

ConfSys3.5: A Kaizen Conference Management System

Ming Lu

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By: Ming Lu

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Signed by the final examining committee:

Dr. Weiyi Shang Chair

Dr. Nematollaah Shiri Examiner

Dr. Joey Paquet Examiner

Dr. Bipin C. Desai Supervisor

Approved by

Chair of Department or Graduate Program Director

_____ 2015

Dean of Faculty

ABSTRACT

ConfSys3.5: A Kaizen Conference Management System

Ming Lu

After over a decade and half of the development and improvement based on real experience, the third generation of ConfSys (ConfSys3) not only possesses features such as user-group management, daemon and multi-track academic meetings, but also is able to support multi-series academic conference. The experience with these previous versions of ConfSys pointed to the need for better usability and additional features for system management. This thesis presents the design and implementation of ConfSys3.5, a kaizen conference management system, with continuous improvements and new features to assist academics to manage the processes of their events, and to provide related services for author and conference participants. ConfSys3.5 uses the same Tomcat - Java Servlet/JSP - MySQL platform as previous versions of ConfSys, but has introduced Struts 2 in Java web application, improved database and user interfaces to address user's requirements. Both user friendliness and efficiency in ConfSys3.5 have been improved thanks to the lessons learned from developing and using earlier versions of ConfSys. ConfSys3.5 not only improves usability, but also introduces new concepts, such as Auto Session Management and Program Generation to reduce repetitive work and make management work more flexible. Furthermore, the improved software framework and database provides clear structure and flexibility, thus making the maintenance and expansion of the software system easier.

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List of Acronyms

AJAX	Asynchronous JavaScript and XML
API	Application Programming Interface
B/S	Brower/Server
C3S2E	International C* Conference on Computer Science & Software Engineering
CINDI	Concordia INdexing and DIScovering system
CMS	Conference Management System
CMS	Content Management System
CSE	Computer Science and software Engineering
CSV	Comma-Separated Values
DAO	Data Access Object
DBMS	Database Management System
HTML	Hyper Text Markup Language
ICCM	International Conference on Composite Materials
IDEAS	International Database Engineering & Applications Symposium
IP	Internet Protocol
JSP	JavaServer Pages
JVM	Java Virtual Machine
MVC	Model–View–Controller

ORM	Object-to-Relational Mapping
PHP	Hypertext Preprocessor
PC	Program Committee
RDBMS	Relational Database Management System
TCP	Transmission Control Protocol

Chapter 1

Introduction

1.1 Overview

A conference management system is web-based software that supports the organization of conferences especially the academic ones. It helps the program chair(s), the conference organizers, the authors and the reviewers in their respective roles and activities. A conference management system can be regarded as a domain-specific content management system [1].

Typical functions and workflows supported by conference management systems include:

- Allow new users to sign up and provide information needed for accessing one system
- Receiving paper submissions (PDF file upload, collection of bibliographic metadata)
- Anonymizing submissions
- Collecting reviewers' topic preferences
- Determining the conflicts of interest from various sources for submitted papers
- Assigning reviewers to papers while avoiding conflict of interests
- Disseminating submissions to reviewers
- Collecting reviews

- Monitoring review coverage
- Sharing reviews among the program committee
- Ensuring independence of reviews
(reviewers cannot see other reviews for a submission before they have submitted their own reports)
- Providing a per-submission blind discussion forum(blind debate) for the reviewers
- Ranking reviews and setting acceptance threshold
- Anonymizing reviews
- Reporting reviewers' comments and program committee decision to authors
- Collecting final accepted versions

Some systems offer additional functions that go beyond supporting only the peer-review process:

- Creating a conference website and program
- Registering attendees
- Managing registration information and providing facility for preparation of receipts, nametags, labels and participation certificates
- Publishing proceedings

Kaizen (改善), the Sino-Japanese word for "improvement" or "change for good", refers to philosophy or practices that focus on continuous improvement of processes in

manufacturing, engineering, and business management [2].

In general, kaizen refers to activities that continually improve the business operations. By improving standardized activities and processes, kaizen aims to eliminate waste and hence improve the total quality. Kaizen was first practiced in several Japanese companies after the Second World War, influenced partially by American business and quality management educators who visited the country. It has since spread worldwide and is now also being implemented outside business and productivity. Kaizen is practiced as methodology to solve problems.

ConfSys, a conference management system, has been continuously improving for over a decade and half. ConfSys provides all the essential solutions and services to support the various roles and operations in the management of academic conference. It supports roles in academic conference such as Administrator, General Chair, Program Chair, Local Chair, Program Committee, Publicity Chair, Local Chair, Reviewer and Author to perform operations such as paper submission, paper auction, paper auto-allocation, paper review, blind debate, paper decision, auto session arrangement and session support.

ConfSys is an integrated web based conference management system. It is based on open source platform consisting of Apache and Tomcat servers with the software such as Java, JSP, Servlet, Struts 2 and uses MySQL as the database server.

ConfSys3.5 is the latest version of ConfSys system, with additional features to facilitate the processes of academic conferences which involve authors, general chair, program chairs, local chair, program committee and external reviewers and to provide conference

services for these and other groups of users and participants. Compared with previous versions of ConfSys, ConfSys3.5 not only improved essential functions, such as more flexible event configuration, more user-friendly paper submission, paper registration integration, but also introduced new features, such as eProceedings in both pure PDF and PDF with a HTML navigation, double/triple blind review and auto session management with track.

ConfSys was initiated by Dr Bipin C. Desai in 1999[3] and has been evolving over years. ConfSys has supported several academic conferences, including IDEAS, C3S2E, ICCM, RTL, accommodating thousands of active user with many hundred concurrent logins at peak period. It is a kaizen style system which evolves with the goal to satisfy needs from different academic conferences and system users.

1.2 Methodology

1.2.1 Overview

In order to analyze ConfSys, we set up our test group in 2011 and further we had a class of students in Concordia University to act as test users, and provide their feedback.

Kaizen emphasizes the importance of Genchi Genbutsu, which means “see the situation with one’s own eyes”. When we try to find the problems or see how the improvement was done, we also act as system users in real event.

As an important part of kaizen, we listen to the system users’ comments, complaints and

suggestions. These were mostly in the form of emails which were analyzed and classified to determine the urgency of the problem. Once an added feature or enhancement was decided on, it was added to a to-do list.

1.2.2 User Analysis

The two most important issues for usability are the users' tasks and their individual characteristics and differences. The major tasks of users in ConfSys are to process academic papers, including submission, review, decision making, and paper publishing, etc. The users are mostly novice, especially for authors and new members of the committee. Some differentiating factors are age, gender, profession, education, computer skill, type of computer, nationality, etc. For ConfSys, most of the users are adults, either male or female, educated in science or technology field with varied computer skills. The users' nationalities are diversified.

Other factors are less immediately obvious, such as differences in spatial memory and reasoning abilities and preferred learning style. While some people learn better from abstract descriptions and others learn better from concrete examples. As we focus on academic use of the system, we assume most users have reasonable memorability and reasoning abilities due to their professions and education level.

1.2.3 Evaluation and Test Group

In 2011, there were 5 of such test users in ConfSys3.5 for usability test. 3 of them were experienced, while 2 were new to the system at the time when ConfSys3.5 was planned. 1 participant is professor, and 4 were graduate students. They had experience of paper submission. These testers were also instrumental in adding to the list of enhancement to ConfSys3.5.

A demo version of ConfSys3.5 was used in a class assignment for a database course. The students used the system to determine the weakness and strengths as well as ease of usability and understanding of the steps. Their feedback was used to augment the to-do list.

For each item in the to-do list the author analyzed the existing code was to determine the best method to address the issues associated with the item. The changes were made and tested on a test platform by the author. Once satisfied, the code in the CVS was updated to reflect the current version of each module. The changes in the CVS were used by a group of testers on an independent test platform to verify the soundness of the updates. Any shortcomings were flagged and were corrected by the author. Once the second set of tests were satisfactory, the updates were made to the production system.

1.3 Problem Statement

More and more challenges emerge as users' requirements become more demanding with

the use of ConfSys system. ConfSys3.5 is expected to satisfy these increasing requirements from both organizers and users.

1. Mura(irregularity), muda(uselessness) and muri(unreasonableness) in its business process. The inefficiencies in the previous versions of ConfSys prevented the system from being used for large number of users in series such as ICCM. The irregularities in the processes which almost every author might encounter such as paper submission, user registration have to be eliminated.
2. Usability. As in previous versions, ConfSys3.5 provides its users enhanced features with additional options and choices, however these features increase complexity. It is important that users would not be confused with this complexity otherwise they cannot take advantage of these features. As in most software applications, usability is a crucial factor to gain user satisfaction.
3. Session management. With larger conferences with multiple tracks, the tasks of session management need to be upgraded. To reduce the manual tasks in generating the final program, the system has to manage the allocation of time slots, location and session chairs assignment, session placement updates and parallel session management.
4. The use of eProceedings. Electronic publications have become the preferred option for both organizers and readers. It is environmentally friendly and easy to navigate using tools already implemented in most readers and user agents.
5. Many thousands of users now use ConfSys system around the clock. For certain

period of the conference cycle, the traffic between clients and server becomes a bottleneck as servlet-based system can only support small number of concurrent users.

This bottleneck has to be addressed in ConfSys3.5.

1.4 Proposed Solution

1. To reduce mura(irregularity), muda(uselessness) and muri(unreasonableness), business process improvement is seen as a necessary approach. As part of kaizen philosophy, reducing mura, muda and muri is an important part of the improvement.

2. Balance of usability and functionality. We have decided not to sacrifice functionality enhancement but focus on improving the usability. Improve interfaces of the ConfSys by using more intuitive widgets and layouts to make sure that users can easily get the information they need. Many of these changes are made for managing the events, with additional features such as automatically execute routine functions to decrease the workload of the organizers.

3. Upgrade the system from Servlet to Servlet/Struts 2 hybrid to resolve the increasing peak traffic issues. In the conference support system the periods such as a few days near the paper submission deadline, there tends to be increased demand on the system and users may experience traffic bottleneck. This needs to be managed to acceptable level.

4. To help the program chair, especially for large conferences with thousands of papers and multiple tracks and parallel sessions, ConfSys3.5 offers Auto Session Management

with features for generating the final program of the conference, with very little manual involvement except for the final changes due to participant travel schedules.

5. To publish environmentally friendly and completely electronic proceedings, eProceedings was introduced in ConfSys3.5. Administrator of the system can compile the proceedings by just entering the necessary front matter *de rigueur* in traditional printed proceedings, such as front and back cover page, list of organizers, forward, preface and copyright page. Once these are entered the creation of the proceedings involves invoking a number of functions to produce a complete eProceedings with pagination, table of contents and author index.

1.5 Organization of the Thesis

This thesis is organized as follows:

- In Chapter 2, we examine the major existing online academic conference systems, analyze their advantages and disadvantages, and then compare ConfSys with these systems.
- In Chapter 3, we briefly explain the technologies and framework which we used.
- In Chapter 4, we address the long existing challenge for software industry: improve usability without reducing functionality of previous version of the system. We practice our kaizen to reduce mura, muda and muri, including business process improvement.

- In Chapter 5, we introduce some new features and new concepts, such as eProceedings and Auto Session Management that are embraced in ConfSys to enhance usability and versatility of the system.
- In Chapter 6, we provide our conclusion and discuss the future work.

Chapter 2

Conference Management Systems

2.1 Related Works

A web application or web app is any application that runs in a user agent(web browser). It is created in a browser-supported programming language (such as the combination of JavaScript, HTML and CSS) and relies on a web browser to render the application [4]. Most web applications are based on the client-server architecture where the client enters information while the server stores and retrieves the information. A client-server environment is the one in which multiple computers share information such as entering information into a database as “client”. The “server” is the application used to process and store the information. Most conference management systems are web applications.

2.2 Benefits of a Web Application

A web application relieves the developer of the responsibility of building a client for a specific type of computer or a specific operating system. Since the client runs in a web browser, the user could be using a workstation, tablet or even a smartphone and using any operating system. The user agent could be one of the many such as Chrome, Firefox, Internet Explorer, Opera or SeaMonkey though some applications require a specific web browser. Web applications commonly use a combination of server-side script (JSP, ASP,

PHP, etc) and client-side script (HTML, JavaScript, etc.) to develop the application. The client-side script deals with the presentation of the information while the server-side script deals with all the critical tasks such as safeguarding, storing and retrieving the information.

Below we describe other conference systems many of which, though popular, still do not have all of ConfSys' features.

2.3 EasyChair

EasyChair is a web-based conference management system, initially developed by Andrei Voronkov in 2002. It has many features to make it suitable for various conference models [5].

EasyChair was designed to help conference organisers to cope with the complexity of the refereeing process. It supports

1. management and monitoring of the program committee;
2. sophisticated and flexible management of the access of PC members and referees to papers and conflicts of interests;
3. paper submission;
4. paper assignment based on the preferences of PC members;
5. list of the latest events;

6. submission of reviews;
7. sending emails to PC members, referees and authors;
8. monitoring email;
9. online discussion of papers;
10. the author response (aka rebuttal) phase, when the author can respond to the reviews;
11. preparation of conference proceedings
12. generation and publishing of conference program
13. generation of conference brochures with program
14. conference program and proceedings on flash drives

EasyChair supports two models.

1. The standard model is intended for conferences having a single program committee. The papers are distributed among PC members, normally based on their preferences.
2. The multi-track version is for conferences having multiple tracks. Each track has its own program committee and one or more track chairs. This model requires a "superchair" to monitor or supervise the work of the tracks.

For each of the supported models the users can choose among various options to adjust the system to their requirements. For example, they can choose to use anonymous submissions.

EasyChair supports three different kinds of licenses (usage agreement) including Free, Professional and Executive. Features such as multi-track support, program generation and publishing, Excel/XML/CSV data export, helpdesk and technical support are excluded from free usage agreement.

2.4 ConfTool

ConfTool is a Web-based event management system developed to support the organization of academic conferences, workshops, congresses and seminars. It has helped more than 1000 organizers to make their events a success and is available in over 10 languages [6].

It was built on Apache - PHP - MySQL platform, is able to run on Linux(Ubuntu) or Microsoft IIS server. It has been developed since 2001, and was first used in 2004. Since then, ConfTool has been used at over 1000 events.

Like other conference management systems, ConfTool provides functions such as paper submission, accepting submission, bidding for review, assigning papers to reviewers, informing author the results, accepting final version, registering for the conference, etc.

Besides, it owns some useful tools, such as data importing/exporting, multiple payment options.

2.5 ConfSys

ConfSys was developed by Concordia students including Yuwei Feng, Min Huang and Kunsheng Zhao under the supervision of Dr. Bipin C. Desai. It supports participants based on roles and rights in the processes of academic conference.

From Min Huang[7] and Kunsheng Zhao's thesis[8], "The core processes of ConfSys include Call for Paper (CFP), Paper Submission, Paper Auction/Bidding, Automatic Paper Allocation, Paper Review, Review Debate, Paper Decision, Registration, Session Arrangement and Session Support.

The major roles and their functions supported by ConfSys:

1. *Signed-up Users*: People who have signed up for ConfSys are considered as users of the system. Once the signed-up users have completed their profiles and selected their topics of interests they are considered as normal. Only normal users can be assigned one or more roles in ConfSys including the default role of author. Hence only normal users could submit a paper during the CFP time window for an event, send and receive internal ConfSys emails and register to participate in an event. The registration may involve payment of fees. This is handled by ConfSys with the use of a third party to manage actual collection of funds.

2. *Administrator (Admin)*. Administrator is in charge of the maintenance and administration of the entire system and is able to execute most functions in the system. Some functions such as user profile modification, user password reset, system database maintenance, system log check and system menus/templates management could only be accessed and run by the Administrator.

3. *General Chair (GC)*. GC has access to all the management functions for a specific conference series. In ConfSys, GC has the highest privileges for the management of the conference series. ConfSys provides the following functions to GC: paper progress management, paper allocation management, user group management, paper auction review management, public message management, paper decision, optional registration management, and automatic-email-reminder sending management.

4. *Program Chair*. Program Chairs' main responsibility is the management of an event under a conference series. Event management includes tasks such as paper management, paper allocation management, paper decision management and public message management. Usually a Program Chair is assigned by the General Chair for a specific event.

5. *Program Committee*: The main duties of Program Committee members are reviewing the assigned papers and debating the reviews for controversial papers. The review result will be used by the Program Chair or General Chair to make

acceptance/rejection decisions for the papers. In ConfSys, the following functions are implemented for PC members: Paper Auction/Paper Bidding, Paper Review, Blind Review Debate and re-assign a paper to another PC members or a normal ConfSys user to review it.

6. *Reviewer*: Reviewer is a normal user to whom one or more papers has been assigned by a PC member or one of the chairs. She/he has the same functions as the PC members, but can't assign paper to another reviewer.

7. *Author*: All users with "normal" status in the system are considered as authors by ConfSys and could submit one or more papers during the CFP time period. However only those users who have submitted at least one paper to an event managed by ConfSys would be able to access the paper management functions for the event. Such users could edit submitted paper, add coauthors, change author type for existing authors or upload a new version or copyright form for a submitted paper. Authors could receive paper related reminders from ConfSys. Two sub-groups are defined for authors: Author with Accepted Paper and Author with Rejected Paper, these sub-groups facilitate a number of the system management tasks. Once a paper is accepted or rejected, the authors of this paper will be put into corresponding sub-group. ConfSys sends a series of reminders to the authors. For a paper, four author types are defined: Contact Author, First Author, Author, Co-Author. Additional authors could be added by the user who originally submitted a paper. A

Co-Author doesn't need to be "normal" status user and is introduced into the system to complete the list of authors for a submission. ConfSys requires email address and name of a Co-Author. ConfSys has an optional feature which allows blind communication between an author and a reviewer (for clarification or rebuttal). The GC may disable it for conferences due to the tight schedule.

2.6 ConfSys versus other CMSs

Thanks to the Internet, information sharing has never been wider and easier as today. EasyChair, ConfTool and many other conference systems have been developed on and for different platforms and techniques, but they essentially are implemented on web-based three tier (Web Browser - Web Server - DBMS) architecture. ConfSys, like these conference management systems, is not an exception.

In terms of user management, these systems classified the basic users of a conference into three main roles: namely Chair (General Chair, Program Chair, Track Chair, etc), Reviewer (internal and external) and Author. Meanwhile, there are roles such as Program Committee Chair/member also in these systems.

In conference management systems, phases of the event may include Call for Paper, Paper Collection, Auction to bid for some of the submitted papers, Paper Allocation, Paper Review, re-assigning a paper to an external reviewer, Paper Decision, Camera

Ready Copy Collection, Program Arrangement, and Participants Registration. These phases are representation of different period in a conference.

ConfSys, compared with other conference management systems, has more features as shown in Table 2.1. Yet, the usability of the previous versions of ConfSys has lagged behind its abundant features. Improving usability is one of the challenges that is addressed in this thesis and is outlined in Chapters 4 and 5.

Features and Functions	Conference Management System		
	ConfTool	EasyChair	ConfSys3
Paper submission/upload	✓	✓	✓
Automatic/Manual Paper Allocation	✓	✓	✓
Auto Reviewer Conflict Check	✓	✓	✓
Paper Review	✓	✓	✓
Monitoring Review Progress	✓	✓	✓
Review Discussion	✓	✓	✓
Setting Acceptance Criteria Based on Review Result	✓	✓	✓
Single/Double Blind Reviews	✓	✓	✓
Review Feedback to Authors	✓	✓	✓
Interest of Conflict Check	✓	✓	✓
Session Management	✓	✓	✓
Slide/Program Package Download	✓	✓	✓
Conference Registration	✓		✓
Multiple Conference Management	✓	✓	✓
Multiple Track Management	✓	✓	✓
System Maintenance Management	✓	✓	✓
Group Based Role Function Management	✓		✓
Auto Publishing Call for Paper Message			✓
Auto Allocation Match Rate Report			✓
Participant Registration (Fee Payment) Management	✓		✓
Conference News Message Management			✓
Combined Internal/External Email System			✓
Dynamic Review Options Setting			✓
Event Customization			✓
Grace Period for CFP			✓

Table 2.1 Comparing ConfSys3 with Other CMSs

Chapter 3

Technology and Framework

3.1 Overview

As a web application, ConfSys has been developed with popular languages and tools, such as Java, HTML and JavaScript.

3.2 Hyper Text Markup Language (HTML)

Various versions of Hypertext Markup Language (HTML), are the predominant markup language to create web pages. HTML consists of elements marked with *tags* enclosed in angle brackets (e.g., <html>). HTML tags are not case-sensitive. Attributes provide additional information about HTML elements, such as fonts, color, etc., which can enhance the presentation of the document. Anything that is not a tag is part of the document itself.

HTML document is small because it does not include formatting information small and hence easy to send over the net. HTML is platform independent. The archive website of ConfSys 3.5 is mainly built with HTML. Partial content of the archive website, where it store the past event program, are generated from dynamic website, which support conference management functions.

3.3 JavaScript

JavaScript (JS) is an interpreted programming language. While it is used more for client-side scripts to interact with the user, it has also become common in server-side programming. It is light-weight and expressive. All modern browsers support JavaScript.

The most common use of JavaScript is to interact with the Document Object Model (DOM) in an HTML page. Some applications applied in ConfSys3.5 include:

- Animation of page elements, such as fading in and out, resizing, moving, etc.
- Validating input values of a web form. The values are submitted to the server if they are verified as acceptable.

With JavaScript, access to a debugger becomes invaluable when developing large, non-trivial programs. Because there can be implementation differences between the various browsers (particularly within the Document Object Model), it is useful to have access to a debugger for each of the browsers that a web application targets.

Script debuggers are available for main stream web browsers, such as Firefox, Google Chrome, Internet Explorer, Safari and Opera. Firefox also has a simpler built-in Error Console, which logs and evaluates JavaScript. It also logs CSS errors and warnings. Web applications within Firefox can be debugged using the Firebug add-on. Firebug is the main JavaScript debugger for ConfSys3.5 development. WebKit's Web Inspector includes a JavaScript debugger, which is used in Safari. A modified version is used in Google Chrome. For IE, there are three debuggers: Microsoft Visual Studio, Microsoft

Script Editor and Microsoft Script Debugger. Opera JavaScript debugger is called Dragonfly. As we support FireFox, Chrome and IE, JavaScript will be tested on these browsers separately for the compatibility.

3.4 JQuery

The description of jQuery from its official website[9] is, “it is a fast, small, and feature-rich JavaScript library. It makes things like HTML document traversal and manipulation, event handling, animation, and Ajax much simpler with an easy-to-use API that works across a multitude of browsers. With a combination of versatility and extensibility, jQuery has changed the way that millions of people write JavaScript.”

In ConfSys3.5, jQuery library has been upgraded from 1.3 to 1.8, since the newer version is stricter on syntax and has less bugs. It is mainly used to improve user interface of ConfSys.

3.5 AJAX

Ajax (Asynchronous JavaScript and XML) is a group of interrelated Web development techniques used on the client-side to create asynchronous web applications. With Ajax, web applications can send data to and retrieve from a server asynchronously (in the

background) without reloading the page [10].

As a trend, the pages on a website consist of more content and users do not always want to reload the page for every request. Using traditional methods, they would have to do so. Ajax provides users such a convenience, so that a web application can request only the content that needs to be updated, thus drastically reducing bandwidth usage.

Since only parts of pages needs to be reloaded, Ajax allows for much more responsive web applications, giving users the experience that changes are happening instantaneously.

The use of Ajax can also reduce connections to the server, since scripts and style sheets only have to be requested once.

In ConfSys3.5, Ajax is used more than previous versions of ConfSys to improve usability of the system.

3.6 CSS

Cascading Style Sheets (CSS) is a style sheet language used for the common format of documents written in a markup language.

CSS is designed primarily to separate document content from document presentation, including elements such as layout, colors, and fonts. This separation, an approach to improve content accessibility, provides more flexibility to the presentation of web pages, enables multiple pages to share formatting, and reduces complexity and repetition in the structural content.

The archive (static) website of ConfSys3.5 is redesigned in order to match the style of the functional (dynamic) website. CSS is widely used to evolving website content and element tags can be separated.

3.7 Java

Java is an object-oriented programming language, strong typed and platform independent.

Java 7.0 contains many new features, enhancements and bug fixes to improve efficiency to develop and run Java programs [11]. The following is a brief summary of the enhancements included with the Java 7 release:

- Improved performance, stability and security.
- Java programming language enhancements that provides developers features for easy writing and optimizing code.
- Enhancements in the Java Virtual Machine to support Non-Java languages.

The small language changes include: Strings in switch, automatic resource management in try-statement, improved type inference for generic instance creation, binary integer literals, allowing underscores in numeric literals, catching multiple exception types and rethrowing exceptions with improved type checking, etc. ConfSys has been developed based on Java platform. Java JRE in ConfSys3.5 has been updated from 6.0 to 7.0.

3.8 Servlet

A servlet is a Java class that is designed to respond with dynamic content to client requests over a network. It provides a Java-based solution used to address the problems associated with server-side programming. Features of Servlet that make them easy and attractive to use include:

- Servlets are persistent. Servlets are loaded only by the web server and can maintain services between requests.
- Linked together, or chained, so that one Servlets can call another Servlets or several Servlets in sequence.
- Secure even when downloading across the network, the Servlets security model and Servlets sandbox protect server from unfriendly behavior.

In ConfSys3.5, Servlets still support most of business logic implementation as ConfSys3.

3.9 JSP

JavaServer Pages (JSP) technology provides a simplified, fast way to create dynamic web content. JSP technology enables rapid development of web-based applications that are server- and platform-independent [12]. Based on Java, It offers proven portability, open standards, and a mature re-usable component model.

A JavaServer Pages file is an HTML document with JSP scripting or tags. Before the page is served, the JavaServer Pages is parsed and processed into a Servlet on the server side. The Servlet outputs real content in straight HTML to the client.

As the previous version of ConfSys, JSP is the mainly used for user interface of ConfSys3.5.

3.10 Struts 2

Struts 2 is a popular Java web application framework based on MVC design pattern. Apache Struts 2 is the product of a merger between the Apache Struts and OpenSymphony WebWork projects, both of which aimed to develop an easy-to-use yet feature-rich framework. Struts 2 represents a revolution in design and ease of use as compared to classic Struts [13].

Apache Struts 2 is an extensible framework for creating enterprise-ready Java web applications. It is designed to streamline the full development cycle, from building, to deploying, to maintaining applications over time. The initial of upgrade to Struts 2 was required due to the larger number of concurrent users of ConfSys. The problem occurs especially during peak periods when multiple threads can concurrently use the same Servlet object. As such, while Servlets are thread-safe and work well under low load, they fail implicitly under increased demand. To solve this problem, Struts 2 is an ideal

solution: it is a framework based on Servlet concept, compatible and easily accommodates fairly large groups of concurrent users. When servlets are used, a copy of the same servlet is loaded for each concurrent user and hence takes up extra memory space in addition to time required to find the memory space and loading the servlets. With struts 2, threads are used for each concurrent process that needs the functionality implemented in the struts and uses a single copy of the code. Thus performance is improved. This was evident in supporting large events with thousands of users and hundreds of users at the peak time; all this was supported by Apache-tomcat running on a single server.

Framework upgrade from Servlet to Struts 2 is hassle free. Since the needs arises in a few key functions of conference process, Struts 2 is used in these relevant modules in ConfSys3.5 to eliminate the bottlenecks.

Struts 2 is introduced in ConfSys3.5 to support the increased number of concurrent users. As we see the needs emerge from a few key points of conference process, Struts 2 was applied only to the modules such as paper control which has heavy load in particular period.

3.11 MySQL

A data base management system (DBMS) is a complex set of software that deals with the organization, storage, management and retrieval of data. MySQL is the world's most

widely used open-source relational database management system (RDBMS)[14], enabling the cost-effective delivery of reliable, scalable Web-based and embedded database applications.

Since ConfSys1.0, MySQL has been used as the database of the system. MySQL in ConfSys3.5 was upgraded from 5.0 to 5.5 a few years ago.

3.12 Tomcat

Apache Tomcat is an open source web server and servlet container developed by the Apache Software Foundation (ASF). Tomcat implements the Java Servlet and the JavaServer Pages (JSP) specifications from Sun Microsystems, and provides a "pure Java" HTTP web server environment for Java code to run in.

Apache Tomcat includes tools for configuration and management, but can also be configured by editing XML configuration files [15].

Tomcat has been the web server for ConfSys over 10 years. In ConfSys3.5, it was upgraded from 5.5 to 7.0.

3.13 IText

IText is a software available in Java that allows one creating and manipulating of PDF documents. It enables developers looking to enhance web and other applications with

dynamic PDF document generation and/or manipulation [16].

iText was introduced in ConfSys3.5 to create eProceedings, including generating dynamic documents from databases, adding bookmarks and page numbers, concatenating PDF pages, etc.

The version of iText in ConfSys3.5 is 5.1.

3.14 Three-tier Model

Three-tier model includes representation tier, application tier, and data storage tier. It is shown in Figure 3.1.

The representation layer is the top level layer and it displays information on a website. Users send request via this tier to the application tier in the network and the result is displayed in a browser. It decides how the data appears to the users and how the users interact with the interface. In Web-based application, the representation tier is located at client side, and normally a web browser is used to act as this tier.

The application tier has various business rules and logics, and controls an application's functionality by performing a detailed processing of these predefined rules. It accepts and processes requests from the representation tier, manipulate data stored in data storage tier, and return the result to representation tier. This tier normally contains the programs hosted on a web server and application server.

The data storage tier is used to store user data and system data required for the execution

of the system. A data base management system (DBMS) is normally used for the data storage in this tier. The interaction with the database is done using standard languages such as SQL queries using database specific protocol over TCP/IP. Data in this tier is kept independent of application servers or business logic.

In ConfSys system, the representation tier is the web browser located at user's computer, which has an internet connection to access the ConfSys web site. The application tier use Tomcat as the application server, with the assistance of Apache to provide static contents. The ConfSys is implemented using Java Servlet and Java Server Page (JSP) and execute on Tomcat server. At data storage tier, MySQL database system is used to store required data.

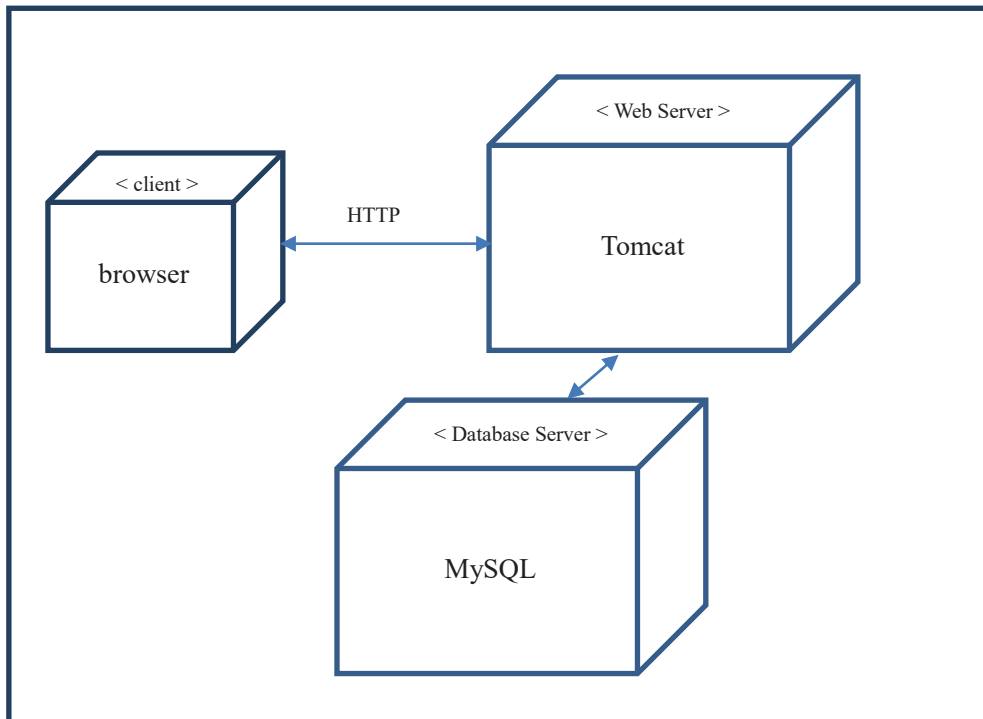


Figure 3.1 Web-based 3 Tier Model

3.15 MVC Architecture

The architecture of ConfSys system is based on the Model-View-Controller model (MVC) shown in Figure 3.2.

The model represents the application data, data access object (DAO) and business logic. It includes the database and a set of Java objects. The Java objects may be populated manually from a result set returned by a database query or they can even be instantiated and populated automatically by an Object-to-Relational Mapping (ORM) framework.

The view is the output representation of information; it renders the contents of the Model and specifies how the information should be shown. The views within MVC typically consist of HTML and JSP. HTML pages are used to serve static content, while JSP pages can be used to serve both static and dynamic content. However, Web applications are considered stateless because the browser doesn't typically maintain an open socket to the web server.

The controller is responsible for accepting input and converting it to commands for the model or view. It performs the following duties,

- Intercepts HTTP request from a client.
- Translates the request into a specific business operation to perform.
- Either invokes the business operation itself or delegates to a handler.
- Helps to select the next view to display to the client.
- Returns the view to the client.

ConfSys3.5 inherited the architecture from ConfSys3. It is shown as Figure 3.2. JSP/HTML is used for view, and Servlet/Struts 2 are mainly for controller. Model includes database and model classes. As Min Huang mentioned in his thesis [7], the architecture of ConfSys has advantages such as unified business logic, reduced coupling and easy to use programming interface. Introducing Struts 2 in ConfSys3.5 reduces coupling further.

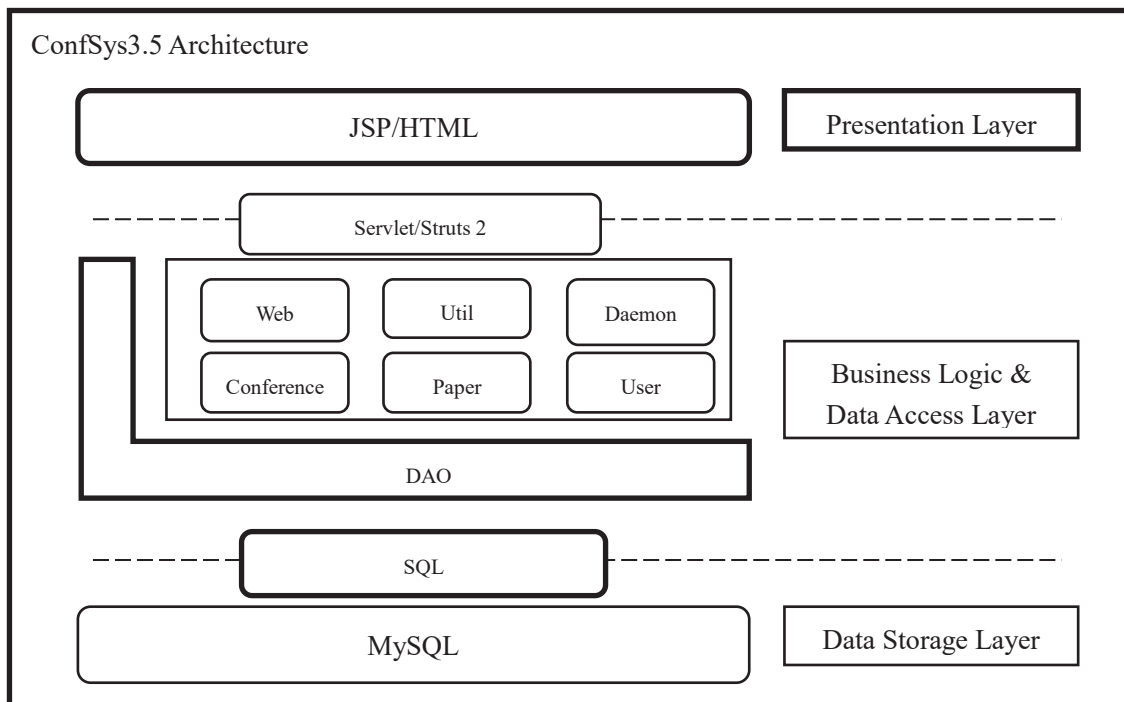


Figure 3.2 ConfSys3.5 Architecture

Chapter 4

Process and Usability Kaizen

4.1 Overview

As discussed in Chapter 1, there are 3 major challenges for ConfSys3.5: business process improvement, usability and new requirements from system users. In this chapter, we will discuss some enhancements that have been made in ConfSys3.5 to improve the usability issues.

Based on the test group's feedback, we see users' suggestions focused on the inconvenient process and system usability. Therefore, we choose the top issues in the list of the test group's evaluation and suggestion to solve. After the solution is provided by ConfSys team, the same test group members will be asked to evaluate the solution and give further feedback. Once all the feedback is addressed and changes are made, the updated code will be tested extensively by real users.

Kaizen has been practiced as requirements emerge from the use of ConfSys by larger number of users for a multitude of event supported on a single server. The ultimate objective of ConfSys is to satisfy users' needs, as we strive for usability, flexibility and extensibility in ConfSys3.5.

4.2 Business Process Kaizen

4.2.1 New User Sign-up

A user who signs up in ConfSys is considered a potential system user. Once the user completes his profile, the status of the user changes to normal. Before ConfSys3.5, a new user could sign-up and directly submit a paper without providing his basic personal information. This would cause problems when organizers need the author's basic information, for example, the proceeding would not be able to add the user's name and organization in the author list. To solve this problem, when a new user signs up for ConfSys, he/she is required to complete the profile shown in Figure 4.1 and choose a set of topics of interest from a subsequent screen. Once completed, the new user becomes a 'normal' user and is assigned the default Author role. Before completing the profile and choosing the topics of interest, the new user would have no access to any ConfSys functions.

[Homepage](#) | [Change Event](#) **Current Event:** IDEAS>15 [\[ConfSys\]](#) [\[Online Help\]](#)
System Message: Your profile is still not complete and most functions would not be accessible until it is completed.

User Profile

User Profile

User Name: conf615443
 Password: * Use a password of at least six characters.
 Password Confirm: *
 Title: -- ▾
 Firstname: *
 Middle Name:
 Lastname: *
 Country: Select Country ▾ *
 Organization: Select Organization ▾ *
 Department: *
 Address:
 City:
 Province/State:
 Postcode:
 Email: *
 Confirm Email: *
 Fax:
 Phone:
 Receive email from ConfSys: Yes ▾

Note:
 You have an **Internal Inbox** in ConfSys which contains all emails sent to you by ConfSys: you can consult it by signing in, choosing the **[My Account]** tab and Mail link once you have completed your profile and Set of Interests (following page).
 Whenever you have a role in one or more events managed by ConfSys which requires that all emails from the system be sent to your email address given above, the ConfSys will automatically set this option to Yes. This way you will get timely reminded of the deadlines etc. You cannot turn it off until the end of the events.

Figure 4.1 Edit User Profile

Similarly, in the previous versions, a registered user could submit a paper and proceeds in an event without completing his profile. This leads to a few problems such as the system not able to determine conflict of interests for assigning paper to reviewers due to not knowing the author’s organisation, missing info for conference program, etc. Those problems is vital and important for the quality of the program.

In ConfSys3.5, a user signing up is considered as a “Registered” user and has not completed his profile. Registered users could only access the “My Account” functions and could access the “Author” functions only after the profile is completed. The access to the author function allows the user to submit a paper during the CFP Period for any event

and subsequently access the paper information in the system.

We also introduced a new status, “Pending”, for the users have completed all the profile except the organization entered is not found in the database. In this case, the author can submit paper before the organization name is verified and added in the database.

4.2.2 User Email

Another feature added in ConfSys3.5 is to allow a user to have multiple emails. This solves the problem where authors do not consult/contact each other about their emails used in ConfSys. Authors may register themselves using a different email address from the one that is assumed by the submitting (contact) author. In spite of the plea for the authors to consult each other to get correct co-ordinates, there seems to be the usual human errors. When the email entered by the contact author is not found by ConfSys, the contact author adds this email as that of a “new user” and ConfSys treats this user as a ‘co-author’ and sends an email to him/her to complete his profile, etc. This could result in creating another user ID for the same person and so create potential confusions and problems since ConfSys does not require a user to have multiple user IDs.

Figure 4.2 shows this new feature where a user is allowed to enter his additional email(s). This feature may help eliminate the confusion problem that the same person has multiple user IDs.

✉ Add/Modify Email

ConfSys allows you to:
-add/modify alternate email address
-change your primary email address used for sending external messages(a copy of which is in your ConfSys Inbox).

Primary Email

Your additional email addresses

(None if the list below is empty. You may change or delete any of these email addresses)

Figure 4.2 Add/Modify Email

4.2.3 Registration Integration

When authors submit a paper and if it is accepted by the event, they need to register themselves and the paper for the event. At this stage, authors may need to submit signed copyright form or sign it online and then pay the registration fee. In the past, authors had to complete these two tasks separately which was not convenient. In ConfSys3.5, signing inline copyright and paying the registration fee could be done in one step. As shown in Figure 4.3, once the author has the paper accepted, s/he can select the accepted paper and copyright will be shown automatically and the author click button “View and accept the publisher copyright for the above selected paper”, s/he will see the copyright and radio buttons: “Accept” or “Decline”. Only choosing “Accept” will allow the author to proceed to registration. By having this integrated copyright feature, author can save time from the processes.

My Registration Options & Registration History	
My Registration Options in [IDEAS>15]	
Registration Option:	TestReg: 50.0 CAD (Paper Main Registration)
Description:	test
For Paper:	Test(PID: HAH20003:)
Quantity:	1
Total:	50 CAD
My Comments:	<div style="border: 1px solid gray; height: 40px;"></div>
Publisher Copyright:	<p>View and accept the publisher copyright for the above selected paper</p> <p>ACM COPYRIGHT NOTICE. Copyright © 2008 by the Association for Computing Machinery, Inc. Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than ACM must be honoured. Abstracting with credit is permitted. To copy otherwise, to republish, to post on servers, or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from Publications Dept., ACM, Inc., fax +1 (212) 869-0481, or permissions@acm.org</p> <p>test publisher copyright form content</p> <p>Accepted by: Pcf Pcl</p> <p>Date: 06-08-2015</p> <p><input checked="" type="radio"/> Accept <input type="radio"/> Decline</p> <p style="text-align: right;"><input type="button" value="Confirm"/></p>
Unpaid Registrations (Note: On-line payment could be made by popular credit cards.) <input type="button" value="Registration History"/>	
Currently, you don't have any registration records for this event.	

Figure 4.3 Registration with inline copyright signature

4.3 Usability Kaizen

4.3.1 Usability Dimensions

Jakob Nielsen, a leading figure in the usability field since the 1980s, highlights the multidimensional nature of usability[17]. To be usable, a product or service must consider, at a minimum, the following five basic dimensions:

- **Learnability:** The system should be easy for users to accomplish basic tasks the first time they encounter the design.
- **Efficiency:** Once users have learned how to use the system, the system should be efficient to use.

- Memorability: The system should be easy to remember so that the casual user is able to return to the system after a period of not using it.
- Errors: The system should have a low error rate, and if users do make errors they can easily recover from them.
- Satisfaction: Users are subjectively satisfied with the system when they use it.

4.3.2 Learnability

4.3.2.1 Ease of Learning

Initial ease of learning is probably the easiest of the usability attributes to measure, with the possible exception of subjective satisfaction. It is important for users to easily remember the interface, even after a considerable period since the previous usage.

4.3.2.2 Menu

The first impression about ConfSys from users probably is the experience of using its menu. The menu in ConfSys3 is shown in Figures 4.4 and 4.5. It is less visually obvious. User can hardly tell it is menu from just text with bracket.



Figure 4.4 Main Menu in ConfSys3



Figure 4.5 Submenu in Confsys3

In ConfSys3.5, a more conventional menu is presented to users. System users may not really need fancy or unique design of menu. Instead they need a simple and easy-to-identify menu shown as Figures 4.6 and 4.7 for accessing and navigating the system.

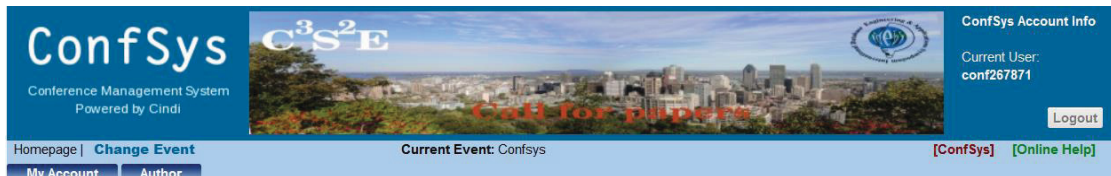


Figure 4.6 Improved Main Menu in ConfSys3.5

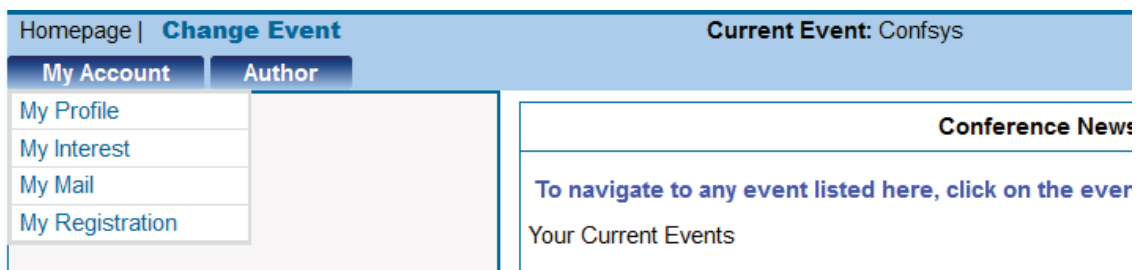


Figure 4.7 Improved Submenu in ConfSys3.5

4.3.3 Efficiency

4.3.3.1 Efficiency of Use

In order to improve the efficiency of use, one of major approaches to clarify and shorten the procedures. Procedures should be relatively short. People have trouble with long procedures unless memory aids provided in form of written instructions or by the system. The user friendliness of ConfSys includes providing context sensitive help pages which could be accessed by an Online Help button featured handily on all user screens. This feature was implemented as of ConfSys2 and additional help pages have been added in ConfSys 3 and ConfSys3.5.

4.3.3.2 Paper Submission and Editing

One example is that the procedure of paper submission is shortened. When an author submits a paper, it is likely that he/she would upload a newer version and if accepted upload the final version; hence more than one version of the paper would be uploaded to ConfSys as illustrated in Figure 4.8. In previous releases of ConfSys uploading a final version or copyright form had to be done separately; authors found this process confusing and was not always popular. In ConfSys3.5, final paper submission becomes simpler. The author can submit the final version and the copyright release form at the same time. Also, there are three options for copyright submission that can be chosen by conference organizers when they configure the event. These options are: inline, online and upload. Organizers can choose one of them to meet the requirement for the event as required by the publisher of the official proceedings.

Paper Info Back

Basic Paper Information for the Paper HAH20003

Title:

The abstract should be at least 30 words but no longer than 300 characters. This count includes blanks(spaces). Prepare the summary in a text editor and copy and paste. DO NOT USE COPY AND PASTE FROM A PDF FILE DISPLAY OR LaTeX. This abstract would be used in the program, both the on-line and printed versions. Any errors etc. are not edited.

Abstract:

Keywords:

Status: Submitted

Review Type:
 Choose Double Blind if one of the author of the paper is in the Program Committee or a Chair.
 DO NOT INCLUDE DETAILS FOR ANY OF THE AUTHORS IN THE PDF FILE TO BE UPLOADED

Sessions Developer: Note: You may change the Sessions Developer until the CFP deadline.

Comments: [View Reviewer Comments And Review Results](#)

Decision:

Program Chair Comment:

Paper Subjects List

<IDEAS>.01 Access Methods and Data Structures	Delete
<IDEAS>.02 Active Databases	Delete
<IDEAS>.01 Access Methods and Data Structures	Add

Paper Files (PDF) (only 3 versions are allowed at a time. To upload more, a previous version must be deleted. You could upload a new version up-till 2015-03-30 EST)

< Version1 > [2015-02-02 19:46:53]	Delete
< CopyrightForm > [2015-02-02 19:46:53] :	

Upload related to this paper

Final Version	Paper: <input type="button" value="Browse..."/> No file selected.	Upload New File
	Copyright: <input type="button" value="Browse..."/> No file selected.	

Please also download, complete and sign the copyright release form for BytePress in cooperation with ACM by select **Copyright Form for BytePress in cooperation with ACM** option in above select list.

Figure 4.8 Paper Info web page

4.3.3.3 Search Function

As search function is useful in ConfSys to find the needed information, such as paper title or author name, we added search bar in our different modules. For example, in Paper Upload Progress module, a user enter a keyword in the search text box, the system will give a paper

list shown as figure 4.9. In order to facilitate the process in paper management, more search bars are imported in the system.

Event Paper Upload Progress							
<input type="text" value="Ming"/>		<input type="button" value="Search"/>		<input type="button" value="View All Papers"/>			
Id	Paper Title	Versions Uploaded	FinalVersion Uploaded	Slide Uploaded	FinalVersion File Info	Decision	Registered
KUN70132	An Online Academic Journal System for CINDI Author: Zhao Kunsheng , Bipin C. Desai , Rui Chen , Min Huang , Ming Lu	2	✓	✓	6 pages 612 x 792 pts (letter)	Short	Yes

Figure 4.9 Search Function in Paper Upload Progress Management

4.3.4 Memorability

4.3.4.1 Casual User

Many users of ConfSys have only casual experience between that of novice and expert users. Casual users are people who use a system intermittently rather than having the fairly frequent use as expert users. However, compared with novice users, casual ones have used a system before, so they do not need to learn it from scratch, they just need to remember how to use it based on their previous learning. Having an interface that is easy to remember is also important for users who return after having been on vacation or who for some other reason have temporarily stopped using a program.

4.3.4.1 Paper ID

The ID for a paper was a number generated by the system in previous version of ConfSys. It is used to help authors and organizers to contact each other for the submitted

paper. Since people tend to remember things related to themselves, we introduced PID for papers authors submit, replacing old paper ID. The format would be 3 uppercase letters plus 5 or 6 numbers. 3 letters are the first 3 letters of author's last name. If author's last name is less than 3 letters in length, then characters from the first name are added. All the letters are capital for easy read. Then if author does not communicate the paper ID, the organizers can search for the paper by using the name of the author.

4.3.4.2 Archive Website Integration

Most ConfSys users will visit both its dynamic(functional) and static(archive) websites. New users may find CFP information from static website, then submit paper on dynamic one. After users may see the final program on archive website. For this reason, it would be better to make dynamic and static websites similar so that users will memorize the use of ConfSys easily.

ConfSys has gone through a number of releases while attempts were made to keep the system backward compatible. This was no longer possible as of version 2.0. Since the dynamic content is of little use for the majority of the past users, it was decided to archive the salient data of the legacy versions in a static site. Hence, legacy contents of events, once the event is over is archived into a static site.

The previous archive website was designed before ConfSys2.0, with style and layout quite different from the dynamic website for currently active events. The older versions of the dynamic site no longer exists. From learnability and memorability perspectives,

the archive website has been designed to be similar as the dynamic site. The new archive website of ConfSys, shown in Figure 4.10, is easy to navigate and interact with especially for casual users.

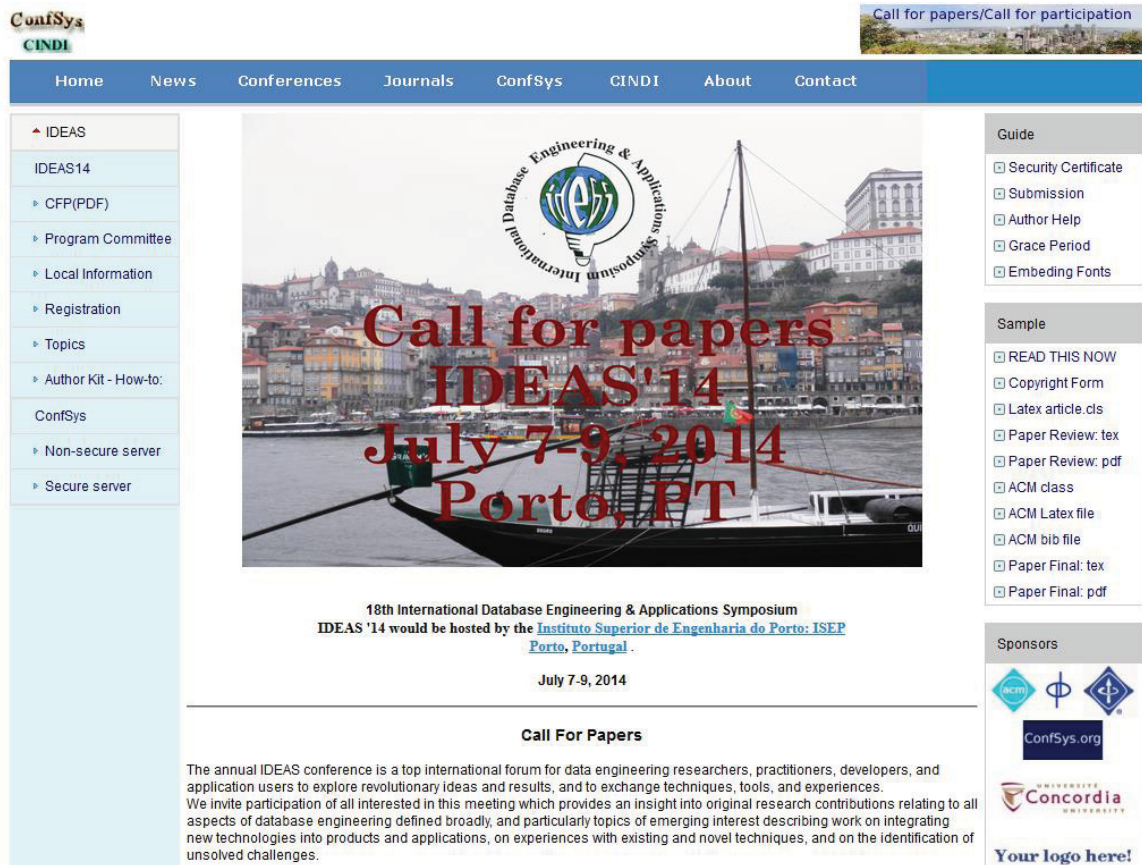


Figure 4.10 Archive Website for ConfSys3.5

4.3.5 Error

4.3.5.1 Error Detection, Tolerance and Prevention

The system should make it easy for the users to detect and identify the error they input, eliminate the potential of error occurrence. It could be done by changing key features of

the task or the interface. When prevention is not possible, reduce the possibility that a user gets into an error state by ensuring the user aware of action consequences and by training the user on normal or even error-recovery procedures. Ensure that the system facilitates rapid correction, task resumption, and movement to a stable system state after error detection and identification.

ConfSys3.5 makes it easier for the users to detect and identify the errors. One of the problems in previous versions is lack of validation of user input, such as user sign-up, paper submission and paper editing. These issues have been addressed in ConfSys3.5 as outlined below.

4.3.5.2 User Profile

When a user fills out his/her profile, it is not always that the user does it correctly. For example, to tolerate the laziness of users to not use the convention of capitalizing the first characters of names or using all caps for names, ConfSys3.5 will automatically correct it. This is convenient for user who enter the correct name but wrong case, the user does not need to spend time on correcting it.

4.3.5.3 Paper Submission

When a paper is submitted to ConfSys, the data for the paper such as paper title, paper abstract, keywords should be validated as well. In ConfSys3.5, validation has been enhanced for those fields. For example, at least three non-trivial keywords have to be

entered as shown in Figure 4.11. If a user enters only 2 keywords or duplicate words, the system will pop up a message, “Please enter at least 3 valid keywords”. Other validations such as minimum and maximum length requirements are added for title and abstract. In addition, duplicate submission is also prevented by using a timestamp token parameter.

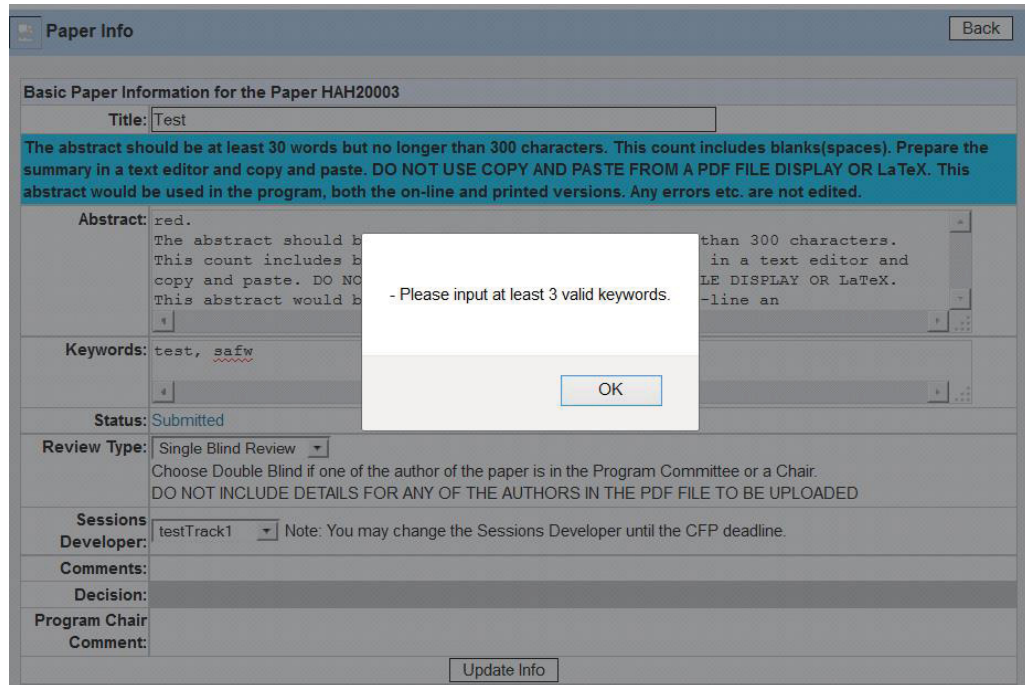


Figure 4.11 Data Validation in Paper Editing

Chapter 5

New Features and Concepts in ConfSys3.5

5.1 Overview

In Chapter 4 we have discussed the kaizen that has been made in ConfSys3.5 to enhance existing functions or interfaces and to achieve the goal of improving usability. In this chapter, some major new features in ConfSys3.5 will be presented. These new features and underlying functions were needed based on the new requirements of a wider class of users and the practical experience of hosting many academic conferences in past few years.

5.2 Single/Double/Triple Blind Review

Single blind review refers to the normal practice where the authors of a paper would not know the identity of the reviewer(s). Since the names of the authors are normally listed in the author area, the reviewers know the identity of the authors.

In double blind review, the reviewers of the paper would not know the identity of the author(s), and the author(s) would not know the identity of the reviewer as in the case of single blind review. This would be useful for a paper where a Program Committee member is an author of the paper.

Triple blind review is that the reviewers of the paper would not know the identity of the author(s), and Program Chair and the other author(s) would not know the identity of the reviewer. This feature is required when one of the authors of a paper is a Program or Track Chair.

Authors have a choice of single or double blind review. Any paper that has one or more program committee member as author(s) is required to be reviewed as double blind. Any paper that has one (or more) Program or Track Chair as author is required to be reviewed as triple blind.

If the submitting author had not selected double/triple blind for such a paper, an email will be sent to the submitting author to tell them what ConfSys has done and ask them to make sure that the names of authors are not listed in the PDF file uploaded for the paper.

Allocation for double/triple blind review must be done automatically. Allocation of a triple blind paper could not be done or altered by a Program Chair who is the author of the paper. Changes in the allocation also are not allowed for the paper. Only a Program Chair who is not an author of the paper can do the allocation. When there is no such Program Chair, the GC must do the allocation. The decision for triple blind review papers can only be made by General Chair. None of the Program or Track Chair author has access to the list of reviewers or their individual scores. The Program Chair is treated as an ordinary author and does not have access to any details about the allocation, reviewers for his paper, their scores etc. He could just see the comments and the decision after the date of decision.

Once a paper is set to triple blind review, the access by the Program Chair who is an

author of the paper is limited to that of an ordinary author; he cannot see the individual scores, the names of the reviewers or the comment to the GC. The Program chair is treated like an ordinary user and would be able to see only the aggregate weighted score and the comments to the authors after the decision date.

Triple blind review option should only be accessible to the user(s) who are Program Chair(s). All other users may be able to see Single and Double Blind Review options in the select list from “Paper Edit” page but not triple blind.

In case of double and triple blind review, the PID(paper’s id for users) would not be generated using the usual three characters from the user's last name. Instead, the PID would start with “BBB”.

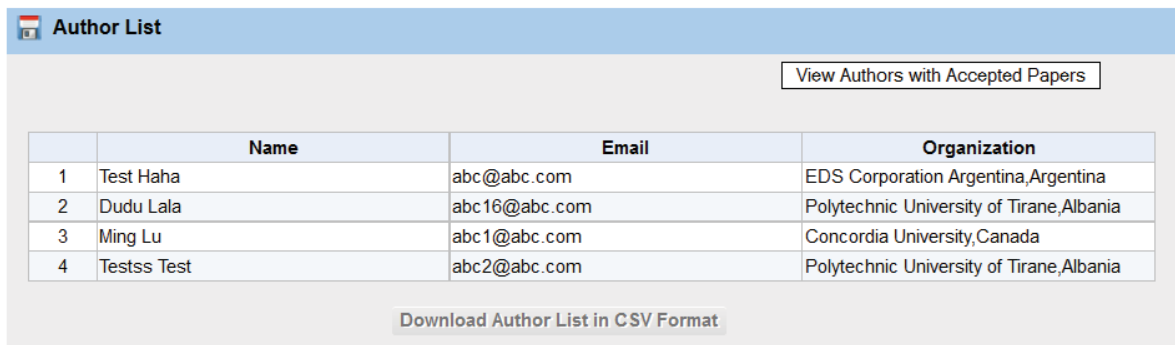
In ConfSys3.5, the authors name would not be shown to the Program Committee members if the paper is double blind or triple blind review and to the Program Chair if the paper is triple blind review. An example page for this change is shown in Figure 5.1.

Paper Allocation Detail Information					Back to Paper Allocation
Maximum Paper Number for Each PC is : 8. Maximum PC Number for Each Paper is : 4.					
Paper Information					
Paper Title	Test Paper				
Paper Abstract	ke changes to Title, Abstract , add authors, delete authors, change paper file, only during this period. No adding or deleting of authors is permitted after this period. Request has to made through the Admin(there is a fee associated with it).o				
Author	Author Name With Held for Triple Blind Review				
Paper Subjects	[<IDEAS>.01] IDEAS::Access Methods and Data Structures [<IDEAS>.02] IDEAS::Active Databases				
Allocated Reviewers					
Id	Reviewer Info	Download Date	Mark	Operation	
1	Triple blind review details not accessible	-	-	Delete	

Figure 5.1 Paper Allocation Detail for Program Chair with a Paper(Triple Blind Review)

5.3 Front Desk

Front Desk is a new role in ConfSys3.5. It has limited access to information to facilitate the clerical management of an event, such as author details, paper processing status, etc. By introducing Front Desk in ConfSys3.5, the program chairs don't have to share their accounts with their assistants to do such clerical job. An example of access to the author list is show in Figure 5.2. Front Desk can see basic author information and could contact the author for the conference. The author list can also be downloaded for further use. The sequence diagram of this improvement is also shown in Figure 5.3.



	Name	Email	Organization
1	Test Haha	abc@abc.com	EDS Corporation Argentina,Argentina
2	Dudu Lala	abc16@abc.com	Polytechnic University of Tirane,Albania
3	Ming Lu	abc1@abc.com	Concordia University,Canada
4	Testss Test	abc2@abc.com	Polytechnic University of Tirane,Albania

Figure 5.2 Author Info in Front Desk Menu

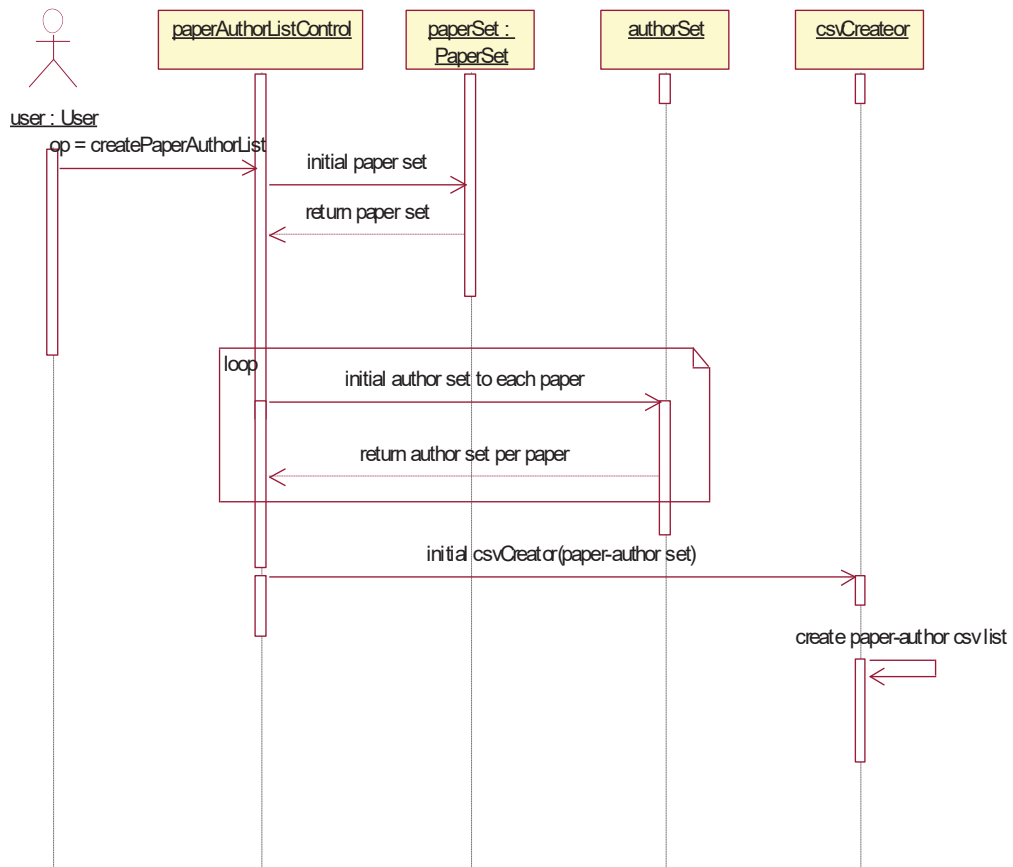


Figure 5.3 Create CSV File for Paper-Author List

5.4 EProceedings Compilation

In addition to the table of contents, proceedings includes the front matter and the back matter. The front matter has the following components: front cover, front page, copyright page, table of content, preface, program committee, external reviewer, organizer; the back matter is made up of author list and back cover. The automatic eProceedings compiler requires the editor to enter a few additional information for the proceedings, and then create proceedings without any manual work. Use case for eProceedings

Compilation is shown as Figure 5.4.

The module exploits iText library and produces pdf format file as the eProceedings.

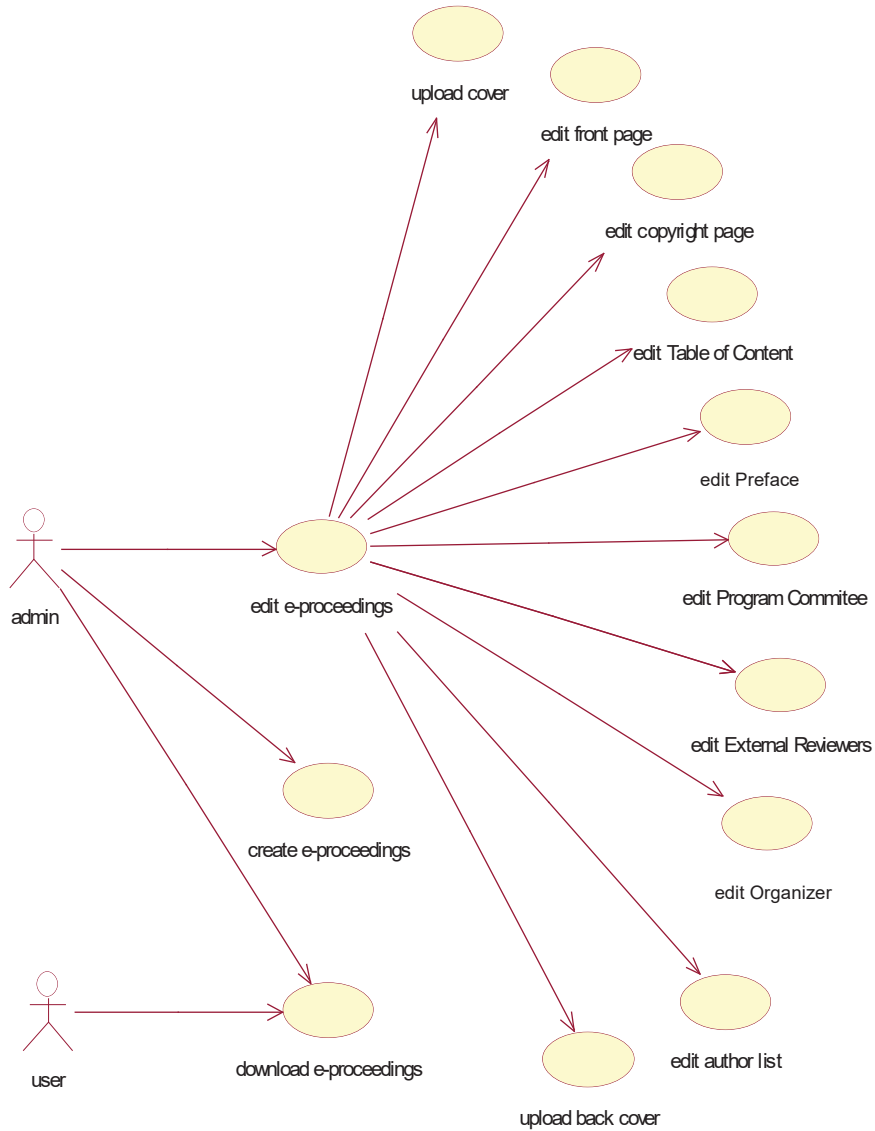


Figure 5.4 Use Case for EProceedings Compilation

5.4.1 EProceedings Editing

EProceedings cannot be done without required pages and additional information from the

editor. The finished product not only has to contain all the papers and relevant information such as authors, keywords, but also needs preface, front page, copyright and an appropriate cover, to mimic a traditional hard proceedings. In order to achieve the goal, a user friendly interface is required for the editor to enter the contents for the preface, or upload a PDF file for the preface. In the first case, the eProceeding generator system would convert the text entered into templates and compile the eProceedings when the function is invoked from a web interface.

Take front page creation as an example. The business logic is shown as Figure 5.5. Admin has an option in the menu to create eProceedings.

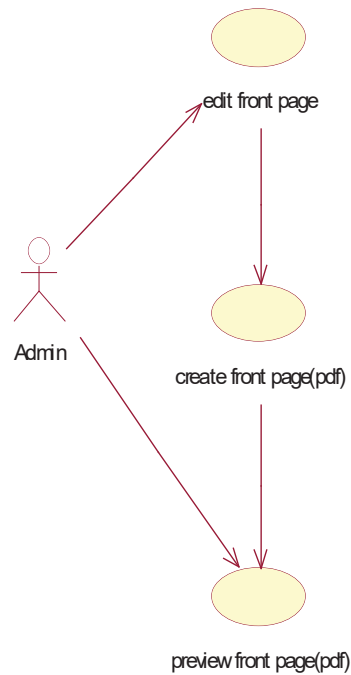
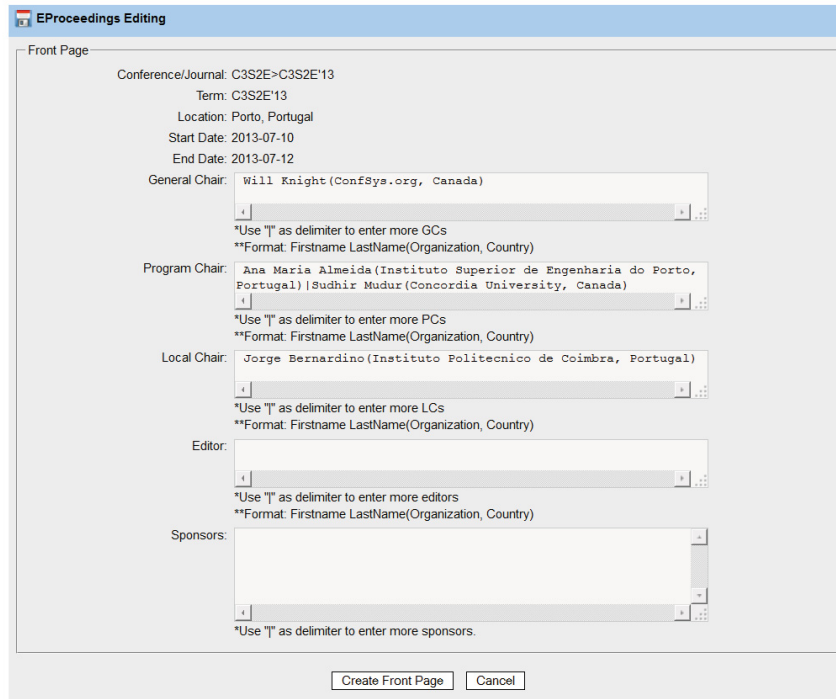


Figure 5.5 Use Case for Front Page Creation

After clicking “Edit” button for Front Page, the Front Page Editing page is seen as Figure 5.6. The information for event, venue, and organizers is retrieved from the system, but also the system allows the editor to edit the organizers information if needed.



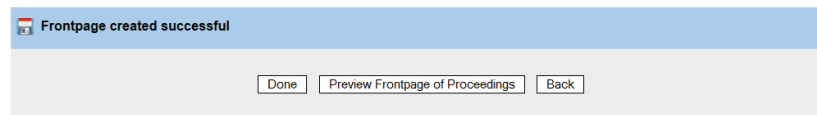
The screenshot shows a web application window titled "EProceedings Editing". The main content area is titled "Front Page" and contains the following information:

- Conference/Journal: C3S2E>C3S2E'13
- Term: C3S2E'13
- Location: Porto, Portugal
- Start Date: 2013-07-10
- End Date: 2013-07-12
- General Chair: Will Knight (ConfSys.org, Canada)
- Program Chair: Ana Maria Almeida (Instituto Superior de Engenharia do Porto, Portugal) | Sudhir Mudur (Concordia University, Canada)
- Local Chair: Jorge Bernardino (Instituto Politecnico de Coimbra, Portugal)
- Editor: (empty field)
- Sponsors: (empty field)

Each of the chair and editor fields includes a text input area, a list of items, and a plus sign button. Below each field, there are instructions: "*Use '+' as delimiter to enter more GCs/PCs/LCs/editors" and "**Format: Firstname LastName(Organization, Country)". At the bottom of the form, there are two buttons: "Create Front Page" and "Cancel".

Figure 5.6 Front Page Editing

After the editor has all the necessary information entered, click “Create Front Page” button, then the system redirects to the page shown as Figure 5.7.



The screenshot shows a message box with a blue header that says "Frontpage created successful". Below the header, there are three buttons: "Done", "Preview Frontpage of Proceedings", and "Back".

Figure 5.7 Front Page Created

By clicking “Preview Frontpage of Proceedings”, the PDF version of the front page is shown as Figure 5.8.

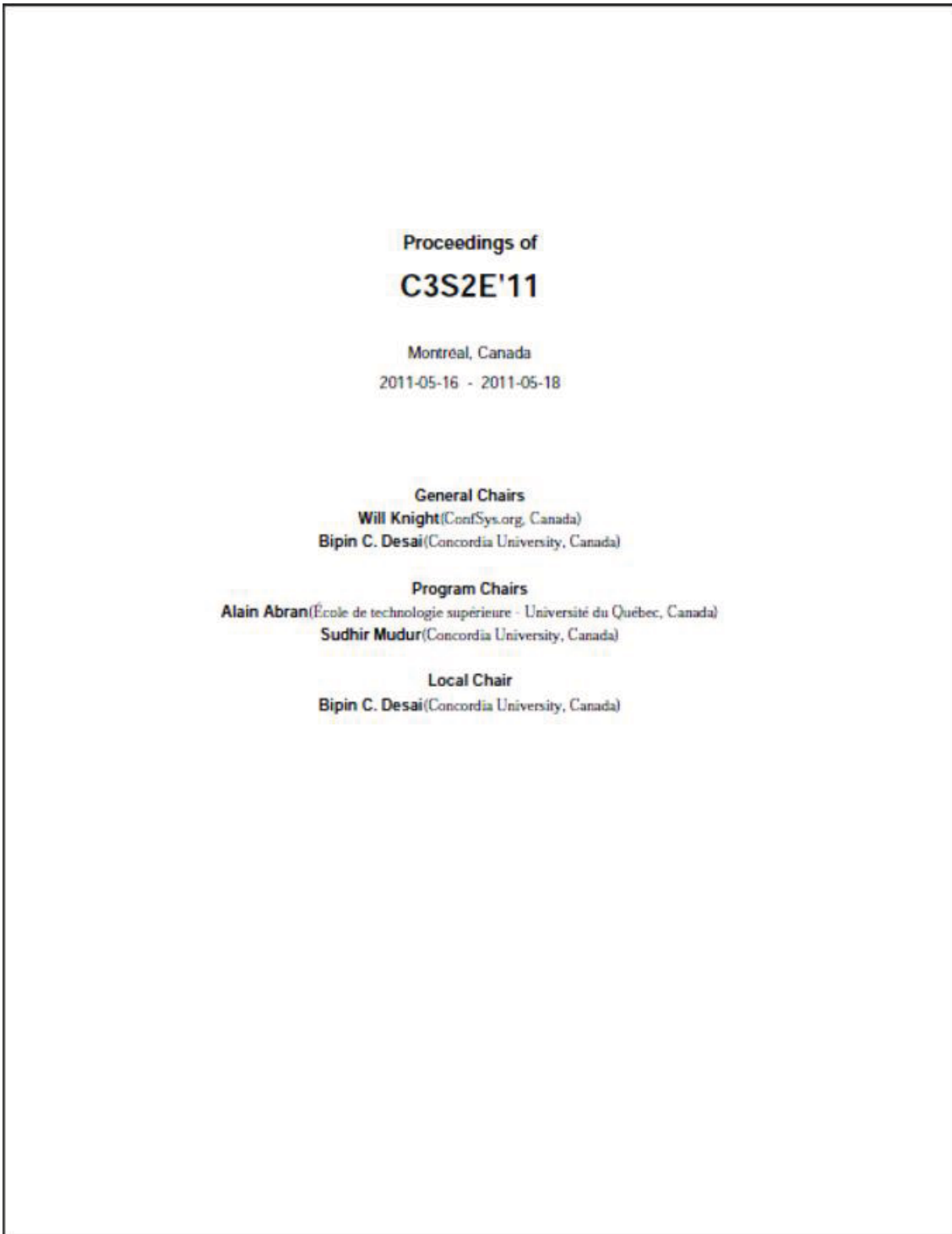


Figure 5.8 Front Page Example

For table of contents shown in Figure 5.9, all the information needed is retrieved from the database of ConfSys. Since the data has to be correct, precise and complete, the

verification for such data is enhanced as we explained in Chapter 4.

Full Paper(Continued)	
Union Rewritings for XPath fragments	43
Foto N Afrati(National Technical University of Athens)	
Matthew George Damigos(National Technical University of Athens)	
Manolis Gergatsoulis(Ionian University Corfu)	
M-TOP: Multi-Target Operator Placement of Query Graphs for Data Streams	52
Nazario Cipriani(Universitat Stuttgart)	
Oliver Schiller(Universitat Stuttgart)	
Bernhard Mitschang(Universitat Stuttgart)	
A Data Masking Technique for Data Warehouses	61
Ricardo Jorge Santos(Universidade de Coimbra)	
Jorge Bernardino(Instituto Politecnico de Coimbra)	
Marco Vieira(Universidade de Coimbra)	
A clustering-based visualization of colocation patterns	70
Elise Desmier(University of New Caledonia)	
Frederic Flouvat(University of New Caledonia)	
Dominique Gay(France Telecom)	
Nazha SELMAOUI-FOLCHER(University of New Caledonia)	
Scrubbing Query Results from Probabilistic Databases	79
Jianwen Chen(Tsinghua University)	
Ling Feng(Tsinghua University)	
Wenwei Xue(Nokia)	
Online Outlier Detection for Data Streams	88
Shiblee Sadik(University of Oklahoma)	
Le Gruenwald(University of Oklahoma)	

Figure 5.9 Table of Content Example

Similar logic is applied to creating copyright and preface. The difference is, for these 2 parts, editor of eProceedings needs to enter necessary content. Examples are provided as Figure 5.10 and Figure 5. 11.

The screenshot shows a dialog box titled "EProceedings Copyright Page Editing". It contains several text input fields for entering copyright information:

- Conference/Journal:** C3S2E>C3S2E'13
- Term:** C3S2E'13
- Copyright Organization:** The Association for Computing Machinery
- Address 1:** 2 Penn Plaza, Suite 701
- Address 2:** New York, New York 10121-0701
- Copyright Notice:** ACM COPYRIGHT NOTICE. Copyright © 2008 by the Association for Computing Machinery, Inc. Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of
- Other Copyright issue:** Please edit
- Notic to Past Authors:** ACM intends to create a complete electronic archive of all articles and/or other material previously published by ACM. If you have written a work that was previously published by ACM in any journal or conference proceedings prior to 1978, or any SIG Newsletter at any time, and you do NOT want this work to appear in the ACM Digital Library, please inform
- ISBN:** Please overwrite. Ex: 978-1-60558-402-7
- Editorial Production:** BytePress
- Cover artwork and photos:** Please edit. Ex: (front) Lettie and (back) Bipin C. Desai

At the bottom of the dialog box, there are two buttons: "Create Copyright Page" and "Cancel".

Figure 5.10 Copyright Page Editing

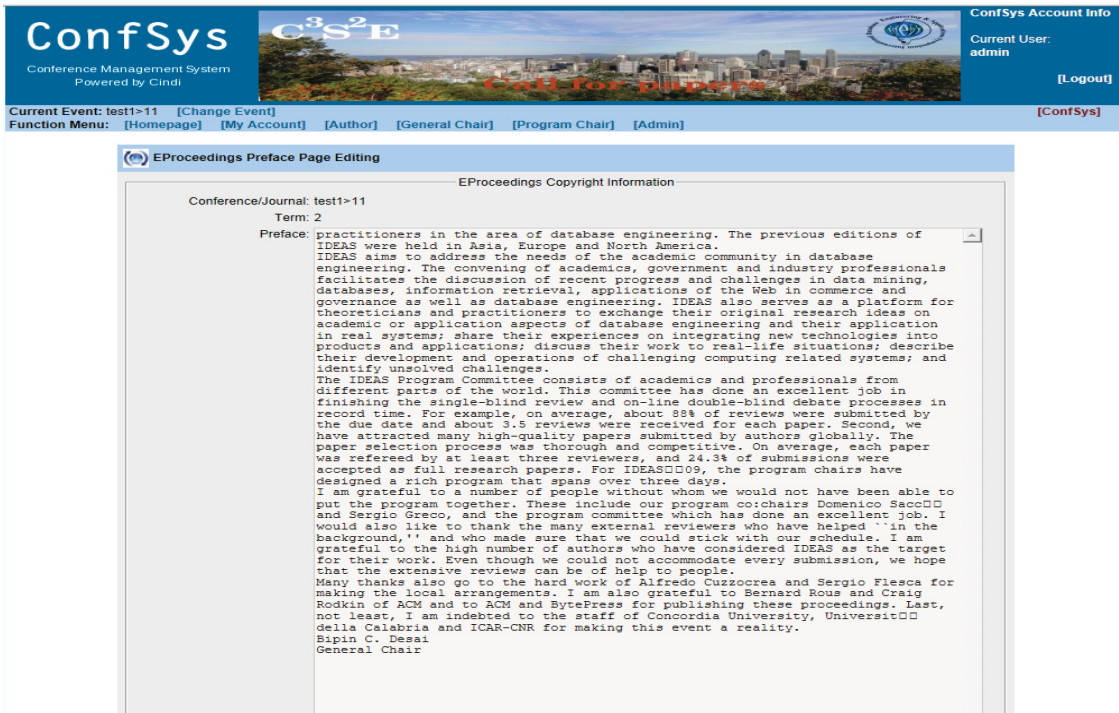


Figure 5.11 Preface Page Editing

5.4.2 EProceedings Presentation

EProceedings can be created for Final Program. Clicking on a session name brings up a window which gives the details of the session including the papers in the session. Clicking on any title would open up the PDF file for the final version for the paper. If the slides upload is enabled, along with description of the speaker, then there is an icon to show the speaker information, and an icon to open the slides for the paper. The third icon would be icon "PDF for paper" which is a bookmark. For on-line version it points to the PDF for the file.

HTML interface is used for navigation to any paper of the eProceedings. The icon is the bookmark to the PDF pages for the paper within the eProceedings. Hence clicking the

icon brings the user to the correct first page of the paper in the eProceedings file.

In the previous version of ConfSys, Final Program(html format) can be created and downloaded by Admin. In ConfSys3.5, Final Program includes papers in PDF format would also be created as alternative option.

5.5 Auto Session Management

In most academic events, some paper types have oral presentations while others have show and tell paradigms (demos or posters). The length of the presentations may vary; full papers have longer presentation than short papers. Sometimes poster papers have a very short oral presentation as well. However, traditionally poster type decisions do not have a formal oral presentation; the traditional approach is where the poster authors exhibit their work in the form of posters and answer questions of the interested participants.

Hence, C3S2E and IDEAS have introduced formal presentation for poster sessions.

5.5.1 Session Arrangement Parameter

In order to arrange the sessions of the event's program, appropriate parameters have to be entered by Program Chair as the first step.

The system is able to generate from these parameters and the number of papers of different types, the required number of sessions, and determine the need for parallel

sessions.

In typical prestigious academic meetings, an invited paper is usually the only paper in a session. Plenary session would be the only session for a given time slot; hence there could be no other sessions in progress during this time slot. To accommodate the larger number of participant, plenary session is scheduled in a large auditorium. When an invited session is run without any other sessions in parallel it is considered as a plenary session. To have a convenient common time for all participants to mingle, breaks for all parallel should be synchronized.

Some of the session arrangement parameters that need to be input by the program chair are given in Table 5.1. Depending on the parameters chosen and the number of papers of different types, the session management system would determine the number of sessions of different types and the need for parallel session. Once these parameters are communicated to the system and session generated, we get a single page with all the sessions as shown in Figure 5.16. For the example for the data given in Table 5.1, if the number of days is 5, number of Oral Presentation per session is 5 and number of sessions per day is 4, then we have: $\text{ceil}(1143/5)=229$ sessions spread over 5 days, which means that there would be $\text{ceil}(229/(5*4))=12$ parallel sessions for Oral Presentations. Assuming

Parameter Description
Use tracks, if any, to group papers in sessions before using topics(default yes)
Number of days for event(N_d)
Number of presentation slots per day(N_s default 4 could be up to 7)
Number of breaks per day(N_b default 3, could be up to 5: Break, Lunch, Break)
Maximum # papers in each Oral Presentation session- N_o
Maximum # Oral Presentation sessions per day(this will be equal to or less than the number of presentation slots per day)
Total #Oral Presentation sessions for the event (A_o / N_o)
Maximum # papers in each Poster Presentation session- N_p
Maximum # papers in each Short Oral Presentation session- N_h
Total #short Oral Presentation sessions for the event (A_h / N_h)
Maximum # Poster sessions per day
Total 3 Poster Presentation sessions for the event(A_p / N_p)
Poster sessions scheduled during breaks (default Yes)
Max # papers in an Invited Paper session (N_i default 1)
Max # Invited Paper sessions per day
Total # Invited Paper sessions for event (A_i / N_i)
Number of plenary session: N_L
Max. # plenary session per day - computed as ($M_L > 1$ if $N_L > N_d$)

Table 5.1 Session Parameters

A_o : number of Oral Presentations; A_p : number of Poster Presentations; A_h : number of Short Presentations;
 A_i : number of Plenary Papers; A_i : number of Invited Papers; N_t : number of tracks not including the general track

the number of posters per session is 20 and poster sessions are not in breaks, there would be $\text{ceil}(234/20)=12$ poster sessions over 5 days giving 3 poster sessions per day(the last day would have no poster sessions.). Hence poster sessions need to run in parallel with presentation sessions (Full, Short, Oral Paper, etc.) and there would be parallel poster sessions during the days.

If there are tracks in the event, the papers submitted to a track are used to create one or more sessions for that track. When an author, during the submission, chooses not to select a track, his paper is placed in the “General Track”. For example, if a track T1 has 7 papers then the system would generate two sessions for this track and fill the second track with three papers from the General Track; these three papers would have at least one common topic with the papers from the track.

Using the number of sessions generated and the number of days and sessions per day, the system can determine the layout in the form of the number of parallel sessions, sessions per day and breaks per day. Subsequently, the system can arrange the days with breaks, invited sessions etc.

The dates are to be counted from the first day of the meeting. The number of sessions in a day and the number of parallel session would determine where each session would be in relation to other sessions. The times need not be determined at this point – only the dates and the relative position of each session.

5.5.2 Creating Sessions

Once the final decisions for all papers have been made, the program for the conference is to be arranged. This includes session creation and arrangement. To create the program, the chair works within the parameters which includes the number of days for the meeting, the number of session slots per day, the number of accepted papers in each type

of session, the number of plenary and keynote (invited) talks.

Doing this operation manually would involve sorting the papers based on the type of presentation and the topics of the papers before attempting to create the sessions while keeping the papers in a session cohesive. Since a paper may have more than one topic, it gives some flexibility but introduces complexities in the placement of the paper. Furthermore, this operation is time consuming and making changes to avoid conflicts is a non-trivial task.

To automate the task of program creation the parameters given in Table 5.1 are set by the Program Chair and used by the system. Some of these parameters in the table could be determined from the number of papers of different types and the type of presentations. For example, since the plenary session is the only session during a time slots in a meeting with parallel sessions, it needs special consideration. Similarly, a keynote talk is the only presentation during a session.

The algorithm used since ConfSys 1.0[23] was designed to create sessions for papers of type Full, Short, mixed (Short and Full) and Posters. It is given in Figure 5.12. No attempt was made to incorporate invited or plenary papers in this algorithm and these tasks and the scheduling assigning time slots and location and session chair was done manually by the program chair. For example, the addition of a keynote paper could be accomplished by using *create new session* function and assigning the keynote talk as the only presentation in that session. The implementation provided web interface to allow easy method of moving papers around, deleting and substituting papers.

Since the procedure of arranging sessions for papers of any type is similar we start with one type, Full, as an example. To determine which session to arrange first and the papers in it has to be determined. A hash table is used to store the information for the session and this information is accessible using the session id. In addition a temporary table is used to store the candidate papers for scheduling; this table stores the ID of the paper, the ID of the paper's topics, the number of topics for the paper and the decision type of the paper.

In order to balance the number of papers in each session, we need to determine which session has high priority to be arranged, and the papers on which topics should be assigned first. Here, we use a hash table to store the information for all sessions using session ID as the key. We use two temporary tables to store topics and papers' information, which are used in sorting the priority of papers and topics. The first table is used to store all candidate papers for session arrangement and contains the topic ID,

```

Create two hashables for storing paper candidates and choosing the highest priority topic;
Get all paper candidates for FULL paper session;
While{
    Number of full sessions=0;
    for(i=0; i< number of sessions; i++){
        if (RemainSNumi >0)
            if (get a suitable topic id for sessioni){
                put all paper candidates of this topic into sessioni;
                if(RemainSNumi == No )
                    name the sessioni after the topic;
                    delete assigned papers from the paper candidates list;
                    continue;
                }
            }else
                Number of full sessions++;
        }
    if (all sessions are full) break;
    if(get topicc, the topic with the highest priority to be arranged){
        if(get sessionc ,of which the number of arranged paper is the smallest in all sessions){
            if(Ctc < Snrc)
                put all paper candidates of this topic into sessionc ;
            else
                put Snrc paper candidates of this topic into sessionc;
            if(number of arranged papers== No )
                name the sessionc after the topic
            else
                if (number of arranged papers> No / 2)
                    name the sessionc after the topic, with a '*' at the end;
                    delete assigned papers from the candidates list;
                }else
                    break; //all sessions are full
        }else
            break; // no more paper candidate
    }
}
drop temporary tables;

```

Figure 5.12: Previous Session Creation Algorithm

* N_o is used to represent the maximum number of papers in a session. When the number of assigned papers reaches the maximum number of papers for a session, we call this session a *filled session*. A *suitable topic candidate* is the topic for which the number of papers is equal to the number of papers remaining (S_{nrc}) in the session; C_{tc} expresses the number of paper candidates for the topic t.

- * **Input:** Paper candidates of different types with topics
- * **Output:** A set of sessions for paper candidates
- * **Assumption:** The info. of all paper candidates is complete

paper ID, number of topics for the paper and the decision for paper. Before session arranging, the algorithm needs to find all Full papers as candidates and store them into this table. Once a paper is assigned to a session, it will be deleted from this table.

The second temporary table is used to store the information for the topics including the topic, the number of papers having the topic and how many papers having this topic would likely be mixed with papers of other topics; the last value is determined by finding $\text{mod}(\text{the number of papers in the topic, number of papers in the session})$. This mod value provides a method of choosing the next highest priority topic.

Since 2011, ConfSys has been supporting conferences with a number of parallel tracks, sessions and diversified program generation requirements. Therefore, there was a need to extend the algorithm for session creation with higher priority being assigned to keep papers from each track together in the sessions.

The modified algorithm is based on the concept of 3-dimension design. The number of different sessions is computed based on the parameters shown in Table 5.1. The program to be generated is considered to be filling a 3-dimensional space as shown in Figure 5.13.

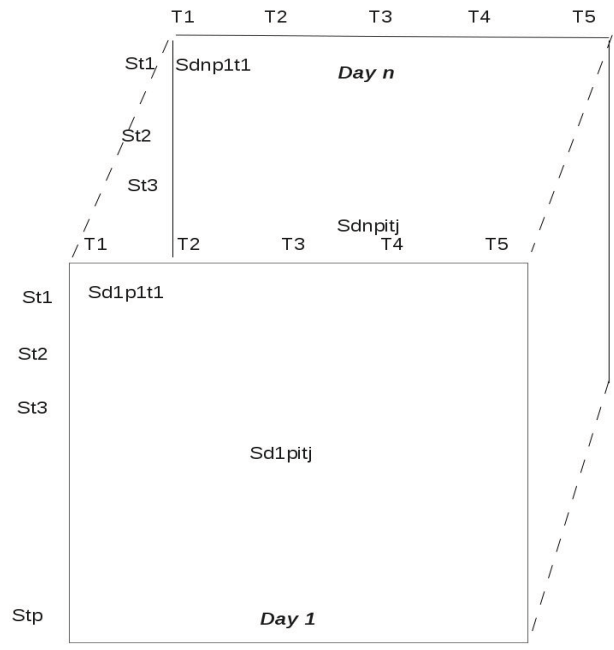


Figure 5.13 Session Generation

The vertical axis represents the stream of parallel sessions, and the horizontal axis represents the time slots for the start and end of each session. The planes represent the days of the meeting.

Based on the parameters entered by the program chair, the system determines the number of sessions of each type, the number of parallel streams. The program generation then consists of filling the 3-dimensional space shown in Figure 5.13 with sessions at the coordinates (x, y, z). The number of different sessions is computed based on the parameters shown in Table 5.1.

The improved session creation algorithm in ConfSys 3.5 is designed to create sessions for papers of different types with track. The algorithm is given in Figure 5.14.

In order to decide which paper should go in which session, the following temporary table is pre-computed for each track excluding the general track: TrackDetails(Track,

number of Papers, type, number of sessions).

For track t_i , with as many as p_{i0} full papers and p_{ip} poster papers would need $\text{ceil}(p_{i0}/N_o)$ oral sessions and $\text{ceil}(p_{ip}/N_p)$ poster sessions.

The stream for a given track is not changed unless the number of sessions required is greater than $N_d * N_s$. Empty slots in a stream could be filled in with a track with the number of sessions (time slots) less than the number of unused sessions for a just completed track.

```

create three hashables: subjectSessions, subjectPapers and paperSubjects, for storing paper candidates and topics;
get all paper candidates for a track;
for each of paper type {
    for each paper in the type {
        get the subjects/ papers, and store in subjectPapers and paperSubjects tables
    }
    for each tuple in subjectPapers{
        //arrange topics that have more papers than N0
        while number of paper candidates in the topic and the paper type >= N0{
            create a new session of the session type;
            add paper candidates in this session;
            label the session as per the topic used, with a suffixing session number in subjectSessions table;
            increment by 1 in for the corresponding session number in subjectSessions table;
            remove the arranged papers from subjectPapers and paperSubjects;
        }
        //arrange when the number of papers for the topics < N0
        if paper candidates > 0 and paper candidates in the subject < N0{
            for each tuple in subjectPapers{
                create new session;
                add paper candidates in the session;
                name the session after the subject, ending with the session number in subjectSessions table;
                remove the arranged papers from subjectPapers and paperSubjects;
                while the number of session papers < N0 {
                    if there exists a paper with same subject in general track{
                        add a paper candidate with the same topic from General Track;
                        remove the paper from General Track;
                    }else{
                        break;
                    }
                }
            }
        }
    }
}

```

Figure 5. 14 Improved Session Creation Algorithm

- * **Input:** Paper candidates of different types with tracks and topics
- * **Output:** A set of sessions for paper candidates
- * **Assumption:** The info. of all paper candidates is complete

If no such track is found, papers from the General Tracks are used to generate sessions of

```
day = 1, stream = 1, slot = 1
get all trackSessions;
iterate sessions in a track{
  n: for each day{
    for each stream{
      for each slot{
        if the slot is not available{
          break;
        }
        if there is no previous session(the 1st session in the track){
          assign the slot(day, stream, slot) to the session;
        }else{
          if( the slot is the not the first slot in a stream){
            assign the slot to the session;
          }else{
            assign the slot(day, stream, slot) to the session;
          }
          iterator move to the next session;
          if(the session is the last one){
            break n;
          }
        }
      }
    }
  }
}
```

Figure 5.15 Session Allocation Algorithm

one of the paper types(e.g., oral or poster).

Once this is completed, the actual sessions are generated. This involves generating the session in position $d_i p_j t_k$ from the TrackSession table. An entry in the Sessions table is generated for day d_i , stream p_j and slot t_k . Then suitable papers are chosen for track t_i and placed in the table Session.

5.5.3 Session Detail

<input type="button" value="Auto Session Arrangement"/> <input type="button" value="Generate Program"/> <input type="button" value="Download Program Package"/> <input type="button" value="Final"/> <input type="button" value="Publish"/>		
<input type="button" value="Arrange Schedule"/> <input type="button" value="Show Schedule"/>		
Session Information		Operation
Session Name: <input type="text"/> Session Type: Oral Presentations Description: <input type="text"/> Date Time: Date <input type="text"/> Time from <input type="text"/> to <input type="text"/> Location: <input type="text"/> Chair Email: <input type="text"/> <input type="button" value="Search Chair:"/> <input type="text"/>	Add	
Session Name: Wood and paper (D1P1S1) Description: Session Type: Oral Presentations Date Time: 2013-07-28 From 00:00 To 00:00 Location: Chair: First263 Henrique Last263 (Universidade de Brasilia) Paper Number: 5	Delete	
Session Name: Structural power materials (D1P1S2) Description: Session Type: Oral Presentations Date Time: 2013-07-28 From 00:00 To 00:00 Location: Chair: First2184 Last2184 (Korea Advanced Institute of Science & Technology) Paper Number: 5	Delete	

Figure 5.16 Result of Automatic Session Generation with Parallel Sessions Indicated by the Stream

Papers in the session	
1. (Accepted for Poster Presentation) The title of this paper is 1582 Damage and fracture Experimental techniques Author: First3639 Last3639 , First3671 Pilgaard Last3671	<input type="button" value="v"/> <input type="button" value="x"/>
2. (Accepted for Poster Presentation) The title of this paper is 1463 Experimental techniques Author: First3311 Last3311	<input type="button" value="^"/> <input type="button" value="v"/> <input type="button" value="x"/>
3. (Accepted for Poster Presentation) The title of this paper is 1372 Experimental techniques Author: First3020 Pantaleo Last3020 , First3021 Last3021 , First2996 Last2996 , First3022 Willem Last3022	<input type="button" value="^"/> <input type="button" value="v"/> <input type="button" value="x"/>
4. (Accepted for Poster Presentation) The title of this paper is 1204 Experimental techniques Mechanical properties Author: First2697 Last2697 , First3443 Last3443 , First3446 Vargas Last3446	<input type="button" value="^"/> <input type="button" value="v"/> <input type="button" value="x"/>
5. (Accepted for Poster Presentation) The title of this paper is 1015 Damage and fracture Experimental techniques Impact and dynamic responses Author: First2310 Last2310 , First1719 Marie Last1719 , First2333 Andrew Last2333 , First1985 Last1985	<input type="button" value="^"/> <input type="button" value="x"/>
<input type="text" value="Please select a paper to add"/>	<input type="button" value="Add"/>

Figure 5.17 Changing Paper Order, Deleting a Paper and/or Adding Another One To/From Pool

The details of a session are shown in Figure 5.16. The placement of a session in the 3-dimensional space is indicated by the parameters DiPjSk where D is the day, P is the

parallel stream and S is the time slot of the session. The Program Chair can adjust the order of the papers in the session. A paper could be deleted and placed in a pool and another paper from the pool could be added at the end of the list of papers in the session. This is illustrated in Figure 5.17.

5.5.4 Session Arrangement

Assigning the location/room and session chair would be done by making appropriate changes in the data in the fields given at the top of the Figure 5.18 in the pop-up window.

The figure illustrates a session arrangement interface. At the top, there are two days: Day1 and Day2. Below each day, there are three paper slots (P1, P2, P3) and their corresponding session slots (S11, S15, S19 for Day1; S21, P2, P3 for Day2). Each session slot contains a downward arrow and a circled X icon. A red arrow points from the S11 slot to a pop-up window titled 'Session Basic Info'. The pop-up window has fields for Session Name, Session Type, Description, Date Time, Location, and Chair Email. Below these fields is a list of 'Papers in the session' with columns for paper title, author, and icons for moving (up/down arrows) and deleting (circled X) the paper. At the bottom of the pop-up is a 'CLOSE' button. Below the main grid, there are four buttons: 'Select Session' (with a dropdown arrow), 'Day', 'Pj', and 'Time'.

Figure 5.18 Session Arrangement with Selected Session Displayed in Pop-up

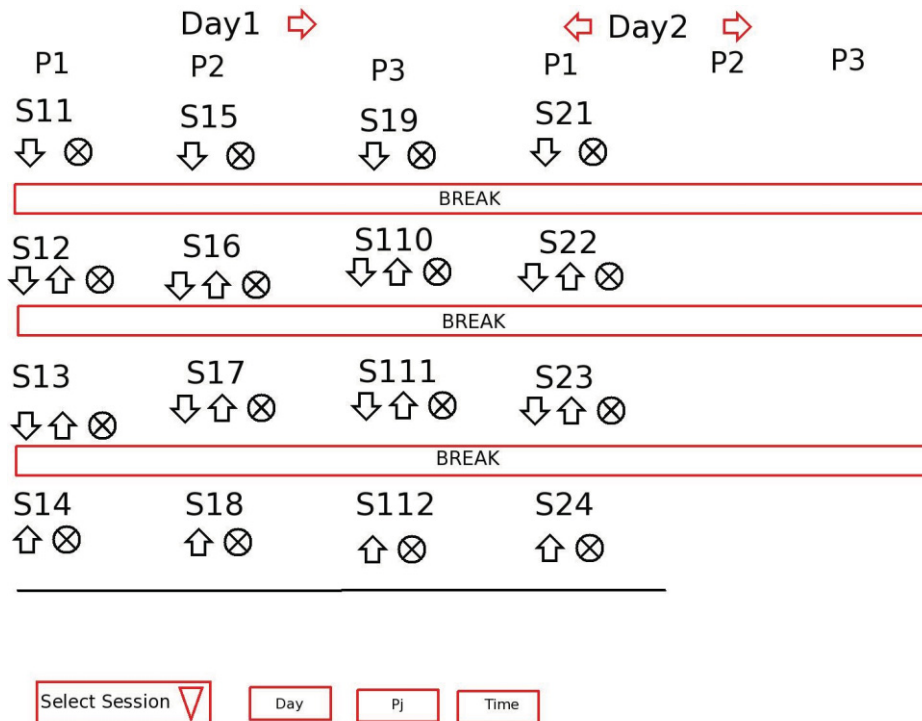


Figure 5.19 Session Reorder, Deletion, Addition, Days Swap

As shown in Figure 5.16, there is a template to create a new session at the top. The required parameters should only be the session title.

We could also arrange the order of the sessions as shown in Figure 5.19. Using this interface, it is possible to:

- change the ordering of the days (by using the left and right arrows near the days)
- change the order of the sessions within a day or stream (by using the up and down arrows near the sessions)
- delete a session from one parallel stream/day, put it in the pool. (by using the delete

button next to the session)

- insert a session from the pool by specifying the day, time, stream from the pull down menu. If the slot is not free, an error could be shown. The sessions would be displayed in the pull down menu at the bottom of Figure 5.19 with the day, time and slot would be three pull down menus next to the session, pull down menu)

- Add a session. This needs an empty slot for a new session to be inserted.

- Add a plenary session. This would involve making a free slot for the session. In case if there are parallel sessions, all session for the required time slot have to be moved to the session pool before an additional plenary session could be created.

- Add an invited paper session. Here, again there is a need to create a free slot for the session in a stream or the day if there are no parallel sessions.

- Adding a session of any type(presentation, poster, plenary or invited) requires that the pool of sessions should contain an 'empty' session which could be used to fit the required session type).

Sessions from the pool could be added in another parallel stream on the same day or another day. When a session is deleted, it is moved to the pool, its day, time slot, etc. are 'lost', the place where the deleted session was, is free. The free space could be moved around in the same day to allow for the insertion of a session from the pool. The inserted session may not be from the same parallel stream since it would be easier to re-order the

sessions in a stream using the up and down arrows.

Any deleted sessions could be inserted in an empty slot on a given day, time and optionally parallel stream. Clicking on a session icon, would show a pop-up screen with the name of the session, and the papers in it. As shown in Figure 5.18. Session S11 icon is clicked to show the name of the session etc.

5.5.5 Date/time Settings

The start and end time all sessions in a time slot could be done by clicking the “Arrange Schedule” button in Figure 5.19 which would bring up an interface illustrated in Figure 5.20. The start and end time for each time slot can then be inserted.

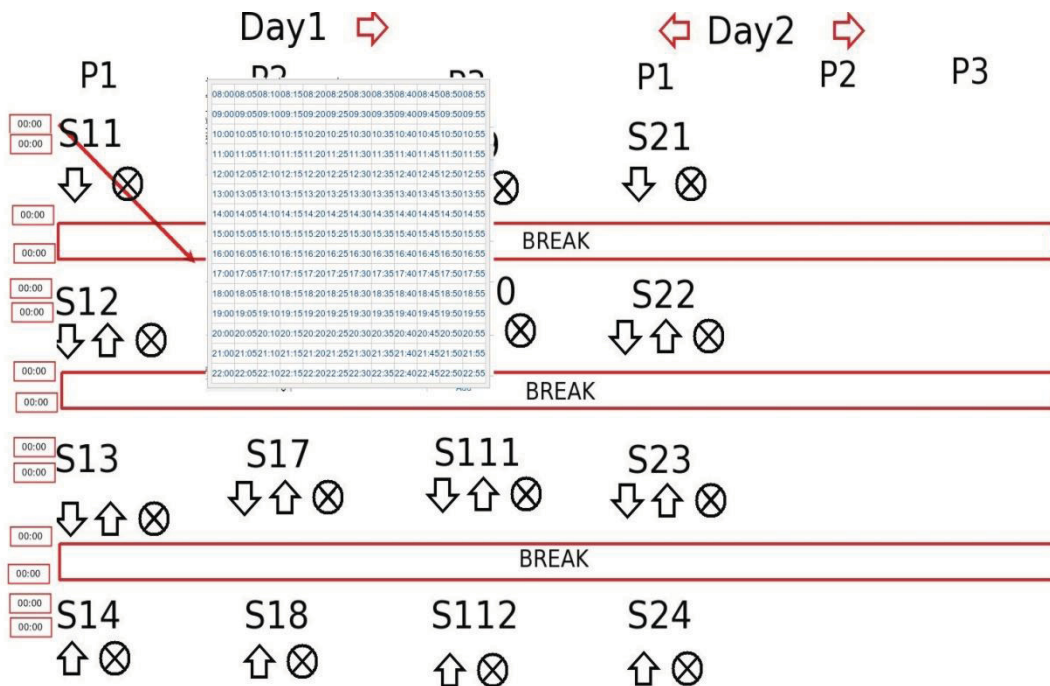


Figure 5.20 Set Synchronous Start-End Times for All Sessions

5.5.6 Location Settings

This could be done in three ways.

5.5.6.1 No Parallel Sessions

If there are no parallel sessions, and if the same location is used for all sessions during a day, clicking on a Day while setting the synchronous time would pop up a Location pop-up screen as shown in Figure 5.21. The Room is entered in the text box and closing the box would assign the locations to all sessions in that day.

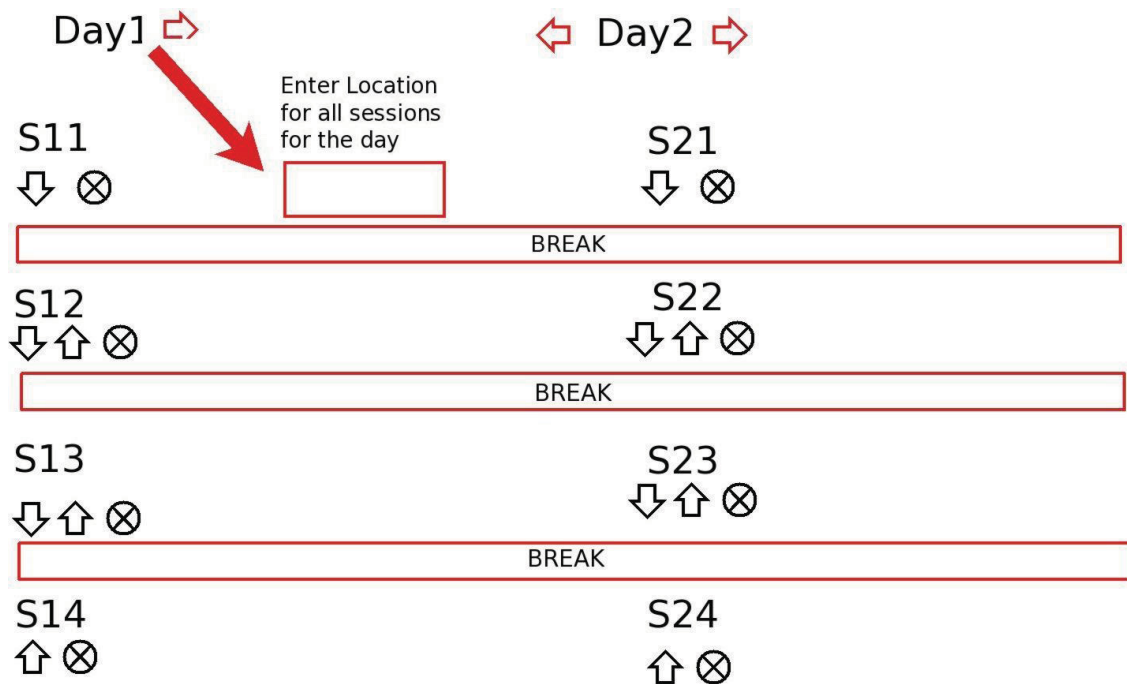


Figure 5.21 Assigning Location for All Sessions in a Day

5.5.6.2 Parallel Session

If there are parallel sessions, then each stream is scheduled in the same room. In this case clicking on the stream name, will pop up a window where the room for that stream is

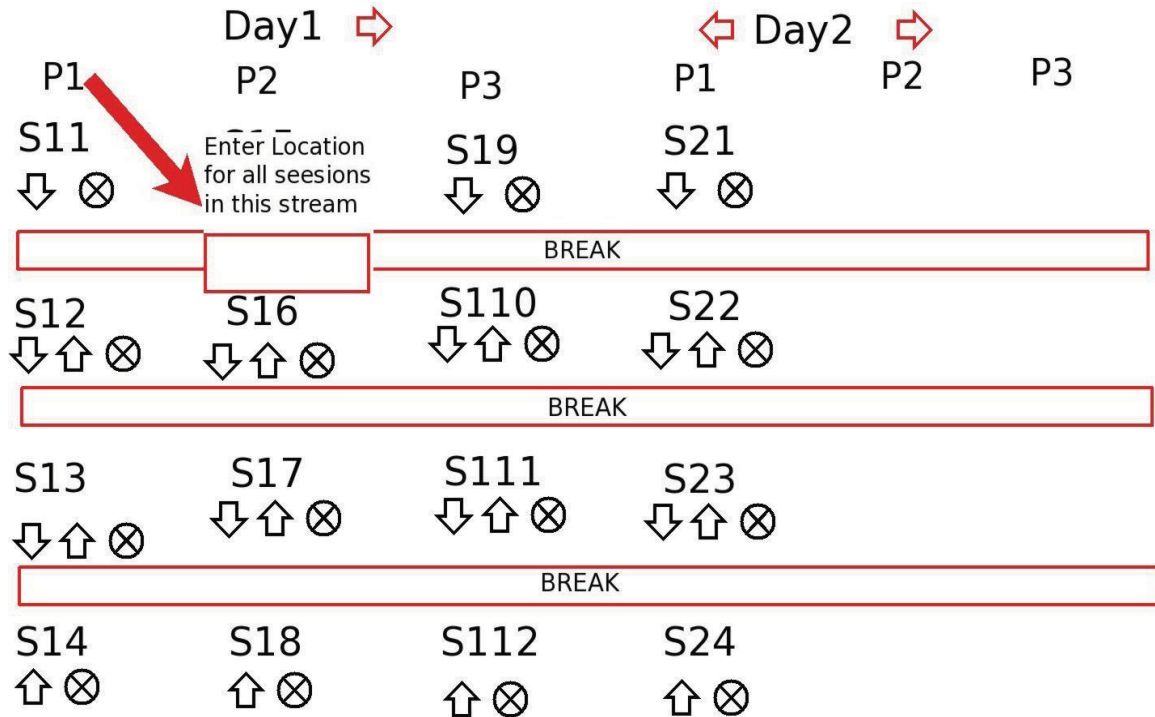


Figure 5.22 Assigning Location to a Stream

entered. This is shown in Figure 5.22.

5.5.6.3 Each Session Has a Different Room

In this case, the location is set by clicking on the session as illustrated in Figure 5.18. In the session update part, enter the location and press Update Session.

If only some session in a stream or a day have different room, then first set all session to have the same room and then choose individual session and update the room for that session.

5.5.7 Assigning Chairs

Chair can be automatically assigned as either the last speaker or the first speaker in each session. This assignment could be manually updated if required.

5.5.8 Program Generation

Once the sessions are generated, the Program Chair could generate the preliminary program.

If there is a change in the sessions (change session order, add/modify papers, sessions, room number, time, chairs), any program that was generated and posted would be automatically replaced.

Chapter 6

Conclusion and Future Work

6.1 Conclusion

ConfSys3.5 is an upgraded version of ConfSys. With functions to support different roles, it manages most of the processes of a conference, and continues to automate increasing number of administrative tasks. Table 6.1 shows the features that have been improved and the additional features that have been added since ConfSys3.

ConfSys has been used in several conferences well over a decade and half, with success. During this period, the requirements in improving the functionalities and the user interface have become more challenging. Such requirements include the support of compilation of proceedings, session management and more user-friendly and intuitive interface. To the best of our knowledge other online conference management systems, while easier to use, do not have all the functionalities of ConfSys. ConfSys3.5 has made significant improvements as web-based systems. It is shown in Table 6.1. ConfSys3.5 also continuously embraces new features to meet the requirements from users.

Features and Functions		ConfSys	
		ConfSys 3	ConfSys 3.5
All User	Archive Site	√	√√
Menu	Menu Usability	√	√√
My Account	User Signup	√	√√
	User Profile Edition	√	√√
	User Interest Setup	√	√√
	Registration	√	√√
Author	Paper List	√	√√
	New Paper Submission	√	√√
	Paper Edition	√	√√
	Copyright	√	√√
General Chair	Event Paper Upload Progress	√	√√
	Event Configuration	√	√√
	Paper Management	√	√√
	Session Management	√	√√
Program Chair	Double/Triple Blind Review	√	√√
Admin	Organization Management	√	√√
	EProceedings Edition		√
Front Desk	Paper List		√
	Registration Status		√
	Author List		√
	Participant List		√
	Program Committee Info		√

Note: “√√” denotes improved features; “√” denotes new features

Table 6.1 Comparing ConfSys3.5 with ConfSys3

6.2 Future Work

As a result of the updates and upgrade, the new features added to ConfSys3.5 made it one of the best CMS with tremendous functionalities and excellent usability. However, there is still room for improvement. Some additional works are required to complete all the features required for supporting ConfSys.

6.2.1 Multimedia

Technology trends today indicate that communication world including voice, video and data are all merging into one carrier base: Internet Protocol(IP). For academic conferences, “real-time”, including audio, video, shared whiteboards and other applications over the Internet are more and more widely used in conference systems. Multimedia functionality will be especially helpful for the authors who could not attend the event in person and upload a presentation with voice and video. However, it lacks the feature of interaction with the audience. The feature could be incorporated in future release of ConfSys.

6.2.2 Automatic Author Detection

In spite of the clear instruction, many submitting authors do not enter all the authors of their papers. This hinders the automatic conflict avoidance feature of ConfSys. One of the features that need to be added to ConfSys is to determine all the authors of the papers

from single blind review papers and enter them for the corresponding paper if any are missing.

Another feature that would help in the review process is to use phrases and keywords appearing the paper along with the names of the authors to detect any self or other type of plagiarism and multiple submission of similar paper. A list of suspect publication could be provided to the reviewers who would be able to make the final judgment of the originality of the submission.

6.2.3 Automatic Reminders to the Organizers

As ConfSys is becoming more complex, there is a need to send reminders to the organizers before important milestones. With increasing load on the busy organizers, this is critically required.

6.2.4 Smart Device User

One of the challenges we face is to address the criticism from the community used to ‘smart’ devices who find the system to be non-intuitive. With all its functionalities and complexity, this is not a trivial task especially when we stated with the assumption that the users were smart not the device.

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