

Elsevier's Article of the Future: enhancing the user experience and integrating data through applications

In a world where our levels of knowledge advance rapidly, so should the communication of research. In partnership with the world's research community, Elsevier investigates the future of research communication with the 'Article of the Future'. An intuitive online article format, this proposes the next generation in research publishing, with a simple-to-read online layout and enriched content, allowing true immersion in the subject matter. In addition, through the use of SciVerse® Applications, the Article of the Future connects the formal scientific record with associated external data sets and other contextual information that is available elsewhere on the web.

In this article, we present the outcomes of the second phase of the Article of the Future project, with an emphasis on its final designs, user feedback collected, and how the Article of the Future handles the rising need of connecting the formal scientific record with associated discipline-specific data sets.



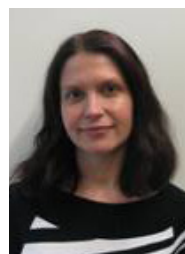
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Introduction

In the past, science was simply recorded through handwriting and until the arrival of the published medium remained isolated and largely unquestioned. With print technology, new methods of recording and communicating research originated, but these too were limited: articles were flat, references and supplementary information intangible, and there was no access to the authors' research tools and data to fully explore and benefit from their insights.

In today's world where information moves electronically, quickly, and where the scientific tools and levels of knowledge advance rapidly, so too should the communication of research. To this end, in 2009, Elsevier initiated the Article of the Future project to improve the formal and electronic communication of research. The key objectives of this (multi-year and still ongoing) project are:

- to improve scientific communication by publishing the full richness of scientific research

- to offer authors the right tools for communicating diverse and discipline-specific results
- to provide users an optimal reading experience to obtain effectively maximum insight.

Following the approach that significant publishing improvements can be made by going discipline-specific, the first milestone of the Article of the Future project was the release of a new article format for all Cell Press life sciences journals in 2010¹. The positive reception of this format led to a continuation of the project for a variety of other scientific disciplines. Milestones in this second phase of the Article of the Future project were (and will be) the release of 13 complete prototypes in 2011² and two SciVerse ScienceDirect[®] releases implementing many of the project findings in 2012³.

In this article, we present the outcomes of this second phase of the Article of the Future project, with an emphasis on its final designs, user feedback collected, and how the Article of the Future handles the rising need of connecting the formal scientific record with associated discipline-specific data sets.

The Article of the Future project

Due to the success of its focus on discipline-specific publishing, in 2010 the Article of the Future project extended to seven other disciplines: parasitology and tropical diseases, electrochemistry, materials science, psychology and cognitive science, mathematics and theoretical computer science, palaeontology, and business management. For each of these disciplines, a group of about 20 scientists collaborated with Elsevier staff to determine the optimal scientific article format for that discipline.

From this discipline-specific approach, two clear observations resulted:

1. Independent of the scientific discipline, scientists like their PDF format, for reasons ranging from optimal typography and predictability to easy storage and distribution. Furthermore, scientists continue to prefer scientific articles to be presented in this traditional and tranquil style, without too much additional clutter obscuring the actual content of the article.
2. However, despite the above, scientists do appreciate additional discipline-specific content, enrichment, value and context – as long as these elements are not distracting from the core of the science presented in the article. In other words, extensive use of pop-ups or flashy highlights should not obscure their core task of reading the article.

These two observations led us to focus the Article of the Future design on the elements of:

- improving the article presentation
- enriching the article content
- adding article context.

Improving the article presentation

Improving the article presentation has been done in multiple ways. First, we clearly separated the tasks of navigation and quick browsing through the images and tables, and introduced a left-pane to support these tasks. Second, we created a middle pane for optimal online article reading, and overhauled the current typography of the online research article. Here we combined lessons from print typography (like maximum number of words per line) and best practices from online page designs (like optimal left and right margin sizes). Third, in order to support the addition and presentation of discipline-specific contextual information without cluttering the core article, we added a right-hand pane to present this type of information. An example of the result can be seen in Figure 1.

The screenshot displays a three-pane layout for an article. The top navigation bar includes options for PDF (8 pages), E-mail, Export, More, and Display mode. The article title is "Carbon" from Volume 48, Issue 11, September 2010, Pages 3033-3041. The main article title is "Comparison of structural changes in nitrogen and boron-doped multi-walled carbon nanotubes" by Antal A. Kóds, Frank Dillon, Ekaterina A. Obratsova, Alison Crossley, and Nicole Grobert. Research highlights include: "Doping carbon nanotubes with B and N controls the nanotube structure, defect density, and oxidation resistance"; "Dopants can be used to produce nanotubes with well defined properties"; and "It was possible to produce doped nanotubes using a cheap and scalable method, without flammable or corrosive gases". The abstract describes the investigation of reaction parameters on the structure of multi-walled carbon nanotubes containing nitrogen and boron. The left pane shows an outline with sections like "Overall structural investigation via SEM and TEM" and "Raman spectroscopy". The right pane shows "Compound information" for Ferrocene Fe(C5H5)2, including its molecular formula, molar mass, density, melting point, and material safety data. Below it, "Toluene C6H5CH3" is also listed with its molecular formula and CAS number.

Figure 1. The three-pane Article of the Future format

Enriching the article content

Enriching the article content has been accomplished by bringing discipline-specific research tools inside the article. For instance, in earth sciences, digital and interactive map software (like ArcGIS or Google Maps) are frequently used in the research workflow, and thus the Article of the Future enriches the article content with such added-value maps as well. Similarly, in materials science and engineering, there is a need for more detail on graphs and plots, and current research tools (like MatLab or Mathematica) do already support this functionality. Hence, the Article of the Future enriches articles with features like cross-hair functionality or 3D-interaction. Examples of these content enrichments can be seen in Figure 2.

Adding article context

Adding article context satisfies a need that is frequently observed from the behaviour of researchers. After or even while reading an article, scientists search for related information or associated data sets. For instance, when reading an article on protein or gene sciences, the relevant protein or genomic information is fetched from the Protein Data Bank or GenBank for inspection. Similarly, in chemistry there is a need for basic information on the chemical compounds being mentioned in an article, plus references and links to the relevant databases in which these compounds are covered. The Article of the Future supports this behaviour by presenting the related key information next to the article, saving the researcher the additional effort of searching for this information. See Figure 3 for an example of how protein information from the Protein Data Bank is added to the article – in the right-hand pane, thus not to clutter and detract from the article content as presented in the middle pane.

Going mobile: tablets

As well as the focus on improved presentation, enriched content and adding context, the Article of the Future design also incorporates the need for an optimal mobile tablet experience. With the Apple iPad being the key device in this segment at the time of development, the design supports all key functionality on the iPad. With the iPad screen being smaller than a regular computer screen, this means that in landscape view the user can choose whether to view the left or right pane next to the middle content pane, while in

PDF (7 pages) | E-mail | Export | More | Display mode

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Tori Bossito	March 2006	Rural	2°89E	6°30N
Pahou	March 2006	Rural	2°13E	6°23N
Cotonou	October 2007	Urban	2°28E	6°21N

Experimental flowcharts

previous | 2 of 2 (view all) | next

Experiment 2

Molecular forms: *Anopheles gambiae* s.s.

View in article

Goal

Identification of the molecular forms (S or M) of the *Anopheles gambiae* s.s. in the collected mosquitoes.

Preparation

For details on Mosquito sample collection, mosquito rearing and DNA extraction, see experiment 1.

- R3: GCAATCCGAGCTGATAGCGC,
- R5: CGAATCTAGGAGCTCCAG,
- Mop int: GCCCTCCCTCGATGGCAT,
- B/S int: ACCAAGATGTTTGGTTC

PCR was performed in 25 μ L volumes containing 2.5 μ L of 10X Taq DNA polymerase buffer, 0.2 mM deoxynucleoside triphosphate (dNTP), 0.25 U of Taq DNA polymerase (Qiagen, France), 10 pmol of each primer, and 1 to 10 ng of extracted DNA.

PCR conditions included an initial denaturation step at 94°C for 3 min followed by thirty cycles of 94°C for 30 s, 63°C for 30 s, and 72°C for 10 s, and a final extension at 72°C for 5 min.

The PCR amplification products were analyzed by electrophoresis onto a 1.5% agarose gel stained with ethidium bromide and visualized under UV light.

Results

Results of the molecular forms can be found in table 2 and figure 2.

Outline | Show thumbnails | Article top

Research highlights

Abstract

1. Introduction

2. Materials and methods

2.1. Study areas

Table 1

2.2. Sample collections

2.3. Molecular analyses

3. Results

3.1. Species distribution

Table 2

3.2. Identification of the molecular forms of *An. gambiae* s.s.

4. Discussion

Acknowledgments

References

Fig. 1: Map of republic of Benin showing the position of the 30 study sites within each bioclimatic area.

Legend: Sudanian, Sudano-Guinea, Guinean

Display: Bioclimatic area

2.2. Sample collections

Mosquitoes were collected as larvae or pupae during the rainy seasons, between March and July 2006, between April and May 2007, and in October 2007. The sampling was guided by the availability and the accessibility of larvae in breeding sites of *An. gambiae* / larvae and pupae were stored in conserato

PDF (6 pages) | E-mail | Export | More | Display mode

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References (35)

Reference 1

Angenent, L.T., Karim, K., Al-Dahhan, M.H., Wrenn, B.A., Domínguez-Espinoza, R.

Production of bioenergy and biochemicals from industrial and agricultural wastewater

Trends Biotechnol., 22, 477-486 (2004)

Abstract (Scopus)

The building of a sustainable society will require reduction of dependency on fossil fuels and lowering of the amount of pollution that is generated. Wastewater treatment is an area in which these two goals can be addressed simultaneously. As a result, there has been a paradigm shift recently, from disposing of waste to using it. There are several biological processing strategies that produce bioenergy or biochemicals while treating industrial and agricultural wastewater, including methanogenic anaerobic digestion, biological hydrogen production, microbial fuel cells and fermentation for production of valuable products. However, there are also scientific and technical barriers to the implementation of these strategies.

Reference 2

Balch, W.E., Fox, G.E., Magrum, L.J., Woese, C.R., Wolfe, R.S.

Methanogens: reevaluation of a unique

Outline | Show thumbnails | Article top

2.8. Substrate solutions

2.9. Biofilm growth and electrochemical biofilm acclimatization

2.10. *G. sulfurreducens* biofilm electrodes

3. Results and discussion

3.1. Primary and secondary biofilm formation

3.2. Fuel cell performance of primary and secondary biofilms

3.3. Voltammetric characteristics of the mixed culture biofilms

3.4. Summarizing discussion

Fig. 1: Formation and biocatalytic current generation of a wastewater-inoculum-based mixed culture microbial biofilm at graphite electrode. The current values originate from the maximum currents of the potentiostatically controlled semi-batch experiment depicted in the inset. The substrate was 10 mM acetate. The electrode potential was 0.2 V. The arrows in the inset indicate wastewater inoculation during the first four semi-batch cycles. In the time interval between 500 h and 1000 h, taken out by the axes breaks for the purpose of clarity, the electrode was used in a multi-electrode setup for secondary biofilm formation.

For the formation of the secondary biofilms, primary biofilm modified electrodes were, together with one or more blank graphite electrodes, immersed into lightly stirred, sterile substrate solution. Depending on the used potentiostat, the electrodes were either interconnected as one working electrode or were

Figure 2. Content enhancements in the Article of the Future: an interactive map (top) and graph (bottom)

portrait mode only the content pane is visible. In both cases, the hidden panes can always be 'flowed in' from the left or right, for temporary display and inspection.

Authors and readers

For authors, the Article of the Future delivers greater exposure and a better opportunity to showcase their work. By enabling a higher level of communication and engagement with the scientific community, it enriches and extends the reach of research, giving it more credibility and increasing the likelihood of use and citation.

The screenshot displays the 'Article of the Future' interface. On the left, a sidebar contains an 'Outline' with sections like 'Protein identification' and 'Bioinformatic analysis'. The main content area shows a section titled '2.6. Protein identification' with detailed text about database searching using Mascot. On the right, a 'Protein Data Bank' entry for 'glutathione-S-transferase [Schistosoma japonicum]' is shown, including a 3D protein structure visualization and various accession numbers.

Figure 3. Context enhancement in the Article of the Future: visualizing data from the Protein Data Bank

For readers, the Article of the Future makes it possible to interact with the content to explore subjects further and in more detail, providing deeper insights in a more efficient and effective way. Researchers save time because they are able to determine the relevancy of an article more quickly, and can use improved linking and navigation to find images, references, or other material within the article right away.

Article of the Future evaluation

As mentioned, the Article of the Future project has been undertaken in collaboration with some 140 scientists, coming from various disciplines and in different stages of their scientific career. With the input of these scientists, 13 prototypes were created and presented to the research community. We evaluated these prototypes with other scientists, and received feedback on them from hundreds more.

Testing user behaviour

At the end of 2011, we conducted an empirical study to compare the latest design variant of the Article of the Future and the traditional (pre-2012) SciVerse ScienceDirect article design (see Figure 4).

The figure compares two article layouts. The left layout is the 'pre-2012 ScienceDirect article page', featuring a traditional layout with a top navigation bar, a search bar, and a main text area with a sidebar on the right containing 'Related Articles' and 'My Applications'. The right layout is the 'Article of the Future format', which is more interactive and includes a 'Your Library' section, a 'Future Generation Computer Systems' title, and a 'BioSim—a biomedical character-based problem solving environment' section with a detailed abstract and a list of authors.

Figure 4. Pre-2012 ScienceDirect article page (left) and Article of the Future format (right)

38 Sixty-four scientists in the first half of their scientific career participated in this study. Our main findings are listed below ⁴:

1. Users immediately start focusing on the article text, then gradually and naturally discover the left navigation first and the right pane second. Everything seems to fall in place at the right time, as users interact with the content rather than with widgets.
2. Using the Article of the Future design, users spend a larger fraction of their reading time online than using the traditional (pre-2012) SciVerse ScienceDirect design. With the new design, users also less often download the PDF for further reading and inspection (see Figure 5a).
3. With the Article of the Future design, part of the additional online time is used to inspect the extra context and content provided – with a great level of satisfaction as the Article of the Future design is preferred in a 4 against 1 ratio (see Figures 5b and 5c).
4. The Article of the Future design is especially effective in determining whether an article is not relevant: a 34% time savings is achieved in those cases (see Figure 5d).

The conclusion that can be made from these findings is that the Article of the Future provides an effective online experience for readers: it allows readers to determine the relevancy of an article more quickly, and for relevant articles, it delivers more information and context than with the traditional (pre-2012) SciVerse ScienceDirect article design in the same time.

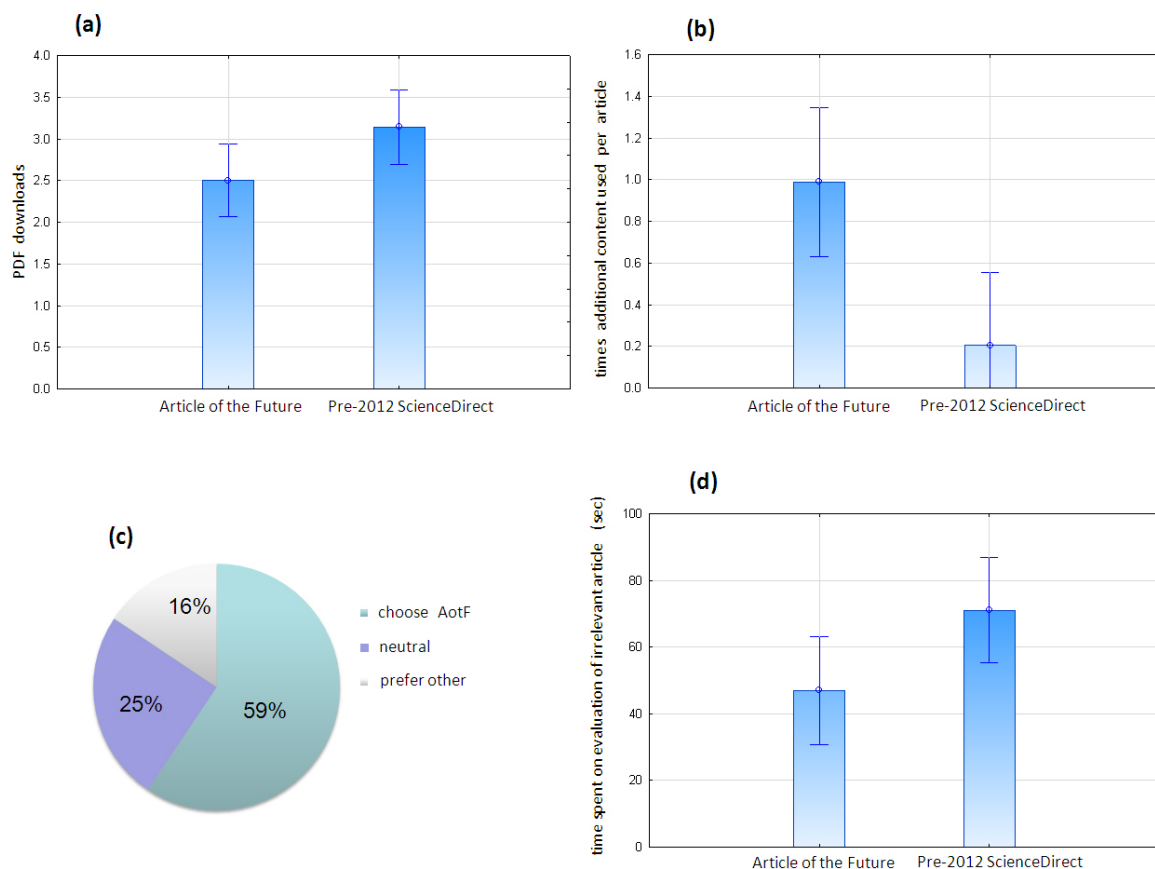


Figure 5. (a) Users less often download the PDF for further reading and inspection. (b) Part of the additional online time is used to inspect extra context and content. (c) The Article of the Future design is preferred in a 4 against 1 ratio. (d) The Article of the Future design is especially effective in determining whether an article is not relevant.

User feedback through surveys

When we launched the Article of the Future prototypes on www.articleofthefuture.com, we also added survey forms to be completed by visitors. (See Table 1 for some of the questions.) From the hundreds of completed user feedback forms that we received between June and December 2011, we learn that:

1. Of the respondents, 75% agree that the Article of the Future design contributes to obtaining a better understanding of the research described in the article.
2. These percentages, however, do vary from discipline to discipline. For instance, while in parasitology 85% agree with this statement, in mathematics it is only 65% (with a higher percentage of 'neutrals').

How does the new presentation format and extra features contribute to obtaining a better understanding of the research described in the article?
Please indicate if there is a specific task that is particularly affected as a result of the new article format
What is your opinion on the overall readability of the main text content area compared to how articles are usually presented in HTML form on journal websites?
Does the article outline shown on the left side help you to navigate easily within the article?
Does the approach of showing additional content/features in the right sidebar help when reading the article?
What did you LIKE THE MOST about the article prototypes?
What did you LIKE THE LEAST about the article prototypes?
How would you rate this new presentation format of a research article overall?
How would you PRIORITIZE the following new content specific article features in terms of usefulness?

Table 1. Some questions from the Article of the Future prototypes survey

Overall, the survey feedback on the Article of the Future design has been very positive. Appreciation covered all areas of the design, ranging from easy navigation provided through the left-hand pane, side-by-side display of text and images, additional information on references at the right, and interactivity in graphs and plots. Negative feedback mostly concentrated around longer download times and still a too cluttered presentation – the former is something that will be addressed at release time in January 2012, while improving the latter is an essential part of the right-hand pane release due later in 2012.

Data sets and SciVerse Applications

Next to the formal scientific record as an article in a peer-reviewed scientific journal, both raw and interpreted data become increasingly important in the communication and validation of scientific research^{5,6}. This trend is accelerated by funding agencies requiring research data to be made accessible for re-use by other scientists through clear research data preservation policies⁷. It is therefore expected that over the forthcoming years the amount and size of available research data sets will be exploding^{8,9}.

Unfortunately, although scientists do indicate that access to data sets is very important for their research, they also say that access to such data is not easy¹⁰. On the other hand, access to the formal research article is very easy (and important). One of the objectives of the Article of the Future is to support scientists by improving the discoverability of data sets as much as possible, by¹¹:

- either simple linking (and moving) from the article to the associated data, or
- through the use of applications to show the data in the context of the article.

SciVerse Applications enable deep integration of research data into the Article of the Future design on SciVerse ScienceDirect¹². Such integration does not just consist of a link to or

40 a list of the data sets that are (remotely) available for the article, but can offer very data-specific functionality – highlighting the data in a form that is optimal for the understanding and re-use by the reader when reading an article. Furthermore, SciVerse Applications is an open platform, allowing any developer to build data-set applications or other solutions to improve research discovery.

Below we list three examples of such data-set applications – one built by Elsevier (with the help of NCBI, the National Center for Biotechnology Information in the USA), one built by a data set repository owner (PANGAEA®, Data Publisher for Earth & Environmental Science), and one by an individual developer unrelated to either Elsevier or the respective data set repository owner.

Genome Viewer

The Genome Viewer¹³ provides functionality for viewing and analyzing sequence data of genomes and also genes mentioned in SciVerse ScienceDirect articles. The Genome Viewer scans an article for author-tagged NCBI accession numbers, of which a list appears in a dropdown menu. When an accession number is selected, the Genome Viewer will be refreshed with the associated sequence map (see Figure 6a).

The Elsevier Genome Viewer was developed in close collaboration with the NCBI team that developed the NCBI's Sequence Viewer¹⁴ and is based on the same JavaScript code and style sheets.

PANGAEA supplementary data

Articles having supplementary data sets submitted to and stored at the PANGAEA® data library¹⁵ display a Google Map indicating the geographical coverage of each such data set. Clicking on the data-set indicator on the map reveals information about the data set, along with a link to PANGAEA where one can view the full information about the data set and download it (see Figure 6b). The PANGAEA application¹⁶ has been developed by PANGAEA.

Exoplanets+

The Exoplanets+ application¹⁷ extracts exoplanets (extrasolar planets) mentioned inside articles and displays exoplanet data right inside the article view. Exoplanets+ combines

The screenshot shows a ScienceDirect article page with several integrated data panels:

- Left Panel:** Article navigation and abstract content, including a table of contents and a table of data.
- Research highlights:** A text box summarizing the article's findings, such as the identification of a novel member of the human ppGalNAc-T family, ppGalNAc-T20.
- Sequence Data from this Article:** A detailed view of the NCBI accession number NM_020474.3, showing the gene structure with exons 1 through 11, and associated features like the ligand binding site, Mn binding site, and catalytic subdomains.
- Abbreviations:** A list of scientific abbreviations used in the article, such as FAM, MALDI-TOF, and TFA.
- Right Panel:** A sidebar with various utility and application buttons, including RefView, Speed Reader, bX Recommender, quantFind, Cite Me!, and eReader Formats.

Figure 6. Using applications in the Article of the Future to integrate data from NCBI GenBank (a), PANGAEA (b), and various data sources in astronomy (c)

SciVerse ScienceDirect Hub ScienceDirect Scopus Applications Usbrand Jan Aalbersberg Logout Go to SciVal Suite

Home + Recent Actions Browse Search My settings My alerts Help

Export citation PDF (1966 K) More options...

Search ScienceDirect Search

Palaeogeography, Palaeoclimatology, Palaeoecology
Volume 183, Issues 1–2, 15 July 2002, Pages 87–101

High-resolution stratigraphic framework for Mediterranean sapropel S5: defining temporal relationships between records of Eemian climate variability

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Received 10 April 2001. Accepted 25 October 2001. Available online 17 April 2002.
[http://dx.doi.org/10.1016/S0031-0182\(01\)00461-8](http://dx.doi.org/10.1016/S0031-0182(01)00461-8), How to Cite or Link Using DOI
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Abstract
A high-resolution stratigraphic framework is presented for sapropel S5, which represents the low-mid latitude climate optimum of the previous interglacial period (Eemian). The framework is based on three sites along a transect from west to east through the eastern Mediterranean, and is further validated using a fourth site. This method allows expression of S5-based proxy records of Eemian climate variability along a standardised depth scale that offers unprecedented possibilities for assessment of spatial gradients and signal leads and lags in an interval where high-resolution (radiocarbon-style) dating cannot be performed. Our lateral comparison of S5 sapropels suggests that the onset of S5 in ODP site 987C (Eratosthenes seamount) was 1–6 centuries delayed relative to the onsets in more westerly sites.

Keywords
correlations; Eemian; sapropel S5; multi-proxy; high resolution

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ns. Most of them are giant planets, with hydrogen and helium as the main constituents, and have atmospheres too turbulent to permit the emergence of life and have no underlying solid surfaces or oceans that could support a biosphere. Nevertheless, there is a possibility for habitable conditions at the surface of moons orbiting giant planets that are positioned within the habitable zone (HZ). Furthermore, Earth-like Trojan planets in 1:1 mean motion resonance on stable orbits with habitable conditions are possible (Dvorak et al., 2004). The distribution of masses of all known exoplanets lets scientists suppose that there must be a multitude of planets with lower masses ([26] and [Marcy et al., 2005]). A planet with a mass of ~14 Earth masses has been detected at a distance of 0.038 AU from the central star (McArthur et al., 2004). Whether this planet is a hot Neptune or a rocky "super Earth" it is clear that the planet is uninhabitable. Also the recently discovered cool sub-Neptune-mass planet of 6.5 Earth masses orbiting a M-dwarf star at a distance ~2.6 AU (Beaulieu et al., 2006) is not a candidate for a habitable world.

The existence of Earth-type planets around stars other than the Sun is strongly implied by various observational findings including (1) the steep rise of the mass distribution of planets with decreasing mass, which implies that more small planets form than giant ones; (2) the detection of protoplanetary disks (with masses between 10 and 100 times that of Jupiter) around many solar-type stars younger than ~3 Myr; and (3) the discovery of "debris disks" around middle-aged stars, the presumed analogs of the Kuiper Belt and zodiacal dust (Marcy et al., 2005; Santos et al., 2005, and references therein). Lineweaver and Grether (2003) conclude that 25–100% Sun-like stars harbour planets.

Even if it seems today beyond the technical feasibility to detect Earth-mass planets we can apply computer models to investigate known exoplanetary systems to determine whether they could host Earth-like planets with surface conditions sufficient for the emergence and maintenance of life on a stable orbit. Such a configuration is described as dynamic habitable. Jones et al. (2001) have investigated the dynamic habitability of several exoplanetary systems. They used the boundaries of the HZ originating from Kasting et al. (1993). To test the intersection of stable orbits and the HZ, putative Earth-mass planets were launched into various orbits in the HZ and a symplectic integrator was used to calculate the celestial evolution of the extrasolar planetary system.

Kasting et al. (1993) calculated the HZ boundaries for the luminosity and effective temperature of the present Sun as $R_{inner} = 0.84$ AU and $R_{outer} = 1.37$ AU. They defined the HZ of an Earth-like planet as the region where liquid water is present at the surface. According to this definition the inner boundary of the HZ is determined by the loss of water via photolysis and hydrogen escape. The outer boundary of the HZ is determined by the condensation of CO₂ crystals out of the atmosphere that attenuate the incident sunlight by Rayleigh scattering. The critical CO₂ partial pressure for the onset of this effect is about 5–6 bar. On the other hand, the effects of CO₂ clouds have been challenged by Forget and Pierrehumbert (1997). CO₂ clouds have the additional effect of reflecting the outgoing thermal radiation back to the surface. The precise inner and outer limits of the climatic HZ are still unknown because of the limitations of climate model used until now. For the present Sun it is probably smaller than the 0.7–2 AU region but it is still impossible to give a better constraint especially for the outer boundary of the HZ.

Figure 6. Continued

and displays rich and visual data of more than 450 planets from the following sources: Exoplanets.org, Exoplanet.eu, Visual Exoplanet, NSfED, and SIMBAD Astronomical Database (see Figure 6c). Exoplanets+ was developed by Soe Thiha in the Apps for Science Challenge organized by Elsevier Developers Network¹⁸.

Conclusions

In 2011, the Article of the Future project delivered the next milestone in its journey to explore better ways to create and deliver the formal published record. This milestone consisted of presenting a new format improving the article presentation, enriching the

article content, and adding article context – functionality and features that were developed in collaboration with many research scientists and developers in the scientific community.

A large number of user tests, behavioural studies and survey feedback demonstrate that the Article of the Future format is valued by the scientific community, and improves both efficiency and contextual understanding of scientists when browsing and reading scientific articles. Furthermore, the Article of the Future design in combination with SciVerse Applications provides great opportunity to connect the formal scientific article with associated data sets.

Key elements of the Article of the Future design will be rolled out and integrated into Elsevier journals and on SciVerse ScienceDirect in the course of 2012.

Acknowledgements

The authors would like to thank all colleagues that contributed to the Article of the Future project, from concept development to final implementation on SciVerse ScienceDirect. We are even more grateful to all scientists who patiently collaborated with us in interviews, user tests, behavioural studies, prototype development, or who left their feedback through the user surveys. Without these enjoyable interactions, the Article of the Future would have never seen the light.

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To cite this article:

Aalbersberg, IJ J, Heeman, F, Koers, H and Zudilova-Seinstra, E, Elsevier's Article of the Future: enhancing the user experience and integrating data through applications, *Insights*, 2012, 25(1), 33–43, doi: 10.1629/2048-7754.25.1.33

To link to this article:

<http://dx.doi.org/10.1629/2048-7754.25.1.33>