Contextual apps for Tizen

Shashwat Pradhan (Emberify)
沙沃特 普瑞韩 (埃姆拜瑞菲)

Introduction to Contextual apps

What is context?

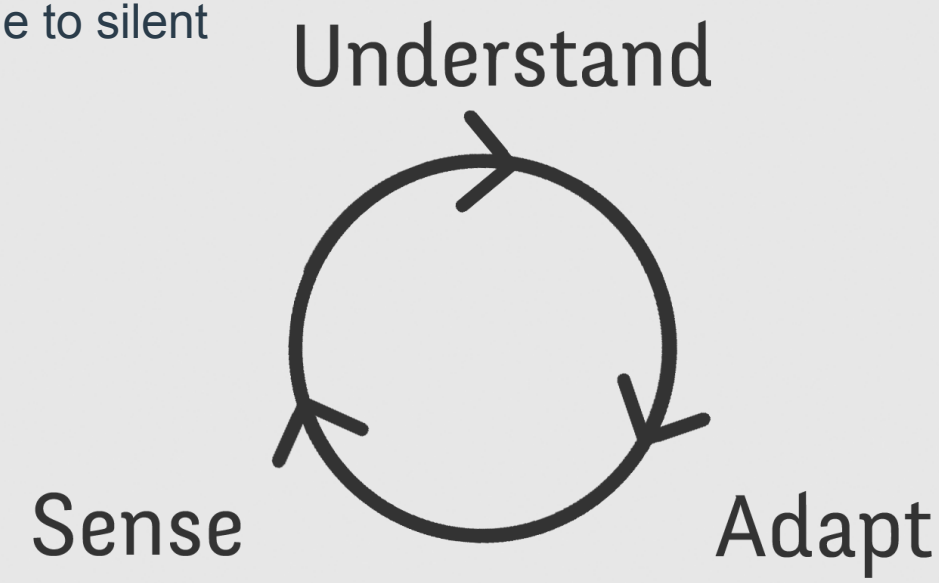
- **Context refers to information that characterizes a situation, between:**
  - Apps
  - People
  - Surrounding environment

- **Contextual apps are also known as Context-Aware apps which understand what is going on with and around the user**

- **Talk to other apps such as social media, email, messages**

Sound Profile Context-Aware App

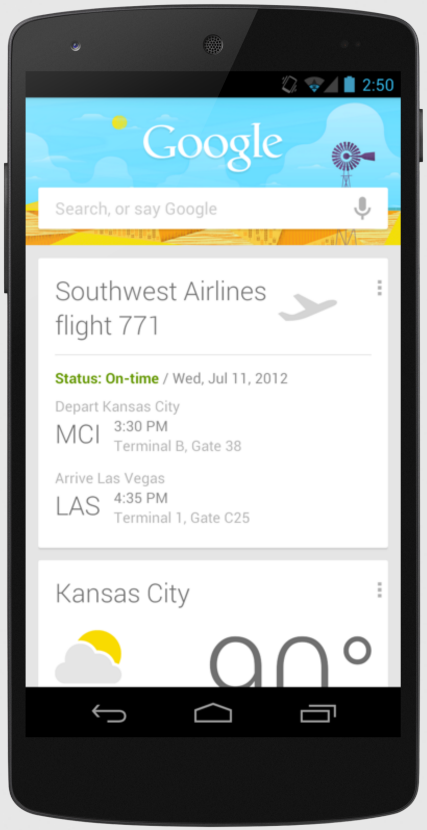
- **App manages the phone sound profiles**
- **In movie theatres, using geo-fencing APIs it puts the phone on silent**
  - Senses the location of the device
  - Understands the place by geocoding APIs
  - Adapts the phone sound profile to silent



Understanding Contextual apps

Google Now

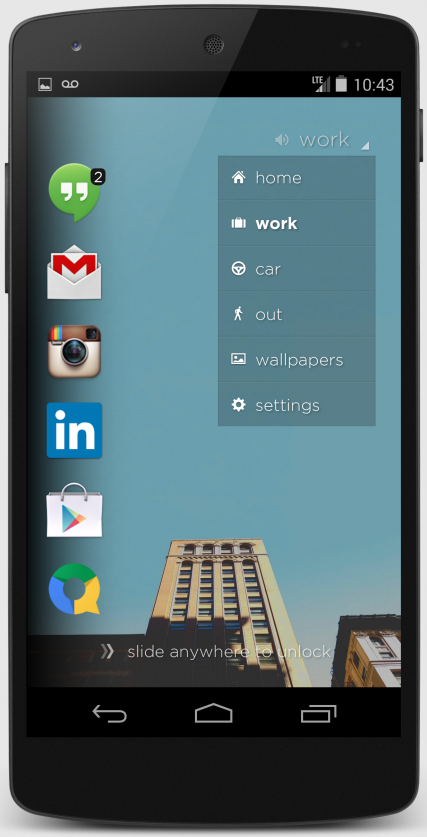
- **Gets you the right information at the right time**
- **Personal contextual assistant**
- **Using Contextual triggers to sense:**
  - Location
  - Email
  - Time
  - Mobility
  - Browsing history
  - Traffic
- **Understands preferences and habits to provide adaptive suggestions**



Cover

- The right apps at the right time
- Context aware lockscreen app
- Learns app usage from user behaviour
- Using Contextual triggers to sense
  - Time
  - Mobility
  - Location

- Situation aware lockscreen



Five technology forces

- Mobile (extended to Werables)
- Social Media
- Cloud and Big data
- Sensors (extended to IoT)
- Location-based services

The magic of context

- Right-Time experiences
- Things in the app just happen
- No redundant user inputs
- Bringing out the interactive experience of mobile
- Everything happens faster and in some cases automatically

Context with Tizen

Context with Tizen

- Tizen has a very wide range of APIs available for developers
- Endless possibilities of understanding the situation with these APIs
- Available in both Web and Native formats
- The abundant data obtained through APIs can be easily stored with Local Storage for JavaScript or Database Class with C++

Sensors

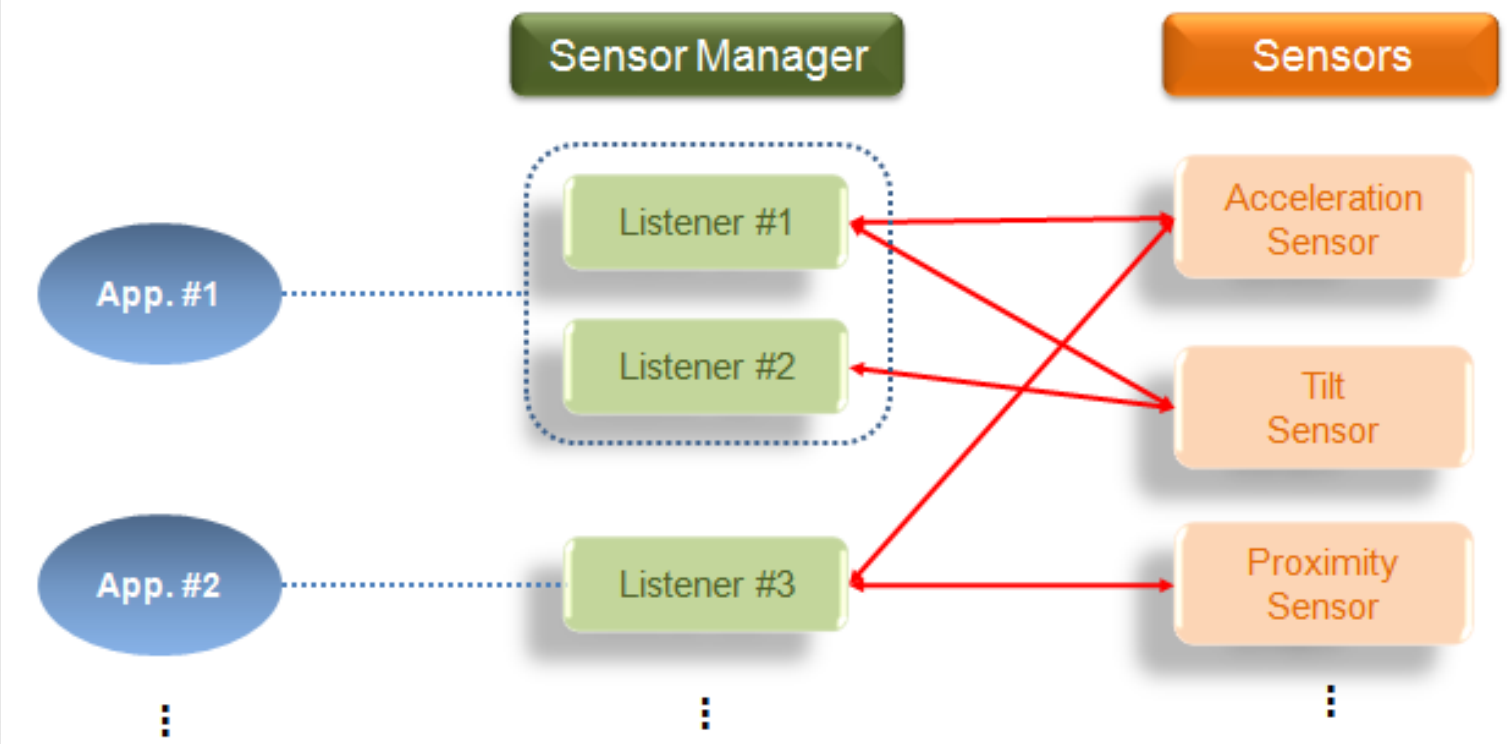
- **Average mobile device has 7 sensors**
- **3 out of 5 human senses have been covered**
  - Camera
  - Microphone
  - Capacitive screens
- **Sensors can help the app understand the user environment**
- **Increase the interactive nature of the app**

Sensors

- **Tizen provides a sensor manager class**
- **It supports the following sensors:**
  - Acceleration
  - Device orientation
  - Gravity
  - Gyro
  - Light
  - Magnetic
  - Proximity
  - Tilt

- **It can be used to access device sensors with polling intervals**

Sensors



- **Reference: https://developer.tizen.org/dev-guide/2.2.1/org.tizen.native.appprogramming/html/guide/uix/sensor_manager.htm**

Deep dive into Sensor Manager

- Construct SensorManager Class
- Create a listener
- Add or remove listeners with interval values

```
SensorManager:: AddSensorListener()
```

- Poll sensors at intervals
- Receive sensor data from event handlers at polling intervals

```
ISensorEventListener::OnDataRecieved()
```

Understanding the user

- Contact Device API
- Messaging Device API
- Call History API

- For example movie tickets, flight tickets or entire vacation itineraries can be parsed through Emails and SMSs’
- Adding a personalized touch of context to a your application

Big Data

- Rather than size, how it is used matters
- Passive gathering of data through sensors
- Understanding the gathered data
- Using the data in an engaging way
- With number of sensors deployed increasing- collection, modeling, reasoning is becoming more important

More data!

- Extract the power of Social Media and Big Data
- The Facebook graph API
- Foursquare Places Explorer
- Google geocoding and reverse geocoding
- Instagram REST API with search tags
- Twitter Search API
- Sina Weibo REST API

~~Content~~ Context is the king

- In the web decade content was the king
- With native access to sensors and big data now context is the king
- Understanding the user
- Providing a customised experience
- The million apps currently out there can be reimagined with a contextual fabric
- New value propositions for users
- Endless possibilities

Market Case Study: Reminder Now

- Reminder app reimagined
- Over 1000 reminder apps available
- Using people and locations as triggers, the entire reminder app experience was reimagined
- #1 Top Paid app on BB World

- There is demand for innovative use cases
- Users are no longer hesitant to invest in new technology

Internet of Things

Internet of Things

- Connecting everyday objects to the internet
- Billions of sensors connected to the internet
- New ways of sensing and interacting with the world around the user
- Nest learns user preferences and user routines
- iBeacon collecting environmental data
- Broader range of contextual data available
  - Self-driving car- 700mb data per second

Internet of Things

- **Sensors are getting smaller, cheaper and more powerful**
- **Sensors now not only limited to user device**
- **Levels of context awareness**
  - Personalization- user preferences
  - Passive context awareness- geo-fencing
  - Active context awareness- Smoke detector

Wearables

Wearables

- Wearables have a first-person perception of the user
- Wearables have small screens, content needs to be very relevant
- More accurate for health based data than smartphone sensors
- Unobtrusive interaction with the user

- With access to more data smartwatch apps are expected to be more advance and automated yet with simple interfaces
- Eg. Atooma- context aware automation

Building a Context-Aware app

Sense

- A context-aware restaurant locator

- Deciding triggers that our application will sense for
- Location is the most important to decide a distance radius
- Time of the day is important to look for a certain category
- The day of the week, so that we can estimate how much time the user has available

Sense

- To add on this

- Social data
- Facebook can be used to search what kind of places does the user like
- Foursquare can be used to get more location based data

Understand and Adapt

- We can store this data in a local database
- If we want to build user profiles and work on advance processing we can use the cloud to reduce the load on the phone
- This data can be used to filter places according to rules and the contextual algorithm
- Eg- if(12<t<16) {Only filter lunch places}
- Using the data triggers we can work on adapting the data to suit the user

Precautions with context

Wow factor vs freaky line

- Wow factor in apps like Google Now
- Automatically knows which flight is been taken and adds it in the schedule with flight tracking
- High utility features been triggered automatically through contextual triggers
- Ideal contextual experience

Wow factor vs freaky line

- Lots of companies going over the freaky line
- Making users nervous with their personal information
- For example Nokia's Trapster allows the user's location to be stalked precisely
- System lacking privacy

- Disclose information with a privacy policy
- Should be allowed to disable the service

Battery

- Data should be polled only when required
- Low battery sensor polling should stop or be reduced
- Share invokable data between apps
- Rather than going to the sensor every time it would be more efficient to get data through an app that just polled the data

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