Contents

• Scenarios

  – Attendance Management
    *Easy management and reporting of student attendance*

  – Academics Assistant
    *One Hub for students to manage their day*

  – Event Finder
    *Discover events, workshops in campus and participate effortlessly*

For each scenario:

• Scenario Vision
• Primary Persona
• Scenario Storyboard
• Solution Design Best Practices
• Solution Architecture
Education Book of Dreams

Attendance Management
Current State

- Sandra starts her day by going through her calendar and identifying the classes and lectures she has to deliver.
- Once she starts the class delivery, she performs a roll call of student names from the list she maintains of class members for classes she teaches.
- The students reply one by one during the roll call and this typically takes 5-10 minutes to complete accurately.
- It is also difficult to determine if the students are actively listening to the class after the attendance roll call is complete. This used to be simpler when Sandra had in-person classes.
- Students who are unable to attend classes intimated the same to their teachers and the administration through emails.
- The administrator approves the leave requests of students and proceeds to inform the same to the concerned teacher over email.
- At the end of day, Sandra compiles reports manually across all of her classes and emails before uploading it in the database.

Future State

- Sandra gets to see her list of classes and reminder from the Teams app on upcoming class for her to confirm.
- The app provides an attendance code that Sandra can flash at any time during the class for students to view and enter in their app.
- During the class, students are prompted to enter their attendance code automatically. Along with code, the app also allows Sandra to ask an optional question that gives a hint to student's attentiveness in class content.
- As the class ends, attendance report is compiled automatically by the app and is available for Sandra to view in a dashboard fashion.
- The attendance report can also be downloaded as an excel file for Sandra to perform any further analysis.
- Students are provided with friendly options to submit their leave requests to the school administrators.
- The students and teacher get a real time view of leave requests getting accepted by the administrator.
Sandra Jones, History Teacher

Sandra is a history teacher who recently started offering her classes virtually over Teams. She is not particularly tech savvy and likes to use apps with simple, non-intrusive user experience to manage her day to day classroom activities.
Sandra delivers her class on Teams meeting and she wants to easily handle tracking attendance without disrupting the class and wasting class time
The app sends a welcome message on installation of the app introducing the features of the app. Sandra signs in using the welcome card.
Hello, I am Attendance App and I can help you manage your daily attendance, leave management process.

Here are some of the things that I can do:
- Initiate attendance roll call and report attendance
- Analyze attendance levels for students
- Analyze attendance levels for students

Sign In  Take a tour

Good morning, Sandra! You have 1 upcoming class

Class Details
Please confirm the class details for recording student attendance

Class name: History 101
Time: 9:00am to 10:00am, April 24, 2020
Class code: 21H107

Confirm  Edit details

Type a new message
As Sandra confirms the class, the app provides a couple of options for Sandra to choose from to generate attendance code. This unique code will be shared during class for the students to key in marking their attendance.
Optional: Sandra may also choose to ask a simple question to students in the class to capture student's answer along with attendance code. This question could be on the day's topic to check student's attentiveness in the online class.
Sandra chooses to ask a question relevant to the day's class but which might have different responses from different students. The question is also framed such that students would be able to answer them only when they have been attentive in sessions.
As Sandra submits, the adaptive card reflects the generated code that Sandra can manually announce during the virtual class session.
Roy Howard, Student

Roy Howard is one of the students in Sandra’s class. Roy has taken a liking to virtual classes online but finds that there is some time wasted in administration activities of marking attendance, applying for leave. Roy also feels it is hard to keep up with change in schedule and timing of classes when it happens virtually.
Sandra has to deliver her class as a Teams meeting and wants to easily handle tracking attendance without disrupting the class and wasting class time
As Sandra starts the scheduled meeting for her history session, all students in the class get a message on their app from the Attendance bot confirming the class details and providing an option for students to mark attendance.
At any time during the class lecture, Sandra may choose to announce the code over Teams meeting. Sandra may choose to vary the time of announcement of attendance in each class.
As Sandra provides the attendance code over Teams meeting, Roy enters the same in the form for attendance code. In addition, Roy mentions his response to the question posed by Sandra before marking his attendance.
Once attendance is submitted, Roy gets a snapshot of his attendance percentage for History class. The app also provides an accurate view of protected attendance percentage if Roy continues to attend all classes until the end of term.
After class, Sandra prefers to check consolidated view of attendance for her class. She proactively reaches out to students who have low attendance to understand their issues.
Sandra's personal app has an attendance dashboard tab that provides attendance details of all students in her class. She is able to switch between different classes if she handles more than one. It provides a clear view of students who are low on attendance for Sandra to reach out.
The app also provides an easy way for Sandra to download the attendance details over a range of dates as a CSV file for any further analysis.
Roy Howard, Student

Roy Howard is one of the students in Sandra’s class. Roy has taken a liking to virtual classes online but finds that there is some time wasted in administration activities of marking attendance, applying for leave. Roy also feels it is hard to keep up with change in schedule and timing of classes when it happens virtually.
Roy is representing his school in a sports event and needs to apply for leave of absence from school administration
As Roy logs in to the app, he is greeted with a set of options available for a student. Roy wants to see the class schedule for the day to check the classes he would be missing.
On viewing the class schedule, the adaptive card refreshes to show the classes in his day with the professors who would be leading the class.
Roy gets back to the original menu of options to apply for a leave
After filling in required details, Roy chooses the reason for leave as On Duty as he is going to be absent representing the school in a sports event.
The card expands to show further options relevant to On Duty category of leave requests.
Roy chooses the type of event he will be attending on duty. Since he is representing the school in a sports meet, he chooses the sports event option.
In the comments box, Roy provides additional justification that will be presented to the administration. The administration can view this justification before approving the leave request.
As Roy submits the request, the card shows a summary of Roy’s leave request, highlighting the administration lead who is responsible for approving the request and the status of approval.
Once Jim Gordon approves the request, Roy's leave request card refreshes to show the approval status as Approved and shows comments from the approver.
The app recognizes that Roy will be absent on the specified leave request days. It checks if Roy has any pending assignments due on those dates and reminds him to submit the assignments so as to not miss the deadline.
Jim Gordon, Administrator

Jim Gordon is a member of school administration is responsible for handling leave requests of certain classes. Jim verifies leave exemptions that are submitted by students and is responsible for easing the life of students steering them away from admin and paperwork for simple tasks.
Jim Gordon receives leave approval requests among other administrative tasks from high school students
As Jim goes about his day, he receives a request from Roy Howard for approving a leave request for 2 days. Jim sees that Roy has also provided the required justification for exemption.
As the request is valid and Jim is aware of the upcoming sports meet, he proceeds to approve the request right away.
The app provides confirmation of approval back to Jim and he is able to edit the request if required.
Solution Highlights – Best Practices

Key Solution Design Considerations

Platform Extension Points

• **Personal Scoped App**  The app is designed as a personal scope app for the teacher as information that the teacher needs to access would be pertaining to their class / subjects and not relevant for other teachers. In addition, it should not be visible for students as well. It is essentially information useful for each teacher individually.

• The adaptive card which asks students to enter their attendance code can be implemented as a card in channel scope as well. This would require configuring of right channels for each subject / class as part of app experience.

• **Personal Bot**  – A personal scope bot handles all attendance and leave management requests. Since attendance and leave management are performed at a student level, a personal bot is used here. There is no reason for a student’s attendance %, leave balance etc. need to be displayed in a Team / channel. It’s personal for each student using the app.

User Experience

• **Card refreshes**  are used to update the card status instead of sending multiple different cards about the same request. This is especially useful in leave management flow. One leave request card gets constantly updated to show statuses under review and approved by the administrator. This ensures that readability is easier, and app does not spam with multiple cards for updates.

• **List cards**  are used for providing a single consolidated view of a student or teacher’s day along, show a list of classes that are clickable to view additional details about a particular class.

• **Proactive Messages**  are used to send attendance code check-ins for students to fill in during a class.

Graph API

• The app utilizes [Get onlineMeeting](https://graph.microsoft.com) Graph API to retrieve list of users who are invited for a particular meeting. The attendance check-in proactive message is then sent to these participant students for each class.
Education – Attendance Management

Solution Architecture

- Azure Subscription
- Bot / Task Module
- Bot Registration
- Meeting, POST attendance
- Attendance App Service
- SSO and Reporting
- AAD
- GET Attendance %
- GET Student Attendance
- Attendance Database
- Azure Table Storage (Leave requests, student responses)
- Graph API
- Fetch meeting, user pictures

Teacher

MS Teams

Student
Education Book of Dreams

Academics Assistant
Current State

- Daniel’s classes may undergo changes in schedule from time to time. This could include last minute changes in the venue of class if they are physical classes, or timing of a class due to events where some classes may get postponed.

- These ad hoc changes are typically communicated to Daniel and rest of his classmates via email. While this works at times, there have been cases that Daniel has missed this email and went unaware of changes in class schedule.

- During a class, Daniel takes notes documenting key concepts discussed in his notebook. He shares them with his classmates from time to time to scan / take photocopy of it.

- While it works for small groups, there was no scalable way for everyone to work together.

- Administration’s announcements at Contoso regarding admin activities, scholarship, fee deadlines, club enrolments are usually pinned on notice board.

- Interactions between classmates, assignment deadline changes all happen through personal groups on various platforms.

Future State

- Daniel signs onto his Teams app and is prompted to check out a central hub which shows the day’s schedule for him along with upcoming deadlines, tasks.

- Whenever there is an announcement from the professor or from school administration, the app alerts Daniel to check out the announcement right within the app.

- Daniel is able to view change of schedule, upcoming classes. He also joins his online classes directly from the app notification.

- During the class, Daniel is able to invoke from the app from Teams meeting and take notes and action items directly within the class.

- After the class is complete, the app automatically collects Daniel’s consent to share his notes in the common class notebook for all classmates to view and consume. Daniel also gets access to others notes as the app encourages good behavior through gamification.

- Administration’s announcements on leave policy changes, scholarship updates are broadcasted to different classes and available for each student to view within the app instantly.

- Classmates all use Teams to interact with each other and share notes, course content with each other in one single platform.
Daniel Tao, Student
Daniel is a student of Physics at Contoso University. He has a packed course workload, and he is active across multiple extra and co-curricular clubs in the university as well. His primary challenge is staying on top of information that comes from his professors, club members and school administration which are scattered across different mediums.
Sandra has to deliver her class as a Teams meeting and wants to easily handle tracking attendance without disrupting the class and wasting class time.
The app sends a welcome message on installation introducing the various features. Daniel Tao uses the take tour button to view various features of the app.
The app provides an introduction to the various capabilities it offers, clearly highlighting how Daniel can make use of it for his day to day activities. It prompts Daniel to explore the student hub. On clicking the button, Daniel is taken to view the My Hub tab of the app.
Daniel starts his day looking at this personalized hub. It shows among other things, Daniel’s classes for the day. The hub also acts as a virtual notice board for Daniel to view announcements that come from his classes university. It also provides a central place for him to keep track of his tasks and assignments.
Clicking on the 'announcements' icon opens a task module with filterable list of announcements from different classes made by his professors, school administrators. Daniel can view all important announcements for the day and plan his day accordingly.
The app sends reminders to Daniel of upcoming classes. It also provides links to pre-read materials that a student must read up before attending the class for quick reference.
If a student is unable to join for some reason, he can use the bot message to mark himself as absent for the class, intimating the professor promptly.
As the class becomes live (at scheduled start time) the app prompts Daniel to join the Teams meeting. Daniel can join the meeting directly from the bot message.
Daniel Tao joins a virtual class along with his class mates. He takes frequent notes from the lecture and makes pointers to himself to revise on key concepts in the class.
As students join the class they see other classmates and professors on the video call with professor delivering the lecture.
Also provides additional surfaces on the meeting side panel for students to take notes during the class. Daniel can take notes in the notes section on the side panel without having to switch to another screen.
As the professor shares content on the screen using diagrams to deliver the lecture, the notes section can be used to copy the concepts presented and take notes with a mixture of picture and text.
As the professor highlights certain follow-up items, provides mini activities for the class, students can make a To Do list on the app using the side panel. Danielle uses the To Do list to make reminders for a case study read-up for next week.
To Do list created in the app utilize Tasks in background and are automatically synced to Planner and To Do lists in Windows. Daniel will be able to track and mark them complete across any of these surfaces.
Notes captured by Daniel are auto saved in persona OneNote. After the lecture is complete, the app prompts Daniel to share his notes with his entire class and in return get everyone’s notes in a single place for the lecture.
The app also gamifies such positive or favourable actions taken by students accumulating points and unlocking badges in the process. This encourages students to collaborate with the class, share notes, carry questions from classmates, and learn as a team.
The shared note is aggregated under a page specifically created for the lecture. Notes from all classmates get saved in a central place and pinned to the General channel of the course Team. This ensures high visibility and easy access for all classmates.
The action items captured by Daniel during class are surfaced by the app as reminders to complete as they near due date.
Daniel's action items across various classes are proactively surfaced by the bot close to due date. Daniel is able to see all action items at a glance and take actions on them.
Clicking on a specific task opens a task module with provision to update status, edit information as required.
The notes are automatically generated to provide additional context on the source of task creation. Daniel marks the task as completed and saves using the task module.
The card with list of tasks updates to show the respective task as completed allowing Daniel to focus on other items in the list.
Solution Highlights – Best Practices

Key Solution Design Considerations

Platform Extension Points

- **Personal Scoped App** The app is a personal scoped app because the experience, classes, tasks need to be customized for each student. Each student will have their own experience of student hub.

- **Personal scoped Tab** is ideal for showcasing the largely visual hub for the students. Especially since students will be using mobile to interact with the app on the go, it is required that app is highly visual and less conversational.

- The bot in personal scope is mostly utilized from the perspective of alerting and reminding the students on upcoming deadlines, status changes, announcements allowing the student to take action on those.

- **Meetings extensibility** comes into play here as an in-meeting tab where students can take notes during a class and take action items, to do lists from the class. These are usually done in a paper-based manner and can be automated to certain extent.

User Experience

- **Card refreshes** are used to update the card status instead of sending multiple different cards about the same request. This ensures that readability is easier, and app does not spam with multiple cards for updates.

- **List cards** are used for providing reminders about upcoming tasks, assignment deadlines. With list cards, it is easy to know the pending tasks in a glance with option to delve deep into each of them.

- **Proactive Messages** are sent at intervals based on announcements, reminders and alerts to each student. Students should ideally get an experience to configure their preferences around these scheduled alerts.

Graph API

- The app utilizes OneNote Graph APIs to retrieve class notebook, create pages and sections and insert notes created by each student during the meetings.

- **To do tasks** APIs are used to create tasks in the To Do list for the signed in user.

- **Assignments Graph API** are used to list the assignments sorted by due date.
Solution Architecture

Azure Subscription

Student

Bot / Task Module / ME

Bot Registration

Student info, class information

AAD

SSO & User IDs

Create pages, insert content

OneNote Class Notebook

External Systems

Create Tasks

To Do Tasks

Get Student details

Student Database

Get course details

Course Database

Broadcast service

Message broadcasts

GET / POST Scores

Gamification Database

Public IP Addresses (Classic)
**Scenario Vision**

**Context**
- Daniela is a student at Contoso university looking to share her knowledge and passion in the field of data science with her fellow batch mates. She is also intent on starting a thriving community of data science enthusiasts in the university.
- She wants to conduct a beginner level workshop on data science to understand the interest level and proceed to form a community from the interested students attending the workshop.

**Current State**
- Daniela updates information about the event in a mail or Power Point deck. She forwards it to all students in the university or to mailers. She also does a post on campus notice board.
- Students receive multiple e-mails on various open events irrespective of their preferences. They read through all of them and shortlist the ones they are interested in.
- Interested students reach out to Daniela or sign up on Daniela’s form.
- Daniela receives all event registrations over e-mail or as a form response.
- For all the registered participants, Daniela sends the pre-read materials and other setup instructions as attachments over email blast.
- Students with questions on the pre-read or setup instructions, reach out to Daniela over email again. Multiple students might have same question and Daniela spends time explaining the same answer with multiple attendees.
- After the event is closed for registrations, Daniela has to manually remove her notice board posting or send an email blast announcing registration closure.

**Future State**
- Daniela uses Teams app to create a new event entity and provides details about her event, timelines, and content that will be covered.
- As Daniela publishes the event entity, it is available for everyone in the university to view and apply. Daniela may also choose the event to be visible for students of certain classes / teams.
- Students can then filter events based on their skills and preferences and apply for events that interests them.
- As students apply for Daniela’s events, she can keep track of registrations and close registrations if required directly from the app.
- As students register for the event, they get added to a Team automatically for further collaboration, communication from Daniela in a scale manner.
- Students who register for the event also get to meet other students who have similar interests and passion. The app builds healthy communities.
Daniela Mandera, Student

Daniela is a student at Contoso university. She is an advanced student in Computer Science and Statistics majors. She is passionate about Data science and is looking to conduct data science workshops in her university for extra credits.
Daniela gets introduced to the app’s functionality and features as she installs the app for herself.
The app sends a welcome message on installation introducing the various actions that a user can perform using the app.
Students can create their own events within the campus and invite their fellow college mates to attend the event.
Students part of Contoso University can search for events happening at any point in the campus and choose to join the event as a participant or as part of organizing committee depending on nature of the event.
Once students join an event, they can start engaging with other students who have joined as well. They can grow their network and connections within the campus by getting together with like-minded students with similar interests and likes.
As Daniela intends to host an event, she chooses to create a new event providing its specifics and broadcasts it for others to view and register.
Daniela can create new events by clicking on the 'Create Event' button in the 'Discover' tab. It is placed prominently and is persistent way that Daniela can come back to whenever she has a need to host an event for her batchmates or class members.
A task module opens with an Event creation wizard that shows step by step input form for collecting details around the event.
Daniela enters information about the event in each step. She marks the event as ‘Technical’ under category and chooses her Audience as public. An event with public audience is visible across entire university for anyone to register and attend.
She proceeds to choose co-hosts for the event. These members will have access privileges to the event that include viewing registration details, editing and cancelling the event.
As an optional step, Daniel may choose to associate an event with a Team. When this is chosen, all members who register for the event are brought inside a Team automatically for further communication and information sharing.
In addition to adding attendees to the Team/Channel, Daniela can also pick and choose files that need to be added to the Team and a welcome message to be displayed in the channel.
Most event registrations have customary questions that ask the users who wish to register. The app provides an option for Daniela to customize and ask these questions to students who wish to register for her events.
Daniela wishes to know the experience level of students who wish to attend her events so that she can fine tune her content based on the audience skill gap.
She also receives from her attendees on their expectations upfront. This is chosen as a small text box where attendees will be able to mention their expectations as a free flowing text.
Finally the app provides a preview of her event details for her to confirm before creating the event.
As Daniela creates the event, it gets published for everyone in the university to discover. Interested students can check the event details and register within the app.
The app allows filtering the events by category...
The app allows filtering the events by category, person who created the event...
The app allows filtering the events by category, person who created the event, and based on popularity. It even shows students who have registered for an event encouraging others to register as well.
Reta Taylor, Statistics Student

Reta is a statistics student who is interested in getting into the career of big data analysis and data science. She has done her own preparation but feels it would be helpful for her to join a study group or entry level crash course.
Reta Taylor is keen on finding events that will further her career aspirations. She finds a data science event organized in her university and decides to enroll.
Reta uses the Discover tab in the app to check out the events that are currently happening or scheduled to happen in her campus. She finds that there is a beginner level data science workshop that would be a good fit for her.
On expressing interest to join the app opens a task module with a couple of questions for Reta to fill. She provides her input to the questions and clicks on register.
A calendar invite is automatically added to Reta’s calendar for the event she registered. It also mentions that Reta will be added to a Team / channel as part of workshop prep.
As participants registrations come through, the app adds the attendees to a Team chosen by Daniela where she can collaborate and provide further communication to attendees.
The app automatically adds members to the Team created by Daniela for the specific event. Bot added to the team posts the welcome message designated by Daniela.
Pre-read materials and software setup files posted by Daniela are available for attendees to go through and ask questions within the community if required. In addition to the actual event, participants get to meet and be a part of an active data science learner's community.
Daniele can continue to engage with the participants and make sure they are all prepped for the workshop and have read the pre-read materials required to understand workshop content.
As Daniela receives enough attendees to fill up her workshop capacity, she can go through list of events that she owns and close registrations.
Manage events tab lists events that Daniela is a host or co-host. She is given a view of participants who have registered for each event.
<table>
<thead>
<tr>
<th>Event Title</th>
<th>Date &amp; Time</th>
<th>Venue</th>
<th>No. of Registrations</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Science for Beginners</td>
<td>05 Jun 2020, 13:00 - 16:00</td>
<td>Conference Hall 201</td>
<td>25</td>
<td>Technical</td>
</tr>
<tr>
<td>Online Public Speaking Workshop</td>
<td>05 Jun 2020, 13:00 - 16:00</td>
<td>L. Square, College Campus</td>
<td>86</td>
<td>Liter</td>
</tr>
<tr>
<td>The Rising 2020</td>
<td>Women in AI Conference</td>
<td>21 May 2020, 9:00 - 11:00</td>
<td>Conference Room No. 010</td>
<td>19</td>
</tr>
<tr>
<td>1 Day Website and Android App Creation</td>
<td>08 May 2020, 9:30 - 12:00</td>
<td>Zeta, Bengaluru</td>
<td>32</td>
<td>Tech</td>
</tr>
<tr>
<td>CommonRoots: A Social Cause Music Fest</td>
<td>15 Apr 2020, 16:00 - 17:00</td>
<td>Leela Palace, Old Airport Road</td>
<td>34</td>
<td>Culture</td>
</tr>
<tr>
<td>Secrets for a Perfect Photography</td>
<td>20 Apr 2020, 12:00 - 14:00</td>
<td>L. Square, College Campus</td>
<td>56</td>
<td>Art</td>
</tr>
<tr>
<td>Fun time with children</td>
<td>10 Apr 2020, 11:00 - 15:00</td>
<td>Football court</td>
<td>24</td>
<td>Fun &amp; Leisure</td>
</tr>
</tbody>
</table>

For each event, the host or co-host has additional privileges to edit the event details, export registration information (containing participant email address and response to the questions).
Students get alerts from the app periodically on new events that are added or if certain events are popular in the campus.
The app provides a digest of events that were newly published and available for them to register. This could be popular events in their campus or events that they have shown prior interest.
Solution Highlights – Best Practices

Key Solution Design Considerations

Platform Extension Points

• **Personal Scoped App** The app is defined to be predominantly personal scoped as event discovery (consume) and posting (produce) are individual activities. The collaboration part of the app brings applicants into one team and encourages dialogue and knowledge sharing
  o Personal Tab – Both Discover and Manage Events are available as personal tabs for a user to discover interesting event based on each student’s interest or passion
  o Personal Bot – Personal bot caters to each student’s personal preferences and sends digests of new events

• **Channel Scope (Optional):** Although not represented in the earlier screen, the app has potential to have a channel tab with a config page to choose category / type of events. E.g. A Team / channel on a subject can have a channel tab filtered to events happening related to the subject

User Experience

• **Proactive Messages** are sent to students when new events are added and alerts when an event they have registered for is nearing.

• **Card refreshes** are used to minimize the number of cards sent to the end user and reduce overload on user’s chat window by reducing the number of cards sent for the same event

• **Digest Cards** are used to show event names and summary information for each event. This also serves the purpose of collating all related information (events of the same category) in one unit as opposed to sending a card with event detail

Graph API

• Applicant insights information around collaboration can be retrieved using **People & Workplace Intelligence Graph API**

• The app also uses Graph API to create a Team and to retrieve Files.
Solution Architecture

Education – Event Finder

- Student (Consumer)
- Bot / Task Module / ME
- Bot Registration
- Azure Subscription
- AAD
- SSO and Reporting org
- Get / POST Event Information
- Registrations
- Files
- Events Database
- Graph API
- People insights, Files & User profile
- MS Teams
- Student (Event Creator – Producer)