones, may endeavour to transform inputs (people/problems) into solutions, thereby creating new markets.

The subsequent discussion centred on policy implications, namely on defining the open and public base-layer of science, the role of publishers and the importance of knowledge management. Prof. Burgelman indicated that data-intensive science would impact scholarly publishing, whose role would need to be re-defined as publications and data became more complementary and integrated. In closing, he also stressed that data-intensive science was under public pressure to deliver useful results rapidly, particularly for the grand challenges facing humanity (e.g., food, climate, mobility).

The **Overviews** were chaired by Mayur Amin (Senior Vice President, Research & Academic Relations, Elsevier).

In the first overview, **Mark Ware** (Vice President and Lead Analyst, Outsell, London) spoke about *The Shape of Things to Come: How Technology Trends and Market Forces Will Change the Structure of the STM Publishing Industry*. Online technologies are powering global economies of scale and scope. Prime examples are a wave of mergers and acquisitions as well as big deal subscriptions. This technology trend is set to continue, with some public re-regulation (e.g., open access legislation or publishing). STM is a USD26bn industry, growing strongly in the medical (>5%) and geophysical (>7%) fields. For the end-user the main issue will no longer be access but information overload. Hence, competition will be for

the attention of the user and value added services and tools that support navigation, reading, re-use and so on. Product diversification (up the value chain), emphasis on services and low barriers will encourage new entrants.

In the second overview, **Dr. Nick Fowler** (Director of Strategy, Elsevier, Amsterdam) reported on *Measuring and Managing Research Outcomes*. He explained that STM publishing is crucial to social development and economic competitiveness. Global R&D spending in 2010 was USD1.2tn, driving growth in research outputs. The publishing industry, annually, handles 3m submissions, publishes 1.5m articles, and has 30m readers responsible for 2bn downloads. Hundreds of thousands of peer reviewers support the system. 30m citations speak to its importance. Four trends are increasing the value of research information: (a) interdisciplinary; (b) collaboration and mobility; (c) emerging markets; (d) data intensity. Consequently, major contributions that may be expected of publishers (and are provided by Elsevier) are (a) nurturing and leverage cross-disciplinary areas of research; (b) facilitate collaboration; (c) monitor brain circulation; (d) facilitate access to experimental data; and (e) broaden the range of research metrics and tools.

The session **The Right Approach** was chaired by Dr. Christian Sprang (Legal Counsel, German Association of Publishers and Booksellers, Frankfurt am Main).

**Mark Bide** (Director, EDItEUR, London) presented *The Linked Content Coalition – A New Approach to the Management of Copyright on the Internet*. He reminded the audience of the importance of standards in all aspects of the publishing. The Linked Content Coalition seeks to improve the management of digital content by establishing standards for metadata and copyright. Currently, on the Internet the handling of copyright is difficult. Legislation often is not fit for purpose, producers are concerned about control over distribution and access, content may be available on illegitimate sites that maximally offer an opt-out or take-down. The idea is that the answer to the machine is in the machine, that a standard can be developed that will be neutral to the environment (legal, technical), fair (competitors) and flexible over time. Copyright and licensing solutions are deployed online more effectively and easily, giving more choice to consumers, but also rewarding the creators and rightsholders.

**Kim Zwollo** (General Manager, RightsDirect, Amsterdam) gave the audience an insight into the topic *Digital Reuse Rights in a Fast-Changing Publishing Environment: Users' Demands and Licensing Options for Publishers*. Most users, and particularly institutional users, seek to be copyright compliant. However, frequently it is cumbersome or even impossible to obtain rights and permissions in an effective and timely manner. RightsDirect makes copyright easy: permission may be obtained 24/7 online for a single and/or flat price. For example, in companies much copyrighted material is used and shared frequently. RightsDirect offers a single integrated solution to use material from all kinds of publishers in a variety of ways. Another example is RightsLink, a point-of-content licensing scheme. In Germany, this scheme is being implemented with the support of major publishers, enabling immediate rights clearance.

The session on **Mining, Enhancing & Integrating** was chaired by Bob Campbell (Senior Publisher, Wiley Blackwell, Oxford).

**Dr. Eefke Smit** (Director, Standards and Technology, STM, Amsterdam) and Dr. Maurits van der Graaf (Senior Consultant, Pleiade, Amsterdam) spoke on *Tracing Tacit Knowledge: Practice and Promise of Journal Article Mining*. The Publishing Research Consortium commissioned a study on the state of play in content mining and its potential: experts were interviewed and publishers surveyed. Content mining is on the rise as newer technologies enable more applications. About half of the publishers are mining their own content, for better navigation, improved retrieval as well as new products and services. Many of them notice increasing requests from third parties. Non-commercial requests (that do

not lead to derivative or competing services) are usually granted. However, third-party mining would be facilitated by more standardization (formats, platforms, rules). Publishers as well as experts believe this to be the most suitable way forward.

**Dr. Peter Doorn** (Director, Data Archiving and Networked Services (DANS), KNAW/NWO, The Hague) gave a talk about *Enhancing Publications with Research Data*. Data is a hot topic because increasingly, it is essential to new knowledge claims, subject to political controversy, and sometimes forged. Policy makers rate data as ‘the new gold’. DANS is a trusted digital repository, whose mission is to preserve data for long-term access. It is committed also to connecting data to publications, and both with research information, so that data is archived and re-used. DANS has focused on enhancing publications, recently releasing 1800 of them via the Dutch national portal (narcis.nl).

**Dr. Sven Fund** (Managing Director, De Gruyter, Berlin) spoke about *Integrated Publishing – New Opportunities for Scientific Publishers*. A string of technological innovations (electronic publishing, databases, bundles, open access, mobile, etc.) has made publishing more complex but not increased profitability. Moreover, technology has not delivered ease-of-use to customers and also not protected publishers by raising barriers to market-entry. Nevertheless, user expectations are changing: they (a) desire direct and mobile access – just-in-time/point of need; and (b) find irrelevant distinctions between paid and open access content. Scholarly publishing will become demand-driven. Consequently, publishers must re-think their strategy, simultaneously developing their technology, workflow, business models, product types and pricing and channels. Seamless integration of these elements offers a chance for the publisher to meet user expectations.

The **APE Lecture** was delivered by Prof. Dr. Bernard Schutz (Director, Astrophysical Relativity Division, Max Planck Institute for Gravitational Physics, Golm) on *Enabling the Transition of Existing Journals in Open Access*. He reported on a Max-Planck-Society working group dedicated to finding ways to increase the number of OA journals, and to help existing journals’ transition to OA. MPS supports OA because it anticipates large benefits to research (e.g., full-text search, interdisciplinarity), but also believes that open access publishing has several advantages. For example, cost and income (price) would be correlated again, and open archives would be complementary. It would widen access to enterprises, professionals and educators, and create entrepreneurial opportunities. MPS, in conjunction with other research funding and performing organizations, is looking for a managed transition to open access: delivering to research organizations open access, protecting publishers business and competitiveness, and minimizing disruption for scholars. The simplest solution is for the research performing and supporting agencies to come together and develop a standardized mechanism for paying article-processing charges. Under discussion is a co-payment scheme, whereby a fund pays the majority of the charge and the researcher contributes (possibly a sliding fraction, depending on the price).

## Day 2

The second day began with the **wake-up discussion** ‘The debate about *The End of the Semantic Web? The Internet of Things and Services*’, introduced and chaired by **Arnoud de Kemp** (Co-EiC, “Information Services & Use”, IOS Press, Amsterdam). The participants were **Richard Padley** (Managing Director, Semantico, Brighton), **Dr. Denny Vandrecic** (Karlsruhe Institute of Technology and Wikimedia Deutschland), **Prof. Dr. Stefan Gradmann** (Institute of Library and Information Science, Humboldt University zu Berlin), **Dr. Sven Fund** (Managing Director, De Gruyter, Berlin), **Michael Dreusicke** (CEO, PAUX Technologies, Berlin) and **Prof. Dr. Felix Sasaki** (DFKI/W3C German Austrian Office, Berlin).

Richard Padley commenced with the provocative claim that the semantic web is dead indeed. Several statistics on job trends in Silicon Valley served to underline his thesis. However, he also highlighted the importance of rich data snippets in the results of search engines – making the existing web more semantic. In his opinion publishing content has to cause traffic on publishers' websites, so the search results of Google & Co. will dominate the use of publishing information. Stefan Gradmann contradicted this view and stressed that linked data has a big potential. Even search engines like Google have noticed this “threat”, so the publishers shouldn't limit their activities to providing rich snippets, but also use the advantages of linked open data. Felix Sasaki strongly disagreed with Mr. Padley's point of view and pointed out that Google and Facebook are working close to RDFa-standards. Denny Vandrecic supported this and pointed to a great advantage for publishers when they give access to original data: RDF provides one set of tools to publish any kind of data and it is a standard format which is used by many scientists. Michael Dreusicke commended Mr. Padley's convincing presentation and noted a key problem: “Semantic web” has an indistinct definition and moreover, “marketing difficulties”. Hence, he suggested finding a new term for the “semantic web”. Sven Fund warned the participants that the discussion is often too technical and “supply-driven”. Publishers' main effort should be extracting data for re-use, thus creating user-friendly content. Different answers were offered as to whether the semantic web is dead or not, but no consensus found.

The session **Innovations** was chaired by Drs. Eefke Smit (Director of Standards and Technology, STM, Amsterdam). She introduced the first talk by stating that semantic publishing is – in contrast to the semantic web – very alive.

In his Wikipedia presentation *Transforming the Way We Publish Research* **Dr. Daniel Mietchen** (EvoMRI Communications, Jena) introduced a new approach for publishing scientific works. As most research activities occur in the digital realm, it is technically possible to integrate research and publishing workflows. This means that the research process – driven by the community – can be published and edited at the various steps of the research cycle, online and in real time: from the first research idea to the final publication. Subsequently, Dr. Mietchen defined the most important criteria for the journal of the future in detail: dynamics, scope, access, replicability, review, presentation, transparency, sustainability and flexibility. To provide free access to scientific knowledge, and permissions to re-use and re-purpose it, is a basic condition for creating a journal of the future. Existing examples prove that open access data of many small publishers is cited quite a lot, so their competitiveness is rising with this new form of publishing research.

**Geoffrey Bilder** (Director of Strategic Initiatives, CrossRef, Lynnfield, MA) gave an *Update on CrossMark as well as on ORCID: Toward Unambiguous Attribution of Scholarly Contributions*. First, he reminded the audience of “CrossMark”. It is a logo that “identifies a publisher-maintained copy of a piece of content”. CrossMark's goal is to inform researchers about the location of the original and important changes, such as updates or corrections. Bilder added that this information is not available when a pdf file is downloaded. Important updates are the “CrossMark Pilot Support” to guide publishers through the project and the CrossMark logo which appears behind relevant articles in the search results of search engines. Finally, Geoffrey Bilder outlined rules and costs for participation.

In the second part of his talk, he spoke about “ORCID – Open Researcher and Contributor ID” which is meant to enable the unambiguous identification of authors and contributors. By issuing unique identifiers to all researchers, ORCID will facilitate discovery and evaluation for researchers, institutions, scholarly societies and publishers, so that all stakeholders will benefit in different ways. The project already counts more than 300 participating organizations from all over the world. Mr. Bilder expects the launch of the service in the second quarter of 2012. Finally, he directed the audience's attention to the different forms

of identification, namely self-asserted identity, organizationally-validated identity and socially-validated identity. ORCID's goal is to provide identification in all these three ways; at the moment a login via self-asserted identity is developed.

**Dr. Steve Pettifer** (School of Computer Science, University of Manchester) reported on *User-Side Semantic Enrichment of Scholarly Content*. At the beginning of his talk, he made the audience aware of the growing volumes of data, which are handled by researchers. Moreover, he pointed to the conflicting demands placed on scholarly articles, such as ease-of-reading versus machine readability. Many challenges arise from the fact that humans and machines understand different languages. To solve this problem, the software "Utopia Documents" wants to facilitate access to the underlying data of an article – directly from the article and vice versa. Although the pdf has recently attracted criticism, being dismissed as an "insult to science", it remains the favourite vehicle for distributing scholarly work. Consequently, Utopia Documents uses this format and links it to live resources on the web, transforming static data into live interactive content. Dr. Pettifer described the aim of Utopia Documents in reading a pdf much like a human being does: recognizing document content and features, ignoring less-important artefacts and non-document content. The software can be downloaded free of charge from <http://utopiadocs.com>.

In his talk *Semantic Enrichment – "Bells and Whistles" or a Scober Part of a Modern Publishing Infrastructure?* **Stefan Geißler** (Managing Director, TEMIS Deutschland, Heidelberg) gave a brief introduction to TEMIS, which has been specializing in content enrichment since 2000. After answering the question "what is semantic content enrichment?" – namely the automated extraction of domain metadata – he stressed reasons for doing it. Value is added to content in three steps: annotation, knowledge insertion and linking. Finally, Mr. Geißler presented several different client use cases, developed by TEMIS according to the needs of their customers: i.e., Project "Rescuing Lost Data" for Thomson Reuters, "Semantic Linking" for Springer SBM and "Case Law in Numbers" for Editions Francis et Taylor. He concluded that semantic content enrichment is about to become mainstream in (scholarly) publishing and that adding value with semantic enrichment might be an essential distinctive feature when raw content becomes more and more open (access).

The afternoon session **Data and Publication Operability** was chaired by Dr. Salvatore Mele (Head of Open Access, CERN, Geneva).

**Dr. Eefke Smit** (Director of Standards and Technology, STM, Amsterdam) introduced the project *ODE – Opportunities for Data Exchange – A Publisher Viewpoint on the Changes Ahead*, which is co-funded by the EU. She stated that the growing expansion of research data has changed the publication process in a very short time. As an example, she showed a digital iPad-version of an article from the journal "Nature". It contains a range of "new possibilities", i.e., linked author information, doi, live updates or share functions. As the depositions of datasets is still growing, researchers face a big data problem. Moreover, about 75% of research data is never made openly available. This raw data and data sets on disks and in drawers should find its way into publications in terms of progressive integration of text and data and seamless links to interactive datasets. Drs. Smit recommended to publishers a range of measures to make things better, especially to partner with reliable data archives to push the integration of data and publications, including interactivity for re-use. Her final comment on the "article of the future" was that it will be less linear and more modular. Data and other original material will not only become citable separately, but also part of articles via interactive pdfs and via semantic links. Data archives will ensure links from data to publications to facilitate access to all relevant literature for users that are interested in re-using the data.

**Dr. Jan Brase** (Director, DataCite, German National Library of Science and Technology, Hannover) provided an update on the project "DataCite" – a global consortium carried by 16 local institutions to im-

prove the scholarly infrastructure around datasets and other non-textual-information. In his talk *DataCite Revisited – Citing Data in the XXIst Century, at long last*, he advocated using digital object identifiers (DOI names) in order to identify datasets permanently. This makes datasets citable, visible, easy to re-use: it puts them on a par with articles. DataCite's main goals are to act as DOI registration agency in cooperation with CrossRef and to develop standards and workflows like CODATA-TG. Besides, the consortium wants to serve as central portal for allowing access to the metadata from all registered objects (OAI) and as community for exchange of all relevant stakeholders in this process. Finally, Dr. Brase finished his presentation with some provocative thoughts beyond data citation. Accordingly, journals and citation are relicts of the 18th century, so it would be worth thinking of further measurements to define the importance of a data set, such as resolution, downloads or mentions.

**Dr. Michael Diepenbroek** (Managing Director, PANGAEA, MARUM Center for Marine Environmental Sciences) reported in *PANGAEA – Research Data Enters Scholarly Communication. Building an Infrastructure to Publish and Cite Data in the Earth and Environmental Sciences* on the idea of PANGAEA, which is integrated in concrete science projects. It is about an information system for long-term archiving and publishing of data from earth and environmental science since 1993. Dr. Diepenbroek pointed out that the data provided in the long-term archive is non-restricted and mostly licensed CC-BY. In total, PANGAEA contains about 450,000 data sets and about 6.5 billion data items. Moreover, the accredited information system offers standard interfaces for metadata and provides a widespread dissemination of data and metadata to numerous portals, i.e., Google, Thomson Reuters or ScienceDirect. Dr. Diepenbroek emphasized that peer-reviewed citable data sets referenced by persistent identifiers are published on PANGAEA. It is strived for an even closer cooperation with journal publishers to be able to connect the editorial systems and to open the data sets for reviewers of the journal, too. In general, PANGAEA aims to synchronize the publishing workflow of submitted data sets and articles. In his closing remarks, Dr. Diepenbroek showed on the basis of a graph that there has been a significant increase of citations in case of articles published with according data sets.

The session “Data and Publication Operability” was concluded by **Dr. Todd J. Vision** (Associate Professor of Biology, University of North Carolina at Chapel Hill, NC). In his talk about *Dryad: Scaling up the Coupling STM Articles with Research Data*, he stressed that the repository Dryad is willing to put the Brussels Declaration on STM Publishing into practice (“Raw research data should be made freely available to all researchers”). The Dryad consortium is an independent nonprofit organisation with a board elected by its members (journals, societies, publishers, funders, research institutions), which currently hosts content from 108 journals and about 3100 data files in different format types. According to Dr. Vision, Dryad is valuable for all stakeholders: researchers benefit from an increasing number of citations to published research and better discoverability of data. Journals, publishers and societies don't have to manage supplemental data any longer. Funders gain from a cost-effective mechanism to make research more accessible. The repository is financed by deposit fees and payment schemes – similar to journal subscriptions. Dr. Vision stated that, it is too early to have verifiable statistics about the return on investment, but because of the marginal costs of data archiving, it is likely that Dryad's business model can prevail.

The **closing keynote** from the USA was introduced by Robert M. Campbell (Senior Publisher, Wiley Blackwell, Oxford).

**Dr. H. Frederick Dylla** (Executive Director and CEO, American Institute of Physics, College Park, MD) spoke on *One Publisher's Journey through the Open Access Debate*. He observed that the rift between publishers and librarians has not been narrowing, and that publishers have not developed solutions that take the steam out of the open (public) access debate. In the US, the scholarly publishing round table

and the subsequent America COMPETES Act (2010) have provided a more cooperative and integrative framework. However, publishers have not been helping their cause by supporting the proposed Research Works Act, which has turned into a public relations disaster. Dr. Dylla urged publishers to reestablish the compact with stakeholders – scholars, funders, libraries – by striving for significant progress on the issues of access and interoperability. As a first step, collaboration on open data would be viable, which is a less political issue.

He reminded the audience that the America Competes Act sets out a model frame for the coordination of public access and stewardship policies. Moreover, as funding agencies face budget cuts, they are interested in cooperating with stakeholders to find cost-effective solutions. There are first engagements between publishers and the key funding agencies National Science Foundation (NSF) and Department of Energy (DOE) which should lead to win–win projects in 2013. Dr. Dylla also pointed to a possible model of publisher–stakeholder partnership through CrossRef: by adding the funding agent(s) category to the standard metadata, additional value for all stakeholders is created.

The **closing panel** was introduced and moderated by **Dr. Sven Fund** (Managing Director, De Gruyter, Berlin). The participants were **Dr. Sabine Graumann** (Director, TNS Infratest Research, München), **Ahmed Hindawi** (CEO, Hindawi Publishing Cooperation, Cairo), **Armin Talke** (IFLA/Staatsbibliothek zu Berlin) and **Dr. Heinz Weinheimer** (Executive Vice President Mathematics/Business & Economics/Human Sciences, Springer, Heidelberg). In her conference synopsis, Dr. Graumann noted three points: (a) while publishers have taken on more functions, the key issue remains quality assurance and control; (b) while open access is often framed in terms of public access, the key users are the scholars; and (c) the discussion about research libraries and their changing role remained inconclusive. Mr. Talke responded by suggesting that librarians and publishers should come together and discuss their future roles as most content is now online. He highlighted the greatest advantage of OA: worldwide access without licensing problems. Dr. Weinheimer commended the unique spirit of the APE conferences, the representation and interaction of all major stakeholders. He learned a lot about semantic enrichment, and in particular liked the notion of “wiki-publishing”. Also he would not recommend investing in RDF, at least not until formats and standards have been agreed. Mr. Hindawi thought that open access business models are becoming more important, and are increasingly shaped in national contexts. He expects scholarly publishing to downsize, with open access publishing at an advantage due to its lower cost base. Also, it is important to add value to publications by using technical innovations like CrossRef (low cost, high benefit) for the industry as a whole.

Mr. Hindawi pointed out that he saw new opportunities for data publishing. Dr. Graumann added that already half the users expect more than just text from a library, but she emphasized that users need guidance when using published data. Mr. Talke suggested that direct service to patrons (researchers, students) would increase in importance again libraries become access points for data also. Dr. Weinheimer stated that publishers already serve their authors very well in this respect.

In the final discussion, members of the audience noted that while open access publishing may lead to increased competition, this may also create new streams of revenues, e.g., personal services for authors, data archiving and publishing as well as semantic enrichment.

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*Please note: APE 2013 will be held 29–30 January 2013.*

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