



# Converge

## SOFTWARE ENGINEERING(IT-314)

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### Group - 23

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# Converge – Object Design Document

## Group-23

### 1. User Management

#### ○ User

##### ■ Attributes

- username: String (unique)
- email: EmailField (unique)
- firstName: String
- lastName: String
- password: String (hashed)
- date\_joined: DateTimeField

##### ■ Methods

- create\_user(username, email, password, firstName, lastName) – Creates new user account
- authenticate(username, password) – Authenticates user login
- generate\_token(user\_id) – Creates session token
- validate\_token(token) – Verifies token validity
- logout(token) – Invalidates session token

#### ○ EmailOTP

##### ■ Attributes

- user: String (email reference)
- otp: String (verification code)
- purpose: String (register/password\_reset)
- created\_at: DateTimeField
- is\_used: BooleanField

##### ■ Methods

- generate\_otp(email, purpose) – Creates OTP
- validate\_otp(email, otp, purpose) – Verifies OTP
- mark\_as\_used() – Marks OTP as consumed

### 2. Project Management

#### ○ Project

##### ■ Attributes

- name: String (required)
- description: String
- team\_leader: ReferenceField(User)
- team\_members: ListField(DictField())
- github\_imported: BooleanField
- github\_repo\_name: String
- github\_repo\_url: String created\_at: DateTimeField calendar\_id: String

##### ■ Methods

- create\_project(name, description, team\_leader) -create project
- add\_members(member\_list) -add members in project
- remove\_members(member\_list) - remove member from project
- import\_github\_repo(repo\_url, token) - import github repo in project
- delete\_project()- delete project

### 3. Task Management

#### ○ Task

##### ■ Attributes

- name: String (required)
- description: String
- project: ReferenceField(Project)
- assigned\_to: ListField(ReferenceField(User))
- status: String (pending, in\_progress, approval\_pending, completed)
- due\_date: DateTimeField
- dependencies: ListField(ReferenceField(Task))
- related\_files: ListField(ReferenceField(File))
- created\_at: DateTimeField

##### ■ Methods

- create\_task(name, project, assigned\_to) – create a task
- update\_status(new\_status) – update status
- add\_dependency(task) – add dependency
- remove\_dependency(task\_id) - remove dependency
- approve\_task() - approve task
- reject\_task() - remove task

### 4. Communication System

#### ○ GroupChat

##### ■ Attributes

- name: String (unique)
- admin: String (user ID)
- participants: ListField(StringField())
- project\_id: ObjectIdField
- created\_at: DateTimeField

##### ■ Methods

- create\_group\_chat(name, admin, participants)-create group chat

#### ○ GroupMessage

##### ■ Attributes

- chat: ReferenceField(GroupChat)
- sender: String (user ID)
- content: String
- timestamp: DateTimeField
- file\_url: String (optional)
- file\_type: String

- Methods

- send\_message(chat, sender, content) - send message
- send\_media\_message(chat, sender, file\_data) - send file in chat
- delete\_message() - delete message

- IndividualChat

- Attributes

- participants: ListField(StringField()) (2 users)
- created\_at: DateTimeField
- project\_id: String

- Methods

- create\_individual\_chat(participants) - create individual chat
- send\_message(sender,content) - send message

## 5. File Management

- File

- Attributes

- name: String (required)
- s3\_key: String
- file\_size: IntField
- content\_type: String
- uploaded\_by: ReferenceField(User)
- project: ReferenceField(Project)
- uploaded\_at: DateTimeField

- Methods

- upload\_file(file\_data, project, user) -upload file
- generate\_download\_url() -generate download url to download file
- delete\_file()- delete selected file

## 6. Meeting

- Meeting

- Attributes

- project: ReferenceField(Project)
- title: String (required)
- start\_time: DateTimeField
- end\_time: DateTimeField
- created\_by: ReferenceField(User)
- attendees: ListField(StringField())
- google\_event\_id: String

- Methods

- create\_meeting(project, title, start\_time, end\_time) - create meeting
- update\_meeting\_details(title, start\_time, end\_time) - update meeting details
- cancel\_meeting() - cancel meeting
- send\_meeting\_invites() -send meeting invitation

## 7. AI Integration

### ○ AIChat Attributes:

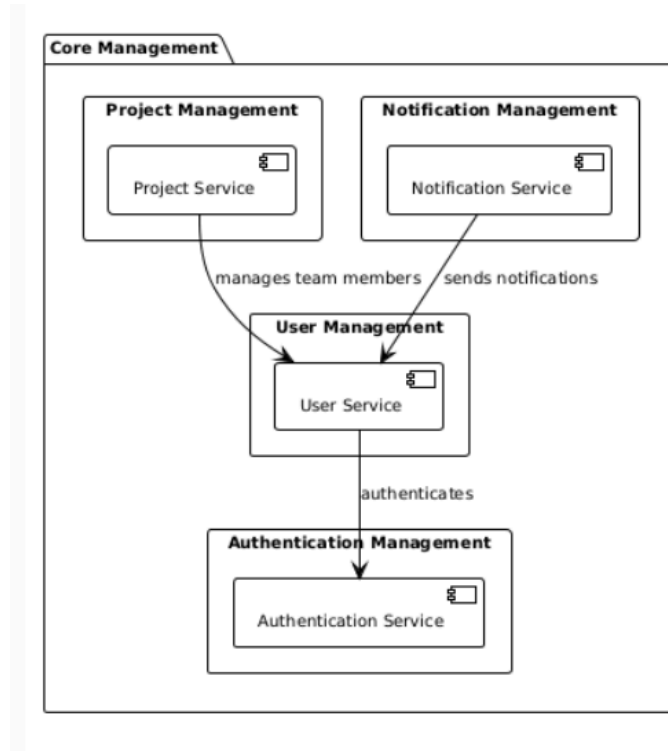
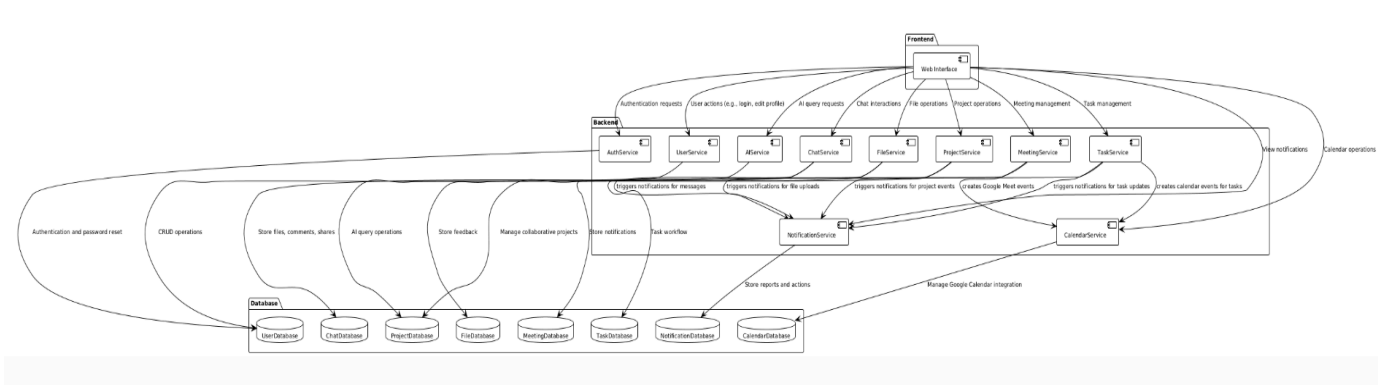
#### ■ Attributes

- title: string, required
- user: string (user id), required
- project\_id: string, optional
- created\_at: datetime
- updated\_at: datetime

#### ■ Methods

- ai\_chats (GET): list chats for authenticated user; optional filter by project\_id
- ai\_chats (POST): create a new chat (title, optional project\_id)
- ai\_chat\_messages (GET): list messages for a chat (ownership check)
- ai\_chat\_create\_message (POST): create a message in a chat (sender, content, context)

Component Diagrams :



Object Diagram:

Object Diagram

