Software Requirements Specification (SRS)

Meeting Scheduler

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	VERSION RECORD

Version record showing the amendments effected to the SRS is given below. It is to be noted that the sections having latest effective dates are the applicable ones.

Section	Version	Details of Version	Effective Date	Approved by
	1.0	Initial Version	9.28.2006	

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1. Introduction

Consider the following scenario

A mid-size Consulting company with 80 employees working in the Knowledge management services and handling 20 clients. As the delivery date of some of the projects comes closer imagine the number of meeting that these employees have to handle at a time with an average of 7 participants in each meeting? Imagine yourself being the meetings coordinator for couple of projects?

Scheduling meetings is one of the most common yet critical tasks in the modern workplace. In earlier days, the time-consuming tasks of scheduling meetings, typing up agendas, and taking minutes was the domain of the office secretary. With the advent of computer technologies scheduling meeting no matter has become a task that every employee get there hands in from time to time.

Scheduling a meeting really is not as simple as it looks, even with scheduling software. A lot of judgment is involved, and there's a real sense of propriety required. In bringing any group of people together, there are so many factors to take into account. This domain is a complex one due to factors such as uncertainty, numerous stakeholders, and potential disturbances. Complexity would increase as more participants were added, or different components were automated. Decisions about where the meeting is held are important as well, and very political. For some meetings, a simple announcement will do. For others, participants will need to be polled for their availability and then confirmed later.

With the growing popularity of scheduling systems, Synergy Soft, Inc. aims to provide such a product, which would outperform any such system that is currently available in the highly competitive market. Synergy Soft, Inc. is proposing an innovative approach to a new product called SDMSTM or Synergy Distributed Meeting Scheduler, in which this product is intended for supporting people to schedule their meetings. Many software vendors are eager to offer such a system, especially one with a powerful vantage point (e.g. Microsoft, IBM-Lotus, etc.).

Synergy Soft, Inc. is also aware that getting the right requirements the first time will be the barometer to successfully completing the entire development effort, reducing production time, and to keeping up its well-established reputation and ultimately to satisfying their workforce and customers. In essence, Synergy Soft, Inc. is looking to our company's expertise to deliver a detailed requirements description, which precisely, concisely and conceptually as possible to capture real customer's real needs or wants.

1.1. Purpose

The purpose of this Requirements Elicitation document is to provide a clear understanding as to what actually he is SDMSTM system and to identify the critical requirements essential for the project's successful completion. This document provides an abstract overview of the SDMSTM system and provides a general overview of the entire project. However, the architectural and detail design is outside the scope of this document, but will be covered in the Software Requirements Specification document.

This document will be used to organize our team's project plan and deliverables. This document explains our team architecture, our team's initial understanding of the user needs. It will assist our team in understanding the system specifications and analyze the critical aspects of our project. It will allow the project management and development group to grasp the high level details delivered to the end user. This document will briefly discuss the stakeholders involved in the development, documents will show how our team was divided to handle the multiple stakeholders, the sources of the requirements, provide an informal preliminary requirements description, and address any issues encountered while transforming the requirements.

1.2. Scope

This document is intended for providing an abstract overview of SDMSTM system and general overview of the entire project. The scope of the document:

- The Enterprise Functional and Non-Functional requirements,

- Stake Holders,

- Team Architecture,

- System Functional and Non-Functional Requirements

This document is also intended to provide a proto-type of the SDMSTM system. However, the Software Architectural Design and Detailed Design of SDMSTM system are beyond the scope of this initial Requirements Elicitation Document and will be described in Software Architectural Design and Detail Design Document in II and III phases of this project.

1.3. Definitions, acronyms and abbreviations

Agenda	A list of topics (and optionally names of persons to lead discussions with optional durations) to be discussed, reviewed, or decided upon at a meeting
date range	Range of dates acceptable for the proposed meeting
duration	The time span of a proposed meeting
location	The physical location of a proposed meeting including building and room number and possibly including the country, state, city.
meeting initiator	A person who starts the meeting scheduling process – who initiates a meeting proposal
meeting proposal	An invitation to a meeting including the meeting topic, date range, and duration that is sent to a list of potential meeting participants
meeting topic	The theme of or reason for the meeting
potential meeting participant	A person who has been invited to a proposed meeting that has not either accepted ("will attend") nor refused ("will not attend")
propose a meeting	To suggest or to decide a meeting is needed
required equipment	Additional equipment, typically audio-visual equipment, needed in support of the meeting
virtual meeting	A meeting simultaneously held at multiple remote locations, e.g. teleconferencing
will attend	A state of a meeting invitation by an individual potential meeting participant indicating that the individual "will attend" the meeting
will not attend	A state of a meeting invitation by an individual potential meeting participant indicating that the individual "will not attend" the meeting
Location manager	In charge of the location where meeting is scheduled
Resource manager	In charge of the hardware equipments needed for the meeting.

1.4. <u>References</u>

IEEE Recommended Practice for Architectural Description of Software-Intensive Systems, IEEE Std. 1471-2000.

IEEE Recommended Practice for Software Requirements Specifications, IEEE Std. 830-1998.

IEEE Guide for Developing System Requirements Specifications, IEEE Std. 1233-1998.

Previous Years Presentations and Specification Documents.

1.5. <u>Overview</u>

The SDMS^{TM} system is a web-based meeting scheduler system that efficiently schedules a meetings by determine the available resources necessary for the meeting to be initiated. This system supports the organization in scheduling meetings by determining each meeting's request, date and location. The SDMS^{TM} system has several features such as, planning meetings under constraints expressed by the participants, rescheduling meetings based on new or modified constraints, resolving conflicts and resolutions, and managing all the interactions among participants and monitoring meetings. It also has the ability to concurrently handle several meeting requests at a time.

The SRS document has got four sections:

1. Section 1 (this section) provides an overview of the entire SRS document

2. Section 2 gives a description of the general factors that affect the product that will be produced based on this SRS. It includes product perspective and General capabilities, General constraints, User characteristics, Operational environment and assumptions and dependencies of the product.

3. Section 3 gives a specific description about the specific equipments which is divided into Use Case Diagram, Functional Requirements and External Interface Requirements

4. Section 4 gives a list of all Non functional requirements and Constraint Requirements and they are described along with attributes like interoperability, accuracy, suitability, functional compliance, data flow diagrams etc.

2. The Process

2.1. Stakeholders

Categories of stakeholders include:
- End users
- Meeting attendees
- Meeting schedulers/initiators
- Project management teams
- Requirement engineers
- System Developers
- Maintenance team
- Network support group
- Testers

2.2. Team Architecture

During our initial meetings, we reviewed the documents provided by Synergysoft: the initial requirement summary and reports from other consulting firms who had conducted prior research on behalf of Synergysoft. With Synergysoft's permission, we were able to reuse much of the work from earlier teams; this significantly aided our ability to meet the condensed schedule.

For our next meeting, we interviewed Dr. Lawrence Chung of Synergysoft to clarify ambiguities in the requirement summary.

Our team then divided into three categories, representing people in the Customer World, Management World and Consultant World. Primary functions and roles played by each team member are:

Team Member	Role Played	Primary Functions Performed
ABHISHEK GOYAL	Customer World: End-user/Buyer	● Initial Requirement Analysis
NIKITA PATEL, SMARAK BHUYAN	Developer World: Programmer, Consultant	● Requirement Issues
MANISH BANSAL, ANURAG MAHAJAN	Management World: Project Manager Product Manager	● Process

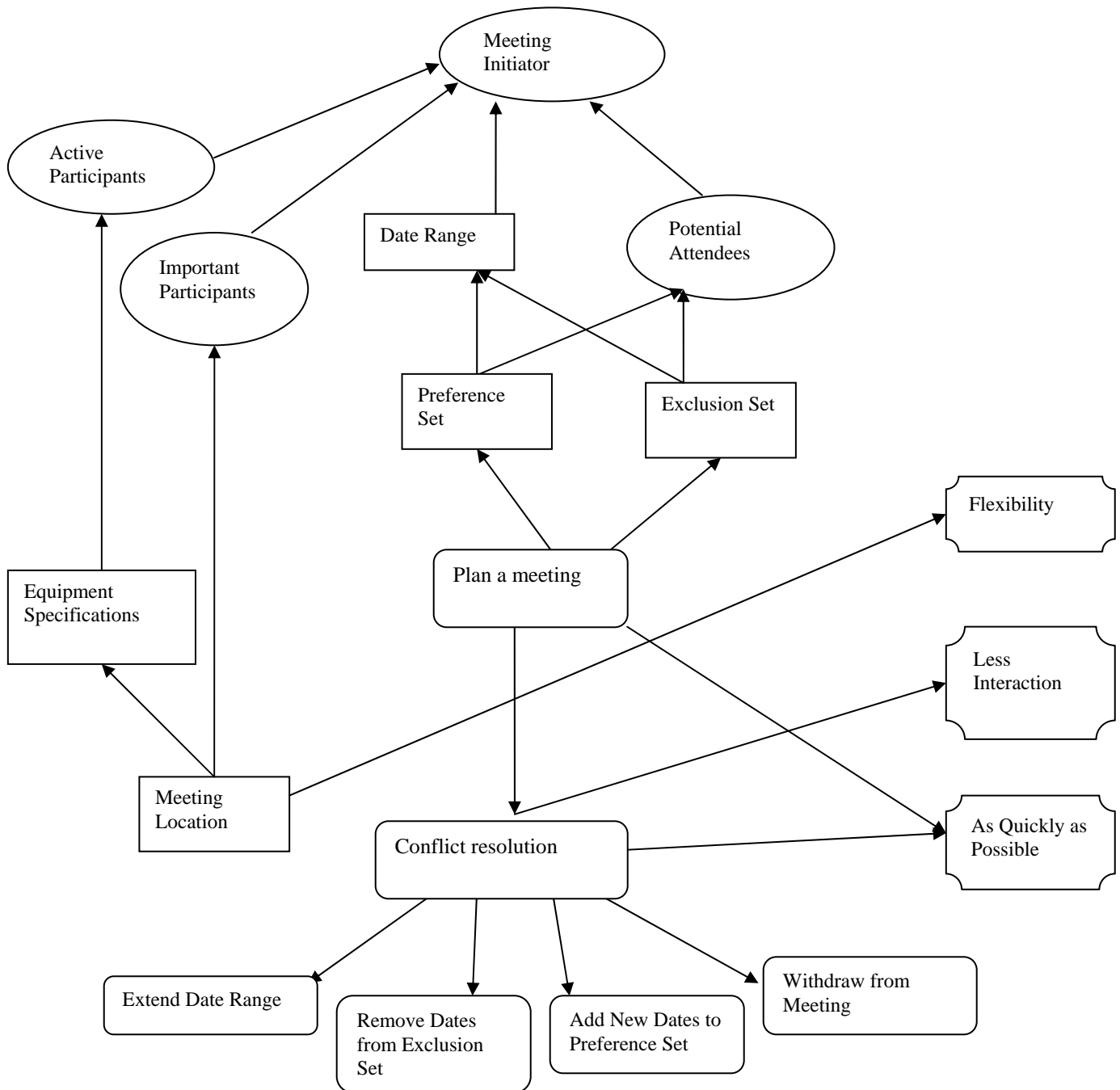## 2.3. Sources of Requirements

Many projects have multiple sources of requirements, and by the time this project goes in to production, additional sources of requirements may have arisen. However, for the preparation of this document, only a single source of requirements was considered: the requirements stated in the Fall 2005 version of the CS 6361: Requirements Engineering project 1 description.

3. Requirements Description

3.1 Enterprise Requirements

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                           ┌───────────────┐
                           │   Meeting     │
                           │   Initiator   │
                           └───────────────┘
```

Meeting Initiator

Active Participants

Important Participants

Date Range

Potential Attendees

Preference Set

Exclusion Set

Equipment Specifications

Plan a meeting

Flexibility

Less Interaction

Meeting Location

Conflict resolution

As Quickly as Possible

Extend Date Range

Remove Dates from Exclusion Set

Add New Dates to Preference Set

Withdraw from Meeting

Enterprise Functional Requirements Description

To determine a meeting date and location.

Meeting Initiation

- The meeting initiator issues a meeting request by inviting all potential meeting attendees for a meeting based on the meeting's agenda. An initiator can be one of the participants or some representative, such as a secretary.
- The initiator fills in the fields like the date range, meeting type, and all potential meeting attendants. The initiator also designates attendees' importance levels.
- The initiator notifies the potential attendants to input their data. Active participants should fill in the equipment they need. If an attendee is designated as an important participant, he is required to fill in his preferred locations. The **exclusive sets** and **preference sets** should be contained in the **date range**.
- After all participants input their data; the initiator asks the system to make a meeting schedule based on the given information. The proposed meeting date should belong to the stated date range and to none of the exclusion sets and to as many preference sets as possible.

Meeting Room Description

- Meeting room shall meet the equipment requirements.
- If participants are geographically dispersed, virtual meeting rooms shall be included like teleconferencing through notebook computers, pc etc.
- The preferred meeting room shall be available at the selected meeting date.

Meeting Conflicts

- A strong conflict occurs when no data can be found within the date range and outside all exclusion sets.
- A weak date conflict occurs when dates can be found within the date range and outside all exclusion sets, but no date can be found at the intersection of all preference sets.
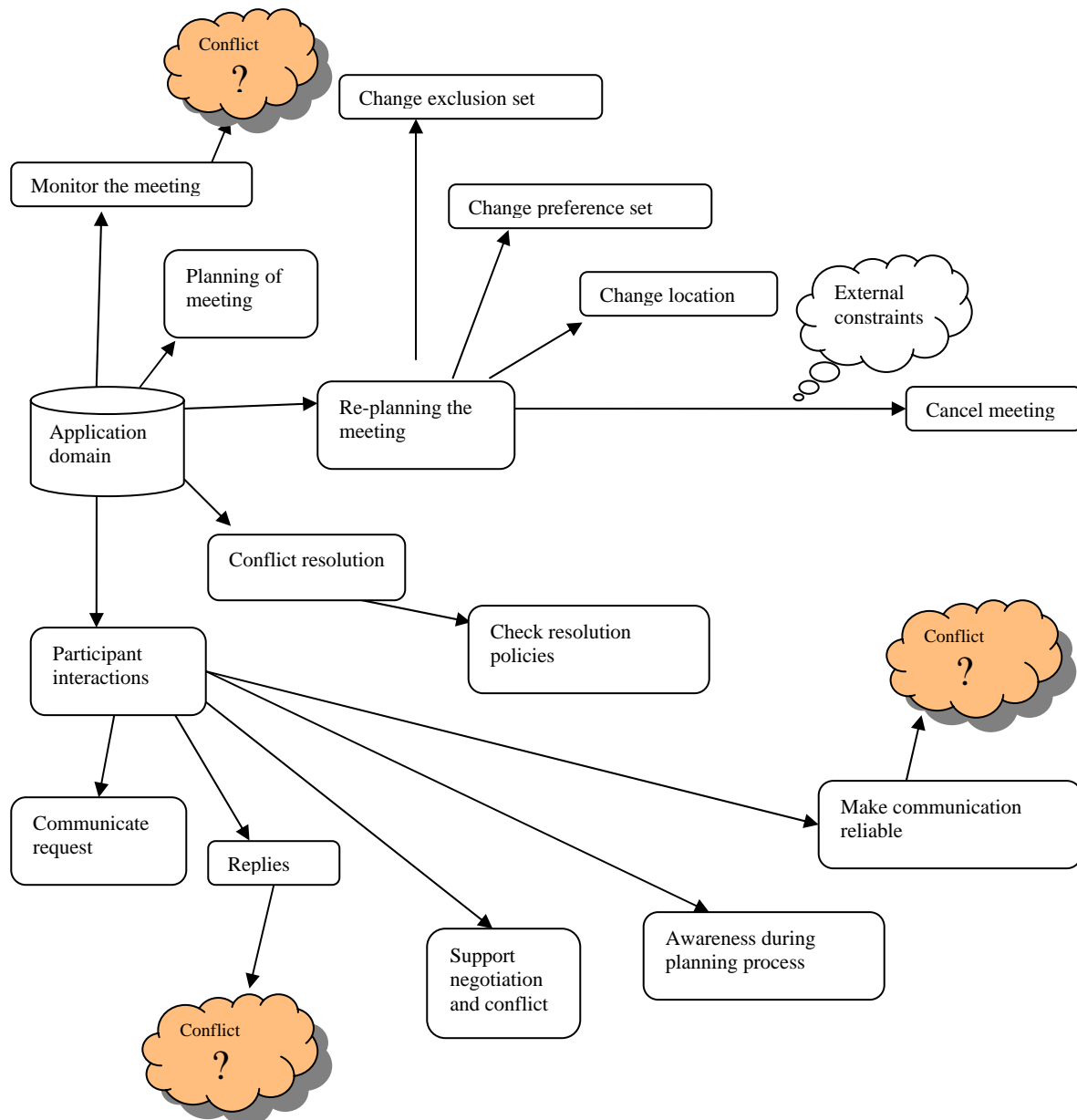
Meeting Conflict Resolution

- If a conflict occurs while generating a meeting, the system shall notify the initiator and ask to
  - Notify a participant to remove a date from his exclusive set,
  - Propose a participant with low importance level to withdraw from the meeting,
  - Propose a participant to extend his preference set.
  - Propose the initiator to cancel the meeting.

If none of the proposed locations can meet the equipment requirements while making a meeting schedule, the system should inform the initiator. The initiator can propose other locations and start the scheduling process again or cancel the meeting and inform all of the participants about that.
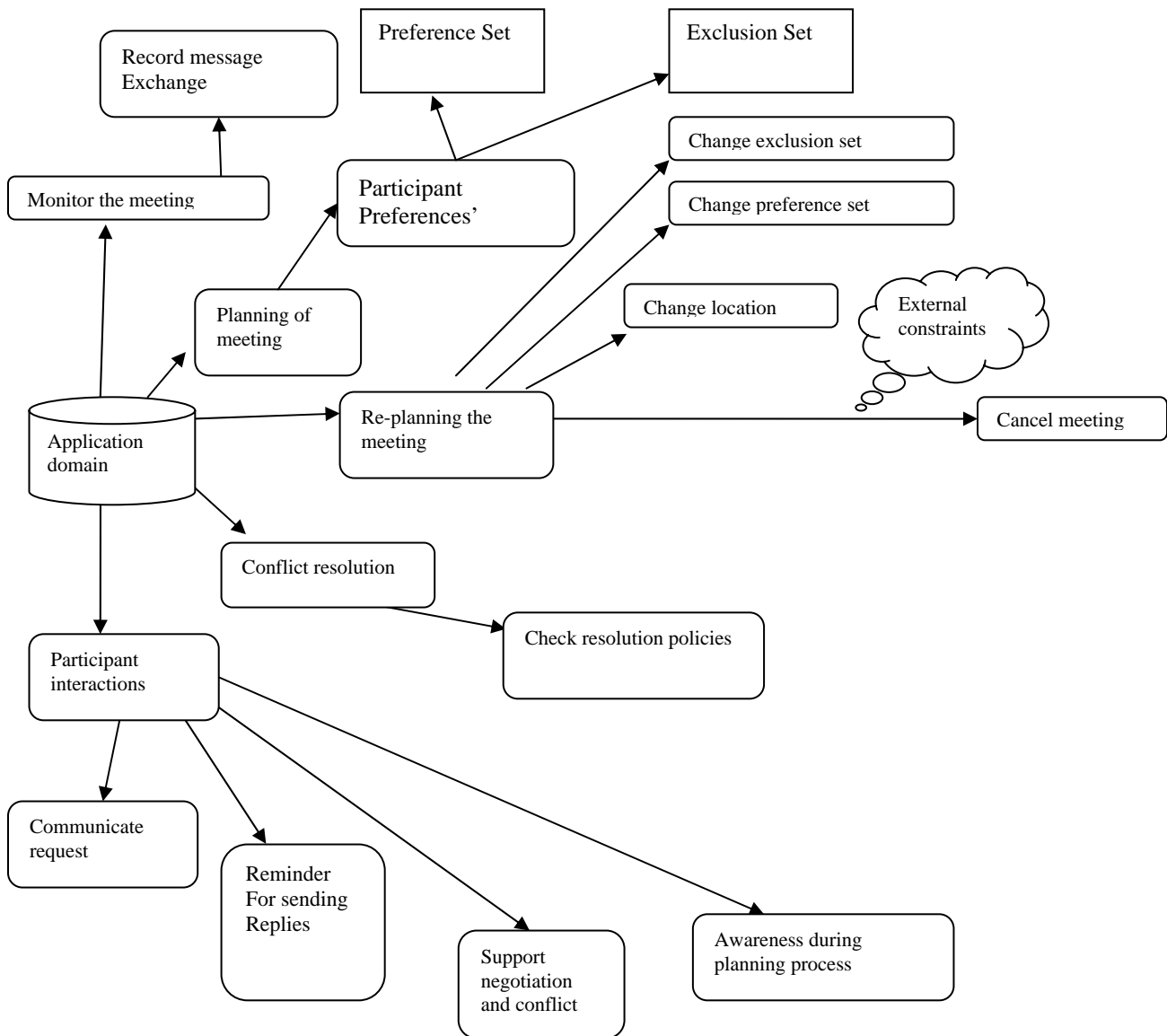
Enterprise Non-Functional Objectives
- All conflicts shall be resolved within **minimum** round of interactions.
- All conflicts should be solved **as early as** possible.
- Meeting location should be **flexible.**
- Meeting room shall belong to one of the locations preferred by **as many important participants as** possible.

3.2 System Functional Requirements

Functional Requirement Modified

Preference Set

Exclusion Set

Record message
Exchange

Change exclusion set

Change preference set

Monitor the meeting

Participant
Preferences'

Change location

External
constraints

Planning of
meeting

Re-planning the
meeting

Cancel meeting

Application
domain

Conflict resolution

Check resolution policies

Participant
interactions

Communicate
request

Reminder
For sending
Replies

Support
negotiation
and conflict

Awareness during
planning process
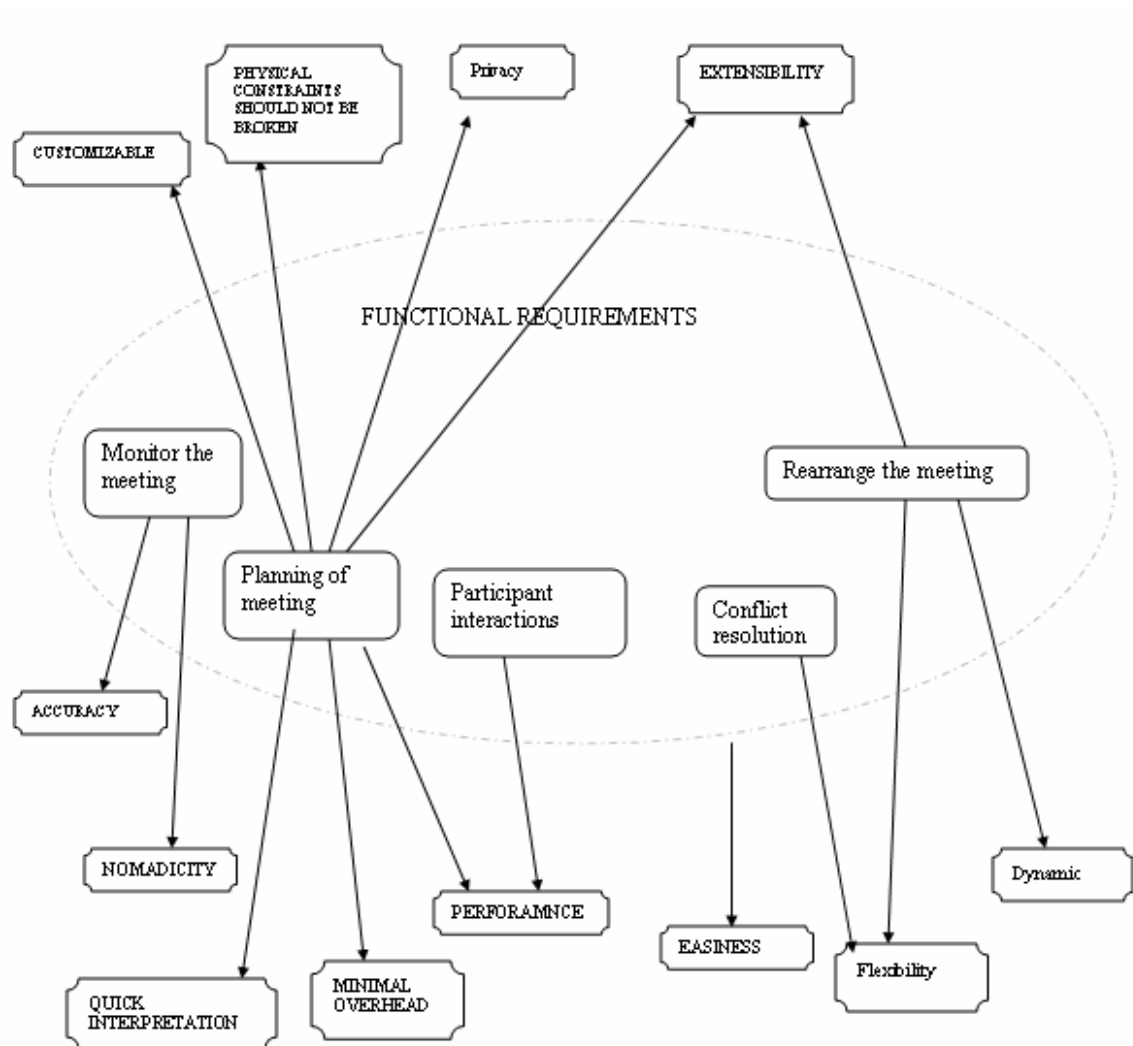
System Functional Requirements Description

- The system shall monitor meetings especially when they are held in a distributed manner like when the participants are located at different location and communicate to each other through virtual networks. To monitor the meeting
The system will create the log of all the messages exchanged between the participants so that it's easy for meeting initiator to monitor the meeting planning proceedings.

- When planning meetings, the system shall take into account all constraints that are expressed by the meeting participants
    - Every constraint expressed by a participant shall be added to a participants preferences set.
    - Each date that the meeting participant can attend shall be added to the preference set
    - Each date that the meeting participant cannot attend shall be added to the exclusion set

- If a user changes their constraints, the SDMS shall rearrange the meeting to accommodate this change
    - The user's preference set, exclusion set, and preferred location shall be changed before a meeting date/location is proposed by the meeting initiator.
    - External constraints shall be considered after a meeting date and location have been proposed. For example, if a high priority meeting needs to be accommodated, a lower priority meeting may be changed or cancelled or If a geographical disaster occurs which need to reschedule the meeting then the proposed meeting is cancelled.

- Conflict resolution shall be supported according to policies that have been stated by the client.
- All interactions between the meeting participants will be managed. There shall be means to communicate the message by participant. There shall be provision to invoke the participants not taking part in communication. The process of negotiation will also be managed. Moreover the reliability of communication will be monitored.

3.3 <u>System Non-Functional Requirements</u>

NON FUNCTIONAL REQUIREMENTS (RAW)
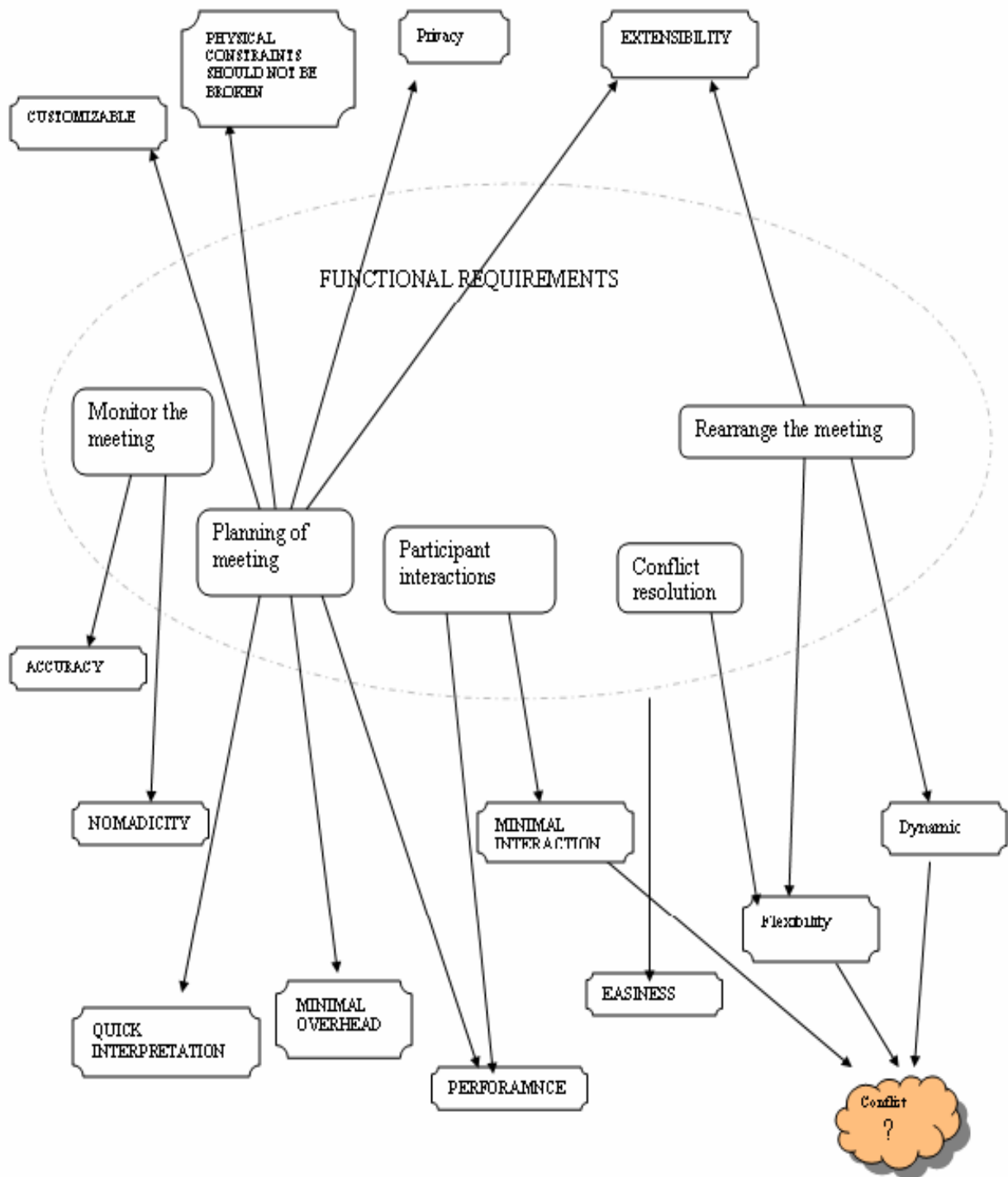
Non Functional Requirements Modified

System non functional requirements description:

- Easiness:--The system should be usable by the non-experts. The user should be able to operate on the functionality easily.
- PERFORMANCE :: -- The elapsed time between the user sending request for meeting and the date   and location set should be minimal i.e. the user should not wonder whether he has submitted the request or not. Lower bound should be fixed between determination of meeting date and actual meeting
- EXTENSIBILITY: -- The system should be able to handle explicit priorities among dates in preference sets. It should handle explicit dependencies between meeting date and meeting location. The system should provide provision to participant for his replacement by other person at the meeting.
- PRIVACY: -- Privacy rules should be enforced a non-privileged participant should not be aware of   constraints stated by other participants. The system should accommodate as much decentralized requests as possible. Therefore, any authorized user should be able to request a meeting independently of his/her whereabouts
- CUSTOMIZABLE::-- The system shall be customizable to two ways(1) Private (2) Professional meetings –these are characterized by different restrictions on the time period that may be allocated (e.g. meeting during office hours, private activities during leisure time).
- FLEXIBLE: -- Rescheduling of a meeting should be done dynamically and with as much flexibility as possible. Also, the system should be flexible enough to accommodate evolving data (e.g. the sets of concerned participants may be varying; the address at which a participant can be reached may be varying, etc.).
- ACCURACY:--the meetings should be monitored accurately especially when the meeting is carried out in a distributed manner.

4. Issues

INCOMPLETE STATEMENTS

1   "It [meeting room] should ideally belong to one of the locations preferred by as many important participants as possible"

PROBLEM: the above statement fails to define what will be the case if there is a clash between the important participants.

OPTION 1:- the initiator of the meeting fixes the meeting room without consulting the participants at the time of scheduling the meeting.

OPTION 2:- The initiator conducts polls among the important participants and then makes final decision based on polls or his preference in case of clash for choosing the meeting location.

SOLUTION: - OPTION 2

REASON: - The option 2 provides a fair chance for choosing the meeting place and solves the problem in a better way.

2   "The system should be usable by non-experts"

PROBLEM: the above non-functional fails to define the term non-experts.
The expertise is measured by the area in which the software is intended to use.

OPTION 1:- drop the statement from the requirement list

OPTION 2:-redefine the statement in terms of appearance and the area in which software is intended to be used.

SOLUTION:-OPTION 2 is the best one because easy operation of software is important parameter which cannot be neglected.

3.   "Some participants remove some date from their exclusion set"

PROBLEM: - the statement is incomplete as it fails to define which participants should drop dates from exclusion set and how to carry the procedure for dropping dates.

OPTION1:- the initiator sends request to every participant who is willing to change the dates in his exclusion set.

OPTION 2:- drop the above choice from conflict resolution

OPTION3:-redefine the statement based on the client policy to handle such situation

SOLUTION: OPTION3

REASON: - the best way to handle is to add more statements to above statement defining how to handle the situation in better way.

4   "Some participants add some new dates to their preference set"

PROBLEM: again the above statement is incomplete and fails to define which
Participants should add the new dates

OPTION1: drop the statement

OPTION2: redefine the statement based on client policy to handle such situation

SOLUTION: OPTION2

REASON: the above option is a good way to handle the conflict and redefining it in a better way solves
the problem.

5   "Some participants withdraw from the meeting"

PROBLEM: the statement fails to define which participants should withdraw from the meeting

OPTION1: The initiator prioritizes the participants based on their importance and then removes the
participants starting from the lowest priority participant.

OPTION2: drop the statement

OPTION3: randomly drop the participant.

OPTION4: transfer a request to all participants about volunteer drop from the meeting and if this fails then
implement the OPTION1

SOLUTION: OPTION 4

REASON; it's the best and fair way to implement the withdrawal.

6   " conflicts can be resolved in several ways"
PROBLEM: the statement fails to tell which method should be given preference in
resolving the conflict over the other.

OPTION1 redefine the statement stating the algorithm for implementing different
Steps for resolving the conflict issue

SOLUTION OPTION1

REASON it's the best way to implement it.

7   "Clarification of criteria for expanding date range."

PROBLEM: Should the meeting initiator only resort to expanding the date range when all the important
participants can't attend, or should this be considered for every participant?

Option 1: The date range shall be expanded only when most of the important participants can't attend.

Option2: The date range shall be expanded if any of the other participants are not present.

Solution: option 1

Reason: The meeting can never be a success if most of the important participants are not a part of it.

AMBIGUOUS

1 **"To get replies even from participant not reacting promptly"**

PROBLEM: the above statement fails to define how we can measure the activeness
Of the participant. Moreover the statement fails to signify how to increase the involvement of the participant.

OPTION 1: drop the statement

OPTION 2: define the reaction time for sending replies

SOLUTION OPTION2

REASON: removing ambiguity and misinterpretation.

2 **"Each conflict resolution should be done as quickly as possible and with no more interactions that is really needed"**

PROBLEM: the statement "with no more interactions that is really needed"
IS AMBIGUOUS in itself as it is difficult to decide upon which interactions are useful to resolve the conflict.

OPTION1: drop the statement

OPTION2: add more statements

SOLUTION: OPTION2

REASON: removing ambiguity and misinterpretation

INCORRECT IDENTIFICATION

1 **"meeting scheduler system must in general handle several meeting requests in parallel"**

PROBLEM: - handling several requests at the same time is a non functional characteristic which cannot be stated as a functional requirement of the system

OPTION 1 add the above statement as the non functional attribute

SOLUTION: OPTION 1

REASON: the above requirement is an important characteristic which cannot be ignored and should be correctly stated.

2   "meeting requests can be competing when they overlap in time or space. Concurrency thus must be managed"

PROBLEM:-concurrency is a non functional requirement .it cannot be implemented functional thus is wrongly stated as functional requirement

OPTION 1 add the above statement as the non functional attribute

SOLUTION: OPTION 1

REASON: the above requirement is an important characteristic which cannot be ignored and should be correctly stated

<u>CONTRADICTION</u>

1   "the amount of interaction among the participants should be kept minimal" and **"re-planning of a meeting should be done as dynamically and with much flexibility as possible**", "**to get replies from participants not reacting promptly**"

PROBLEM: the above statements are contradictory stated in the requirements. We want that the re-planning of the meeting should be done as dynamically as possible which means there is no stored procedure for that moreover the policies for conflict resolution requires interaction among the participants so for more flexibility the no of interaction will increase. Similarly for getting replies from participants not reacting promptly it requires that no of interaction among participant's increases.

OPTION 1 remove the constraint ""**the amount of interaction among the participants should be kept minimal"

OPTION 2 remove the constraint "re-planning of a meeting should be done as dynamically and with much flexibility as possible"

SOLUTION OPTION 1

REASON: the option1 is much better to implement than option2 as non functionality point of view.

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ACCEPTED BY:	
Signature:	Signature: