ALBUKHARY INTERNATIONAL UNIVERSITY

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Course Title : **REQUIREMENT ENGINEERING**
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ASSESSMENT INSTRUCTION

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Lecturer	**Associate Professor Dr. Muhammad Shiraz**		
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Table of Content

1. Business Requirement

1.1 Business Background

Communities today often struggle with fragmented communication and disconnected interactions among their members. At present, community members utilize a variety of disparate platforms to stay informed, participate in events, and connect with one another. This scattered approach leads to inefficiencies and missed opportunities for meaningful engagement.

For instance, community members may spend significant time navigating multiple platforms to find relevant information or events. This fragmented experience often results in members missing out on important announcements, activities, and opportunities to connect with others who share their interests. Additionally, community managers face challenges in maintaining engagement due to the lack of a unified system that addresses both functional and non-functional requirements comprehensively.

The current state of community engagement tools also presents usability issues. Many existing systems have complex interfaces that are not user-friendly, deterring members from active participation. As a result, communities face decreased engagement and difficulties in fostering a cohesive, interactive environment.

1.2 Business Opportunities

There is a clear opportunity to develop a Community Engagement Management System (CEMS) that addresses these challenges by providing a centralized, user-friendly platform for community interaction. Such a system would streamline communication, making it easier for members to stay informed, participate in events, and connect with each other seamlessly.

By prioritizing user experience through an intuitive interface and accessible features, the CEMS would significantly enhance community connectivity. This would lead to increased engagement and a stronger sense of community among members. The system would also offer comprehensive functionality to meet diverse user needs, supported by clear visualizations such as activity diagrams, use case diagrams, sequence diagrams, class

diagrams, and state diagrams. These visual tools would help stakeholders understand and adopt the system more effectively.

Moreover, designing the CEMS with a scalable and robust architecture ensures that it can grow alongside the community it serves, maintaining performance and reliability as user numbers increase. A component-based approach would allow for modularity and reusability, making the system easier to update and expand.

Implementing rigorous software testing strategies would ensure the system's reliability and robustness, providing a high-quality, dependable platform for community engagement. Overall, the CEMS represents a significant opportunity to revolutionize community interactions, fostering more meaningful connections and a vibrant, engaged community.

1.3 Business Objectives

- BO-1 : Collaborative Requirement Gathering: Engage key stakeholders in a collaborative process to document comprehensive user stories, use cases, and functional requirements, accurately reflecting the community and system users' needs.
- BO-2 : Requirement Prioritization: Apply techniques like MoSCoW analysis to prioritize system features and functionalities, ensuring effective resource allocation and focusing on delivering the most valuable requirements first.
- BO-3 : Requirement Validation: Implement mechanisms such as prototype demonstrations, stakeholder reviews, and user acceptance testing to verify the accuracy, completeness, and feasibility of requirements, minimizing misunderstandings and discrepancies.
- BO-4 : Traceability and Impact Analysis: Establish a traceability matrix to link requirements to system components and test cases, facilitating comprehensive impact analysis and change management throughout the project lifecycle.
- BO-5 : Continuous Improvement and Adaptation: Use agile methodologies like Scrum or Kanban to iteratively refine requirements based on stakeholder and user feedback, promoting flexibility, transparency, and responsiveness to changing business needs.

1.4 Success Metrics

- SM-1: 80% of community members actively engage with the Community Engagement Management System (CEMS) at least once a week within six months of launch.
- SM-2: The average rating on the community satisfaction survey increases by 1.0 on a scale of 1 to 10 within three months of launch, and by 2.0 within 12 months.
- SM-3: Community managers report a 40% reduction in time spent on manual administrative tasks within six months of implementing the CEMS.
- SM-4: 75% of events and activities planned through the CEMS achieve their attendance goals within the first year.

1.5 Vision Statement

For communities and their managers who need a unified platform to facilitate seamless and meaningful interactions among members, the Community Engagement Management System (CEMS) is a comprehensive and user-friendly application that enhances communication, event management, and member engagement. Unlike current fragmented and cumbersome tools, our product offers a scalable, reliable, and visually intuitive solution that significantly improves user experience, increases engagement, and reduces administrative burdens, ultimately fostering a more connected and active community.

1.6 Business Risks

1. Data Privacy and Security:
    - Risk: Breach of sensitive community data leading to legal repercussions and loss of trust.
    - Mitigation: Implement robust encryption, regular security audits, and compliance with data protection regulations (e.g., GDPR, CCPA).
2. User Adoption and Engagement:
    - Risk: Low adoption rates among community members and stakeholders.
    - Mitigation: Conduct thorough user training, promote the system through marketing campaigns, and gather continuous feedback for improvements.

3. Technological Failures:
    - Risk: System downtimes or malfunctions can disrupt community engagement activities.
    - Mitigation: Ensure high availability through reliable cloud services, regular maintenance, and having a responsive technical support team.
4. Financial Constraints:
    - Risk: Budget overruns or funding shortfalls can halt development or maintenance.
    - Mitigation: Establish clear budget plans, seek multiple funding sources, and regularly monitor financial health.
5. Regulatory Changes:
    - Risk: Changes in laws or regulations affecting community management and data handling.
    - Mitigation: Stay informed about regulatory changes, and be prepared to adapt policies and systems accordingly.

1.7 Business Assumption and Dependencies

Business Assumptions

- AS-1: Community members will have access to the necessary devices and internet connectivity to use the CEMS effectively.
- AS-2: There will be sufficient technical support available to address any issues that arise promptly.
- AS-3: Community managers will receive adequate training to use the system to its full potential.

Business Dependencies

- DE-1: The CEMS must be able to integrate seamlessly with existing community management tools and platforms to ensure continuity and ease of use.
- DE-2: Ongoing funding and resources must be available for system maintenance and updates to ensure long-term sustainability and scalability.

2. Scope and Limitation

2.1 Major Features

FE-1: Centralized system for community announcements, updates, and messaging.

FE-2: Comprehensive tools for organizing and engaging in community events.

FE-3: A searchable directory of community members to promote networking and connections.

FE-4: Interactive forums for discussions, idea sharing, and collaboration.

FE-5: A central repository for community resources, documents, and media.

FE-6: Tools for gathering feedback and opinions from community members.

FE-7: Comprehensive analytics tools to monitor engagement and measure community activities.

FE-8: Ensure accessibility through both web and mobile platforms.

FE-9: Robust security measures to protect community data and ensure privacy.

FE-10: Seamless integration with existing community management tools and platforms.

2.2 Scope of Initial Release and Subsequent Releases

Feature	Release 1	Release 2	Release 3
FE-1	Basic community event creation and management	Enhanced event creation with advanced customization	Comprehensive event management with analytics and reporting
FE-2	Not implemented	Not implemented	Full community feedback collection and analysis tools
FE-3	Implemented if time permits (medium priority)	Fully implemented	
FE-4	User registration and basic profile management	User profiles with additional fields and social media integration	Detailed user engagement tracking and reporting
FE-5	Event notifications via email	Notifications extended to SMS and push notifications	Personalized notification settings for users
FE-6	Basic discussion forums	Expanded discussion forums to include broader community topics	Full forum management with moderation tools
FE-7	Initial resource management for events	Community contribution tracking	Volunteer management system
FE-8	Not implemented	Fully implemented	
FE-9	Fully implemented		

1. **Scope of Initial Release**
   - FE-1: Basic functionality to create and manage community events, including scheduling and entering basic details.
   - FE-3: (Medium priority) Implementation of basic engagement tracking if time permits.
   - FE-4: Basic user registration and profile management system.
   - FE-5: Event notifications and reminders sent through email.
   - FE-6: Basic community discussion forums specific to event topics.
   - FE-9: Basic resource management for events.

2. **Scope of Subsequent Releases**

1. Release 2: Subsequent Release 1
    - FE-1: Enhanced event creation with the ability to schedule recurring events and provide advanced customization options. Integration with social media platforms for event sharing.
    - FE-3: Full implementation of the engagement tracking system.
    - FE-4: Enhanced user profiles with additional fields for more detailed information and integration with social media accounts.
    - FE-5: Notifications extended to include SMS and push notifications.
    - FE-6: Expansion of discussion forums to include general community engagement topics.
    - FE-8: Implementation of a community contribution tracking system.

2. Release 3: Subsequent Release 2
    - FE-1: Complete event management system including advanced analytics and reporting tools.
    - FE-2: Full implementation of community feedback collection and analysis tools.
    - FE-4: Comprehensive user engagement tracking and detailed reporting.
    - FE-5: Personalized notification settings allowing users to choose their preferred method of communication.
    - FE-6: Full forum management capabilities with moderation tools and forum analytics.
    - FE-7: Full implementation of a volunteer management system.

2.3 Limitation and Exclusions

LI-1: The initial mobile application will offer a subset of the full features available on the web platform. Certain functionalities such as detailed analytics and advanced customization options will be accessible only via the web interface.

LI-2: Offline access will be limited to viewing previously downloaded resources and messages. Features requiring real-time data, such as event registrations and message posting, will not be available offline.

3. Business Context

3.1 Stakeholder Profiles

Stakeholder	Major Value	Attitudes	Major Interest	Constraints
Local Residents	Stay informed, participate in decision-making, community bonding	Enthusiastic about local issues but cautious about data privacy, mixed tech-savviness	User-friendly interface, real-time updates, privacy protection	Limited time, varying tech skills
Community Leaders	Effective community management, data-driven decision making	Highly supportive, proactive in using data for decisions, interested in transparency	Detailed analytics, robust communication tools	Need actionable insights, time constraints
IT and System Administrators	System stability and security, minimal downtime	Committed to ensuring system reliability, cautious about new implementations	Reliable infrastructure, comprehensive security	Limited budget and manpower
Local Government Officials	Regulatory compliance, public trust, enhanced services	Supportive but cautious about data handling, prioritize legal compliance	Compliance reporting, transparency features	Budget limitations, regulatory requirements
Non-Profit Organizations and Advocacy Groups	Advocacy and outreach, community projects	Passionate about community issues, collaborative approach, limited resources	Collaboration tools, outreach capabilities, impact measurement	Volunteer-based operations, limited funding
Businesses and Local Merchants	Increased community engagement, marketing	Interested but cautious about ROI, need clear benefits	Advertising and promotion features, engagement	Budget constraints, need clear ROI

	opportunities		analytics	

3.2 Project Priorities

Dimension	Driver	Constraint	Degree of Freedom
Schedule	Launch phases must align with key community events and local government schedules	Initial release by 10/8/2024, second release by 1/8/2025, overrun of up to 4 weeks acceptable without sponsor review	
Features	Core functionalities must address the primary needs of all major stakeholder groups	All critical features (real-time updates, feedback tools, analytics) must be fully operational in release 1.0	Additional non-critical features can be rolled out in subsequent releases
Quality	System must be reliable and user-friendly to ensure high adoption and trust	98% of user acceptance tests must pass, all security tests must pass, compliance with data protection regulations must be demonstrated	
Staff	Projected team size includes a full-time project manager, 3 developers, and 1 QA tester	Additional part-time developer and part-time tester will be available if necessary	
Cost	Project budget must remain within reasonable limits to ensure continued funding and support	Budget overrun up to 10% acceptable without sponsor review	

3.3 Deployment Consideration

Deploying the Community Engagement Management System (CEMS) for the Requirement Engineering course entails several critical considerations to ensure a smooth and successful launch. These considerations cover technical, organizational, and user-related aspects, each vital for the system's adoption and sustainability.

1. **Technical Infrastructure:**
   - Scalability: Ensure the system is designed to handle varying loads, with the ability to scale up as the community grows. This requires robust cloud infrastructure capable of elastic scaling.
   - Reliability and Uptime: Implement a reliable hosting environment with high availability. Utilize redundant servers and backup systems to minimize downtime and ensure continuous operation.
   - Security: Deploy comprehensive security measures, including encryption, secure authentication methods, and regular security audits. Compliance with data protection regulations (e.g., GDPR, CCPA) is crucial to protect user data and maintain trust.
   - Integration: The system must seamlessly integrate with existing community management tools and platforms. This ensures continuity and enhances user experience by providing a unified interface.

2. **User Adoption:**
   - Training and Support: Provide extensive training sessions for community managers and users to familiarize them with the system's functionalities. This can include webinars, user manuals, and on-site training sessions.
   - User Engagement: Develop marketing campaigns to promote the system, highlighting its benefits and ease of use. Collect continuous feedback from users to identify areas for improvement and ensure the system evolves to meet user needs.
   - Interface Design: Focus on creating an intuitive and user-friendly interface to encourage widespread adoption. This includes clear navigation, accessible features, and responsive design to cater to users with varying levels of technical proficiency.

3. **Project Management:**
    - Phased Rollout: Implement a phased deployment strategy, beginning with a pilot launch to a smaller group of users. This allows for the identification and resolution of any issues before a full-scale launch.
    - Continuous Improvement: Use agile methodologies to iteratively refine the system based on user feedback and changing community needs. This includes regular updates and the addition of new features as needed.
    - Resource Allocation: Ensure adequate resources, including a dedicated project manager, developers, and QA testers, to support the deployment and ongoing maintenance of the system.

4. **Stakeholder Coordination:**
    - Stakeholder Engagement: Engage key stakeholders, including community leaders, local government officials, and non-profit organizations, throughout the deployment process. Their input is essential for aligning the system with community needs and ensuring broad support.
    - Communication: Maintain open lines of communication with all stakeholders to keep them informed about the deployment progress and gather feedback. Regular updates and meetings can help in managing expectations and addressing concerns promptly.

5. **Performance Monitoring:**
    - Metrics and Analytics: Implement comprehensive analytics to monitor system performance and user engagement. Key metrics include system uptime, response times, user activity levels, and feedback scores.
    - Reporting: Provide detailed reports to stakeholders on the system's performance, highlighting successes and areas for improvement. This transparency helps in building trust and demonstrating the value of the CEMS.

4. Requirement Elicitation Techniques for Community Engagement Management System

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4.1 Techniques Employed to Elicit Requirements

In this section, we will discuss techniques employed to elicit requirements for the Community Engagement Management System (CEMS). The technique that we used is interviews.

Interviews: Interviews were conducted with key stakeholders, including Local Residents, Community Leaders, IT and System Administrators, and Local Government Officials. These interviews allowed us to gather detailed and personalized insights into the needs and expectations of each stakeholder group.

Why Interview Technique?

- **Direct Interaction and Clarification:** Interviews facilitate direct interaction between the development team and stakeholders, allowing for real-time clarification of requirements and expectations. For example, interviews with Local Residents and Community Leaders helped immediately clarify their needs for community engagement features and data privacy concerns.
- **Detailed and Personalized Insights:** Interviews provide in-depth, personalized insights into each stakeholder's unique needs, challenges, and expectations. Interviews with IT and System Administrators, for instance, provided detailed insights into the technical requirements for system stability and security, essential for the CEMS's reliable operation.
- **Building Rapport and Trust:** Face-to-face or virtual interviews help build rapport and trust with stakeholders, encouraging them to share honest and comprehensive feedback. This was crucial with Local Government Officials, whose trust enabled a thorough understanding of their regulatory compliance needs.
- **Flexibility and Adaptability:** Interviews can be structured or unstructured, allowing flexibility in exploring various topics and adapting questions based on stakeholder responses. For Community Leaders, a mix of both formats allowed us to delve deeply into their needs for data-driven decision-making tools and effective community management features.

4.2 Subsequent Steps Post-Elicitation

Following the analysis of the gathered requirements, the subsequent steps post-elicitation should be implemented, including:

a) Organize and share documents notes

To organize and share our documented notes for the Community Engagement Management System (CEMS), we follow a systematic approach:

1. **Consolidation of Information:**
   - Gather all information from stakeholder interviews, including local residents, community leaders, IT and system administrators, local government officials, non-profit organizations, and local businesses.
   - Compile individual comments, suggestions, and concerns into a comprehensive document.
2. **Review and Update:**
   - After each interview, review the notes to ensure all key points are captured accurately.
   - Make necessary updates to the notes based on the interview feedback.
   - Consolidate the updated notes into a single document.
3. **Distribution for Verification:**
   - Send the consolidated notes to the team members who participated in the interviews.
   - Ask team members to review and confirm that their input is accurately represented.
   - Early review is crucial to ensure that the feedback about the system's expected functionalities and issues is correct.
4. **Addressing Inconsistencies:**
   - Identify any inconsistencies during the review, such as discrepancies in the priorities for system features and concerns about data security.
   - Schedule follow-up discussions to clarify and resolve these issues.
   - Track follow-up actions and document outcomes using Jira.
5. **Documentation and Sharing:**
   - Store the organized notes in a centralized document repository such as Google Drive or Confluence

- Ensure all team members have access to the repository, promoting transparency and collaboration.

6. **Ensuring Alignment:**
    - Regularly review and update the documented notes to reflect ongoing feedback and changes.
    - Ensure that the development of the CEMS aligns with stakeholder needs and expectations by maintaining organized and accurate documentation.

By following this approach, we ensure that all stakeholder feedback is accurately captured, verified, and addressed. This leads to the development of a more effective and user-friendly Community Engagement Management System that meets the needs of all stakeholders.

b) Document open issues

- Gather comprehensive information from stakeholder interviews, including insights from various parties such as local residents, community leaders, IT and system administrators, local government officials, non-profit organizations, and local businesses.
- Carefully review notes post-interview to ensure accurate capture of all critical points.
- Distribute consolidated notes to interview participants for early review and confirmation of their feedback regarding system functionalities and concerns.
- Identify inconsistencies or discrepancies during the review process, such as conflicting priorities for system features or concerns about data security.
- Document identified issues as open issues for further clarification and resolution.
- Schedule follow-up discussions to address and resolve documented open issues.
- Use Jira to track follow-up actions and document their outcomes.
- Ensure necessary adjustments are made promptly to address documented open issues.
- Thoroughly document open issues and systematically address them to keep the development of the community engagement management system aligned with stakeholder needs and expectations.
- Aim for a more effective and user-friendly platform through this structured and meticulous approach.

c) Classify the newly gathered information

- Collect detailed input from various stakeholders, including local residents, community leaders, IT and system administrators, local government officials, non-profit organizations, and local businesses.
- Review gathered information meticulously to identify common themes, topics, and areas of interest.
- Categorize the information based on key themes such as system functionalities, user experience, security concerns, and desired features.
- Create a structured framework for analysis and decision-making through classification.
- Organize classified information into a coherent format for easy reference and analysis.
- Share the classification with relevant stakeholders for verification and validation.
- Make necessary adjustments based on stakeholder feedback to ensure accuracy and completeness.
- Document the classification methodology and outcomes for transparency and future reference.
- Establish a clear and organized foundation for analyzing specific areas of interest and concern in the development of the community engagement management system.
- Use the structured approach to make informed decisions that align with stakeholder needs and expectations.

d) Identify the most suitable tool that can facilitate the subsequent stages of requirement analysis.

For the follow-up stages of the requirement analysis for the Community Engagement Management System (CEMS), the most suitable tool would be Jira. Based on the requirements and tasks outlined in our project document, Jira offers the necessary features to support organizing, tracking, and managing the various aspects of the requirement analysis process. These are the reasons why Jira is suitable:

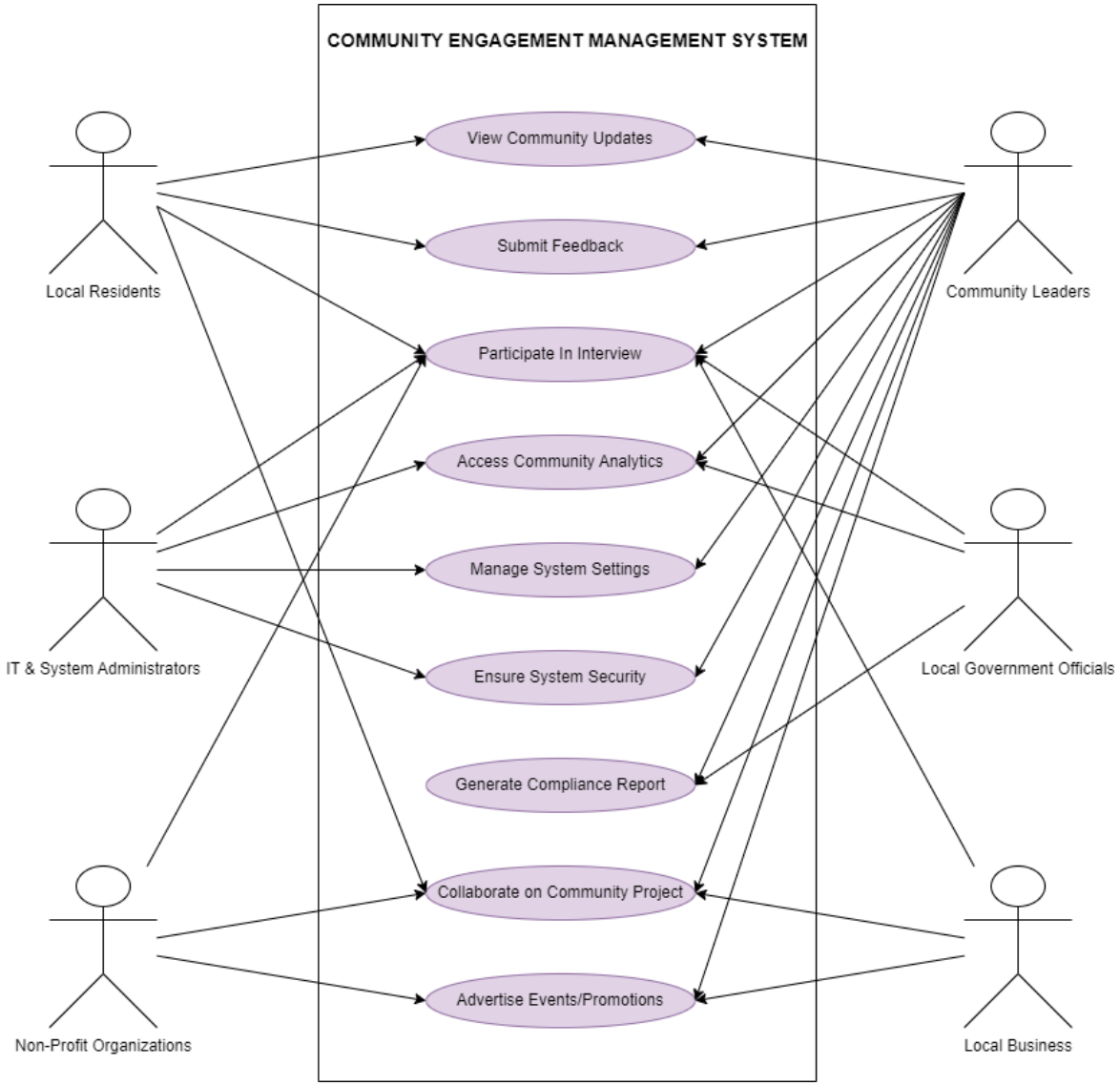
1. Organizing and Sharing Documents and Notes:

- Jira allows for the attachment of documents and notes directly to issues and tasks. This feature ensures that all related information is stored in one place and can be easily accessed by all team members.
- We can create Confluence pages (if integrated with Jira) to document detailed meeting notes, interview summaries, and stakeholder feedback, which can then be linked to relevant Jira issues.

2. Documenting Open Issues:
   - Jira's issue tracking capabilities enable us to document, categorize, and prioritize open issues effectively. Each issue can be assigned to team members, given deadlines, and tracked through its lifecycle.
   - The use of labels and custom fields in Jira can help categorize issues based on different themes such as security concerns, system functionalities, or user experience feedback.
3. Classifying Newly Gathered Information:
   - Information gathered from stakeholders can be classified and documented as separate issues or tasks within Jira. This helps in organizing the data systematically.
   - Jira's workflow customization allows us to create statuses and transitions that reflect the stages of requirement analysis, making it easier to track the progress of each piece of gathered information.
4. Follow-up Actions and Resolutions:
   - Jira supports the scheduling of follow-up actions through its calendar and reminder features, ensuring that any discrepancies or open issues are addressed promptly.
   - We can use Jira's reporting and dashboard capabilities to monitor the status of all follow-up actions and ensure that all necessary adjustments are made in a timely manner.
5. Collaboration:
   - Jira's collaborative features, including comments, mentions, and notifications, facilitate communication among team members, ensuring that everyone stays informed about the status of the requirement analysis process. By leveraging Jira, our team can maintain organized, accurate, and up-to-date documentation.

5. Requirement Modeling

5.1 Use Case Community Engagement Management System



5.2 List of Primary and Secondary Actor

1. **Primary Actor:** Community Leader
2. **Secondary Actors:**
   - Local Residents
   - Non-Profit Organizations
   - Businesses and Local Merchants
   - IT & System Administration
   - Local Government Officials

5.3 Use Case Relationship

1. **View Community Updates**
   - **Primary Actor:** Local Residents
   - **Secondary Actors:** Community Leaders
   - **Description**: Local residents view the latest community updates posted by community leaders.
2. **Submit Feedback**
   - **Primary Actor:** Local Residents
   - **Secondary Actors:** Community Leaders
   - **Description**: Local residents submit their feedback or suggestions which are then reviewed by community leaders.
3. **Participate in Interview**
   - **Primary Actor:** Local Residents
   - **Secondary Actors:** Community Leader, Local Government Officials, Non-profit Organizations, IT & System Administrators, Local Business
   - **Description**: Local residents participate in interviews conducted by various community stakeholders to gather insights and opinions.
4. **Access Community Analytics**
   - **Primary Actor:** Community Leaders
   - **Secondary Actors:** Local Government Officials, IT & System Administrators
   - **Description**: Community leaders access analytics data to make informed decisions. This data is also used by local government officials and IT administrators.
5. **Manage System Settings**
   - **Primary Actor:** IT & System Administration
   - **Secondary Actors:** Community Leaders
   - **Description**: IT administrators manage system settings to ensure the platform runs smoothly, with oversight from community leaders.
6. **Ensure System Security**
   - **Primary Actor:** IT & System Administration
   - **Secondary Actors:** Community Leader
   - **Description**: IT administrators ensure the security of the system with the help of community leaders who are informed about the security status.
7. **Generate Compliance Report**
   - **Primary Actor:** Community Leader
   - **Secondary Actors:** Local Government Officials
   - **Description**: Community leaders generate compliance reports to ensure the community activities adhere to government regulations and share these reports with local officials.

8. **Collaborate on Community Project**
    - **Primary Actor:** Local Residents
    - **Secondary Actors:** Community Leader, Non-Profit Organizations, Businesses and Local Merchants
    - **Description**: Local residents collaborate with community leaders, non-profit organizations, and businesses on various community projects.
9. **Advertise Events/Promotions**
    - **Primary Actor:** Community Leader
    - **Secondary Actors:** Non-Profit Organizations, Businesses and Local Merchants
    - **Description**: Community leaders advertise upcoming events and promotions with the help of non-profit organizations and local businesses.

5.4 Detailed Document for each use Case Diagram

Use Case 1: View Community Updates

Field	Description
Use Case ID	UC-1.1
Use Case Name	View Community Updates
Actors	Primary: Local Residents Secondary: Community Leaders
Description	Local Residents view updates about community events, announcements, and news.
Trigger	A resident logs into the system and selects the option to view updates.
Preconditions	1. Resident is logged into the system. 2. There are updates available to view.
Postconditions	1. Resident views the updates. 2. System logs the activity of the resident.
Normal Flow	1. Resident logs into the system. 2. Resident navigates to the "Community Updates" section. 3. System displays the latest updates.
Alternative Flows	None
Exceptions	1. No updates available - System displays a message indicating no new updates.
Includes	None

Special Requirements	The system must be updated regularly to ensure residents receive current information.
Assumptions	Residents have internet access and the ability to log into the system.
Business Rules	Only verified residents can view certain sensitive updates.

Use Case 2: Submit Feedback

Field	Description
Use Case ID	UC-1.2
Use Case Name	Submit Feedback
Actors	Primary: Local Residents Secondary: Community Leaders
Description	Local Residents submit feedback regarding community issues, events, or services.
Trigger	A resident wants to provide feedback and accesses the feedback form.
Preconditions	1. Resident is logged into the system. 2. Feedback form is available.
Postconditions	1. Feedback is submitted and stored in the system. 2. System notifies the community leader of new feedback.
Normal Flow	1. Resident logs into the system. 2. Resident navigates to the "Submit Feedback" section. 3. Resident fills out and submits the feedback form.
Alternative Flows	None
Exceptions	1. Feedback form not available - System displays an error message.
Includes	None
Special Requirements	Feedback submission must be secure to protect resident privacy.
Assumptions	Residents have valid concerns and are willing to provide feedback.
Business Rules	Feedback may be subject to moderation by community leaders.

Use Case 3: Participate in Interview

Field	Description
Use Case ID	UC-1.3
Use Case Name	Participate in Interview
Actors	Primary: Local Residents Secondary: Community Leader, Local Government Officials, Non-Profit Organizations, IT & System Administrators, Local Business
Description	Local Residents participate in interviews conducted by various stakeholders for community improvement.
Trigger	A resident is invited to participate in an interview or signs up for an available interview slot.
Preconditions	1. Resident is aware of the interview opportunity. 2. Interview schedule is available.
Postconditions	1. Interview is completed. 2. Feedback from the interview is recorded and analyzed by the stakeholders.
Normal Flow	1. Resident logs into the system. 2. Resident navigates to the "Interview Participation" section. 3. Resident signs up for an interview slot. 4. Resident participates in the interview.
Alternative Flows	None
Exceptions	1. No interview slots available - System displays a message indicating no available slots.
Includes	None
Special Requirements	Interviews must be scheduled at convenient times for residents.
Assumptions	Residents are willing to participate in interviews.
Business Rules	Interviews must comply with privacy regulations and data protection policies.

Use Case 4: Access Community Analytics

Field	Description
Use Case ID	UC-1.4
Use Case Name	Access Community Analytics
Actors	Primary: Community Leaders Secondary: Local Government Officials, IT & System Administrators
Description	Community Leaders access analytics to understand community engagement, feedback, and participation trends.
Trigger	A community leader logs into the system and selects the analytics option.
Preconditions	1. Community leader is logged into the system. 2. Analytics data is available.
Postconditions	1. Community leader views the analytics. 2. System logs the activity of the community leader.
Normal Flow	1. Community leader logs into the system. 2. Community leader navigates to the "Analytics" section. 3. System displays the analytics data.
Alternative Flows	None
Exceptions	1. No analytics data available - System displays a message indicating no data available.
Includes	None
Special Requirements	Analytics data must be updated regularly to ensure accuracy.
Assumptions	Community leaders have the necessary permissions to access analytics data.
Business Rules	Access to certain sensitive analytics may be restricted based on user roles.

Use Case 5: Manage System Settings

Field	Description
Use Case ID	UC-1.5
Use Case Name	Manage System Settings
Actors	Primary: IT & System Administration Secondary: Community Leaders
Description	IT & System Administrators manage the system settings for the Community Engagement Management System.
Trigger	An IT administrator logs into the system and selects the option to manage settings.
Preconditions	1. IT administrator is logged into the system. 2. System settings are accessible.
Postconditions	1. System settings are updated. 2. System logs the changes made to settings.
Normal Flow	1. IT administrator logs into the system. 2. IT administrator navigates to the "System Settings" section. 3. IT administrator updates the settings as needed.
Alternative Flows	None
Exceptions	1. Access denied - System displays an error message if the user does not have sufficient permissions.
Includes	None
Special Requirements	System settings must be protected to prevent unauthorized access.
Assumptions	IT administrators are trained to manage system settings.
Business Rules	Only authorized personnel can change critical system settings.

Use Case 6: Ensure System Security

Field	Description
Use Case ID	UC-1.6
Use Case Name	Ensure System Security
Actors	Primary: IT & System Administration Secondary: Community Leader
Description	IT & System Administrators ensure the security of the Community Engagement Management System by implementing and monitoring security protocols.
Trigger	A security check is scheduled or a threat is detected.
Preconditions	1. IT administrator is logged into the system. 2. Security protocols are defined and in place.
Postconditions	1. Security protocols are executed. 2. System logs the security activities.
Normal Flow	1. IT administrator logs into the system. 2. IT administrator navigates to the "Security" section. 3. IT administrator runs security checks and implements necessary protocols. 4. System notifies Community Leader of any critical issues.
Alternative Flows	1. If a security threat is detected, IT administrator follows the threat mitigation protocol. 2. If a false alarm occurs, IT administrator marks the incident as resolved.
Exceptions	1. Access denied - System displays an error message if the user does not have sufficient permissions. 2. System failure during security check - System logs the error and notifies IT administrator.
Includes	None
Special Requirements	System security protocols must be updated regularly to address new threats.
Assumptions	IT administrators are trained in cybersecurity and threat mitigation.
Business Rules	Only authorized personnel can access and modify security settings.

Use Case 7: Generate Compliance Report

Field	Description
Use Case ID	UC-1.7
Use Case Name	Generate Compliance Report
Actors	Primary: Community Leader Secondary: Local Government Officials
Description	Community Leaders generate compliance reports for local government officials to ensure that the community activities adhere to regulations.
Trigger	A compliance report is requested by local government officials or a scheduled report is due.
Preconditions	1. Community Leader is logged into the system. 2. Data required for the compliance report is available.
Postconditions	1. Compliance report is generated. 2. Report is shared with the local government officials.
Normal Flow	1. Community Leader logs into the system. 2. Community Leader navigates to the "Compliance Report" section. 3. Community Leader selects the reporting period and generates the report. 4. System compiles the data and generates the report. 5. Report is reviewed and submitted to local government officials.
Alternative Flows	1. If data is incomplete, system prompts Community Leader to complete the data entry before generating the report.
Exceptions	1. System error during report generation - System logs the error and notifies IT administrator.
Includes	None
Special Requirements	Compliance reports must meet the local government’s formatting and content requirements.
Assumptions	Community Leaders have the necessary permissions to generate and submit reports.
Business Rules	Compliance reports must be generated and submitted within the specified deadlines.

Use Case 8: Collaborate on Community Project

Field	Description
Use Case ID	UC-1.8
Use Case Name	Collaborate on Community Project
Actors	Primary: Local Residents Secondary: Community Leader, Non-Profit Organizations, Businesses and Local Merchants
Description	Local Residents collaborate with community leaders, non-profit organizations, and businesses on community projects.
Trigger	A community project is initiated, and residents are invited to participate.
Preconditions	1. Project details and collaboration tools are available. 2. Participants are registered in the system.
Postconditions	1. Project collaboration activities are tracked and documented. 2. Project progress is updated in the system.
Normal Flow	1. Local Resident logs into the system. 2. Resident navigates to the "Community Projects" section. 3. Resident selects a project to collaborate on. 4. Resident participates in project activities and updates progress. 5. System tracks and displays project progress.
Alternative Flows	None
Exceptions	1. Project details not available - System displays an error message.
Includes	None
Special Requirements	Collaboration tools must be user-friendly and accessible.
Assumptions	Residents are willing to actively participate in community projects.
Business Rules	Projects must be approved by community leaders before collaboration begins.

Use Case 9: Advertise Events/Promotions

Field	Description
Use Case ID	UC-1.9
Use Case Name	Advertise Events/Promotions
Actors	Primary: Community Leader Secondary: Non-Profit Organizations, Businesses and Local Merchants
Description	Community Leaders advertise events and promotions to residents and other stakeholders.
Trigger	An event or promotion is scheduled and needs to be advertised.
Preconditions	1. Event or promotion details are available. 2. Advertising tools are accessible.
Postconditions	1. Event or promotion is advertised to the community. 2. System logs the advertisement details.
Normal Flow	1. Community Leader logs into the system. 2. Leader navigates to the "Advertise Events/Promotions" section. 3. Leader enters event/promotion details. 4. System publishes the advertisement to the community.
Alternative Flows	None
Exceptions	1. Advertisement not published - System displays an error message.
Includes	None
Special Requirements	Advertisements must be clear and accessible to all residents.
Assumptions	Community Leaders have the necessary permissions to create advertisements.
Business Rules	Advertisements must comply with community guidelines and regulations.

5.5 Data Flow Diagram

List of Activity

- Register/Login
- ViewCommunity Announcements
- Participate in Events
- Engage in Discussions
- Create New Event
- Edit Event Details
- Delete Event
- RSVP to Events
- Send Announcements
- Respond to Messages
- Post in Discussion Forums
- Upload/Download Documents
- Access Community Resources
- Share Media Files
- Provide Feedback
- View Analytics Reports
- Monitor Engagement Metrics
- Integrate with Social Media Platforms
- Connect with Existing Community Tools

Grouping Activity

User Interaction:

- Register/Login
- View Community Announcements
- Participate in Events
- Engage in Discussions
- Send Announcements
- Respond to Messages
- Post in Discussion Forums

Event Management:

- Create New Event
- Edit Event Details
- Delete Event
- RSVP to Events

Resource Management:

- Upload/Download Documents
- Access Community Resources
- Share Media Files

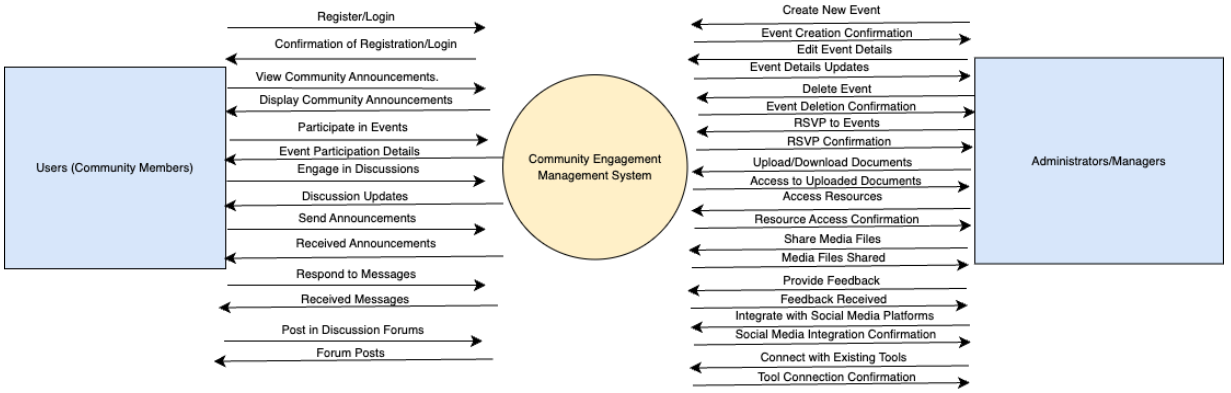
Feedback and Analytics:

- Provide Feedback
- View Analytics Reports
- Monitor Engagement Metrics

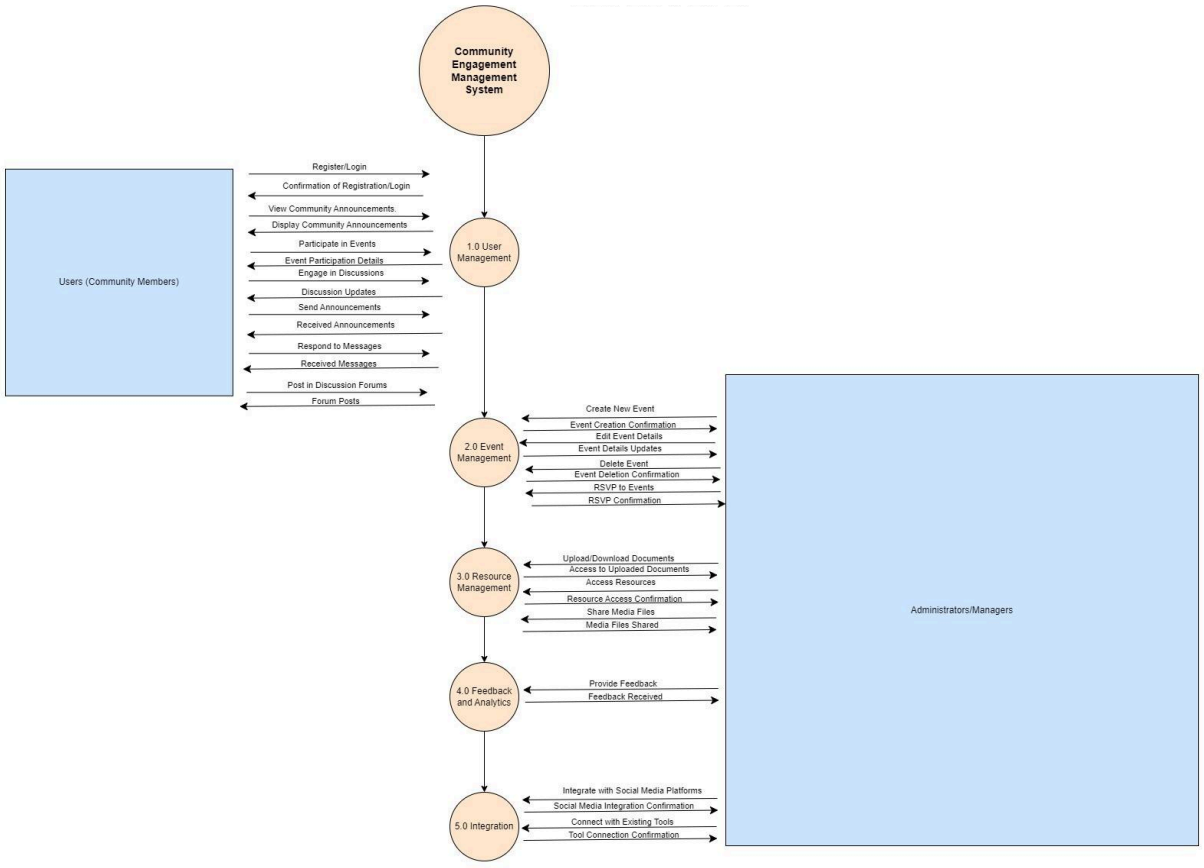
Integration:

- Integrate with Social Media Platforms
- Connect with Existing Community Tools

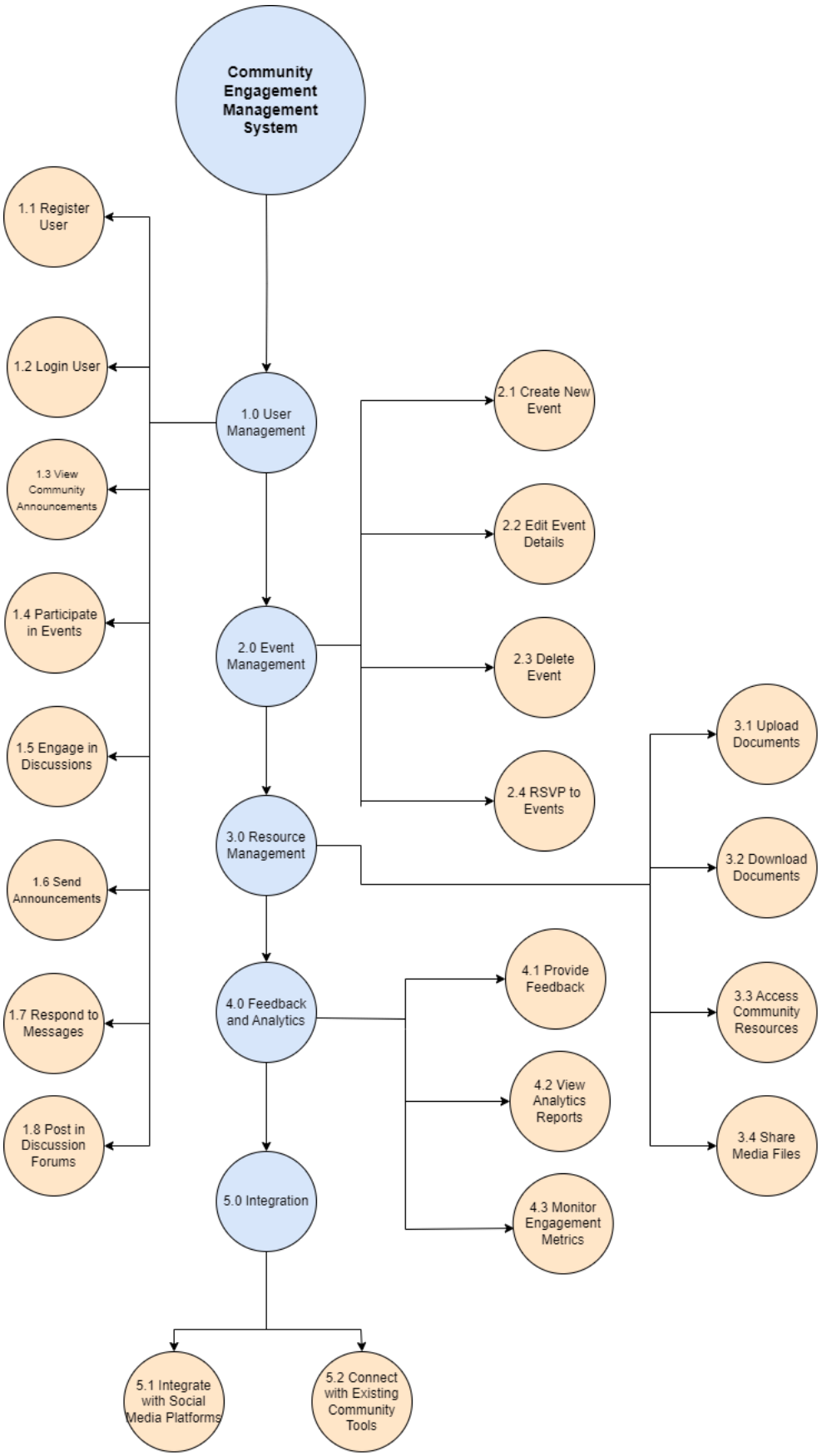
- Construct Context Level DFD



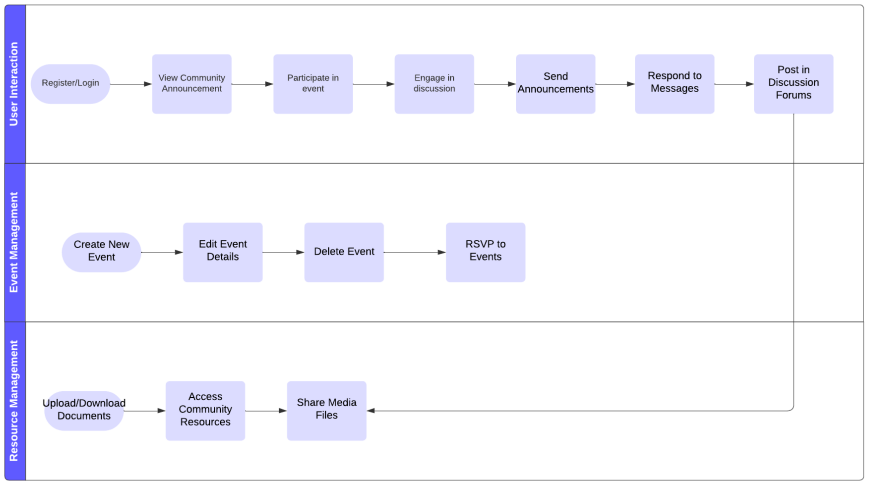
- Construct Level 0 DFD



- Construct Level 1- n DFD

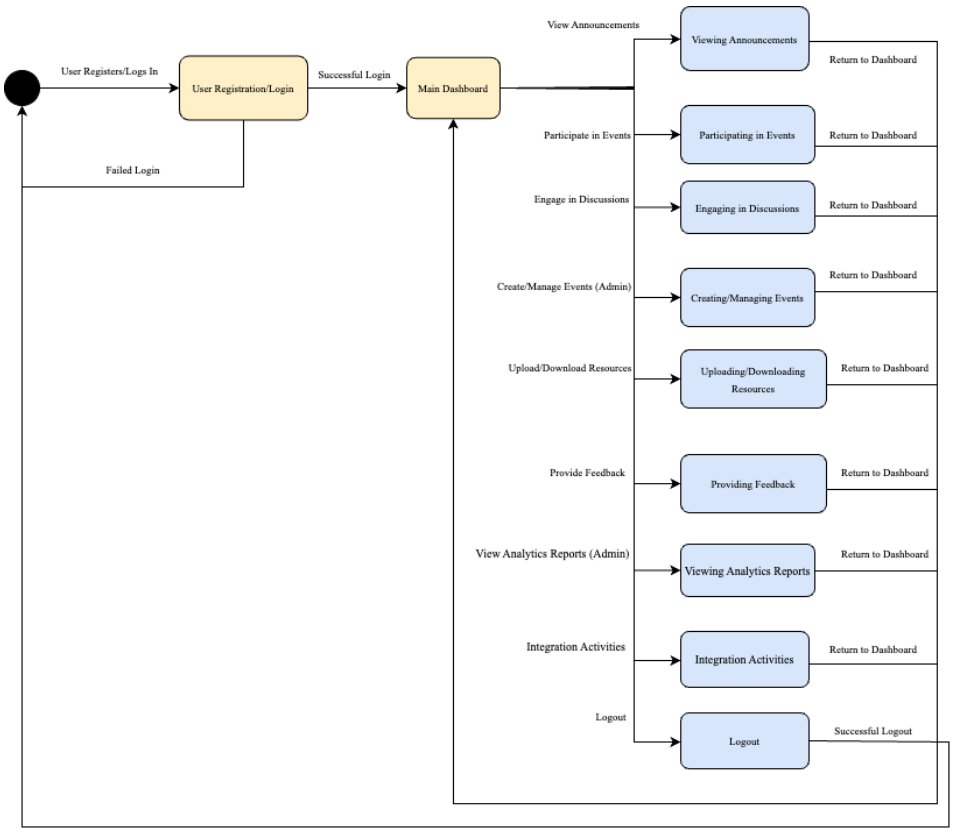


5.6 Swim-lane Diagram



5.7 State-Transition Diagram (STD) and State Tables

State-transition diagram (STD) Community Engagement Management System

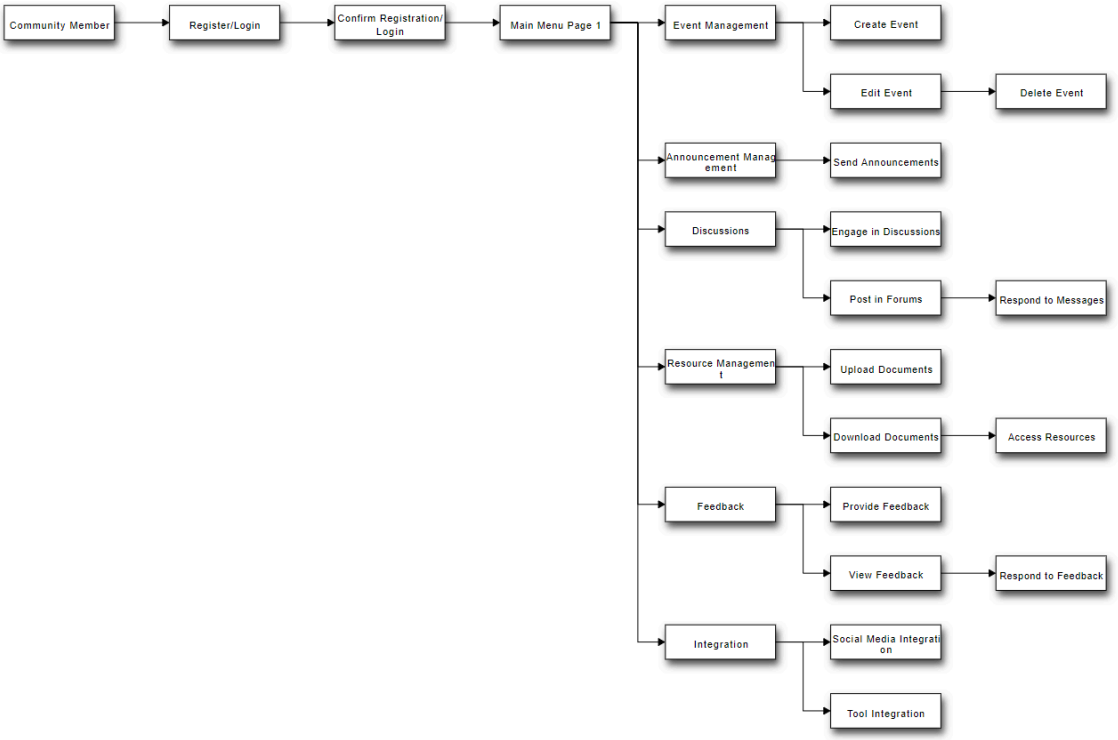


State Table Community Engagement Management System

Key States	User Registration /Login	Main Dashboard	Viewing Announcements	Participating in Events	Engaging in Discussions	Creating/ Managing Events	Uploading/Downloading Resources	Providing Feedback	Viewing Analytics Reports	Integration Activities	Logout
User Registration/Login	Start Registration/ Login	no	no	no	no	no	no	no	no	no	no
Main Dashboard	no	View Announcements	View Events	View Discussions	Admin Access	View Resources	Provide Feedback	Admin Access	Integrate	Logout	
Viewing Announcements	no	Back to Dashboard	no	no	no	no	no	no	no	no	Logout
Participating in Events	no	Back to Dashboard	no	no	no	no	no	no	no	no	Logout
Engaging in Discussions	no	Back to Dashboard	no	no	no	no	no	no	no	no	Logout
Creating/Managing Events	no	no	no	no	no	no	no	no	no	no	Logout
Uploading/ Downloading Resources	no	no	no	no	no	no	no	no	no	no	Logout
Providing Feedback	no	no	no	no	no	no	no	no	no	no	Logout
Viewing Analytics Reports	no	no	no	no	no	no	no	no	no	no	Logout
Integration Activities	no	no	no	no	no	no	no	no	no	no	Logout
Logout	no	no	no	no	no	no	no	no	no	no	no

5.8 Dialog map, **Decision tables and Decision trees**

Dialog map



Decision Tables

Requirement Number						
Condition	**1**	**2**	**3**	**4**	**5**	**6**
User is registered	F	T	T	T	T	T
User is an event organizer	-	T	T	T	T	T
Event has available spots	-	-	F	T	T	T
User has completed required training	-	-	-	F	T	T
User is logged in via the web platform	-	-	-	-	-	T
Action						
Allow event creation		X				X
Allow event registration					X	X
Deny event registration	X	X	X	X		

Prompt user to complete training				X		
Notify user of full event			X			
Send event notifications via email						X
Send event notifications via SMS/push notifications					X	X
Access main dashboard	X	X	X	X	X	X
View announcement		X	X	X	X	X
Participate in events			X	X	X	X
Engage in discussions				X	X	X
Upload/download resources					X	X
Provide feedback					X	X
View analytics reports					X	X
Integration activities					X	X
Logout	X	X	X	X	X	X

Decision Tree