

CONFIOUS:
**Managing the Electronic Submission and Reviewing Process of
Scientific Conferences**

<http://confious.ics.forth.gr>
<http://www.confious.com>

Manos Papagelis

ICS-FORTH &
Department of Computer Science,
University of Toronto
Email: papaggel@cs.toronto.edu

Dimitris Plexousakis

ICS-FORTH &
Computer Science Department,
University of Crete
Email: dp@ics.forth.gr

Panagiotis Nikolaou

Computer Science Department,
University of Crete
Email: pnikol@csd.uoc.gr

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Presentation Outline

ICS-FORTH

Manos Papagelis

WISE 2005, 20 Nov 2005, NYC, NY



Part I: Introduction

Part II: Dynamics of a Workflow System

Part III: Identifying the PC Chair's Main Concerns

Part IV: System Overview

Part V: Conclusions

Introduction

Part I



Motivating Questions



- Have you ever been the person in charge of **organizing** a Scientific Conference or Workshop?
- Did you go off for an **Electronic Process**?
- If **YES**, then how straightforward did you find:
 - to **install** the software?
 - to **manage** submissions?
 - to **assign** papers to reviewers?
 - to **coordinate** the reviewing process?
 - to **chair** the PC Meeting?
 - to **make** acceptance decisions?
 - to **notify** authors about decisions?
 - to **obtain** useful statistics for the conference report?



Problems of Existing Software



We found out that existing **Free** and **Commercial** Software:

- was **hard to install**
- was **tricky to manage**
- offered **limited functionality**
- presented **poor flexibility**
- offered **low security level**
- followed an **untidy design**
- required **separate installations**

Trends in Scientific Communities



- Need for **Online Collaboration**
 - Mostly enabled by **WWW**
- Adoption of **Electronic Systems** instead of Letters or E-mails
 - Mostly enabled by **online management system** technologies
- **Fairness** requirement of the Selection Process
 - Need for a **double blind review** support
 - Need for a **meta-review** process
 - Need for identification of **conflicts of interest**
- **Quality** requirement of the Selection Process
 - Need for **flexibility** in configuring the review process
 - Need for **appropriate assignment** of papers to reviewers
- **Effectiveness** in preparing the proceedings

Dynamics of a Workflow System

Part II



The Submission and Reviewing Process

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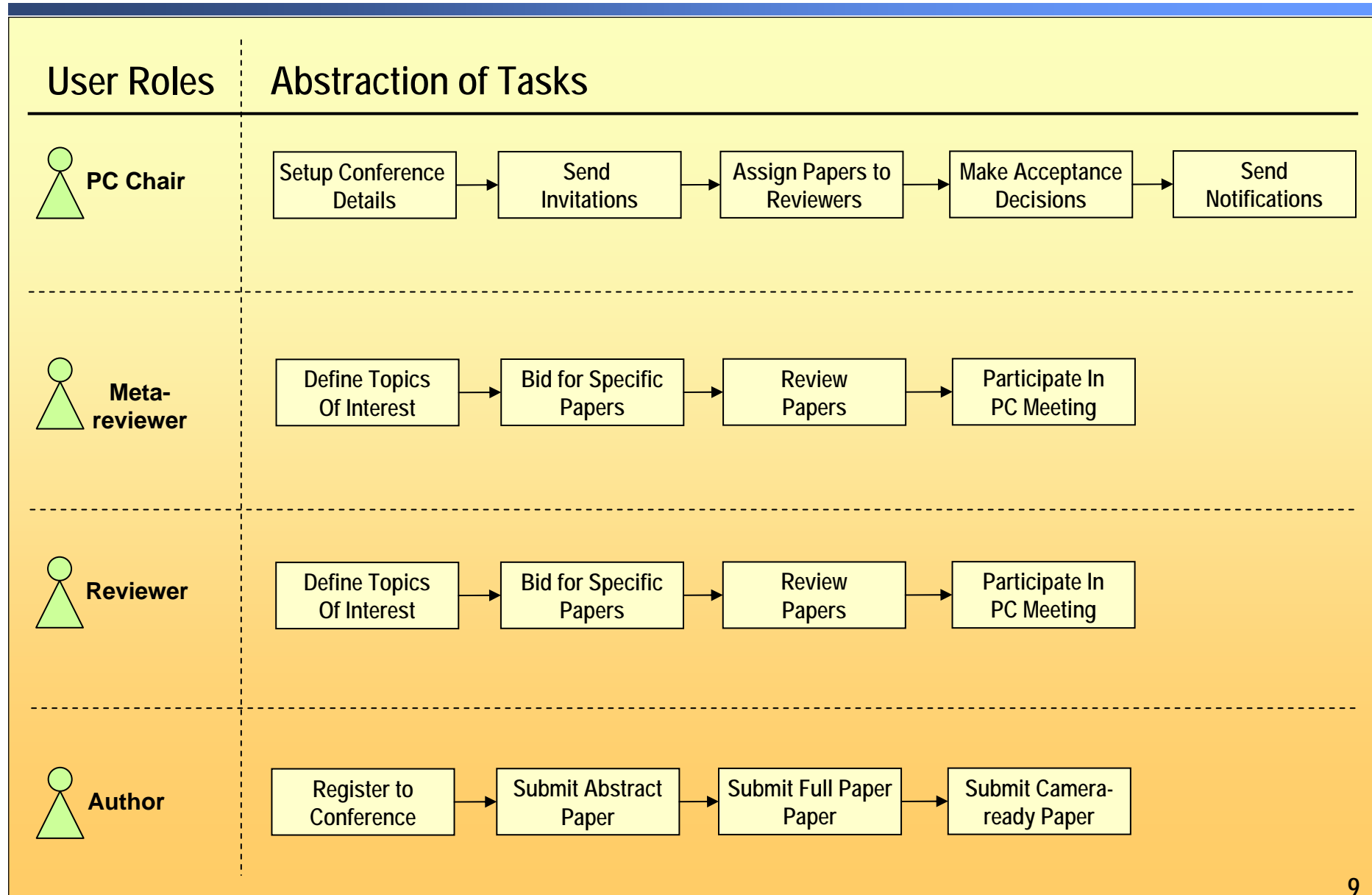
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Workflow Dynamics

- **User Roles**
 - Program Committee Chair (or **PC Chair**)
 - Senior Program Committee Member (or **Meta-Reviewer**)
 - Regular Program Committee Member (or **Reviewer**)
 - Contact Person (or **Author**)
- **Chronological Dependencies (Phases)**
 - **Setup Phase**
 - **Invitation Phase**
 - **Abstract Submission Phase**
 - **Full Paper Submission Phase**
 - **Bidding Phase**
 - **Assignment Phase**
 - **Reviewing Phase**
 - **Revision Phase**
 - **Notification Phase**
 - **Camera-ready Submission Phase**

User Role Abstraction



Chronological Dependencies



- Phases in Confious in form of a Gantt Graph

Submission and Review Process	Setup	Submission			Reviewing			Publishing	
Setup	Mandatory								
Invitation		Optional							
Abstract Submission			Mandatory						
Bidding			Optional	Optional					
Full paper Submission			Mandatory	Mandatory	Mandatory				
Assignment						Mandatory			
Reviewing							Mandatory		
Revision								Mandatory	
Notification									Mandatory
Camera-ready Submission									Mandatory

Mandatory Phase

Optional Phase



Time Scale

Identifying the PC Chair's Main Concerns

Part III



1st Concern



Conflicts of Interest may arise in the reviewing process because:

- Reviewers regularly submit papers to the conference they serve
- Reviewers and Authors may be associated in some way
 - May be occupied by the same or an affiliated institution
 - May have been working on the same project
 - May have co-authored in the past

Lack of identifying these **conflicts** may:

- Offend the **confidentiality** of the review process
- Seriously affect the conference's **overall reputation**

Challenge (1): Efficiently Identify Potential Conflicts of Interest

How?

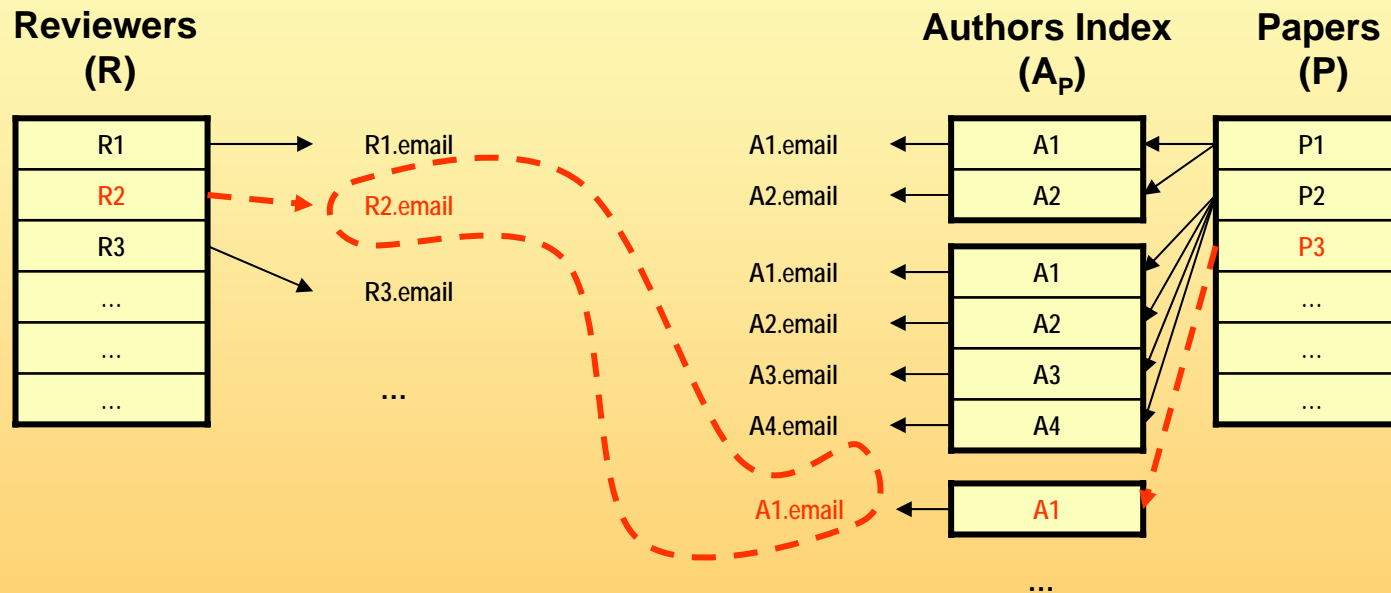


- **Intentional** definition of conflicts by Authors, Reviewers, Chairs
- More **Sophisticated** Techniques
 - **Same Institute Appointment** technique
 - **Previous Co-authorship Appointment** technique

"Same Institute Appointment"



- Based on string comparison of email accounts

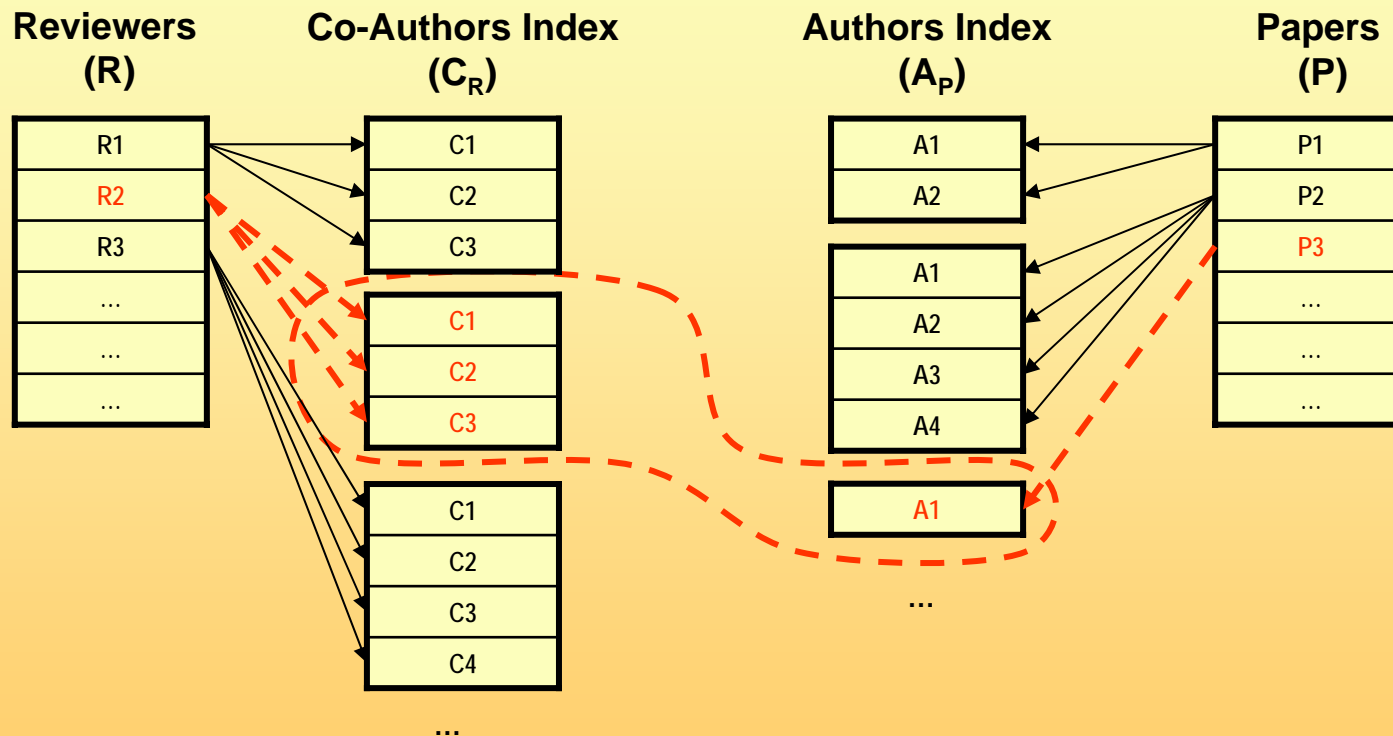


Example: IF Similar_{AccuracyLevel}(R2.email, A_{P3}1.email)
THEN Recommend Conflict R2-P3

“Previous Co-authorship Appointment”



- Based on matches in co-authorship index as compiled by DBLP



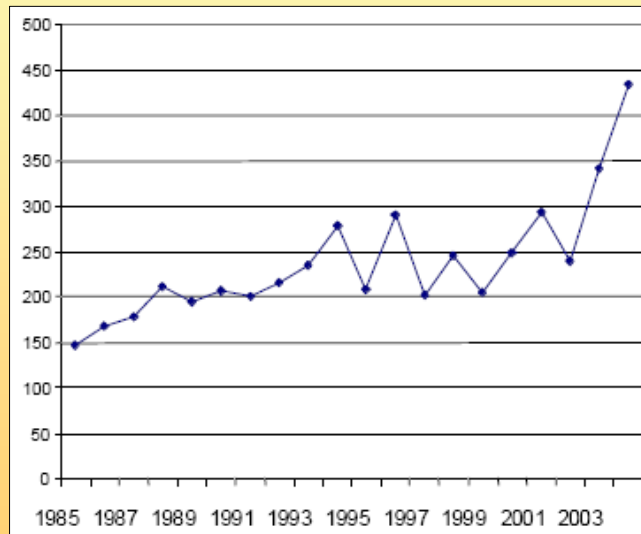
Example: IF C1=A1 OR C2=A1 OR C3=A1
- - - THEN Recommend Conflict R2-P3

2nd Concern

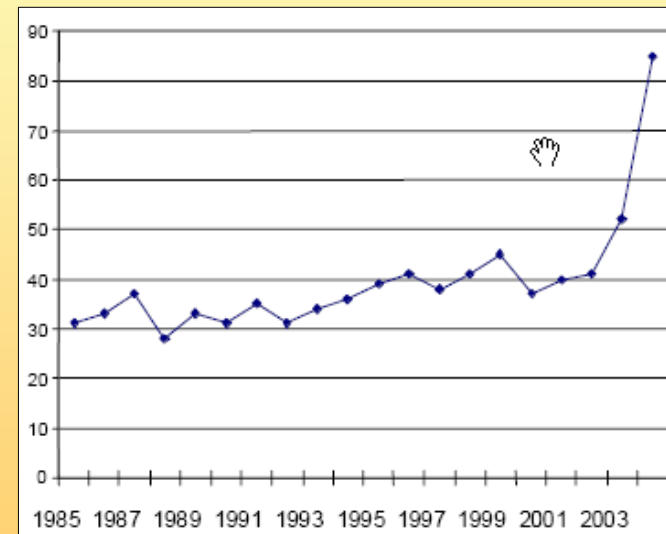


In recent years:

- Each paper needs to be reviewed by a number of reviewers
- The number of submitted papers has spiked dramatically
- PC sizes have increased



SIGMOD Submissions 1985-2004*



SIGMOD PC Size 1985-2004*

*Data from [Rethinking the Conference Reviewing Process. SIGMOD 2004 Panel]

Challenge (2): Reliably Assign Papers to Reviewers

How?



- **Automatic Assignment** of papers to reviewers according to the following constraints:
 - Matches between paper topics and reviewer interests
 - Bids of reviewers to specific papers
 - Conflicts of interest between PC members and papers
 - Workload Balance
- **Manual adjustments** of the automatic assignment are possible

3rd Concern



Review Quality may be harmed due to:

- **Static Review Forms**
- **Incomplete or Confusing Reviews**

Low Review Quality may:

- Offend the **fairness** of the review process
- Seriously affect the conference's **overall reputation**

Challenge (3): Communicate High Quality Reviews to Authors

How?



- **Dynamic Review Form Construction**
 - Construction of a new Review Form
 - Customization of predefined Review Form bases on templates
 - Addition/Update/Deletion of Questions and Possible Answers
- **Hierarchical Reviewing (Support of Meta-reviewers)**
 - Enables meta-review process
 - Better Control over the reviews submitted
 - Recommendations from meta-reviewers
 - More Interactive PC-Meeting

4th Concern



Acceptance and Rejection Decisions are:

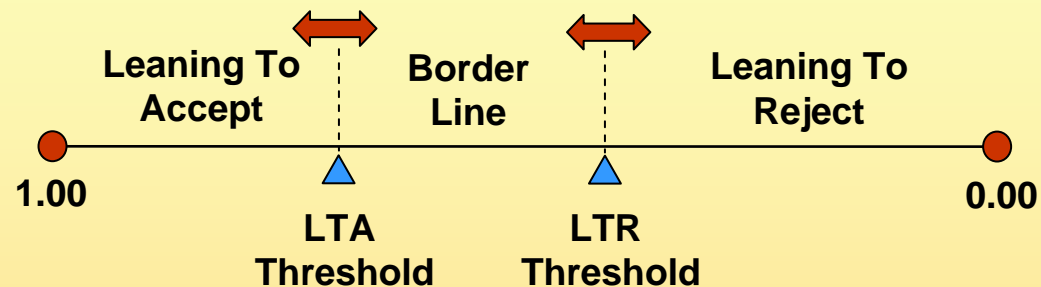
- **Time-consuming**
- **Hard** (How to reduce the results of several reviews into a single meaningful score?)

Challenge (4): Make Correct Decisions Efficiently

How?



- **Classification** of Papers in **five (5)** meaningful classes
- **LTA-Threshold** and **LTR-Threshold** are employed to define classes



The five (5) Classes are:

- **Leaning to Accept**
- **Border Line**
- **Leaning to Reject**
- **Conflicted Reviews**
- **Incomplete Reviews**

PC Chair's Main Concerns: Summary

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- Efficient Identification of Potential Conflicts of Interest
- Reliable Assignment of Papers to Reviewers
- High Quality of the Reviews Communicated to Authors
- Making Correct Decisions Efficiently

System Overview

Part IV



CONFIOUS: Design Policies



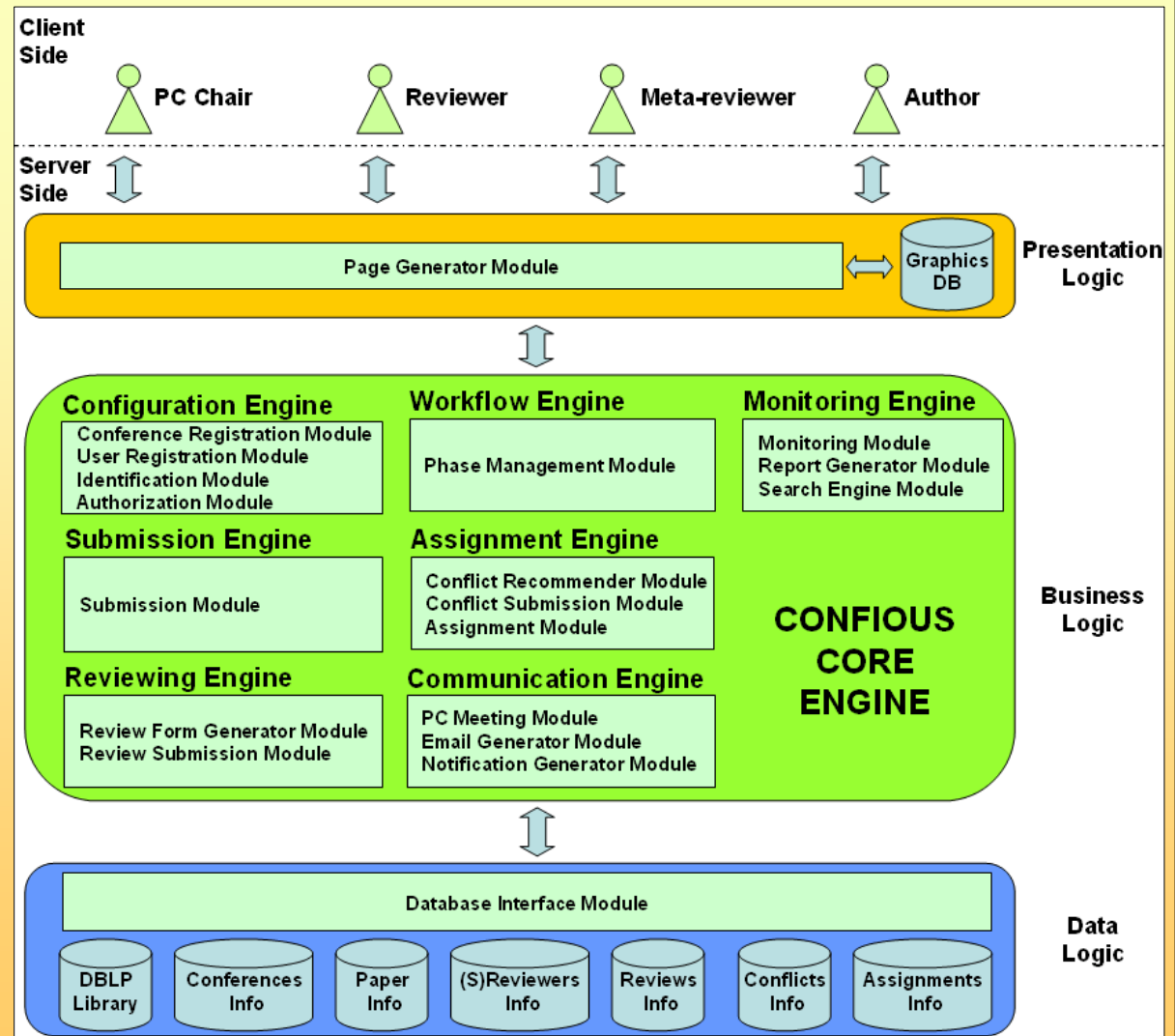
- **100% Web-based** Information System
- **Client-Server** Model
- **3-tier Architecture** on the Server Side
 - Presentation Logic
 - Business Logic
 - Data Logic
- **Modular Architecture** Software Development
 - Based on extensible, independent, re-usable, easily invoked and efficiently executed components

CONFIOUS: Architecture



Components/ Engines

- Configuration Engine
- Submission Engine
- Assignment Engine
- Reviewing Engine
- Workflow Engine
- Communication Engine
- Monitoring Engine
- Other Modules
 - Page Generator
 - Database Interface



Conclusions

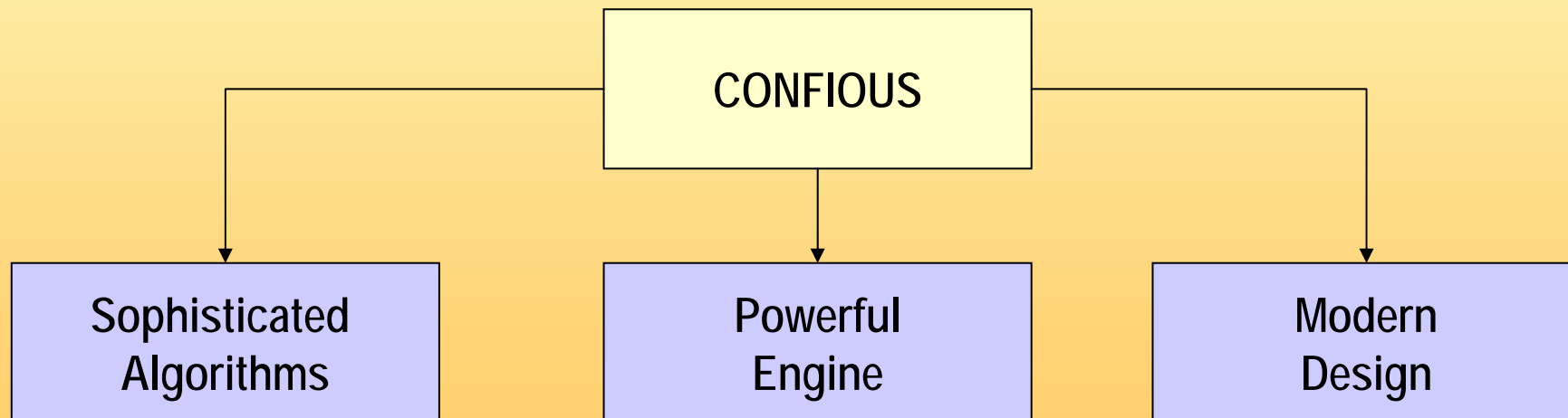
Part V



CONFIOUS: Overview



- A State-of-the-art Conference Management System
 - Sophisticated Algorithms
 - Modern Design
 - Powerful Engine



CONFIOUS: Main Features



- Instant Conference Setup
- 100% Online, Role Based Collaboration
- Intelligent Management of Conflicts of Interest
- Automatic Assignment of Papers to Reviewers
- Dynamic Construction of the Review Form
- Bidding for Specific Papers Support
- Double Blind Reviewing Support
- Hierarchical Reviewing Support
- Decision Making Based on Paper Classification
- Workflow Management through Phases
- Enhanced Monitoring, Reporting and Communication Service
- Transaction-based Operations
- Task-Oriented Design

CONFIOUS: So far



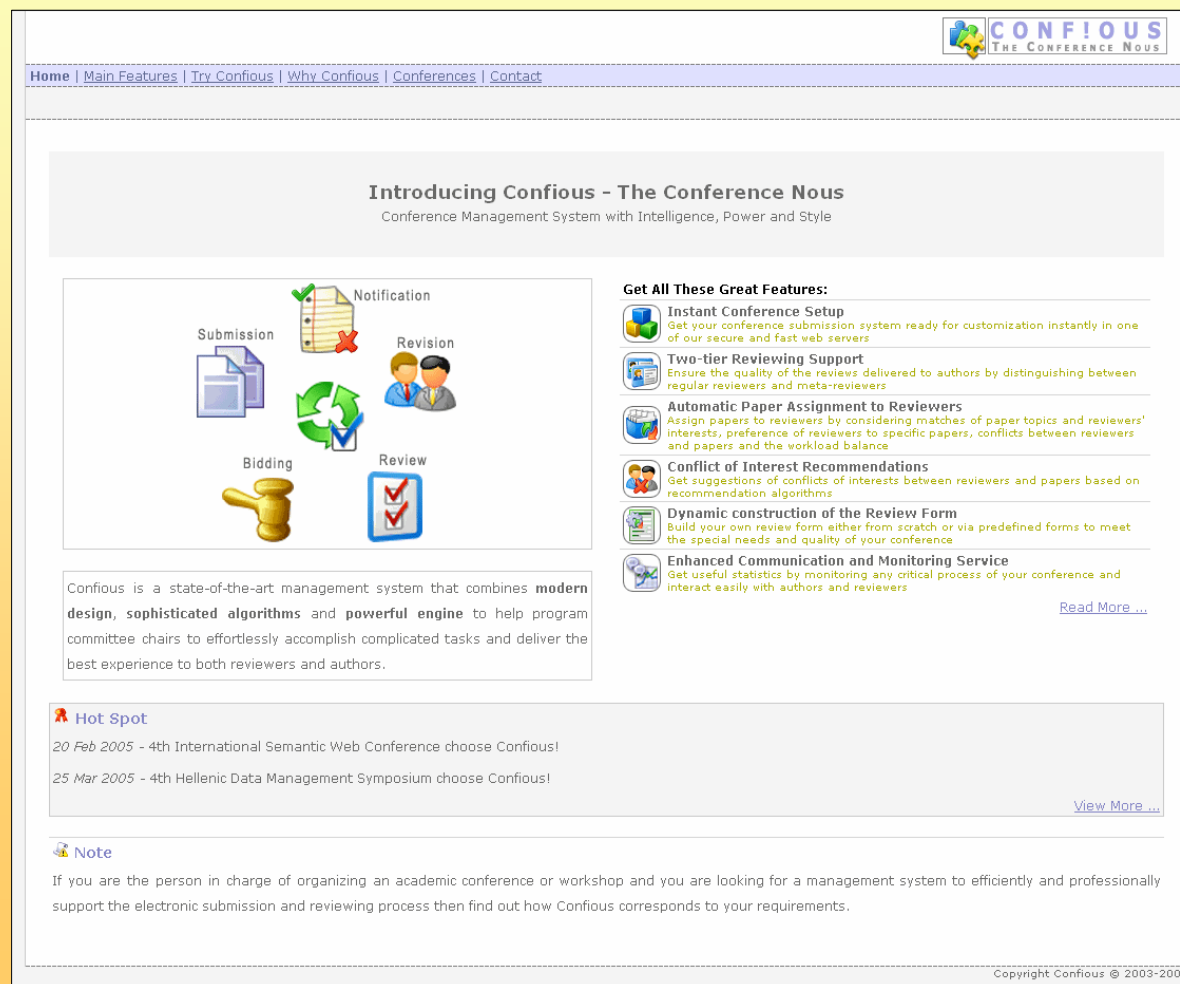
- 3rd International Semantic Web Conference (**ISWC'04**)
- 4th International Semantic Web Conference (**ISWC'05**)
- 4th Hellenic Data Management Symposium (**HDMS'05**)
- 4th Hellenic Conference on Artificial Intelligence (**SETN'06**),
- Special Issue of Journal of Web Semantics (**JWS**)

Objective:

To exert a pull on conference organizers and scientific committees to consider Confious for their future conferences.



- www.confious.com OR <http://confious.ics.forth.gr>
- **Demonstration** available through the website



The screenshot shows the Confious website homepage. At the top right is the logo "CONFIOUS THE CONFERENCE NOUS". Below it is a navigation bar with links: Home | Main Features | Try Confious | Why Confious | Conferences | Contact. The main heading is "Introducing Confious - The Conference Nous" with the subtitle "Conference Management System with Intelligence, Power and Style". A central graphic illustrates the workflow: Submission (document icon), Notification (document with checkmark), Revision (document with red X), Bidding (gavel icon), and Review (document with checkmarks). To the right, under "Get All These Great Features:", there are six feature descriptions, each with an icon and a "Read More ..." link. Below this is a "Hot Spot" section with two news items: "20 Feb 2005 - 4th International Semantic Web Conference choose Confious!" and "25 Mar 2005 - 4th Hellenic Data Management Symposium choose Confious!", with a "View More ..." link. A "Note" section at the bottom states: "If you are the person in charge of organizing an academic conference or workshop and you are looking for a management system to efficiently and professionally support the electronic submission and reviewing process then find out how Confious corresponds to your requirements." The footer contains "Copyright Confious © 2003-2005".

Questions?



Thanks!

