Lesson 17
Prototyping Online Components for an Smart Umbrella Web API

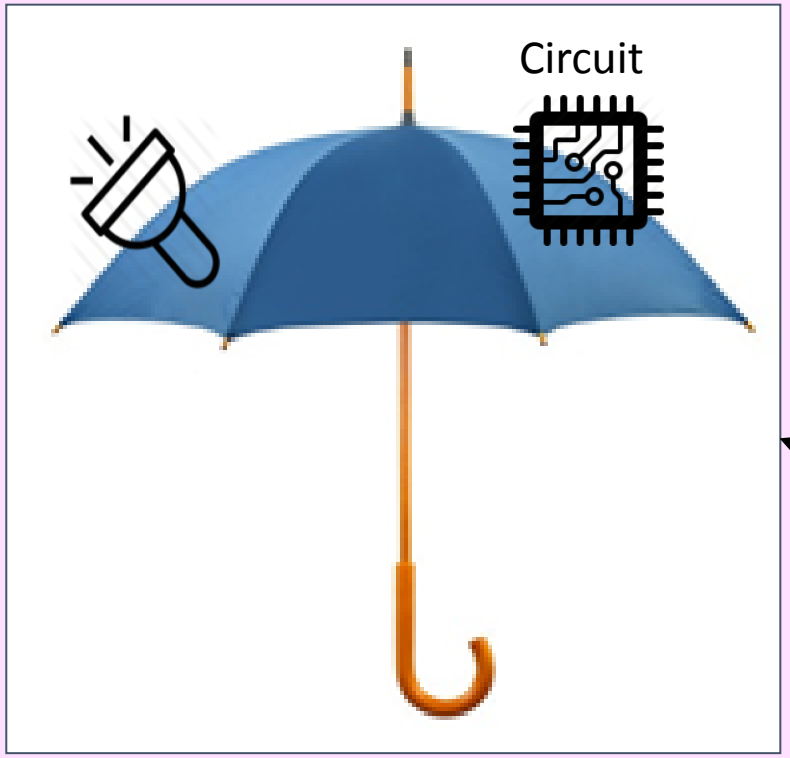
Smart Umbrella As A Device Platform

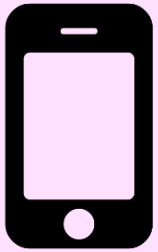
- Example 1.1
- The umbrella, behaves smart and alive through computing. An embedded small device interacts with weather web-service and mobile of the owner through Internet

A Smart Umbrella

Weather Website

Flashing LED





Internet

Weather web-APIs for an umbrella

- Fourteen sequences of message exchanges
- Extreme weather-message web-API
- Mobile phone web-API, and weather-service API, and their interactions

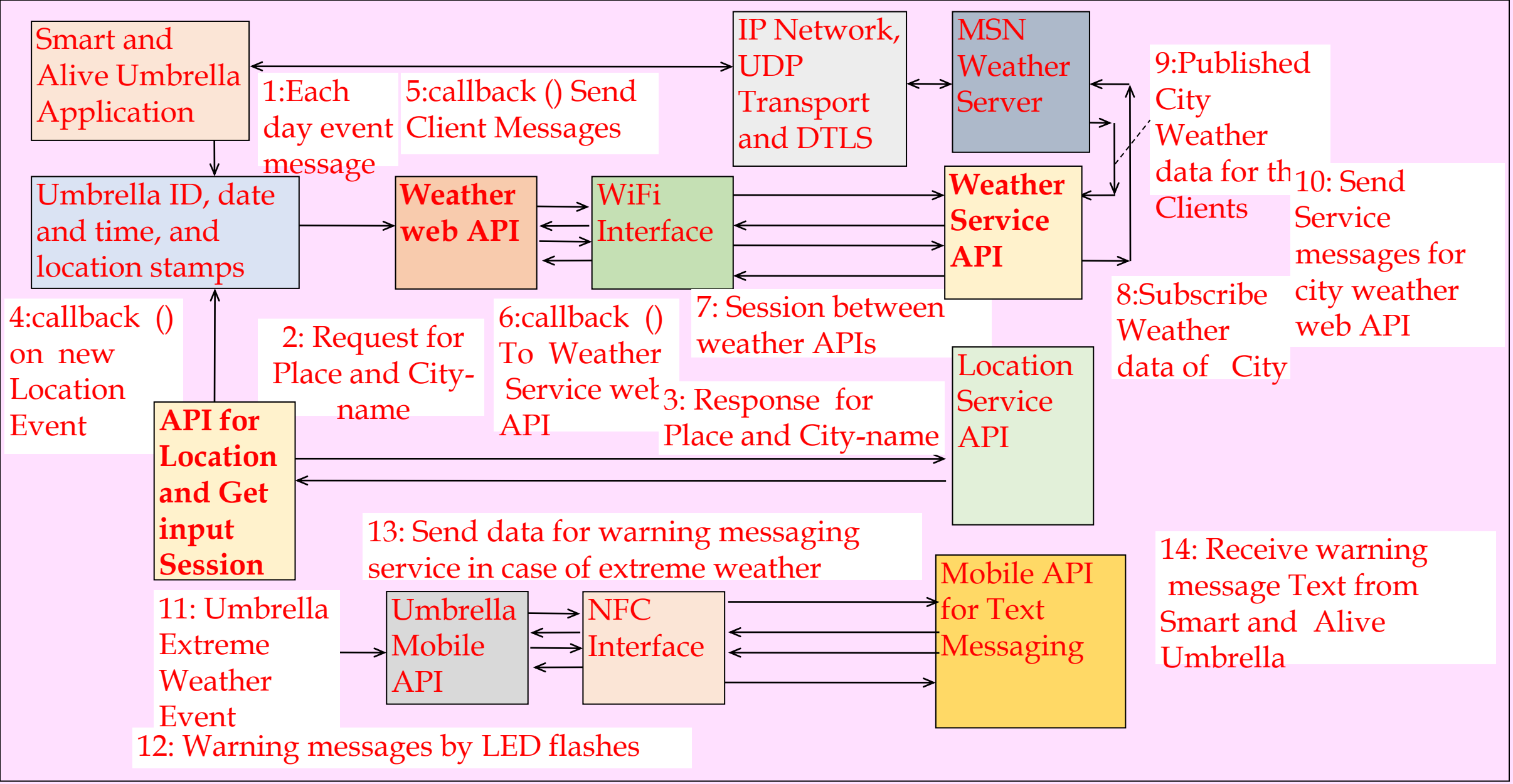


Fig. 9.5 Umbrella weather web API, location API, Extreme weather warning message Umbrella mobile API, mobile phone Text messaging API, and weather service API, and their interactions, and fourteen sequences of message exchanges

Example 9.14

- Explians the concept of APIs and web-APIs for Internet of smart and alive umbrella
- ‘Weather’ API at an Umbrella accessing a weather service and communicate an expected extreme weather event, such as rain or hot sunny day to a mobile-phone API by a text message

Weather web Application at the Umbrella

- Using number of APIs and callback functions
- Location API gets the name of the city from location server. (Sequences 2 and 3).
- The weather web-API callback functions interact with a weather API for the weather service messages.
- The API subscribes to MSN or other Weather Server. The server publishes weather messages for the subscribing clients (Sequence 5 to 8).

Weather web Application at the Umbrella

- Weather service API sends service messages as a response which communicates over Internet to the weather-client of the web API
- The weather service also communicates in response the present and next two days predications, and expected maximum and minimum temperatures (Sequences 9 and 10).
- Umbrella mobile web API

Implementation Table of an API

- Implementation makes coding easy
- Column 1 of each row has the actions in sequences which occur one by one.
- Column 2 may specify for each action, the authentication code or method (device platform ID, such as MAC address)
- Password can be some code internally generated at device platform using some algorithm using a secret key as input
- (Example 9.8)

Implementable for an API.

- Column 3 specifies the API inputs for initiating the action on event.
- Column 4 specifies the API outputs for the inputs. The outputs communicate to other end and initiate the

Summary

We learnt

- Example of smart and alive umbrella showing the uses of APIs and web APIs.
- Sequences of 14 sessions using mashed up web APIs in the web service usages

Summary

We learnt

- APIs implements using standard message or object formats, protocols and models
- Specify in a row for each action of the sessions and interactions, specifying the authentication methods, inputs and outputs
- APIs implementation for the Smart Umbrella example using the weather web-service, location API and mobile

End of Lesson 17 on Prototyping Online Components for an Smart Umbrella Web API