IEEE SYSTEMS COUNCIL
KNOWLEDGE ELECTRONIC ENVIRONMENT
SYSC-KEE

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1. SPONSOR

IEEE System Council

2. TECHNICAL CO-SPONSORS

The following Societies/Councils will technically cooperate:

- IEEE Aerospace & Electronic Systems
- IEEE Circuits and Systems Society
- IEEE Communications Society
- IEEE Computational Intelligence Society
- IEEE Computer Society
- IEEE Control Systems Society
- IEEE Technology Management Council
- IEEE Instrumentation & Measurement Society
- IEEE Microwave Theory & Techniques Society
- IEEE Oceanic Engineering Society
- IEEE Power Electronics Society
- IEEE Product Safety Engineering Society
- IEEE Reliability Society
- IEEE Robotics & Automation Society
- IEEE Systems, Man & Cybernetics Society

Possible knowledge will also be searched in the field of interest of all other Societies/Councils to enrich the electronic knowledge environment as much as possible.

3. GOALS

The Knowledge Electronic Environment of the IEEE Systems Council (SYSC-KEE) aims to be a web-based environment for collecting and disseminating knowledge on complex systems, system-of-systems and engineering of systems.

This will provide a comprehensive integrative environment focusing on this interdisciplinary area, thus attracting readers and authors since they will found an easy access to the knowledge of their interest.

Easier access to knowledge in this field will result in a wider circulation of the knowledge itself and an increased education level of the readers, for the benefit of academic and professional communities as well as students and governmental bodies and, in turn, for the economic and social development.

Visibility of the IEEE knowledge and role in the scientific and professional communities as well as in the governmental bodies and in the general public will be enhanced.

Easier access to the IEEE intellectual property will return in higher income to IEEE in general and, specifically, to the IEEE Systems Council and its Member Societies. Besides, the SYSC-KEE will allows for establishing a new business model for the IEEE Systems Council, its Member Societies and the whole IEEE and more business opportunities (including online sponsorships and/or advertising as well as traditional subscription and single item purchases).

4. SCOPE

The Knowledge Electronic Environment of the IEEE Systems Council (SYSC-KEE) aims to be a web-based environment for collecting and disseminating knowledge on theory, technologies, design methodologies, applications, successful cases, and practical guidelines on complex systems, system-of-systems and engineering of systems.

Topics of relevance to this environment would therefore include, but not be limited to, the following:

- systems engineering, education, standards, processes and methodologies
- modeling, simulation, dynamic analysis and integration related to design, testing, production and support
- design aspects for robust design, human factors, safety, security and usability
- transition of products from design to production, deployment and use
- quality control and system management
- program/product/project management interactions
- system manufacturing and deployment
- risk management and mission assurance
- systems architecture
- interoperability and adaptability
- system performance analysis and evaluation
- analysis of human factors in complex systems
- large-scale system management and operations
- maintainability
- safety
- decision making
- optimization of complex systems and systems-of-systems
- product life cycle analysis and management
- reliability and availability of complex systems

Typical application areas will include, but not limited to:

- autonomous vehicles and systems
- intermodal transportation systems
- automation and control
- manufacturing systems
- logistics
- energy production, distribution and management
- exploratory exploration (space, terrestrial, underwater)
- global earth observation and prediction
- environmental monitoring and control
- disaster response
- human health and life science
- national defenses security
- organizational internal
- privacy, security and surveillance
- computer security and privacy
- social and political systems
- e-services (specifically: e-commerce, e-banking, and e-government)
- virtual reality

5. USERS

Prospective users will encompass:

- researchers in academia, industry and governmental bodies
- professionals in industry and governmental bodies
- managers needing to understand issues, technologies, and methodologies,
- government people
- educators in universities and other educational bodies
- students in undergraduate, graduate and PhD programs

The target audience is apparently highly variegated and with diversified main interests. However, the proposed project will address a homogeneous need which is shared by all of them: the need for a deeper knowledge about theory, methodologies, and their effective and efficient use in real-world applications. Besides, this need spreads across the whole IEEE membership and outside the IEEE.

The project aims to unify the access to this knowledge by including all phases of the professional life, from initial education to continuous education, from applied research to industrial exploitation.

6. POSTED MATERIAL

The Knowledge Electronic Environment of the IEEE Systems Council will include, but not be limited to, the following material:

- abstracts and links to articles published in the IEEE Systems Journal, as major source of archival knowledge in the systems field,
- abstracts and links to articles published in other IEEE journals and related to the systems field,
- abstracts and links to articles published in the Proceedings of the IEEE Systems Conference or other conferences and workshops sponsored, co-sponsored or technically co-sponsored by the IEEE Systems Council, as major source of up-to-date knowledge in the systems field,
- abstracts and links to articles published in the proceedings of other IEEE conferences and workshops and related to the systems field,
- survey and tutorial articles,
- application notes,
- tutorials in the IEEE Expert Now program or in other educational programs of the IEEE Societies/Councils,
- tutorials created for the SYSC-KEE,
- electronic books
- standards announcements and analysis,
- discussion forums,
- book reviews,
- products reviews,
- announcements of technical meeting (e.g., conferences, symposia, workshops) organized by the IEEE (in particular by the IEEE Systems Council),
- announcements of educational activities organized by the IEEE (in particular by the IEEE Systems Council),
- peer-reviewed references to articles published outside the IEEE in the systems field,
- any other information and knowledge relevant in the systems area, as a comprehensive service to communities in academia, industry, professional engineering, government, and the general public.

7. ELECTRONIC ENVIRONMENT STRUCTURE

The Knowledge Electronic Environment of the IEEE Systems Council will be a web-based portal in which information and knowledge will be made easily accessible to various categories of readers interested in this field.

The portal technology (called *ePub*), currently running in beta form, is a functionality developed as part of a 2007 new initiative project (shared between IEEE ComSoc and the IEEE Publications Business Development group) and is interconnected with the IEEE Xplore online delivery platform. As a result, users will have the ability to access the ePub either directly through a traditional IEEE Xplore search or browse experience, or directly through a unique ePub URL.

Designated editors will manage the posting of content using a web-based Content Management System (CMS) which will include flexible features that allow the editor to determine when content is displayed (published) and removed from the online display.

Searches for content from either the ePub's direct URL or via IEEE Xplore will be handled via keyword, title, author, etc. in addition to traditional browsing through an alphabetical list of Journal and Magazine titles. Additional clustering of documents will also be studied.

The proposed Knowledge Electronic Environment is a hybrid and extended view of the virtual journal concept developed in the IEEE. As mentioned in Section 6, materials already published or created by other OUs within the systems interest area will be made accessible through the ePub. The editor will have the ability to list recently published content from other IEEE publications or repositories, as well as links to materials found outside IEEE. In this method, the IEEE Systems Council will tie together IEEE's systems coverage found across all relevant publications as well as attract more interest in IEEE content being inclusive of other non-IEEE sources.

In the instance of IEEE articles referenced, the reader will be able to follow a link to the article posted on IEEE Xplore. If the reader has rights to view that article, they will be able to view the PDF (or HTML file, if appropriate). If the reader does not have rights to view the article referenced, they will be given the opportunity to purchase it through IEEE Xplore.

Personalization and possible self-adaptation of the web-based environment will allow for making more visible and accessible the knowledge which has the higher probability of being of interest to the user and, consequently, to simplify access to the service.

Figure 1 shows a sample view of an online article. Content will be rendered in rich-text format with embedded graphics and navigational elements to browse or search for additional content. In addition, additional features for news briefs, information for submitting papers, category buckets, multimedia files and other types of content can also be added to the ePub.

There is no plan for a traditional print component. An annual CD-ROM will be considered to satisfy the subscribers of the print version of the All-Society Periodicals Package (ASPP) and for the optional backup to nonmembers' individual online subscription purchase.

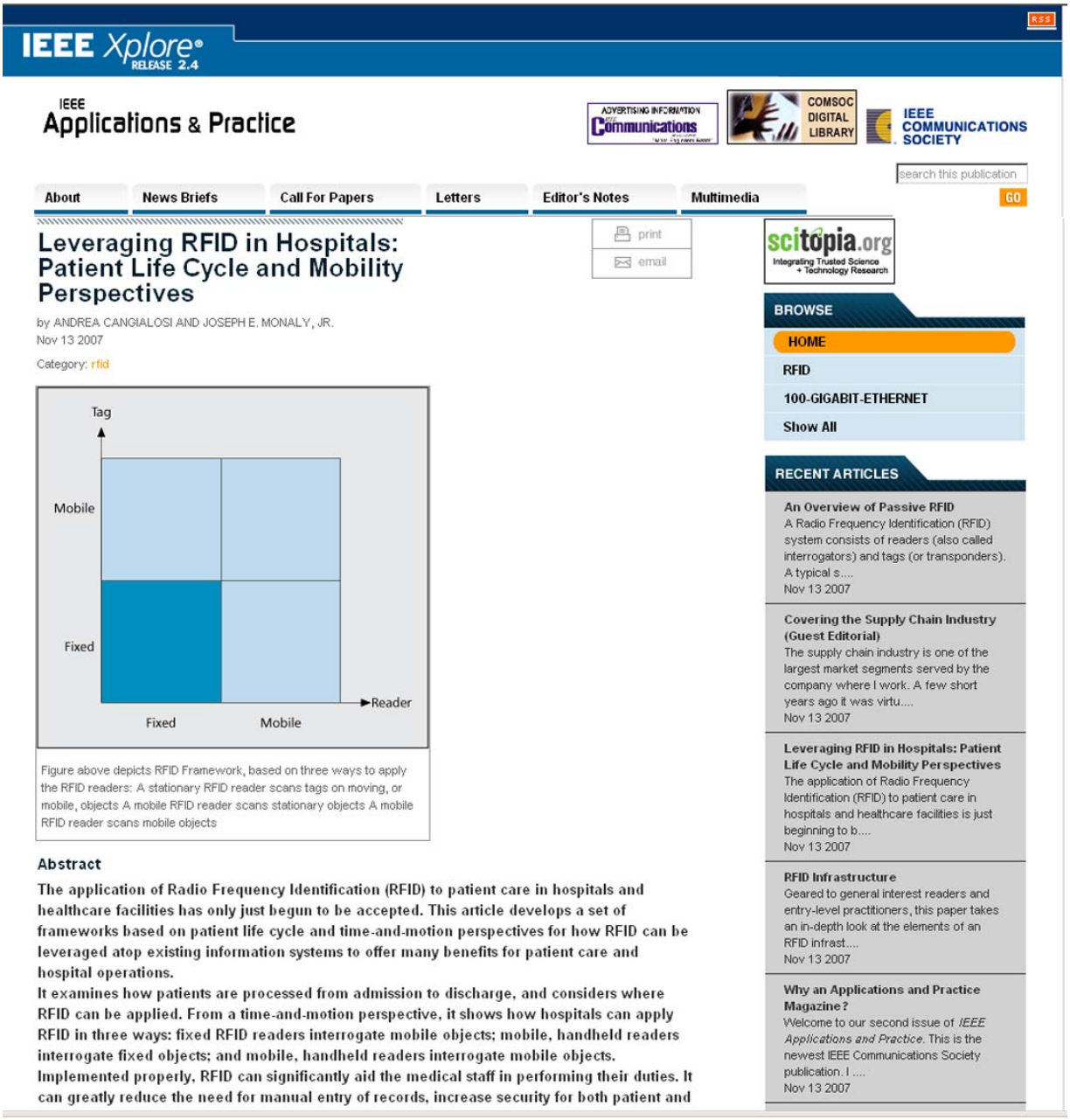

Figure 1: Sample Online Article Page

8. MANAGEMENT

The Knowledge Electronic Environment of the IEEE Systems Council will be managed by an Editor-in-Chief, assisted by an Editorial Board composed by experts of the field from academia, industry and governmental bodies. The EiC will be appointed by the IEEE Systems Council; the Editorial Board will be appointed by the EiC with the concurrency of the IEEE Systems Council AdCom.

The EiC will be responsible for selecting the material posted in the environment. For articles already published in IEEE journals or conference proceedings he will manage the selection process according to the relevance to the SYSC-KEE topics, without performing a peer review since these documents have been already peer-reviewed by IEEE boards/committees/OUs. Similarly, tutorials which have been already reviewed by the IEEE or any other IEEE Society/Council will only be analyzed according to relevance to the SYSC-KEE topics. Information and announcements will be checked for relevance with respect to the SYSC-KEE topics. For survey and tutorials articles, application notes, electronic books, standards analysis, book and products reviews, and similar materials a peer-review process will be established, at the appropriate editorial level. For articles published in non-IEEE journals with a peer-review process, relevance to the SYSC-KEE topics will be verified as well as content quality since the peer-review process has not been managed by IEEE. Discussion forums will be moderated as appropriate.

The goal is to ensure technical accuracy and quality, as well as relevance to the systems field.

The peer-review process for the SYSC-KEE will adhere to the guidelines described in the IEEE Publications Operations Manual. However, articles will not go through the typical pre-process copy-editing. Copy-editing and adherence to the minimum editorial standards will be the responsibility of the IEEE Systems Council and its editors. Generation of compliant XML as specified by Publication Service and Products Board's policies will occur after content is posted to the site.

Figure 2 illustrates the flow for adding content to the SYSC-KEE. An editor will enter content, including technical articles and their associated metadata, news briefs, and multimedia files, through the easy-to-use CMS interface. Any content types that have review requirements will not appear on the ePub until the review requirements described in the Publications Operations Manual are satisfied.

The SYSC-KEE may not be established as a formal IEEE periodical publication. In this case the person in charge of the SYSC-KEE management will not have the formal accreditation as EiC. This aspect will have to be discussed more in detail within the IEEE Systems Council and the appropriate IEEE OUs.

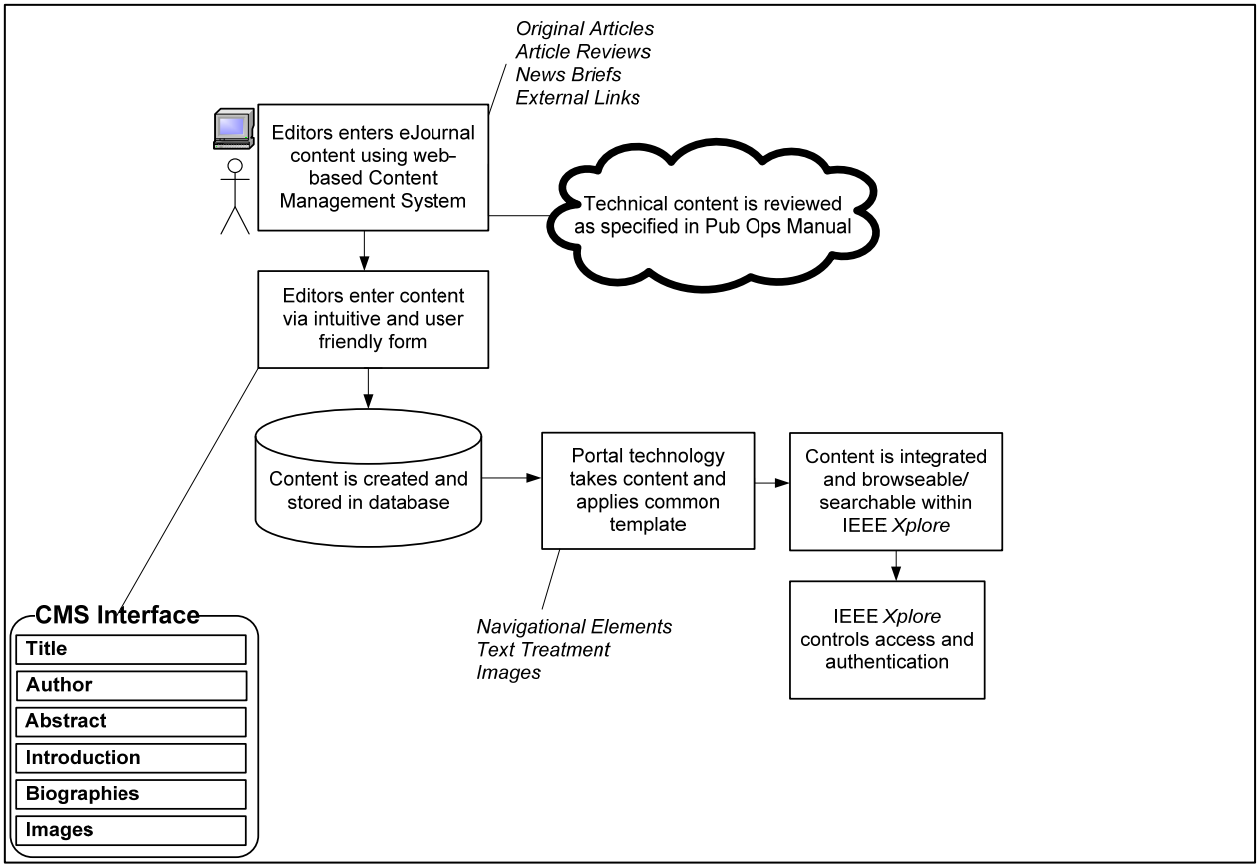

Figure 2: SYSC-KEE Content Management

9. INCOME ACCREDITATION AND COSTS CHARGING

The income produced by accessing the knowledge and the information posted in the SYSC-KEE will be credited to the OUs originating the accessed materials, deduced a very small service fee for the SYSC-KEE since it made easier to access those materials. For example, articles and tutorials published by other IEEE OUs and accessible with a fee will be credited to those OUs; the very small brokerage fee per document hit will be charged by the SYSC-KEE to the originating OUs. The SYSC-KEE brokerage fee will be credited to the IEEE Systems Council. Income due to materials produced specifically for the SYSC-KEE will by credited the IEEE Systems Council.

The cost of creating the Knowledge Electronic Environment infrastructure may be charged to IEEE since it will be an experimental new product which could be adopted also by other OUs for their specific field of interest.

The expenses to personalizing and running the SYSC-KEE may be charged to the IEEE Systems Council since they will be specific of this OU.

Cost charging needs to be discussed with IEEE.

10. EXPECTED BENEFITS

The major benefit will be a better support to users in accessing IEEE knowledge and practical expertise on systems all along their professional life, including also initial education and long-life education, in research, industry, profession, and government activities.

An additional major benefit will be reinforcing the presence and the role of the IEEE among practicing engineers and managers as the major source of technical and scientific information for the engineering profession and the larger public in the field of systems.

Specifically, the benefits provided by the knowledge electronic environment on systems will be:

- better support to professionals;
- better support to beginners;
- availability of educational material for continued education (also on-line);
- availability and electronic access to the expertise and knowledge, specifically the one generated by IEEE;
- wider dissemination of knowledge with induced higher quality for the specific field and all scientific and professional areas;
- making more clear the relevance of technologies and methodologies for applications;
- improve the visibility and perceived value of the IEEE Systems Council;
- improve the value of the IEEE Systems Council and, in general, of the IEEE as perceived by industry managers so as to have additional involvement and proactive presence of companies in IEEE Systems Council activities;
- strengthen relationships with volunteers and recruit new volunteers who will gladly share their knowledge for the benefit of the whole scientific, educational, industrial, and governmental communities;
- attract more members to IEEE;
- promote the value of the IEEE Systems Council and, in general, of the IEEE as perceived by people in and outside the IEEE.

Another major benefit will be the additional income provided by the easier access to IEEE knowledge and services. The IEEE Systems Council and all other IEEE OUs will enjoy an increased income for material already published by them since access will be made easier. The IEEE Systems Council will enjoy an additional source of income for material and services provided specifically and only thorough the SYSC-KEE.