國立臺灣大學

101 學年度第二學期軟體工程設計課程

Software Requirement Specification

Meeting Scheduler

軟體工程實驗室

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Outline

Revision history

版次	負責人	日期	變更項目敘述	審查者	審查日期
0.1	鄭聖翰	11/24/11	建立 SRS 文件架構	全體組員	11/30/11
0.5	鄭聖翰	11/30/11	新增介面、功能、非功能需求和系統架構	全體組員	12/06/11
0.7	鄭聖翰	12/06/11	新增目標導向使用案例	全體組員	12/15/11
0.8	鄭聖翰	12/15/11	修改目標導向使用案例	全體組員	12/19/11
0.9	鄭聖翰	12/19/11	新增追蹤矩陣	全體組員	12/19/11
1.0	鄭聖翰	12/22/11	里程碑會議會後修正	全體組員	12/26/11
1.1	謝文哲	04/16/13	修改系統架構圖、功能性需求、介面需求和非功能性需求，以英文方式呈	全體組員	04/16/13
1.2	范姜瑞	04/21/13	修改系統架構圖、功能性需求、介面需求	全體組員	04/22/13
1.3	黃柏皓	04/22/13	Modify Architecture Expression	全體組員	04/22/13

1. System Architecture

1.1 Introduction

在現代化社會，學生、老師、社會人士、政治人物等會常常需要參加各種活動。從利用筆記本在幫助自己安排活動到請專人管理活動之行程管理，目的在於想使自己達到目標之需求，盡量參與會議。

觀望現在網路上所有的會議排程系統，皆是以時間為主軸來排程。此專案主要目的在於有同樣目的組織(ex. 學校、公司等)，建立在此組織中，互動式的會議排程管理，讓使用者可以利用系統裡面之功能，幫助排程身邊的各種會議，以及邀請參與者參與會議。

在此專案中，強調互動式的會議排程管理、與組織內的成員溝通、自動化的會議排程，使每個人的會議排程達到最佳化。此專案強調以地點、時間為排程主軸，來進行專人的會議規劃。並期望可利用此系統，管理休閒活動 (ex. 社團活動、聚餐等)，藉此達到多方面的使用功能，符合現代人之根本需求。

本專案為國立台灣大學資訊工程學系軟體工程實驗室開發，專案內容主要包含網頁的頁面設計、訊息傳遞設計、排程演算法設計、後端管理介面等項目。

1.2 Architecture Expression

Following are the main functionalities of the system and system architecture:

Module	Descriptions
Login Module	Provides login functionality.
Registration Module	Provides registration functionality.

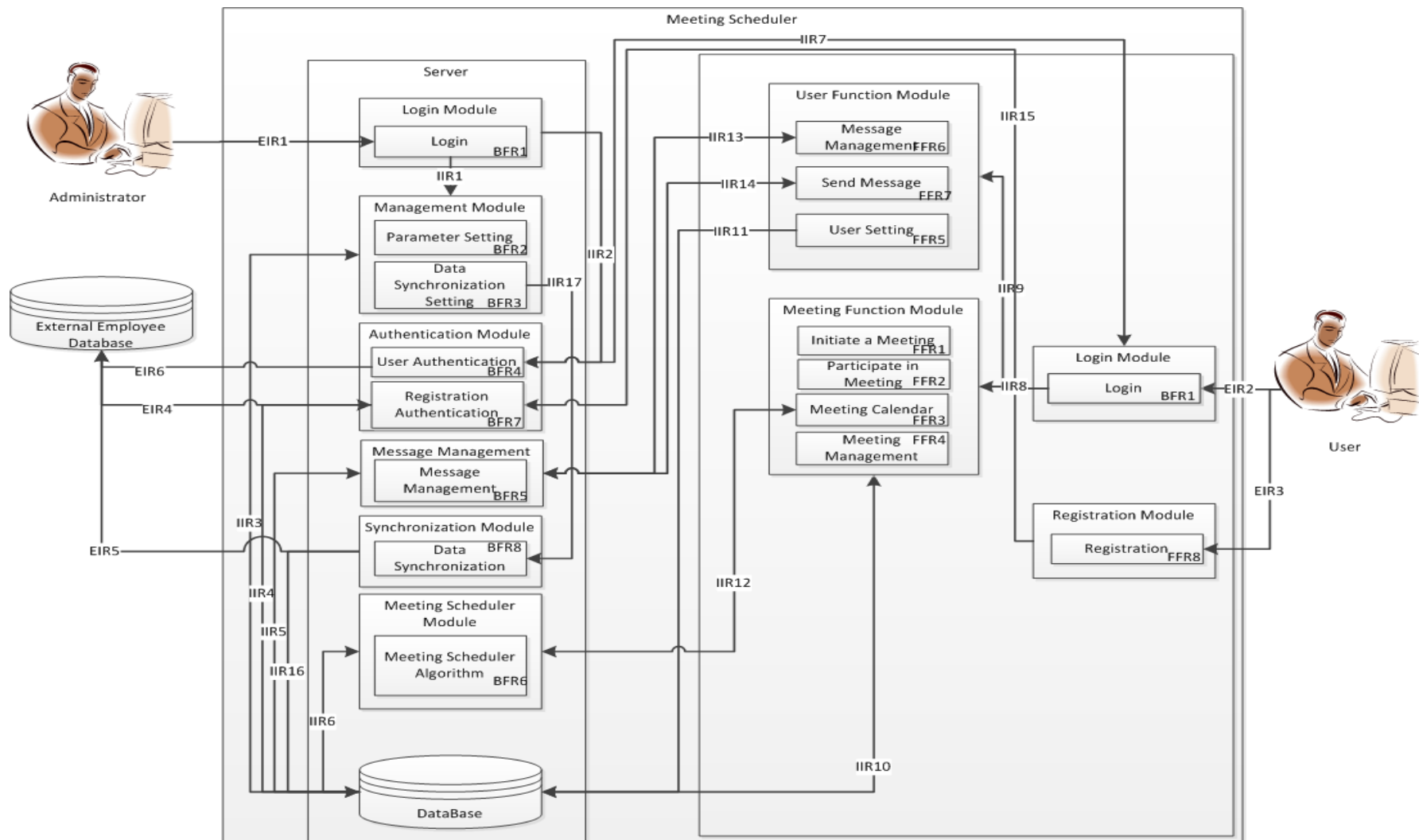|	
Meeting Function Module	Provides meeting related functionalities, including initiating, participating, managing a meeting. Provides a meeting calendar.
User Function Module	Provides functionalities of modifying personal profile, managing messages and sending messages.
Management Module	Settings of back-end parameters and back-end data synchronization.
Authentication Module	Provides functionalities of user authentication and registration authentication.
Message Management Module	Provides back-end management functionality.
Synchronization Module	Provides back-end data synchronization management functionality.
Meeting Scheduler Module	Provides an algorithm to support back-end meeting scheduling.

Figure 1: System Architecture

2. Functional Requirement

2.1 Front-end Functional Requirements

Meeting Function Module	
FFR1	**Initiate a Meeting**
	The user can initiate a meeting in the system. When the user initiates the meeting, he/she can choose the type of meeting, select the time interval and location, decide the item for discussion, and select the person whom should be invited.
FFR2	**Participate in Meeting**
	If the user receives the invitation from other users' meeting, this function will alert the user to decide the desire for participation, and send the results to Database.
FFR3	**Meeting Calendar**
	Provides the user an interface to show the meetings that the user participate in and the scheduling status of the meetings that the user may participate in.
FFR4	**Meeting Management**
	The user manages meetings with administrative access rights.
User Function Module	
FFR5	**User Setting**
	This function manages user's personal information. The user can use this function to maintain user information.
FFR6	**Message Management**
	This function lets users to manage asynchronous messages in the system, receive messages from other users, and access to message history.
FFR7	**Sending Messages**
	This function provides a user interface to allow users for communicating and passing messages.
Registration Module	
FFR8	Registration
	Provide an interface to a new user and register him/her as a user of this system.

2.2 Back-end Functional Requirements

Login Module	
BFR1	**Login**
	This function provides a user interface to allow users to enter login the information which used for the back-end user authentication.
Management Module	
BFR2	**Parameter Setting**
	This function provides the interface which allows the administrator to manage information which includes actors of meetings, meeting-levels, and user-levels by adding, modifying and deleting them.
BFR3	**Data Synchronization Setting**
	This function provides the interface which allows the Administrator to set data fields which will be synchronized between External Employee Database.
Authentication Module	
BFR4	**User Authentication**
	This function checks whether the login person is a system user or not and return results. If the login person is a system user, the Authentication Module will register him/her into Database and allow him/her to use system functions. If the login person is already in the system, the Authentication Module will kick out the previous user and authenticate the current login person.
BFR7	**Registration Authentication**
	The system registers a new user, and checks him/her with the External Employee Database, then sends messages to Registration Module.
Message Management Module	
BFR5	**Message Management**
	This function manages messages that user transmitted to others by the front-end User Function Module, so messages can be correctly delivered and stored to Database. Messages are passed asynchronously.
Synchronization Module	
BFR8	**Data Synchronization**
	Employee's information will be synchronized between External Employee Database and Database in a certain time.
Meeting Scheduler Module	

BFR6	Meeting Scheduler Algorithm
	This function provides an algorithm to manage and schedule meetings initiated by users.
	The meeting will be scheduled for whether participants want to participate in the time/location or not.
	The Meeting Scheduler gives the meeting a schedule-level which is used to solve the priority conflict of time / location.
	When the number of meeting participants' demands are more than a certain value, the system will start the corresponding meeting schedule and import the meeting to Meeting Scheduler.
	When the time gets closer to the start time of a meeting, the system will start a schedule of it and import the meeting to Meeting Scheduler.

3. Interface Requirement

3.1 External Interface Requirements

EIR1	Administrator Identity Authentication
	An Administrator inputs an account and a password to judge the qualification of entering back-end system to manage other modules.
EIR2	User Identity Authentication
	The user inputs an account and a password in order to determine whether he/she has the permission or not to enter the system to view or use other modules.
EIR3	User and Registration Module
	A non-registered user can enter an email through this interface and the email will be sent to the back-end module for identity verification and registration.
EIR4	Registration Authentication and External Employee Database
	The system queries External Employee Database to check whether the E-mail is valid or not when a user completes the registration.
EIR5	Synchronization Module and External Employee Database
	The system reads the information of External Employee Database when synchronizing.
EIR6	User Authentication and External Employee Database
	The system queries External Employee Database to check whether the password is valid or not after a user logged in.

3.2 Internal Interface Requirements

IIR1	**Administrator and Management**
	After an Administrator gained access rights by login confirmation, he/she can perform actions in back-end modules.
IIR2	**Administrator and User Authentication**
	An Administrator logins through Login Module which sends the login information to Authentication Module. Authentication Module checks whether the user is an Administrator of the system or not.
IIR3	**Management Module and Database**
	An Administrator can manage meeting-levels, actors of meetings, user-levels and the parameter settings of data synchronization through back-end management provided by the system.
IIR4	**Registration authentication Module and Database**
	After a user email is authenticated by External Employee Database, Authentication Module will register his/her personal information to Database.
IIR5	**Message Management Module and Database**
	The Message Management Module manages messages sent by users and stores them to Database temporarily.
IIR6	**Meeting Scheduler Module and Database**
	Meeting Scheduler Module retrieves the states of meetings and the states of participants from Database to perform Meeting Scheduler Algorithm and stores the result to Database.
IIR7	**Login Module and User Authentication Module**
	A user logins through Login Module which sends login information to Authentication Module. Authentication Module checks whether the user has access rights of front-end or not.
IIR8	**Login Module and Meeting Management Module**
	If a user passes login validation, he/she can use meeting management functionality, including initiating a meeting, managing a meeting, and participating in a meeting.
IIR9	**Login Module and User Function Module**
	If a user passes login validation, he/she can use message management functionality, including sending messages, managing messages sent from other users, and managing the user profile through the user interface.
IIR10	**Meeting Function Module and Database**
	When a user uses Meeting Management Module, the system will

	generate documents and send them to Database.
IIR11	**User Setting and Database**
	This function provides a user interface which allows the user to access the user's personal profile from Database.
IIR12	**Meeting Scheduling Algorithm and Meeting Calendar**
	Meeting Calendar will get the current user states of participation in meetings and initiation of meetings from Meeting Scheduler Algorithm.
IIR13	**Front-end Message Management and back-end Message Management**
	The messages managed by users will communicate with message management in the back-end in order to increase the convenience of transmitting and receiving messages.
IIR14	**Sending Messages and Message management**
	When a user sends messages to other users through the interface, the system will send messages to the back-end, which sends messages together and stores them to Database temporarily. This function bases on asynchronous message management.
IIR15	**Front-end Registration and back-end Registration Validation**
	The system sends user information to the back-end and checks if the identity is valid or not when the user completes the registration.
IIR16	**Data synchronization and Database**
	Synchronization between External Employee Database and Database in a certain time.
IIR17	**Data Synchronization Setting and Data Synchronization**
	An Administrator can set parameters of Data Synchronization.

4. Nonfunctional Requirement

NFR1	Flexibility
	Users can attend meetings flexibly. Users can choose which meeting they want to attend (e.g. desired meeting or important meeting).
NFR 2	Efficiency
	Set a threshold which provides rules of scheduling meetings at proper time. System can assume participants' attendance by default. By doing above things system can maximize the scheduling efficiency.
NFR 3	Maximum ease of agenda
	Let all project discussion participants can attend the meeting.
NFR 4	Maximum number of attendant
	Maximize the number of attendants at all meetings in the system.

5. Goal-driven Use Case Diagram

5.1 Introduction to Goal-driven Approach

    本專案採用 Goal Driven(目標導向)Use Case 表示，強化表現出本系統所想達到的目標，以及此系統的非功能性需求的描述，以及和使用案例的相依關係，此系統分為三個層面去做分析：能力面、觀點面、內容面。根據能力面，判斷此目標是否該被完全滿足，分出強制性的目標和非強制性的目標。根據觀點面，判斷目標若是以角色觀點來描述，將之稱為角色相關；若與系統相關，稱作系統相關。在從內容面判斷，若此目標為系統上定義的功能，稱作功能性目標；相反的將之稱為非功能性目標。

5.2 Objective Statement

目標名稱	目標屬性	目標描述
Optimize Performance	(S,A,N)	設定門檻，規定會議最晚該進入排程，以及預設參與人意願，使會議排程效能最大化。
Provide Flexibility	(S,Y,F)	提供使用者彈性參與會議，參與想要或者重要性大之會議。
Ensure the attendance of primary actors	(S,A,N)	使討論項目參與者，皆能參與會議。
Satisfy the maximum number of participants	(S,A,N)	使各個會議參與人數能讓較多的參與者參與。
Satisfy the requirements of meeting	(R,A,F)	讓使用者發起會議，邀請人參與會議，與參與者討論完成會議討論項目。
Communicate conveniently	(R,A,F)	讓使用者之間能夠互相傳遞訊息來達到溝通的目的。
Modify user information conveniently	(R,A,F)	讓使用者能修改基本資料及設定時間傾向。
Manage system conveniently	(S,Y,F)	為了方便設定排程演算法的參數與管理使用者等管理項目，所以必須達成方便管理系統的目標。
Can participate in meeting	(R,A,F)	參與者可以出席召集者舉行的會議。

| Identify users | (R,A,F) | 讓使用者可被識別，並使用系統功能。 |
| Manage meeting conveniently | (R,A,F) | 使多個召集人管理相同會議 |

屬性	說明	屬性	說明
R	Rigid	S	Soft
A	Actor-Specific	Y	System-Specific
F	Functional	N	Nonfunctional

表 1: 目標屬性說明

5.3 Goal-driven Use Case Diagram

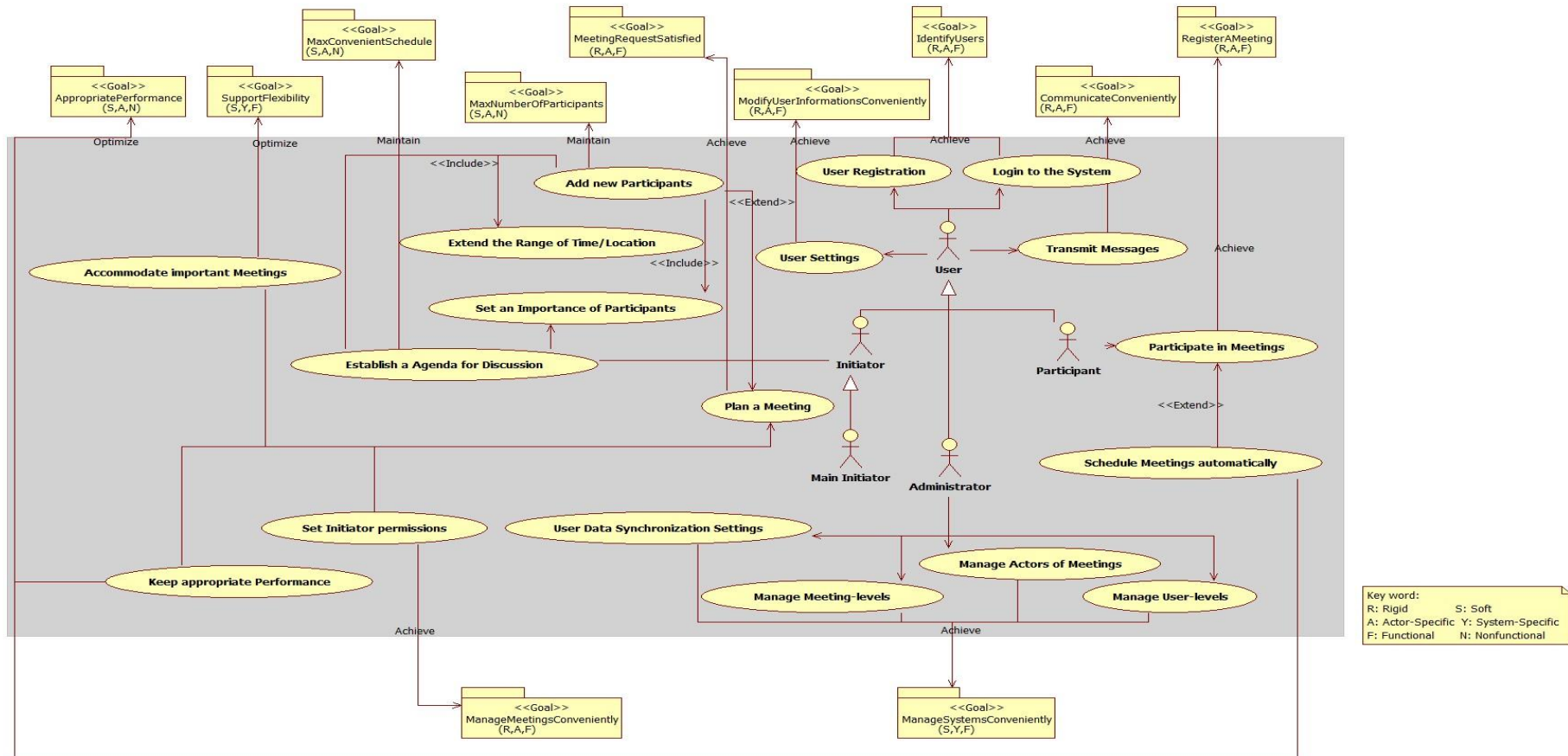Figure2: Goal-driven Use Case Diagram

5.4 Actor Description and Actor Use Case Matrix

Actor Name	Actor Description
User	Users who use Meeting Scheduler.
Participant	The person who is invited to attend a meeting.
Initiator	The person who can coordinate, manage a meeting.
Primary Initiator	The person who initiates a meeting, and he/she can manage and coordinate the meeting.
Administrator	The person who manages Meeting Scheduler.

Table 2: Actor Description Table

Use Case	User	Participant	Initiator	Primary Initiator	Administrator
Transmit Messages	V				
User Settings	V				
Login to the System	V				
User Registration	V				
規劃會議				V	
設定召集人權限				V	
新增參與者			V		
建立討論議程			V		
保持效能			V		
配合重要會議			V		
擴充時間/地點範圍			V		
設定參與者重要性			V		
參與會議		V			
自動安排會議		V			

User Data Synchronization Settings		19			V
Manage meeting-levels					V
Manage actors of meeting					V
Manage user-levels					V

Table 3: Actor Use Case Matrix

5.5 Use case specification

Use Case ID	UC-CU-001
Use Case Name	Transmit Messages
Goal	Achieve "CommunicateConveniently"
Requirement	[FFR7: Sending messages] [FFR6: Message management] [BFR5: Message Management]
Description	A user can transmit messages to specific users.
Actor	User
Assumptions	
Constraints	
Priority	High
Pre-Conditions	系統定義出該使用者能傳送訊息給特定的使用者
Post-Conditions	系統完成訊息傳送
Basic Flow	1. 使用者使用發訊功能 2. 系統給予可傳遞對象清單 3. 使用者選擇收訊人 4. 使用者撰寫訊息內容 5. 使用者發出訊息 6. 系統收到訊息 7. 系統傳送訊息給指定的對象
Alternative Flows	
Exceptional Flows	
Use Use Case	
Extends Use Case	
Business Rules	

Special Requirements	一位使用者可傳遞訊息給他所參與的會議中的參與者, 召集人及系統管理員
Artifacts	訊息
Use Case Glossary	訊息=發訊人+接收人+發訊時間+訊息內容

Use Case ID	UC-CU-002
Use Case Name	User Settings
Goal	Achieve "ModifyUserInformationConveniently"
Requirement	[FFR5: User setting]
Description	A user can modify his/her personal information and choose the time periods which are available for certain types of meeting.
Actor	User
Assumptions	
Constraints	
Priority	High
Pre-Conditions	使用者須登入本系統
Post-Conditions	系統將更新使用者的基本資料 時間傾向: 若有會議符合使用者所設定的條件, 且該使用者被列為參與者, 則直接被排入會議行程內
Basic Flow	1. 使用者修改自己的基本資料 2. 使用者新增可開放參與會議的時間傾向 3. 使用者新增時間傾向中可參與哪種類型的會議 4. 使用者按下確定
Alternative Flows	
Exceptional Flows	若是有會議符合使用者所設定的條件, 且使用者被列為參與者
Use Use Case	
Extends Use Case	
Business Rules	
Special Requirements	所設定的時間傾向必定要能出席會議

Artifacts	使用者基本資料 = 姓名 + 性別 + 職稱 時間傾向表 = 使用者 ID + 時間區間
Use Case Glossary	使用者能設定自己在哪些時段可接受參與哪種類型的會議, 以方便系統做到滿足最大參與人數的條件

Use Case ID	UC-CU-003
Use Case Name	Login to the System
Goal	Achieve "IdentifyUsers"
Requirement	[BFR1: Login]、[BFR4: User authentication]
Description	Let users login to the system and enable them to use system functionalities.
Actor	User
Assumptions	
Constraints	
Priority	High
Pre-Conditions	使用者尚未登入
Post-Conditions	使用者成功登入系統
Basic Flow	1. 使用者輸入帳號密碼 2. 系統檢查是否有相符的已註冊帳號、密碼
Alternative Flows	2.1 驗證為一般使用者，則導向至前端操作平台使用本系統 2.2 驗證為系統管理者，則導向至後台管理者操作平台管理本系統 2.3 若非以上兩者，則顯示尚未在系統內註冊，並無法登入本系統
Exceptional Flows	
Use Use Case	
Extends Use Case	
Business Rules	
Special Requirements	

Artifacts	登入驗證
Use Case Glossary	登入驗證 = 帳號 + 密碼

Use Case ID	**UC-CU-004**
Use Case Name	User Registration
Goal	Achieve "IdentifyUsers"
Requirement	[FFR8: Registration]、[BFR7: Sending messages]
Description	Let a user have an account and a password in order to let him/her login to the system.
Actor	User
Assumptions	
Constraints	
Priority	High
Pre-Conditions	使用者須為公司內部人員
Post-Conditions	使用者成功註冊並能登錄本系統
Basic Flow	1. 使用者輸入 E-mail 後經系統來驗證是否為公司內部人員 2. 系統檢查是否有相符的 Email 並寄發註冊確認信給使用者
Alternative Flows	
Exceptional Flows	
Use Use Case	
Extends Use Case	
Business Rules	
Special Requirements	
Artifacts	使用者註冊的帳號、密碼
Use Case Glossary	註冊帳號密碼 = 外部員工資料庫密碼

Use Case ID	UC-IP-001
Use Case Name	Plan a Meeting
Goal	Achieve "MeetingRequestSatisfied"
Requirements	[FFR1: Initiate a Meeting] [FFR3: Meeting Calendar] [FFR4: Meeting Management] [BFR5: Message Management] [BFR6: Meeting Scheduler Algorithm]
Description	The user uses this function to initiate, maintain a meeting and invite people to participate in the meeting.
Actor	Initiator
Assumptions	
Constraints	
Priority	High
Pre-Conditions	1. 使用者必須為本系統認可使用者 2. 使用者必須先登入系統
Post-Conditions	會議進入排程狀態，並寄送訊息給邀請之參與者。

Basic Flow	1. 使用者點選"發起會議"，進入會議發起
	
	  1.1 使用者點選發起會議
	
	  1.2 編輯會議名稱、類型、角色
	
	  1.3 使用者編輯會議項目、議程[UC-IP-003: Establish a Agenda for Discussion]
	
	  1.4 使用者新增邀請參與人[UC-IP-002: Add new Participants]
	
	  1.5 設定參與者重要性[UC-IP-007: Set an Importance of Participants]
	
	  1.6 使用者設定調查時間/地點範圍[UC-IP-006:

	Extend the Range of Time/Location]
	1.7 設定會議參與人數限制
	1.8 設定召集人[UC-IP-008: Set initiator permissions]
	2. 使用者點選"會議管理"
	2.1 顯示具有管理權限之欄位
	2.2 管理會議內容
	3. 點選送出，將會議重新導入排程
Alternative Flows	1.7.1 若人數限制不做調整，則預設為 50%
	3.1 會議角色若為空，提醒使用者是否確認送出
	3.1.1 使用者點選「是」，則將召集人設定為主席，並送出會議發起單
	3.1.2 使用者點選「否」，則回原畫面，讓使用者繼續填寫
Exceptional Flows	2.1 若使用者完全不具此會議管理權限，則不顯示在可管理會議上面
	3.2 調查日期/地點、會議名稱若為空，則顯示警告訊息，提醒使用者填寫，或者停止發起此會議。
Use Use Case	
Extend Use Case	
Business Rules	
Special Requirements	

Artifacts	會議發起單
Use Case Glossary	會議發起單 ＝會議編號 +會議等級 +召集人編號 +會議目的 +工作項目及負責人 +參與者編號+時間選項 +地點選項+備註

Use Case ID	**UC-IP-002**
Use Case Name	Add new Participants
Goal	Maintain "MaxNumberOfParticipants"
Requirements	[FFR1: Initiate a Meeting] [FFR4: Meeting Management] [BFR5: Message Management] [BFR6: Meeting Scheduler Algorithm]
Description	Manage a meeting and add new participants to the meeting.
Actor	
Assumptions	
Constraints	
Priority	High
Pre-Conditions	1. 使用者必須登入系統 2. 使用者在新增/維護一場會議
Post-Conditions	系統更新會議資訊，並將會議資訊以訊息傳送至被新增之使用者。
Basic Flow	1. 使用者新增一位參與者 2. 調整使用者重要性[UC-IP-007: 設定參與者重要性] 3. 按確定送出
Alternative Flows	2.1 若使用者重要性位調整，則依系統預設給予
Exceptional Flows	1.1 若新增參與者已在調查時段中不行時段達到一定量，則會建議使用者擴充調查時間/地點傾向
Use Use Case	[UC-IP-006] Extend the Range of Time/Location [UC-IP-007] Set an Importance of Participants
Extend Use Case	[UC-IP-001: Plan a Meeting]
Business Rules	

Special Requirements	31
Artifacts	
Use Case Glossary	

Use Case ID	UC-IP-003
Use Case Name	Establish a Agenda for Discussion
Goal	Maintain " MaxConvenientSchedule"
Requirements	[FFR1: Initiate a Meeting] [FFR4: Meeting Management] [BFR5: Message Management] [BFR6: Meeting Scheduler Algorithm]
Description	Set responsible people for each item of discussion and give them certain weight of participation in a schedule in order to make sure that responsible people can participate the meeting in this meeting schedule. 針對每個討論項目設立負責人，給予負責人在此排程中一定的參與權重，以達到在會議排程中，項目負責人皆可參與會議。
Actor	
Assumptions	
Constraints	
Priority	Medium
Pre-Conditions	3. 使用者必須登入系統 4. 使用者在新增/維護一場會議
Post-Conditions	針對討論議程以及其負責人，設定其重要性，送至排程系統中排程
Basic Flow	1. 使用者新增一條討論項目 2. 針對單一討論項目新增負責人 3. 針對新增負責人，調整其重要性[UC-IP-007: Set an Importance of Participants]
Alternative Flows	

Exceptional Flows	2.1 若新增參與者已在調查時段中不行時段達到一定 量，則會建議召集人擴充調查時間/地點傾向 [UC-IP-006: Extend the Range of Time/Location]
Use Use Case	[UC-IP-006: Extend the Range of Time/Location] [UC-IP-007: Set an Importance of Participants]
Extend Use Case	[UC-IP-001: Plan a Meeting]
Business Rules	
Special Requirements	
Artifacts	
Use Case Glossary	

Use Case ID	**UC-IP-004**
Use Case Name	Performance Maintenance
Goal	Optimize Performance
Requirements	[BFR6: Meeting Scheduler Algorithm]
Description	會議最晚必須開始進入會議排程內，並將未填寫意願人 預設為不參加 Sets the deadline for meeting starting into the meeting scheduler, and sets the people who have not decided as non-participant. 會議最晚會在排程中鎖定排程，並通知所有參與者開會 訊息。 Sets the deadline for scheduling meetings in meeting scheduler, and informs every participant the information of meeting.
Actor	
Assumptions	
Constraints	
Priority	High
Pre-Conditions	必須發起會議成功

Post-Conditions	
Basic Flow	1. 若會議參與權重已達標準，則將會議導入排程 2. 若會議已達最晚開始排程時間，則預設參與者參與狀態，將會議導入排程 3. 若會議已達最晚結束排程時間，則將會議鎖定，並以訊息通知參與者參與會議
Alternative Flows	
Exceptional Flows	
Use Use Case	
Extend Use Case	[UC-IP-001: 規劃會議]
Business Rules	
Special Requirements	
Artifacts	
Use Case Glossary	

Use Case ID	UC-IP-005
Use Case Name	Tends to important meeting
Goal	Provide Flexibility
Requirements	[FFR1: Initiate a Meeting] [FFR4: Meeting Management] [BFR5: Message Management] [BFR6: Meeting Scheduler Algorithm]
Description	若有重要性會議發生衝突，系統將通知參與者有更重要會議衝突通知，提醒使用者是否要更改參與意願。 If there are conflicts between meetings, the system will inform participants of important meeting notification, and

	ask user whether he/she wants to change the Willingness of participation.
Actor	
Assumptions	
Constraints	
Priority	Medium
Pre-Conditions	1. 使用者必須登入本系統 2. 參與者必須有在時間/地點上衝突之條件
Post-Conditions	以訊息通知參與者會議衝突通知與建議。
Basic Flow	1. 當一會議邀請此參與者，與此參與者原本時間上會議有所衝突
Alternative Flows	1.1 若新衝突會議設定此參與者為重要參與者、討論項目負責人，則詢問使用者是否更改參與會議傾向 1.2 若新衝突會議等級比原會議高，則詢問使用者是否更改參與會議傾向 1.3 若新衝突會議不屬於以上兩者，則以訊息通知使用者會議衝突通知
Exceptional Flows	
Use Use Case	
Extend Use Case	[UC-IP-001: 規劃會議]
Business Rules	
Special Requirements	
Artifacts	

Use Case Glossary	

Use Case ID	UC-IP-006
Use Case Name	Expansion of time/space
Goal	
Requirements	[FFR1: Initiate a Meeting] [FFR4: Meeting Management] [BFR5: Message Management] [BFR6: Meeting Scheduler Algorithm]
Description	會議管理員管理會議，對於調查時間/地點參與意願進行 擴充、修改 Administrator manages meeting (e.g. Expands or modifies the time, space or willingness of participation)
Actor	
Assumptions	
Constraints	
Priority	High
Pre-Conditions	1. 使用者必須登入本系統 2. 使用者必須在發起會議或者維護會議
Post-Conditions	將新擴增時間/地點調查通知所有可能參與者
Basic Flow	1. 新增原本以外的時間/地點調查
Alternative Flows	1.1 若為發起會議狀態，無新增時間，則警告使用者 時間未填寫，詢問使用者是否繼續填寫 1.1.1 若使用者選擇「否」，則結束發起會議 1.1.2 若使用者選擇「是」，則回到原本畫面繼續填

	寫 1.2 若為發起會議狀態，無新增地點，則警告使用者時間未填寫，詢問使用者是否繼續填寫 1.1.1 若使用者選擇「否」，則結束發起會議 1.1.2 若使用者選擇「是」，則回到原本畫面繼續填寫 1.3 若為維護會議，則時間/地點皆無新增，則直接結束本案例
Exceptional Flows	
Use Use Case	
Extend Use Case	
Business Rules	
Special Requirements	
Artifacts	
Use Case Glossary	

Use Case ID	UC-IP-007
Use Case Name	Set the important of participants
Goal	
Requirements	[FFR1: initiate a meeting] [FFR4: meeting management] [BFR6: meeting scheduler algorithm]
Description	The meeting manager can set the importance of participants which have some influence on meeting schedule.
Actor	
Assumptions	
Constraints	
Priority	Medium

Pre-Conditions	3. 使用者必須登入本系統 4. 使用者必須在發起會議或者維護會議
Post-Conditions	設定之重要性，將影響會議排程結果
Basic Flow	1. 當新增一參與者，或一項目負責人，則出現使用者參與重要性 2. 會議管理者可以藉由滑動 slide bar，來調整此參與者重要性
Alternative Flows	2.1 若無調整參與者重要性，則依系統預設
Exceptional Flows	
Use Use Case	
Extend Use Case	
Business Rules	
Special Requirements	
Artifacts	
Use Case Glossary	

Use Case ID	UC-IP-008
Use Case Name	Set initiator permissions
Goal	Manage meetings conveniently
Requirements	[FFR1: initiate a meeting] [FFR4: meeting management]
Description	Set initiator permissions in order to manage the meetings conveniently.
Actor	
Assumptions	
Constraints	
Priority	Medium
Pre-Conditions	5. 使用者必須登入本系統 6. 使用者必須在發起會議或者維護會議
Post-Conditions	設定之召集人，可針對具有權限部分來維護會議
Basic Flow	3. 新增一召集人 4. 開放會議可管理權限 甲、可開放範圍:討論項目與負責人、調查時間/地點範圍、新增受邀參與者
Alternative Flows	
Exceptional Flows	
Use Use Case	
Extend Use Case	[UC-IP-001: meeting management]
Business Rules	
Special Requirements	
Artifacts	
Use Case Glossary	

Use Case ID	**UC-PT-001**
Use Case Name	Participate in meetings
Goal	Achieve "participate in meetings"
Requirement	[FFR2:participate in a meeting]、 [FFR3:meeting calendar]、 [BFR6:meeting scheduler algorithm]
Description	Participants receive invitation of a meeting and decide the desire for participation.
Actor	participants
Assumptions	
Constraints	
Priority	High
Pre-Conditions	1.　參與者已收到會議邀請 2.　目前時間仍在會議參與調查期間內
Post-Conditions	系統根據參與者所選可參與時間，判斷該參與者是否參加該會議
Basic Flow	1.　參與者選擇可參與時間、地點、攜帶設備，並按下送出 2.　系統收到參與者之參與意願單
Alternative Flows	
Exceptional Flows	
Use Use Case	
Extend Use Case	
Business Rules	
Special Requirements	
Artifacts	參與意願單
Use Case Glossary	參與意願單 = 意願單編號 + 會議編號 + 參與者列表 + 可參與時間 + 可參與地點 + 攜帶物品清單

Use Case ID	UC-PT-002
Use Case Name	schedule meetings automatically
Goal	Appropriate performance
Requirement	[FFR3:meeting calendar]、[FFR5:user setting]、[BFR6:meeting scheduler algorithm]
Description	According to the preferred time of the user and the available time of the meeting, the system will help the user to decide the desire for participation..
Actor	participants
Assumptions	
Constraints	
Priority	High
Pre-Conditions	系統檢查會議是否尚在出席意願調查階段
Post-Conditions	
Basic Flow	1. 系統檢查本參與者是否已經選取可參與時間 2.1 若是，系統檢查參與者所選定之時間是否在會議舉行時間區間內 2.1.2 若否，系統自動替使用者放棄參與此次會議 2.2 若否，系統檢查參與者所設定之時間傾向是否與此會議的舉行時間以及會議類型相符 2.2.1 若是，系統自動替使用者選擇參與時間並參與此會議
Alternative Flows	2.1.1 若是，本案例結束 2.2.2 若否，系統不進行任何動作，本案例結束
Exceptional Flows	
Use Use Case	

Extend Use Case	[UC-PT-001:participate in meetings]
Business Rules	
Special Requirements	
Artifacts	
Use Case Glossary	

Use Case ID	UC-SU-001
Use Case Name	User Data Synchronization Settings
Goal	Achieve "Manage systems conveniently"
Requirement	[BFR3:Data Synchronization Setting] [BFR8:Data Synchronization]
Description	Set parameters for synchronization request
Actor	Administrator
Assumptions	
Constraints	
Priority	High
Pre-Conditions	系統管理者登入後台。
Post-Conditions	系統完成使用者資料同步參數更新，啟動自動資料同步。
Basic Flow	1. 點選使用者資料同步設定。 2. 填寫人士資料庫網址、帳號、密碼、資料庫名稱、資料表名稱。 3. 填寫使用者名稱、使用者密碼、使用者職位、電子郵件資料庫欄位。 4. 填寫資料庫同步時間。 4. 完成動作後，點選確定。 5. 系統發出確認警告，選擇「確定」，完成使用者資料同步設定使用案例，選擇「取消」，回到先前畫面。
Alternative Flows	
Exceptional Flows	1. 若有欄位未填妥，系統發出警告。 2. 待欄位填妥後，完成使用者資料同步設定使用案例。

Use Use Case	45
Business Rules	
Special Requirements	
Artifacts	
Use Case Glossary	

Use Case ID	**UC-SU-002**
Use Case Name	Manage meeting-level
Goal	Achieve "Manage systems conveniently"
Requirement	[BFR2:Parameter Setting]
Description	Add, modify and delete to the meeting-level
Actor	Administrator
Assumptions	
Constraints	
Priority	High
Pre-Conditions	系統管理者登入後台。
Post-Conditions	系統完成會議等級參數更新
Basic Flow	1. 點選參數設定。 2. 點選設定會議等級參數。 3.1 點選新增選項。 3.2 點選修改選項。 3.3 點選刪除選項。 4.1 填寫會議等級名稱、選擇等級數值。 4.2 逐一修改欲修改項目。 4.3 逐一選擇要刪除的選項。 5. 完成動作後，點選確定。 6. 系統發出確認警告，選擇「確定」，完成管理會議等級使用案例，選擇「取消」，回到先前畫面。
Alternative Flows	

Exceptional Flows	1. 若有欄位未填妥，系統發出警告。 2. 待欄位填妥後，完成管理會議等級使用案例。
Use Use Case	
Business Rules	
Special Requirements	
Artifacts	
Use Case Glossary	

Use Case ID	**UC-SU-003**
Use Case Name	Manage actors of meeting
Goal	Achieve "Manage systems conveniently"
Requirement	[BFR2:Parameter Setting]
Description	Add, modify and delete to the actors of meeting
Actor	Administrator
Assumptions	
Constraints	
Priority	High
Pre-Conditions	系統管理者登入後台。
Post-Conditions	系統完成會議角色參數更新
Basic Flow	1. 點選參數設定。 2. 點選設定會議角色。 3.1 點選新增選項。 3.2 點選修改選項。 3.3 點選刪除選項。 4.1 填寫會議角色名稱。 4.2 逐一修改欲修改項目。 4.3 逐一選擇要刪除的選項。 5. 點選確定。 6. 系統發出確認警告，選擇「確定」，完成會管理會議角色使用案例，選擇「取消」，回到先前畫面。
Alternative Flows	

Exceptional Flows	1. 若有欄位未填妥，系統發出警告。 2. 待欄位填妥後，完成管理會議角色使用案例。
Use Use Case	
Business Rules	
Special Requirements	
Artifacts	
Use Case Glossary	

Use Case ID	UC-SU-004
Use Case Name	Manage user-level
Goal	Achieve "Manage systems conveniently"
Requirement	[BFR2:Parameter Setting]
Description	Add, modify and delete to the user-level
Actor	Administrator
Assumptions	
Constraints	
Priority	High
Pre-Conditions	系統管理者登入後台。
Post-Conditions	系統完成使用者等級參數更新。
Basic Flow	1. 點選參數設定。 2. 點選設定使用者等級參數。 3.1 點選新增選項。 3.2 點選修改選項。 3.3 點選刪除選項。 4.1 填寫使用者等級名稱、選擇等級數值。 4.2 逐一修改欲修改項目。 4.3 逐一選擇要刪除的選項。 5. 點選確定。 6. 系統發出確認警告，選擇「確定」，完成管理使用者等級使用案例，選擇「取消」，回到先前畫面。
Alternative Flows	

Exceptional Flows	1. 若有欄位未填妥，系統發出警告。 2. 待欄位填妥後，完成管理使用者等級使用案例。
Use Use Case	
Business Rules	
Special Requirements	
Artifacts	
Use Case Glossary	

Use Case ID	**UC-ALGO-001**
Use Case Name	FCFS Strategy
Goal	Appropriate Performance
Requirements	[BFR6] Meeting Scheduler Algorithm
Description	Perform FCFS Strategy
Actor	Initiator, Host Agent, Guest Agent
Assumptions	
Constraints	
Priority	High
Pre-Conditions	3. User must login the system 4. Host Agent should create a meeting first
Post-Conditions	1. If FCFS passes, set the meeting into calendar 2. If FCFS doesn't pass, run HR Strategy
Basic Flow	2. An initiator create a meeting first 3. Run FCFS Strategy 4. Set the meeting into participants' calendar
Alternative Flows	2.1 If FCFS Strategy failed to arrange the meeting 2.2 Run HR Strategy
Exceptional Flows	
Use Use Case	
Extend Use Case	[UC-ALGO-002: HR Strategy]
Business Rules	
Special Requirements	
Artifacts	
Use Case Glossary	

Use Case ID	**UC-ALGO-002**
Use Case Name	Use High Rank Strategy
Goal	Achieve "Appropriate Performance"
Requirement	
Description	A meeting will be scheduled by HR strategy.
Actor	Host agent
Assumptions	
Constraints	
Priority	High
Pre-Conditions	The FCFS strategy is failed
Post-Conditions	3. If HR passes, set the meeting into calendar 4. If HR doesn't pass, run voting Strategy
Basic Flow	1. Check the booked meetings is movable or fixed 2. If movable, choose the meeting with the highest priority or use voting strategy 3. If the requested meeting is the meeting which have the highest priority, add the requested meeting and reschedule the booked meeting 4. If one or more booked meeting have higher than the requested meeting, reschedule the requested meeting
Alternative Flows	
Exceptional Flows	
Use Use Case	
Extends Use Case	
Business Rules	
Special Requirements	
Artifacts	
Use Case Glossary	

dUse Case ID	UC-ALGO-003
Use Case Name	Voting Strategy
Goal	Achieve "AppropriatePerformance"
Requirement	[BFR6: Meeting Scheduler Algorithm]
Description	A user can resolve conflicted meeting.
Actor	User
Assumptions	
Constraints	
Priority	High
Pre-Conditions	- Status of conflicted meeting is not movable. - Conflicted meeting has lower priority. - Conflicts cannot be resolved or negotiation time expires.
Post-Conditions	Conflicts can be resolved.
Basic Flow	- If HR fails Then - Host agent: sends all possible blocks to the server - Server: sends all possible blocks to all guest agents - Guest agents: - Assign yes or no message for each block - Respond to Server - Server: - Waits for predefined time to receive the responses from guest agents - Pick the block that has majority yes - If more than one block has the same majority Then - Pick the block based on highest user priorities - If more than one block has the same high priority Then - Pick a block based on the preferences of the host (morning, afternoon, etc). - If the user preferences do not exist or do not apply Then - Pick the block randomly
Alternative Flows	

Exceptional Flows	55
Use Use Case	
Extends Use Case	
Business Rules	
Special Requirements	
Artifacts	Conflicted meeting, requested meeting
Use Case Glossary	Resolved meeting = VotingStrategy(conflictedMeeting, requestMeeting)

6. Traceability Matrix

6.1 Traceability Matrix of Requirements V.S Requirements

需求	FFR1	FFR2	FFR3	FFR4	FFR5	FFR6	FFR7	FFR8
FFR1	--							
FFR2		--						
FFR3	v	v	--					
FFR4	v			--				
FFR5					--			
FFR6						--	v	
FFR7						v	--	
FFR8								--
BFR1								
BFR2								
BFR3								
BFR4								
BFR5						v	v	
BFR6	v	v	v	v	v			
BFR7								v
BFR8								

需求	BFR1	BFR2	BFR3	BFR4	BFR5	BFR6	BFR7	BFR8
FFR1						v		
FFR2						v		
FFR3						v		
FFR4						v		
FFR5						v		
FFR6					v			
FFR7					v			
FFR8							v	
BFR1	--			v				
BFR2		--				v		
BFR3			--					v
BFR4	v			--				
BFR5					--			
BFR6		v				--		
BFR7							--	
BFR8			v					--

6.2 Traceability Matrix of Requirements V.S Use Case

需求	UC-CU 001	UC-CU 002	UC-CU 003	UC-CU 004	UC-PT 001	UC-PT 002	UC-SU 001	UC-SU 002	UC-SU 003	UC-SU 004
FFR1										
FFR2					v	v				
FFR3					v	v				
FFR4										
FFR5		v				v				
FFR6	v									
FFR7	v									
FFR8				v						
BFR1			v							
BFR2								v	v	v
BFR3							v			
BFR4			v							
BFR5	v									
BFR6					v	v				
BFR7				v						
BFR8							v			

需求	UC-IP 001	UC-IP 002	UC-IP 003	UC-IP 004	UC-IP 005	UC-IP 006	UC-IP 007	UC-IP 008
FFR1	v	v	v		v	v	v	v
FFR2								
FFR3	v							
FFR4	v	v	v		v	v	v	v
FFR5								
FFR6								
FFR7								
FFR8								
BFR1								
BFR2								
BFR3								
BFR4								
BFR5	v	v	v		v	v		
BFR6	v	v	v	v	v	v	v	
BFR7								
BFR8								

6.3 Traceability Matrix of Requirements V.S subsystem function

需求	Login Module	Registration Module	User Function Module	Meeting Function Module	Authentication Module	Message Management Module	Management Module	Meeting Scheduler Module	Synchronization Module
FFR1				v					
FFR2				v					
FFR3				v					
FFR4				v					
FFR5			v						
FFR6			v						
FFR7			v						
FFR8		v							
BFR1	v								
BFR2							v		
BFR3							v		
BFR4					v				
BFR5						v			
BFR6								v	
BFR7					v				
BFR8									v