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Smart Space-Based Intelligent Mobile Tourist Guide: Service-Based Implementation

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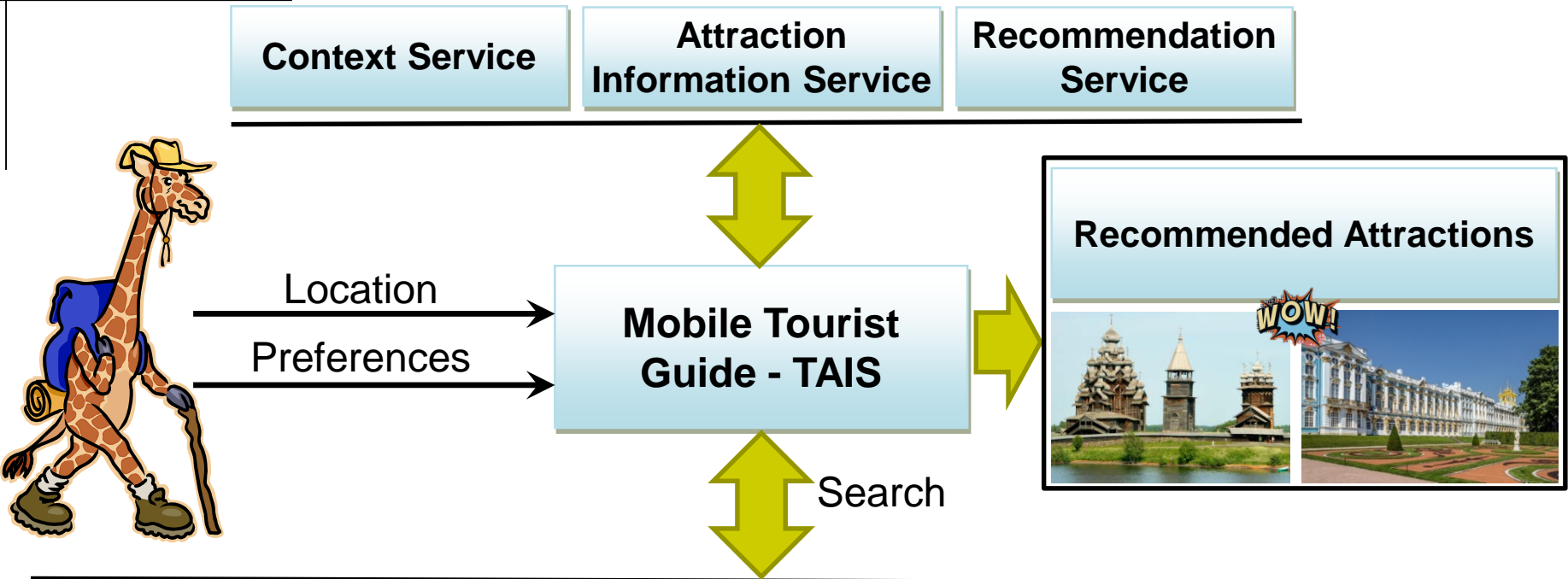
Table of Contents

- Motivation
- Mobile Tourist Guide Service Overview
- Architecture of Mobile Tourist Guide Service
- Smart Space Communication
- Recommendation Service
- Video
- Conclusion

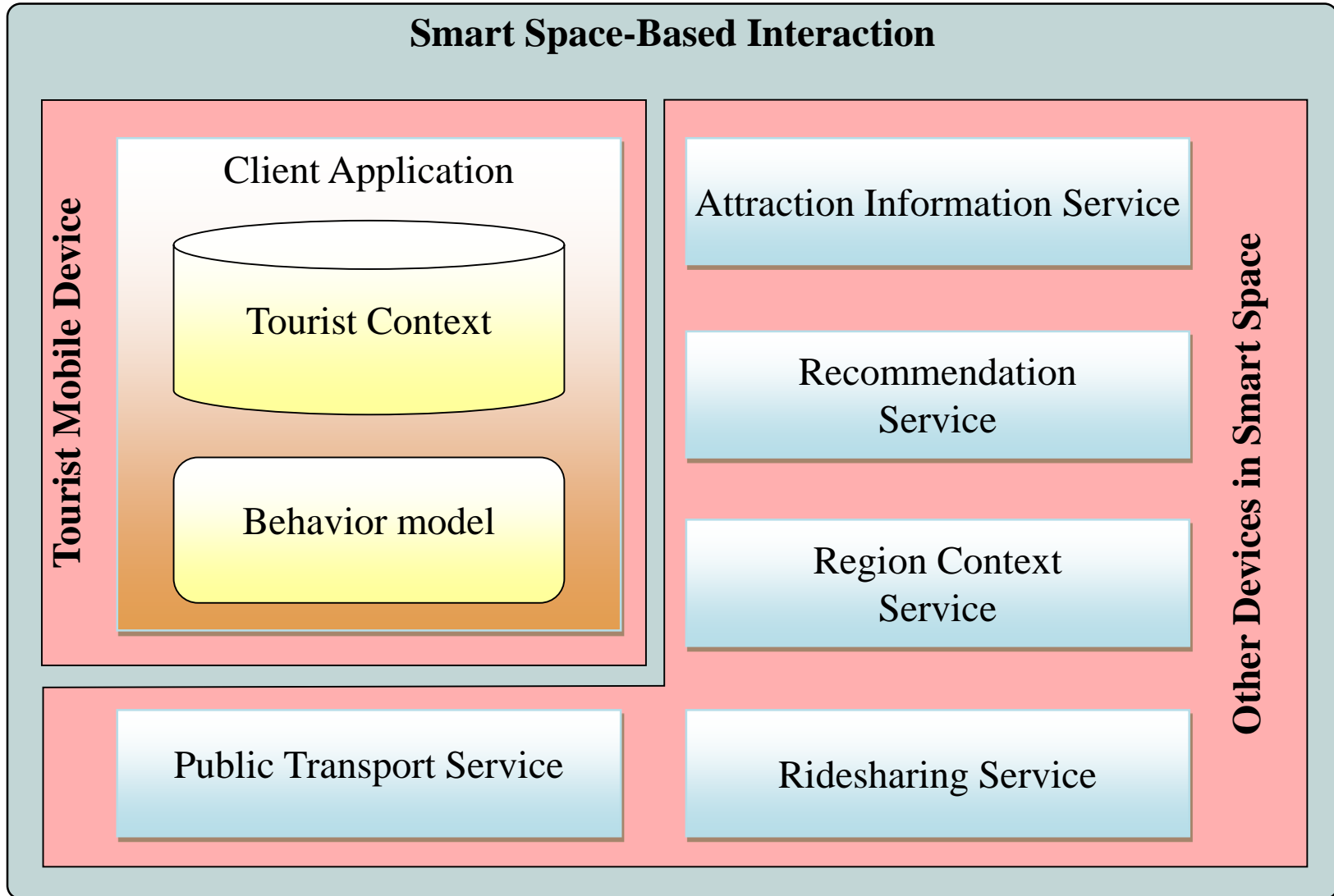
Motivation

- The tourism business has become more and more popular.
- More and more tourists prefer to use the Internet for studying information about interesting places in the world and transport situation in interested region.
- Mobile Tourist Guide – TAIS is a complex solution that
 - Works on Android-based devices.
 - Finds in the Internet attractions nearby the tourist and provides recommendations which attractions which is better to attend.
 - Provides pictures and descriptions of these attractions acquired from different Internet Sources.
 - Takes into account tourist preferences and current situation in the region.
 - Shows the tourist weather in the location region.
 - Provides interactive map of the region.
 - Provides pedestrian and car routing information for the tourist.

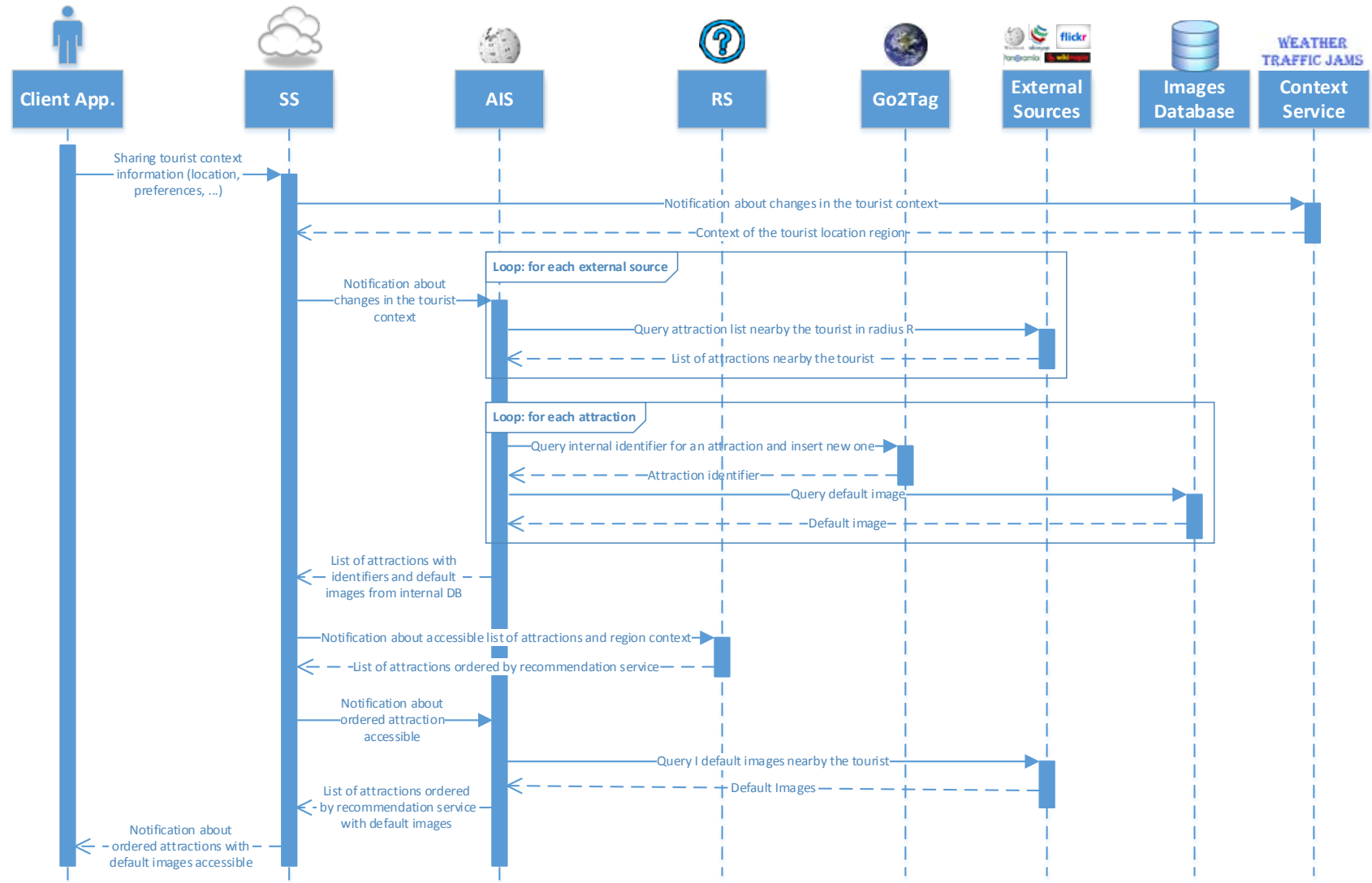
Intelligent Mobile Tourist Guide - TAIS



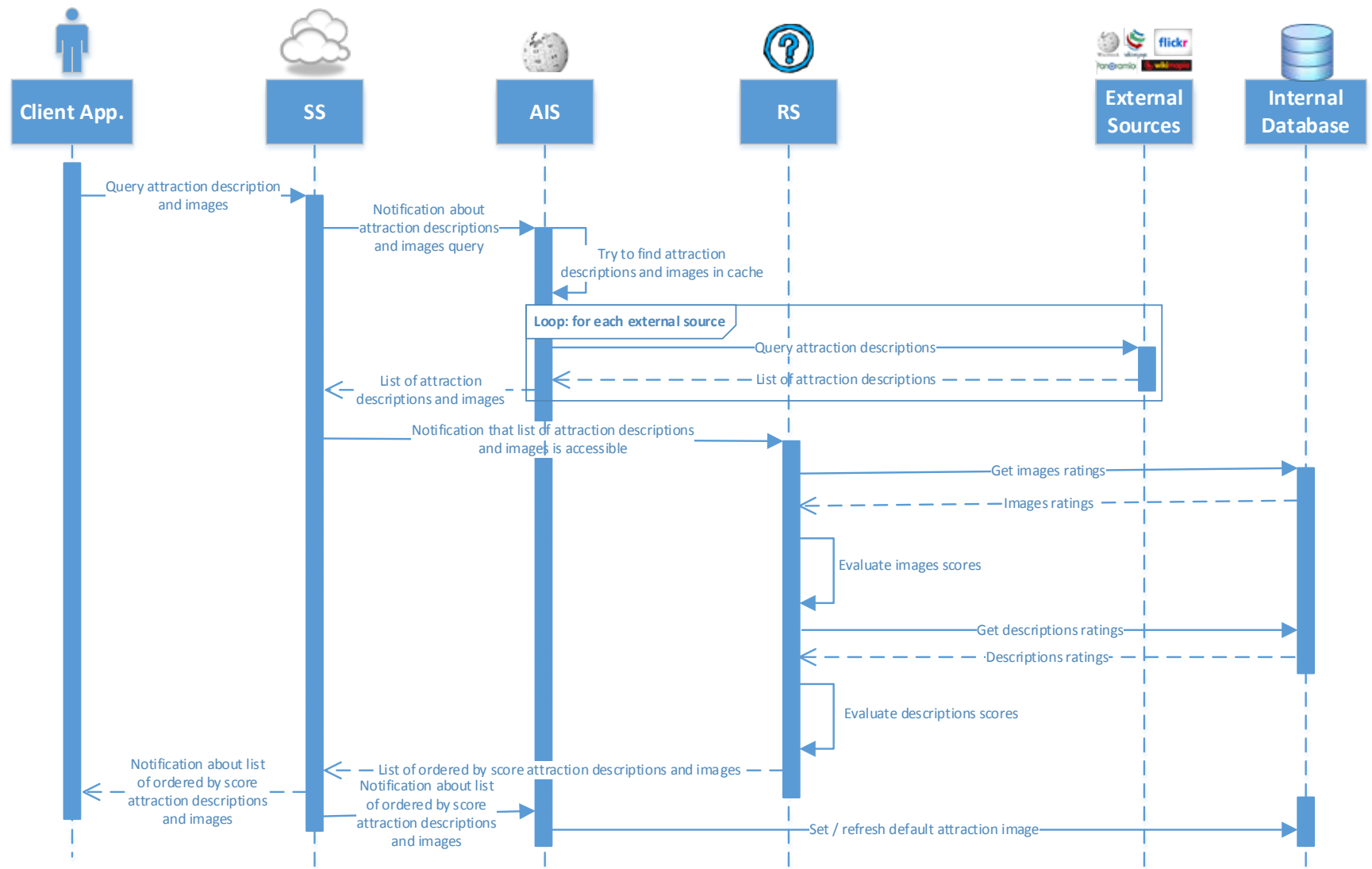
Intelligent Mobile Tourist Guide Architecture



UML Sequence Diagram For Getting List of Recommended Attractions



UML Sequence Diagram for Getting Attraction Descriptions and Images



Smart Space Communication Example

● Client Module

- ([user_id], “http://cais.iias.spb.su/XML/tais:is_a”, “tourist”)
- ([user_id], “http://www.w3.org/2003/01/geo/wgs84_pos:longitude”, “60.12”)
- ([user_id], “http://www.w3.org/2003/01/geo/wgs84_pos:latitude”, “30.24”)
- ([user_id], “http://cais.iias.spb.su/XML/tais:date_time”, “2014-04-21 10:00”)
- ([user_id], “http://cais.iias.spb.su/XML/tais:role”, “traveler”)

● Context Service

- ([user_id], “http://cais.iias.spb.su/XML/tais:weather”, “sunny”)
- ([user_id], “http://cais.iias.spb.su/XML/tais:weather_icon”, “http://..”)
- ([user_id], “http://cais.iias.spb.su/XML/tais:temperature”, “20”)
- ([user_id], “http://cais.iias.spb.su/XML/tais:wind_speed”, “5”)
- ([user_id], “http://cais.iias.spb.su/XML/tais:wind_direction”, “U+2199”) ✓
- ([user_id], “http://cais.iias.spb.su/XML/tais:traffic_jams”, “average”)

● Attraction Information Service

- ([user_id], “http://cais.iias.spb.su/XML/tais:near_by”, NearbyXML)

● Recommendation KP

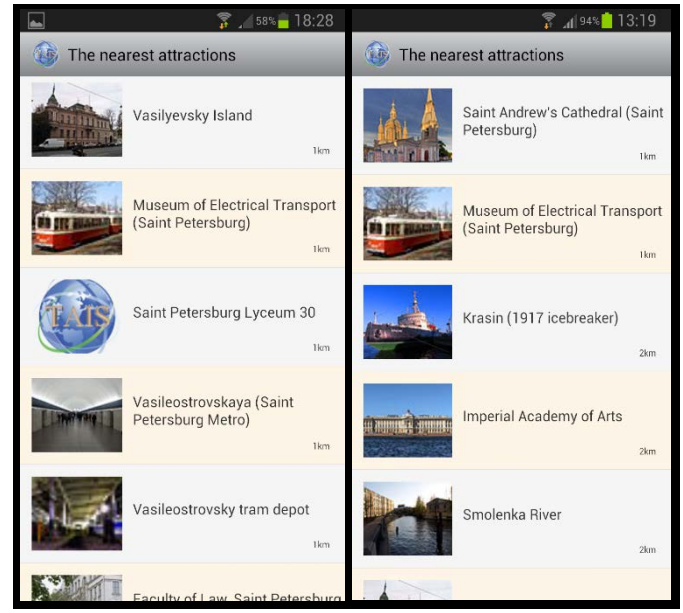
- ([user_id], “http://cais.iias.spb.su/XML/tais:recommended_attractions”, RecommendedAttractionsXML)

Attractions Recommendation Based on Ratings

	Louvre	Eiffel Tower	Palace of Versailles	Notre Dame de Paris	Ile de la Cite	Museum of Electrical Transport	Imperial Academy of Arts	Krasin	Smolenka River	Saint Andrew's Cathedral
John	5	5	3	3	2					
Lisa		5	3	2	2	5	5		5	5
Alice	5	5	3	2	2	4	5	5	4	5
Bob	5	5	3	2	2	5	4	5		5
Patrick	2	1		3	4	5	2	4		2
Jack		4	5		5		3	4		3

Attraction 1 Attraction 2 Attraction 3

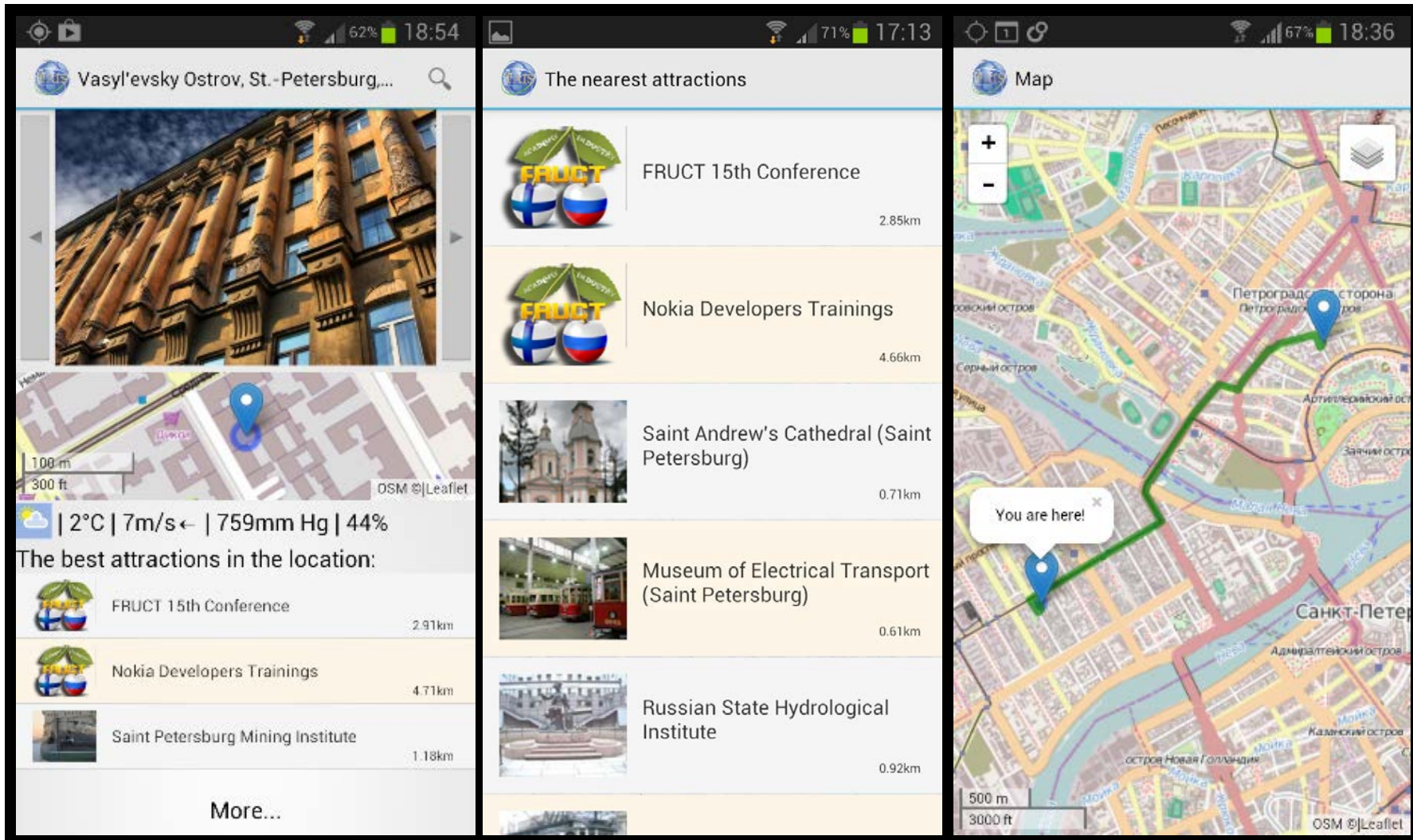
User 1	2	3	2
User 2	5	4	?
User 3	4	5	5



Attraction Images and Descriptions Recommendation

- Internet services provide a big amount of images
- The system allows users to estimate every image (“like”, “dislike”)
- It is reasonable to show the user only the best images of the selected attraction
 - Show images that have the best score
 - Show new images (images without score)
 - Show small amount of images that have negative score (to exclude mistakes)
- Internet services provide several text blocks for an attraction
- It is needed to show the user the best text block and range other
 - User estimations («Like» / «Dislike»)
 - Text block characteristics: size, variety of vocabulary
 - Degree of similarity of a text block with the last shown

User Interface: Intelligent Mobile Tourist Guide



Conclusion

- The service has been successfully tested in St.Petersburg and Leningradskaya region.
- The smart space based intelligent mobile tourist guide service can be downloaded from Google Play Market
<https://play.google.com/store/apps/details?id=ru.nw.spiiras.tais>
- The service can be overviewed during the DEMO section (today, April 25 from 18.00 till 20.30, Auditorium 103).
- The service can be used to find FRUCT conference location and build path to it.
- The count of downloads is more that 300.



**Thank you for Attention
Questions are Welcome!**



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