CS4443: Software Engineering
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Publication Management System

SRA Document

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1 Context Diagram

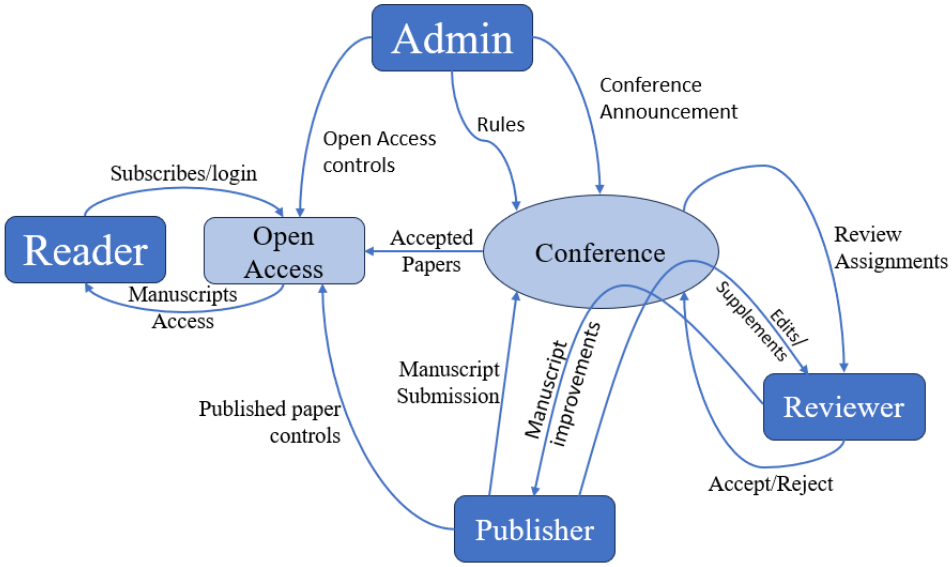

Figure 1: Context Diagram

Our Publication Management system will have 4 Actors, i.e. Admin, Reviewer, Author, Open Access Reader.

- **Authors**: Submit manuscripts, track review progress, receive feedback, and manage revisions.
- **Reviewers**: Access assigned manuscripts, provide peer review feedback, and communicate with authors.
- **Open Access**: Browsing access to the manuscripts published in conferences with subscriptions.
- **Admin**: Manage journal and conference information, configure workflow settings, and analyze publication data.

2 Data Flow Diagrams

- **Data flow diagrams** is a type of diagram that depicts the movement of data through a system or process and is crucial in the system or software design process.
- For our software we decided to make 2 DFDs to get better insights into the software. We have compared one with the other.Then we have finnally selected the best DFD out of the two.

2.1 DFD - 1

- The principal actors are the Admin, Authors, Reviewers, and Readers.
- Admin opens a manuscript submission where registered users can submit their records.

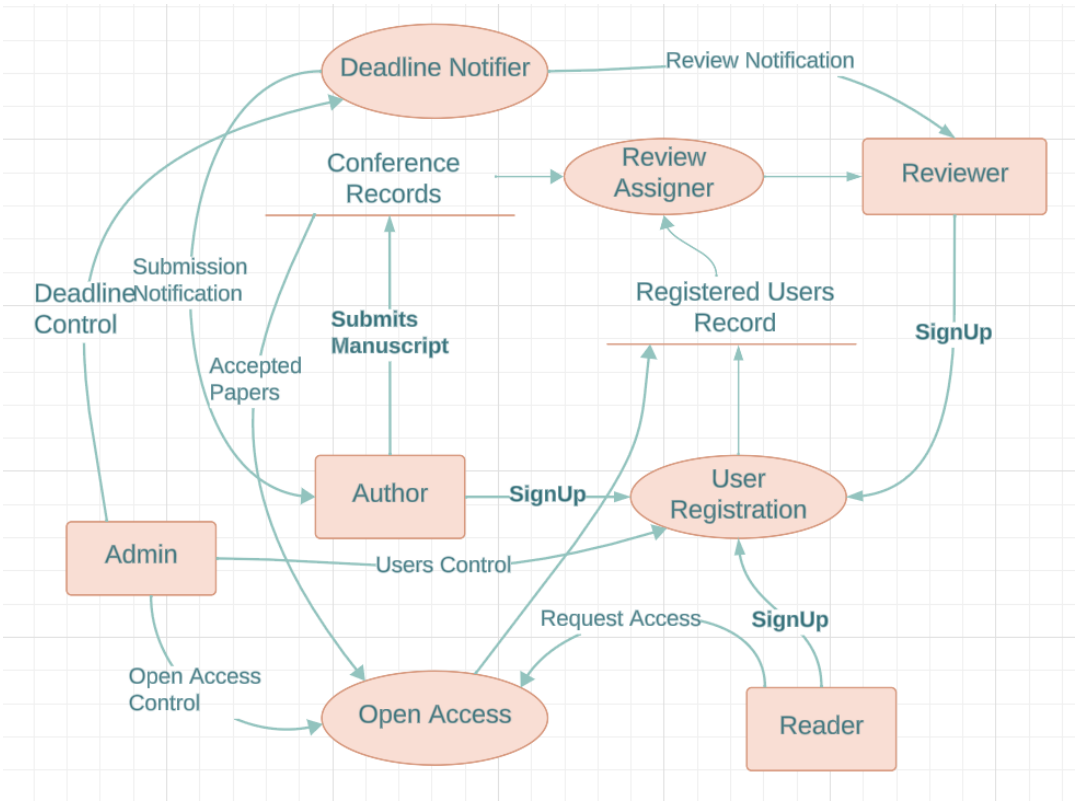

Figure 2: First DFD with common registration module

- Authors, Readers and Reviewers get registered on the Registration portal, and these credentials are stored in User Records.
- Authors submit manuscripts in their interested conferences; this data is stored in the conference record.
- Before Authors can submit papers, the Admin can request reviewers or reviewers express their interest in review at a particular conference.
- All the manuscripts submitted before the deadline in a conference are allocated to Reviewers by the allocation algorithm upon their interest such that for every paper, there are at least 3 reviewers.
- Admin sends notifications to Reviewers and Authors regarding deadlines, Acceptance, camera-ready submission, etc.
- All the accepted manuscripts are sent to open access, where the reader subscribes to the papers he wants to read.
- DFD doesn't tackle how the authentication or rules check mechanism for reviewers and manuscripts works. It doesn't tackle how the reviews are being displayed to the user.
- DFD uses a single module for all kinds of registration and does not handle user-specific or manuscript checks.
- DFD does not do the automatic registrations of authors during manuscripts.
- DFD does not show the statistics module to calculate the statistics.

2.2 DFD - 2

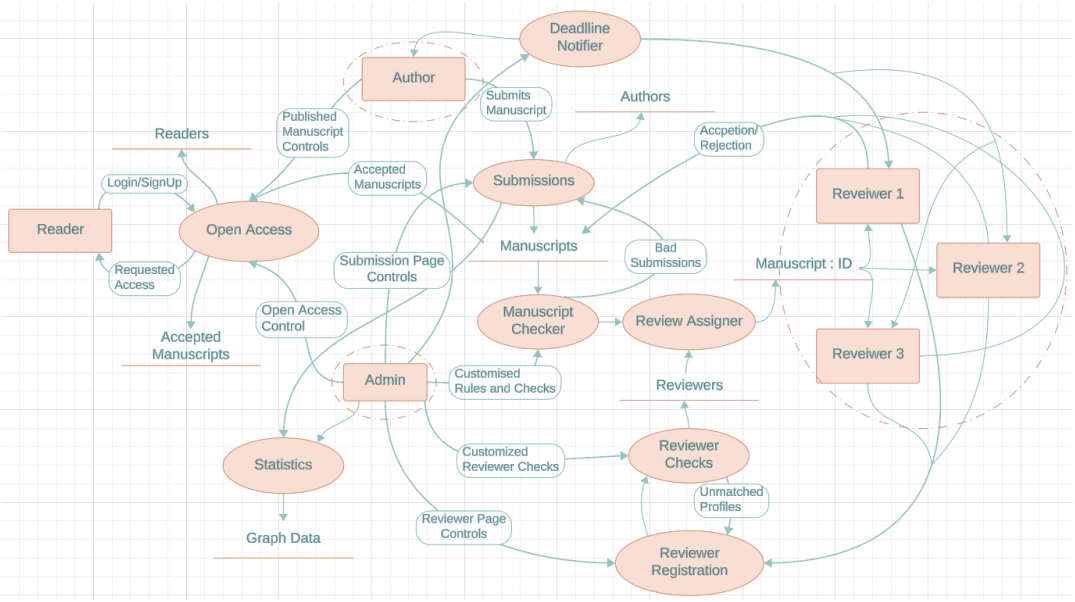

Figure 3: Second DFD (with man-machine boundary) with separate registration module along with respective checker module

- The principal Actors are Admin, Authors, Reviewers, and Readers.
- Admin opens a manuscript submission page for a conference where Authors can submit their manuscripts
- The submitted manuscripts go into the initial version checker customized by admin, where invalid submissions are marked back as bad and valid manuscripts are passed to the review assigned module.
- Reviewers registered on the review registration page controlled by the admin need to pass the reviewer checks customized by the admin. Unmatched Reviewers are marked back as unmatched.
- Reviewers willing to participate and match the required rules are passed to the review assigned.
- Review Assigner assigns the manuscripts to at least three available reviewers.
- Authors give their review along with acceptance or rejection, which is updated in the manuscript database.
- Accepted manuscripts are passed to an open access portal controlled by admin, where they are published.
- Authors can control their manuscript's access on the open-access portal.
- Admin sends notifications to Reviewers and Authors regarding deadlines, Acceptance, camera-ready submission, etc.
- Reader can register or sign up to this open access page and request access to required manuscripts.

- There is a statistics module connected to the submissions module to track the submitted, accepted, and rejected manuscripts to construct related graphs.
- This DFD has each author, reader, and reviewer module divided, hence decreasing load.
- Easy deployment of new check modules for each author, reader, and reviewer gives us more control.

Separate modules for each user help decrease the load of individual data handling. So, DFD 2 is better than DFD 1. We are using the DFD 2 to take the project forward.

3 Function Point Analysis

3.1 Unadjusted Functional Point Calculation:

Table 1: UFP Table

Measurement Parameter	Counts	Average Weighting factor	Average Value
External Inputs (EI)	21	4	84
External Outputs (EO)	10	5	50
External Enquired (EQ)	3	4	12
Internal Logic files (ILF)	8	10	80
External Logic File (ELF)	2	7	14
UFP = Total Count			240

3.2 Complexity Adjustment Factor Calculation:

Table 2: CAF Table

Factor	**Rating**	**Justification**
Data Communication	0	Self-contained system
Distributed Data Processing	0	No evidence of distributed processing
Performance	4	Critical for timely responses and decisions
Heavily Used Configuration	3	Moderate user base expected
Transaction Rate	4	Moderate number of transactions
Online Data Entry	5	All data entry is online
End-User Efficiency	2	User interface may require training
Online Update	2	Some online updates supported
Complex Processing	3	Some complex processing, but overall logic is straightforward
Reusability	3	Some components may be reusable
Installation Ease	5	Web-based, minimal installation required
Operational Ease	4	Relatively easy to operate and maintain
Multiple Sites	0	Not designed for multiple sites
Facilitate Change	2	Moderately easy to change
Total CAF	**1.95**	**Moderate complexity**

3.3 Overall calculation:

$$FP = UFP \times CAF$$

From Table 2, $UFP = 240$ and from Table 1, $CAF = 1.95$.

$$FP = 240 \times 1.95 = 468$$

Considering $1\,FP = 50\,LOC$, the Lines of Code (LOC) can be calculated as:

$$LOC = 50 \times 468 = 23400$$