

ITU-TRCSL Training on ICTs for promoting Innovation & Entrepreneurship

ICT enabled mobile applications

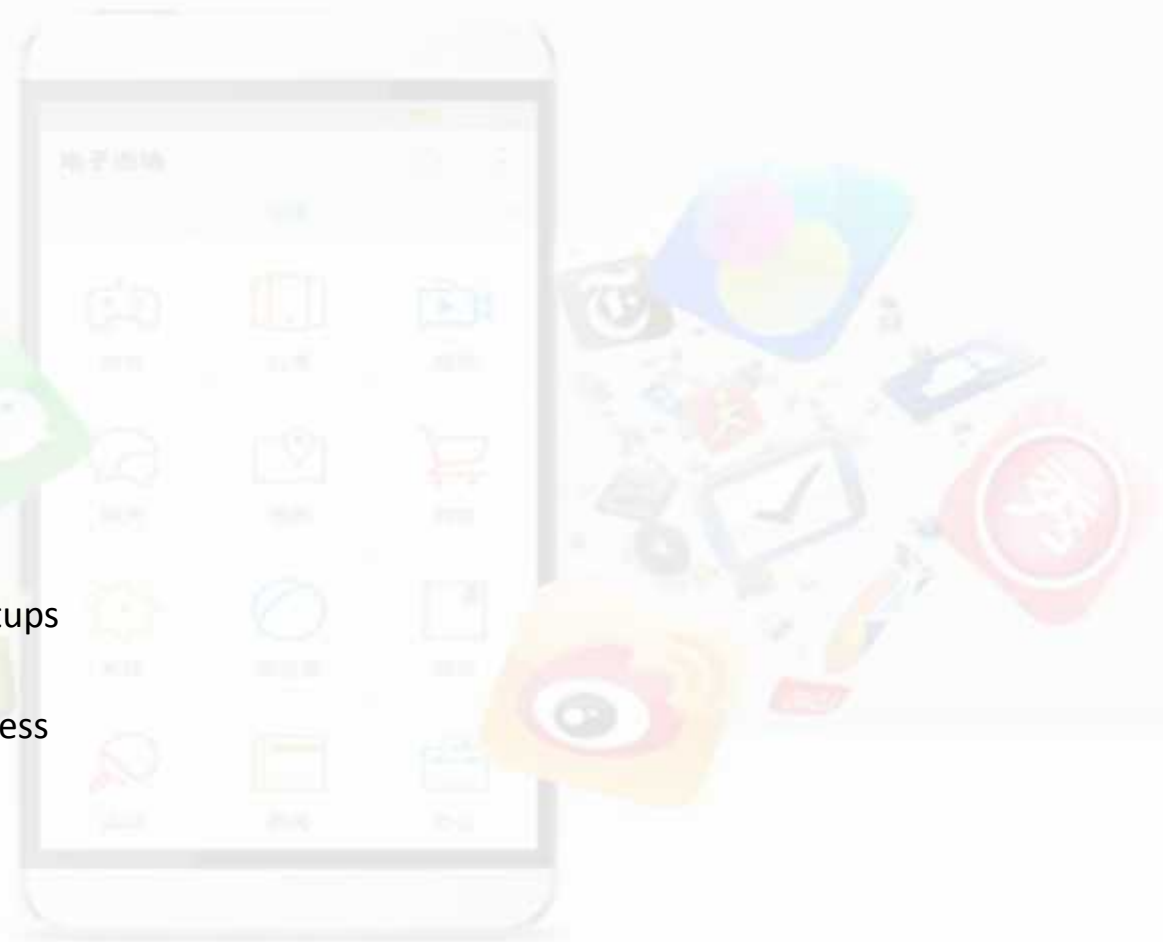
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Colombo, Sri Lanka**

Shahryar Khan , ITU Expert



Agenda

- Web Technologies
- Mobile Computing
- Why develop Mobile applications?
- Different Smartphone Platforms
- Application Categories
- Native VS Web based apps
- Hybrid Apps
- How to earn from Mobile apps
- Challenges and Opportunities for Startups
- Innovative Business Models
- How to build mobile apps based business
- Mobile Games
- Demand of Mobile apps in Sri Lanka
- Bhutan Case Study (Mobile apps)
- Conclusion





Web Technologies

- HTML – Hypertext Markup Language
 - CSS – Cascading Style Sheets
 - Javascript – Client / browser side programming language
 - DOM – Document Object Model
 - JQuery – Java Script library
 - AJAX – Asynchronous JavaScript and XML
-
- These technologies will be used when developing mobile web applications



Mobile Computing

- Mobile Computing is human-computer interaction by which computer is expected to be transported during normal usage. Mobile Computing requires mobile communication, mobile hardware and mobile software

Mobile Communication – Wifi, GPRS, Edge, 3G, 4G

Mobile Hardware - Laptops, Smartphones, Smart Watches

Mobile Software - Android, iOS, Windows Phone

Limitations:

Slow network Connectivity

Limited Battery life



Why develop mobile applications?

- Worldwide there are more than 1 Billion smartphones
- These smartphones are capable of running apps developed by 3rd party developers
- Downloading apps is the most popular data usage activity on smartphones
- Most of these smartphone have GPS, Touch screen, accelerometer and high speed internet connectivity (wifi,3G,4G)
- These features makes developing interesting apps possible
- Apps can solve real-word problems and create an impact
- Lot of demand for smartphone applications



Different Smartphone Platforms

- iPhone
- Android
- Windows phone
- Blackberry



Apple

A lot of platforms
out there.



Google



Symbian



Microsoft



RIM

Apple iPhone/ iPad



- Unique distribution mechanism through Apple App Store
- App Store was launched in June, 2008
- Total number of apps downloaded crossed 100 Billion
- More than 1.5 million apps available on the App Store
- On average user downloaded more than 60 apps
- Apps can be free or developer can set a price tag
- Developer gets 70% share for each app purchase
- Apple has paid more than 30 Billion USD to developers
- Apple develops both hardware(iPhone) and software (iOS)
- Apple approves every app submitted to App Store



Google Android

- Android Apps are distributed through Google Play
- More than 1.6 million apps on Google Play
- Google develops Android Operating system while hardware is developed by Samsung, HTC and others
- Device fragmentation problem
- There is no formal approval process on Google Play
- Other App Stores also available for Android i.e. Amazon Kindle Fire
- Developer gets 70% of revenue for each app purchase
- Revenue can be earned through paid content, in app purchasing and advertisement



Google play





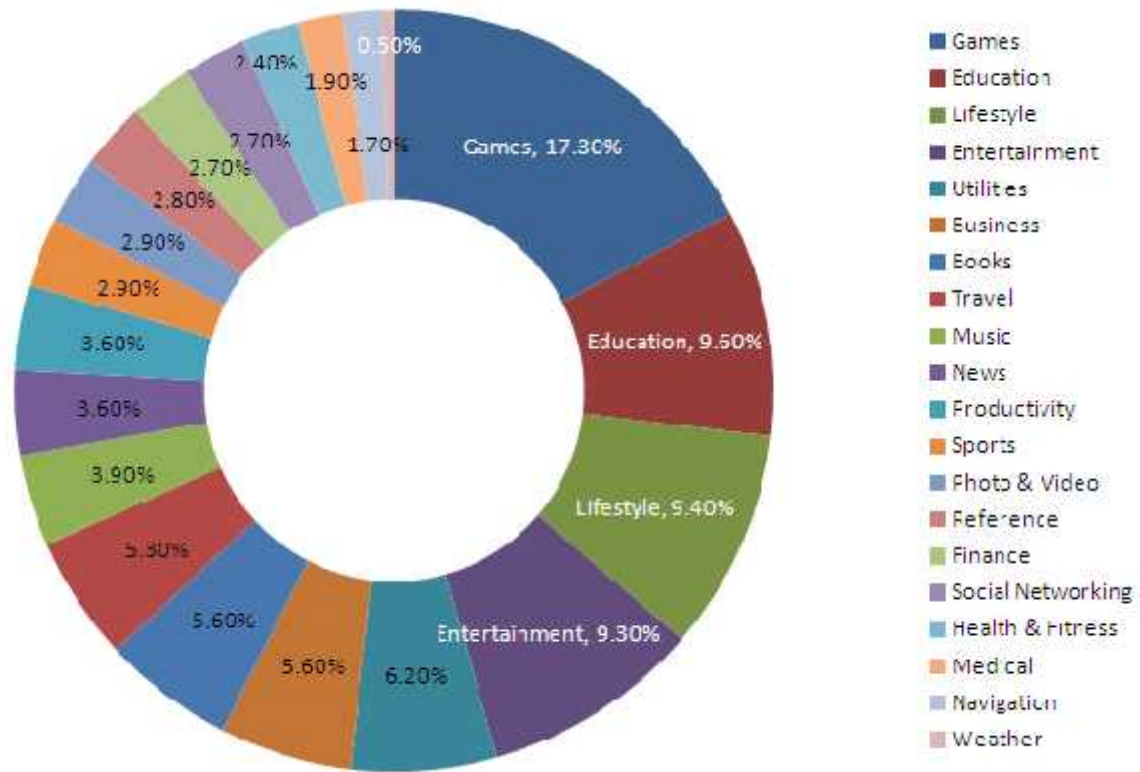
Windows Phone



- Windows phone app available through Windows Marketplace
- Marketplace was launched in Oct,2010
- Total number of apps is around 400,000
- Apps are approved before they are published on Marketplace
- Developer earns 70% of revenue for each app purchase
- Operating system is developed by Microsoft
- Hardware is mostly developed by Nokia

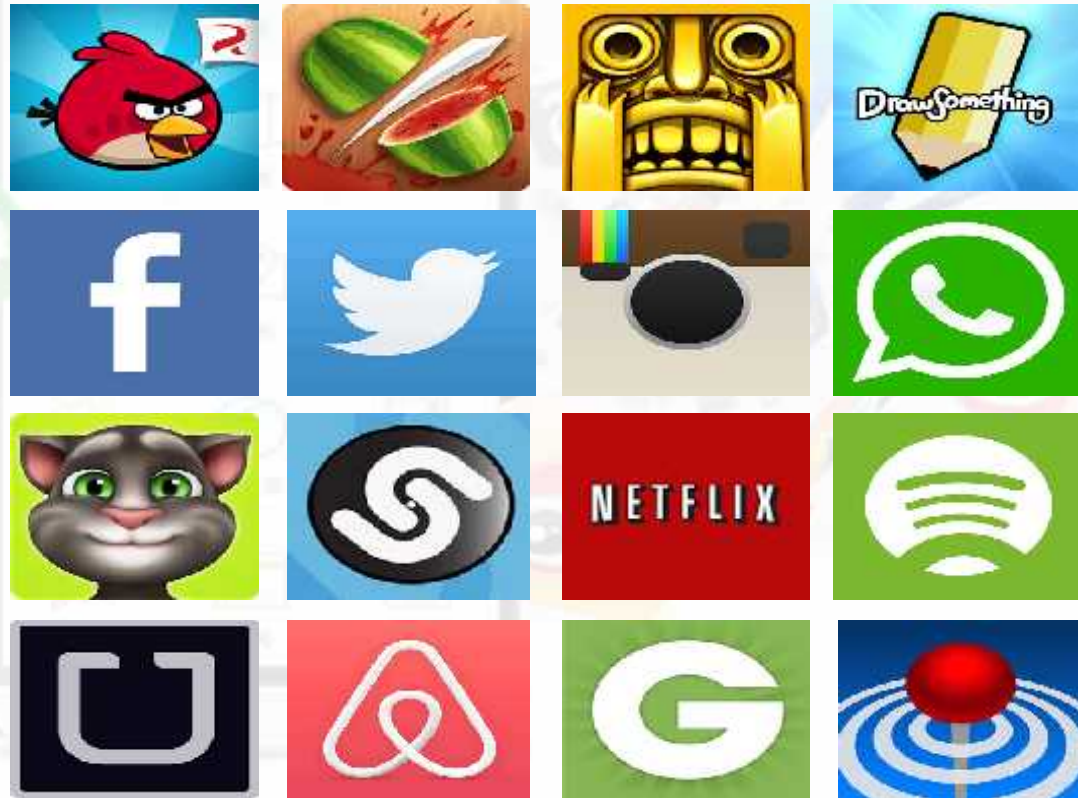


App Categories



ITU App Categories

- Games
- Social Networking
- Entertainment
- Travel and Lifestyle





Native VS Mobile Web Apps

- A native app is one that is built for a specific platform, such as iPhone or Android using their code libraries and accessing their available hardware (GPS, Camera etc)
- A web based app, is one that is hosted on web and is accessed from a mobile browser (normally uses HTML5)
- Some of famous mobile browsers are:
 1. Safari
 2. Opera Mini
 3. Chrome
 4. Android browser
 5. Internet Explorer Mobile



Pros and Cons of Native apps

Pros	Cons
Since native apps work with device built in features, they are faster and they can access device hardware features	They are more expensive to develop, especially if you want to target multiple platforms
Native apps can be easily downloaded from concerned App Stores	The cost of maintenance and updates is also higher if you want to support multiple platforms
Because they go through an approval process, users can be sure that they are secure	Getting updates can be tedious and developers cannot iterate quickly
Easy for the developers to work on, as they are provided with tools and SDKs to work on	App can be lost in the sea of apps already available on the App Stores



Pros and Cons on Web apps

Pros	Cons
Web apps are much easier to maintain as they have common code base across multiple mobile platforms	Only have limited scope as far as accessing mobile device features
Web apps do not require developers to submit the app to the App Stores	Web apps that support multiple browsers can be expensive to maintain
Since web apps do not require App Stores approval they can be released and iterated much faster	User may find it difficult to discover a web app as it is not listed on App Stores
Users need not to be bothered with visiting an App Store for downloading and updating apps	Since web apps do not have to pass through an approval process, users are not sure of their security



Native apps development platforms

- Apple iPhone – Objective C,, Swift, Xcode
- Google Android – Java, Eclipse, Android Studio
- Windows Phone - .NET ,C# Microsoft Visual Studio

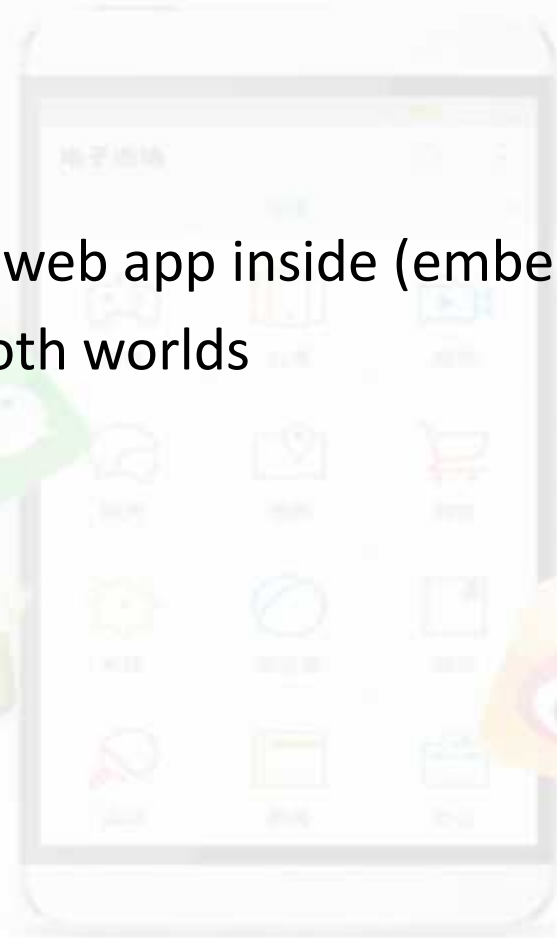
Web apps development platforms

- PhoneGap
- Cordova
- Ionic
- Sencha Touch
- Titanium



Hybrid Apps

- Native app with with a web app inside (embedded HTML)
- Can combine best of both worlds





Native ,Hybrid and Web apps

	API Access	Speed	Development Cost	App Store	Approval Process
Native	Full	Very Fast	Expensive	Available	Mandatory
Hybrid	Full	Very Fast	Reasonable	Available	Low overhead
Web	Partial	Fast	Reasonable	Not available	None

Which approach you use depends on your specific requirements





How to earn from Mobile apps

- Paid apps (Developer keeps 30% of the revenue)
- Free apps with advertisement
- Free apps with in app purchases



Apps and Games





Challenges for Startups

- Market is getting saturated (More than 3 million apps)
- Can be difficult to promote your application
- Can be hard to get funding for your idea



Opportunities for Startups

- Mobile apps can impact the lives of many people
- Can earn revenue if the apps solves a particular problem
- Think of solving a local problem
- Identify a niche market
- Think globally act locally



Innovative Business Models

Airbnb is an online marketplace and hospitality service, enabling people to lease or rent short-term lodging including vacation rentals, apartment rentals, homestays, hostel beds, or hotel rooms.

The company does not own any lodging; it is merely a broker and receives percentage service fees (commissions) from both guests and hosts in conjunction with every booking.

It has over 3,000,000 lodging listings in 65,000 cities and 191 countries, and the cost of lodging is set by the host.





Innovative Business Models

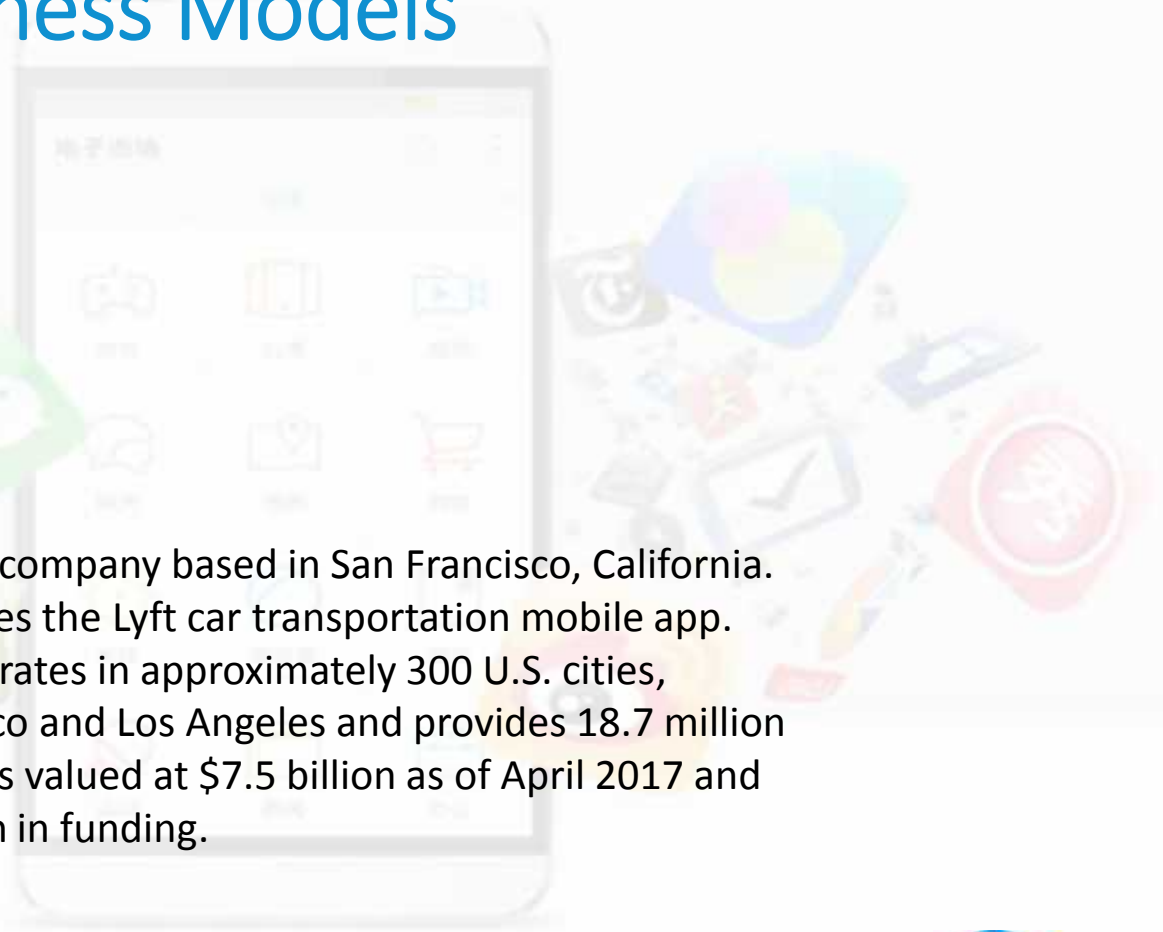


Uber Technologies Inc. is an American technology company headquartered in San Francisco, California, United States, operating in 633 cities worldwide. It develops, markets and operates the Uber car transportation and food delivery mobile apps. Uber drivers use their own cars





Innovative Business Models

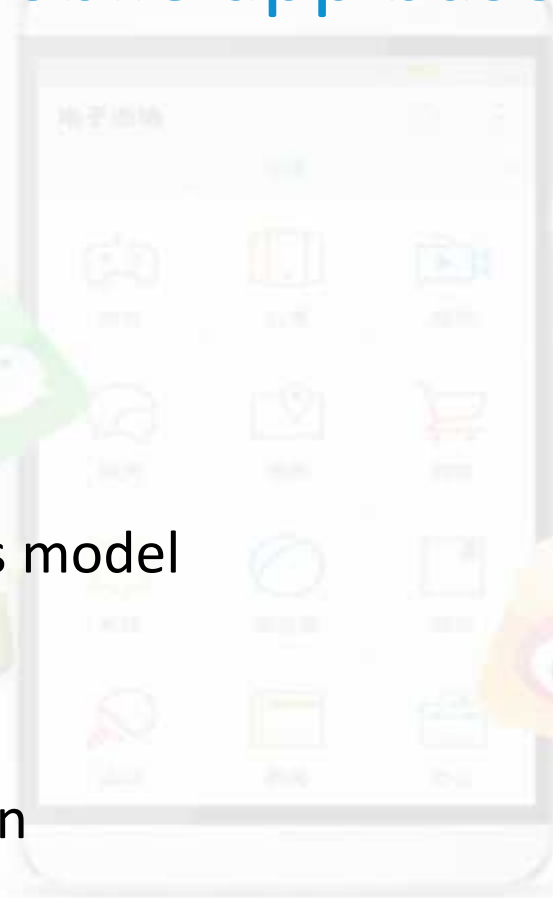


Lyft is a transportation network company based in San Francisco, California. It develops, markets and operates the Lyft car transportation mobile app. Launched in June 2012, Lyft operates in approximately 300 U.S. cities, including New York, San Francisco and Los Angeles and provides 18.7 million rides a month. The company was valued at \$7.5 billion as of April 2017 and has raised a total of \$2.61 billion in funding.



How to build mobile app based business

- Find problems and gaps
- Imagine the future
- Do market research
- Think about the business model
- Partner/hire someone
- Develop your product
- Marketing and Promotion





Find Problem and Gaps

- Building mobile app startup is about solving a problem
- Provide a better solution to an existing problem
- Adapt an existing solution to problems in your country
- Apply existing solutions to your industry
- Seek and address existing pain points



Imagine the future

- Think of problems that can be solved with future technology
- VR/AR solutions to existing industries
- Internet of things (IoT)
- Identify/Predict future problems




Do market research

- Research about similar products/ apps that exist in the market
- Research about the value proposition of your app
- Research about the pricing of your app
- Identify keywords for your app



Partner/Hire someone

- Ideal team formation
- Hire a freelancer to build product/mobile app



Develop your product

- Customer persona
- Sketching/wire framing
- User Interface design
- Planning
- Clickable prototype
- Software development
- Quality Assurance



Marketing and Promotion

- ASO
- Social Media Promotion



Think about business model

- How will you make money from your idea?
- Will you set a price tag or go with free model ?



Mobile Games

- Can be developed using Unity 3D
- Most popular category in mobile apps
- Retention rate is higher as compared to apps
- Most of the mobile games are free
- Games can be developed with local content and themes
- Do not need to build game from scratch
- Can re-skin an existing game



Sri Lanka Stats

- Total population: 20,905,335 (21 million)
- Total internet users: 6,087,164 (6 million)
- Internet penetration: 29.1%
- Literacy rate: 92%



- 3G/4G subscribers: 3 million +
- Sri Lanka was the first country in South Asia to launch 3G services in 2006 and 4G services in 2012
-














Demand for mobile apps in Sri Lanka





ICTA mobile apps

ICTA Sri Lanka

 <p>Leem Sinhala Tamil ICTA Sri Lanka</p> <p>★★★★★ FREE</p>	 <p>Sri Lanka Museum ICTA Sri Lanka</p> <p>★★★★★ FREE</p>	 <p>Sri Lanka Vehicle In ICTA Sri Lanka</p> <p>★★★★★ FREE</p>	 <p>Sri Lanka e-Service ICTA Sri Lanka</p> <p>★★★★★ FREE</p>	 <p>LIFE - Location Code ICTA Sri Lanka</p> <p>★★★★★ FREE</p>	 <p>ICTA Sinhala Tamil ICTA Sri Lanka</p> <p>★★★★★ FREE</p>
 <p>Sri Lanka Postal Co ICTA Sri Lanka</p> <p>★★★★★ FREE</p>	 <p>Sri Lanka Fish Price ICTA Sri Lanka</p> <p>★★★★★ FREE</p>	 <p>Sri Lanka Train Schedule ICTA Sri Lanka</p> <p>★★★★★ FREE</p>	 <p>Sri Lanka Mobile Police ICTA Sri Lanka</p> <p>★★★★★ FREE</p>	 <p>Health Education Bureau ICTA Sri Lanka</p> <p>★★★★★ FREE</p>	





Demand for mobile apps

- There is a lot of demand for smartphone apps in Sri Lanka
- There is a lot of demand for local content
- There is a huge opportunity
- Try to identify and solve local problems
- Games/ learning apps can be developed for children
- Viber is more popular than Whatsapp in Sri Lanka



Mobile Operators





Package/bundle activation



Activation

Reload
👍 Yes

Card
👍 Yes

☎
*59#

✉
D59 to 155

Reload
👍 Yes

Card
👍 Yes

☎
*95#

✉
D95 to 155

Reload
👍 Yes

Card
👍 Yes

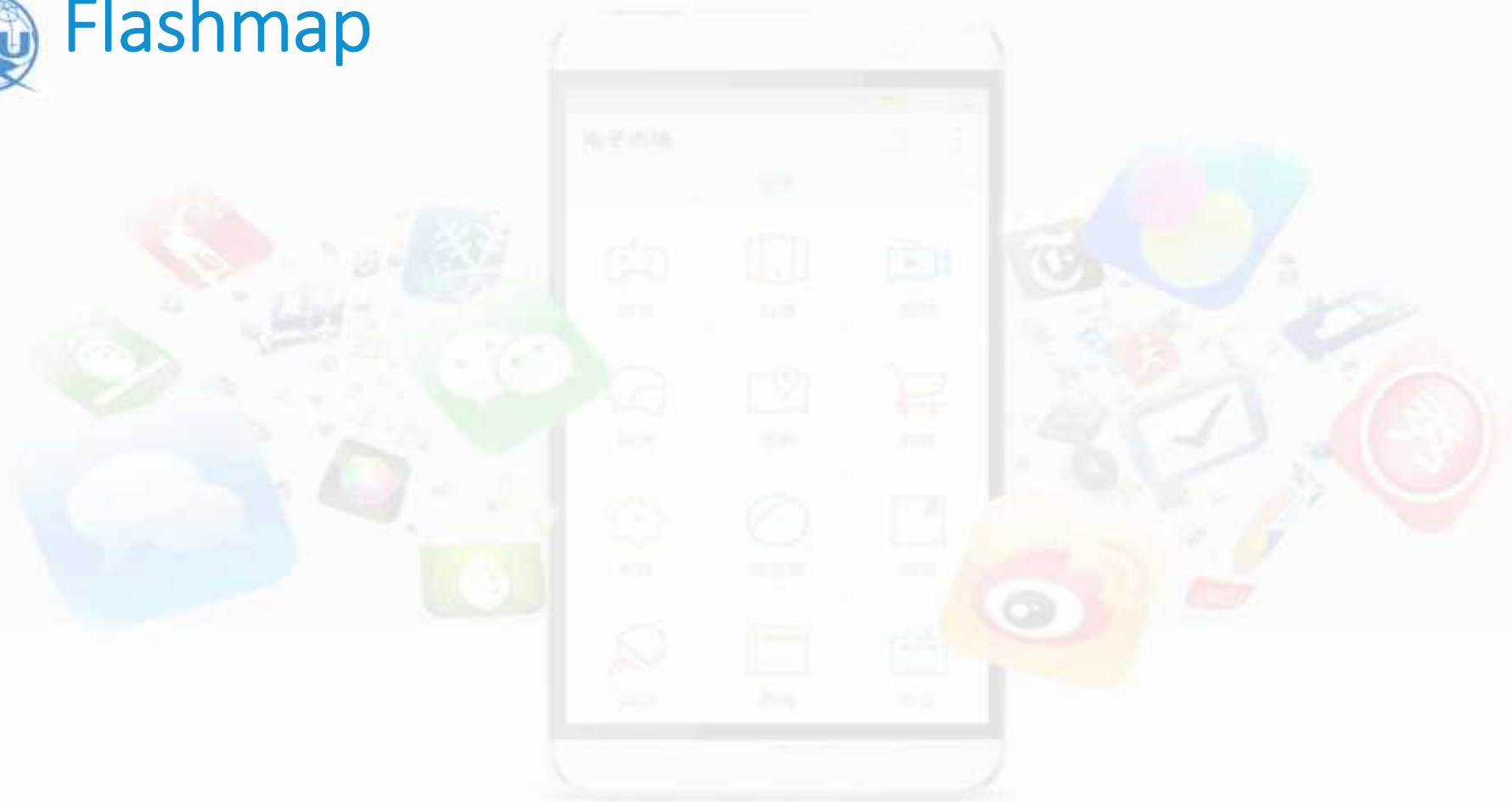
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Flashmap





Bhutan Case Study

- In 2012, Bhutan government requested ITU to provide input on the emerging mobile applications opportunities in Bhutan
- ITU helped in identifying four key areas for mobile application development
 1. Mobile Agriculture
 2. Mobile Health
 3. Mobile Banking
 4. Disaster Management



Mobile Agriculture

- The main objective was to reduce role of middle man
- Farmers should have access to up to date pricing information
- Application should provide support for different local languages
- Most of the farmers have feature phones

Solution

- Developed IVR (Interactive Voice Response) based application
- Farmers can access the information free of cost



Mobile Banking

- Access banking information on the go and reduce the need to go to bank
- Most of bank customer of Bhutan already have Android based smartphones
- Security of customer is very important

Solution

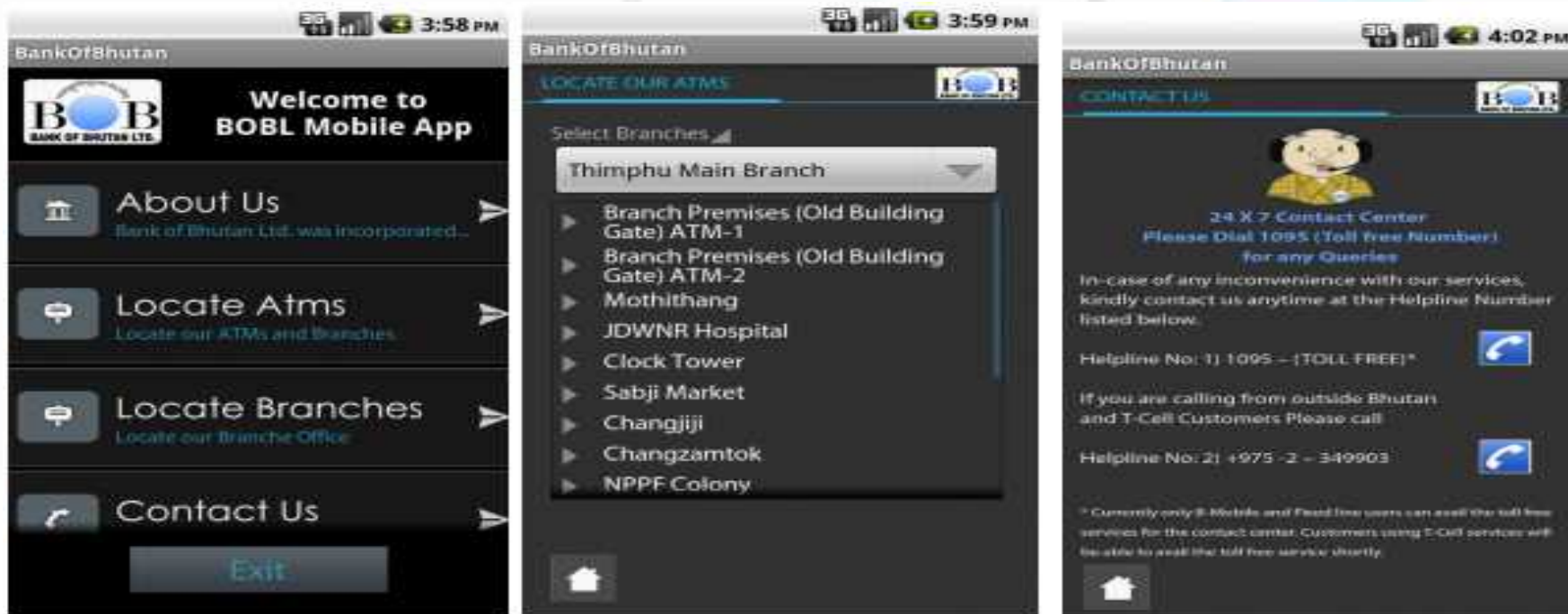
Android app for Bank of Bhutan

Some of the features are:

1. Account balance inquiry
2. ATM/ Branch Locator using Maps
3. Interest Calculator
4. News and Announcements
5. Latest Currency Exchange Rates



Bank of Bhutan Android App



Available on Google Play for Free Download





Mobile Health

- Assist Ministry of Health in maintaining record of child vaccination
- Alert health care workers if a child has missed a vaccine
- Health care workers have access to tablets

Solution

Developed an HTML5 based web application for tablets



Disaster Management

- Warn the inhabitants about a disaster before, during and after the event

Solution

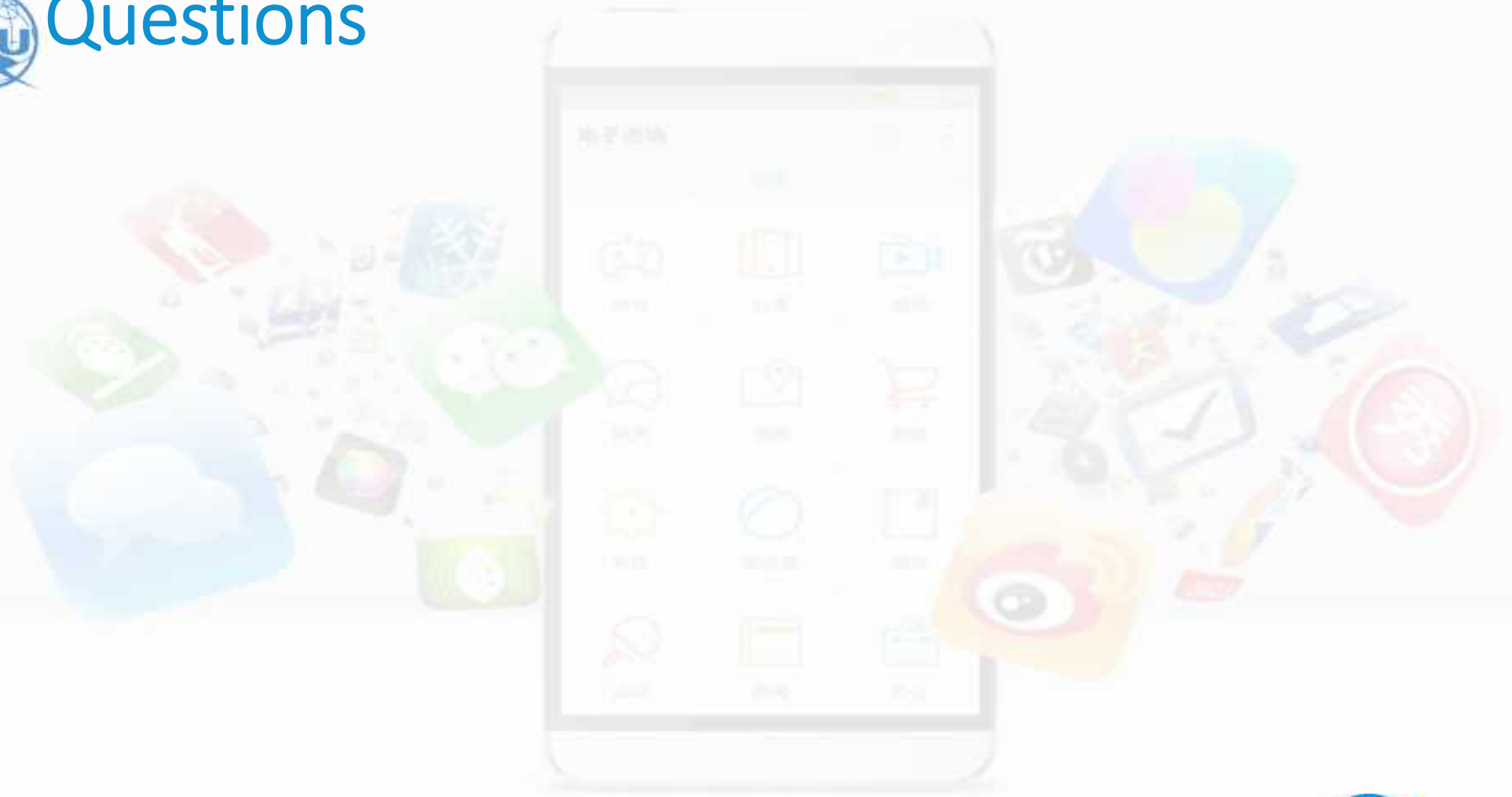
- Developed a SMS based solution
- Has support for local languages



Conclusion

- There should be courses thought on Mobile app development in the Universities
- There is a lot of demand for mobile applications with local content/languages
- Mobile apps should be developed both for smartphone users and feature phones

Questions





I Thank U (ITU)

