

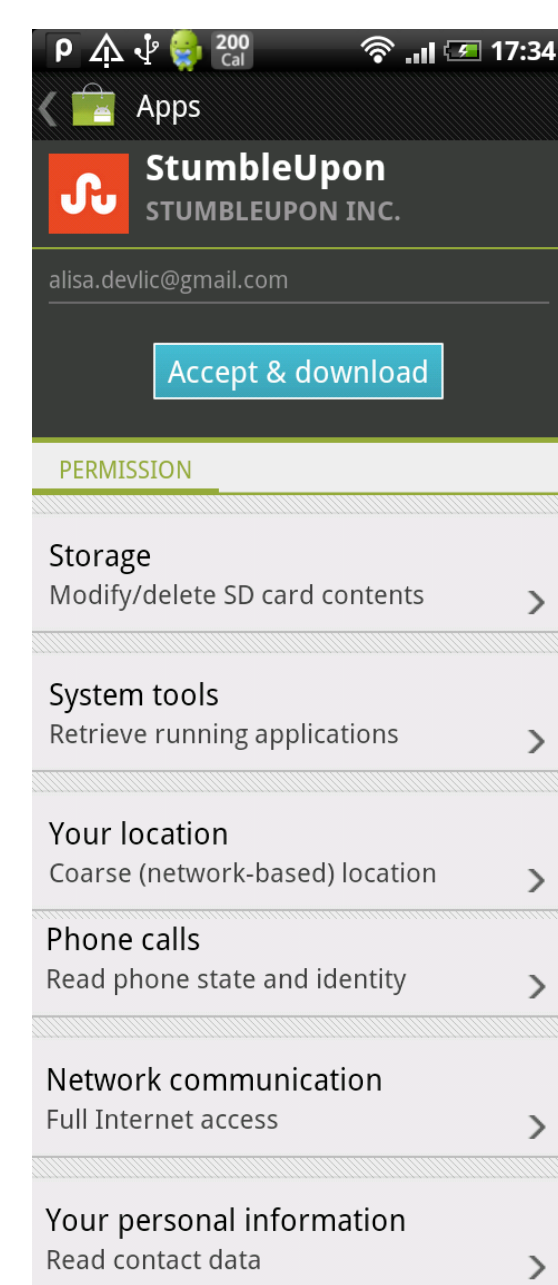
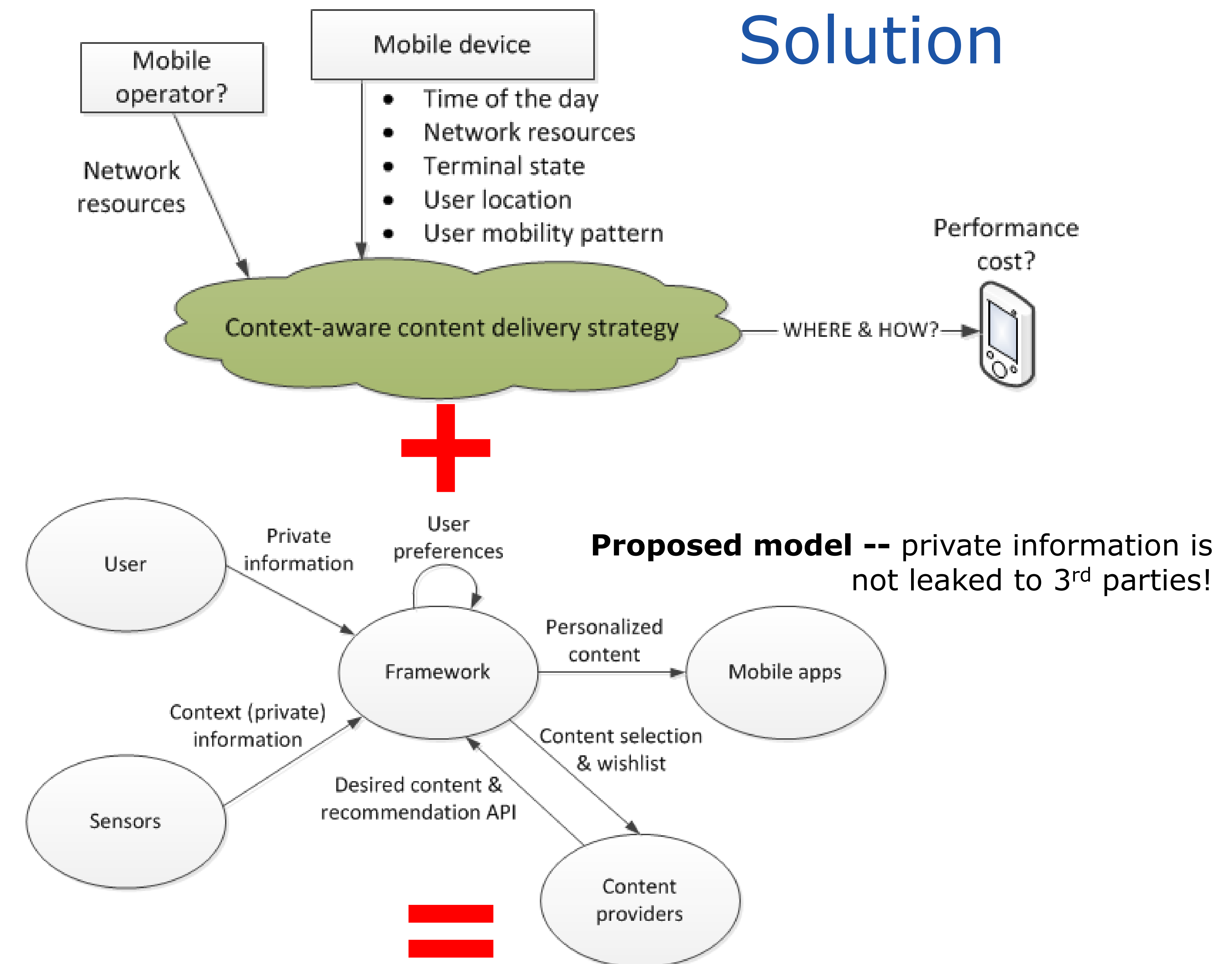
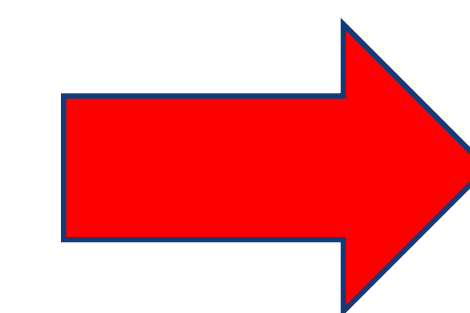
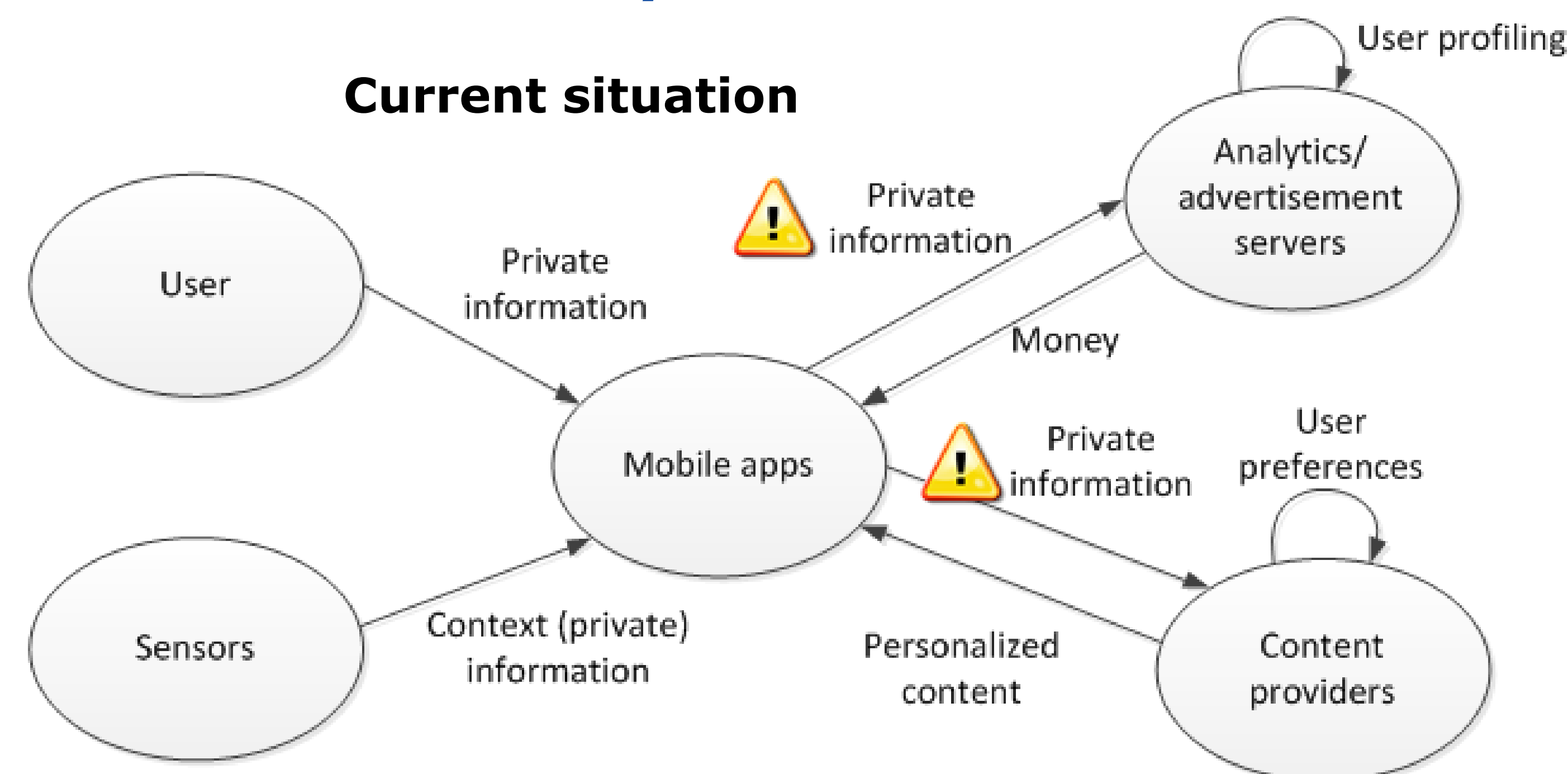
Towards a context- and privacy-aware framework for mobile video content delivery

Enabling rich QoE to mobile users while protecting their privacy

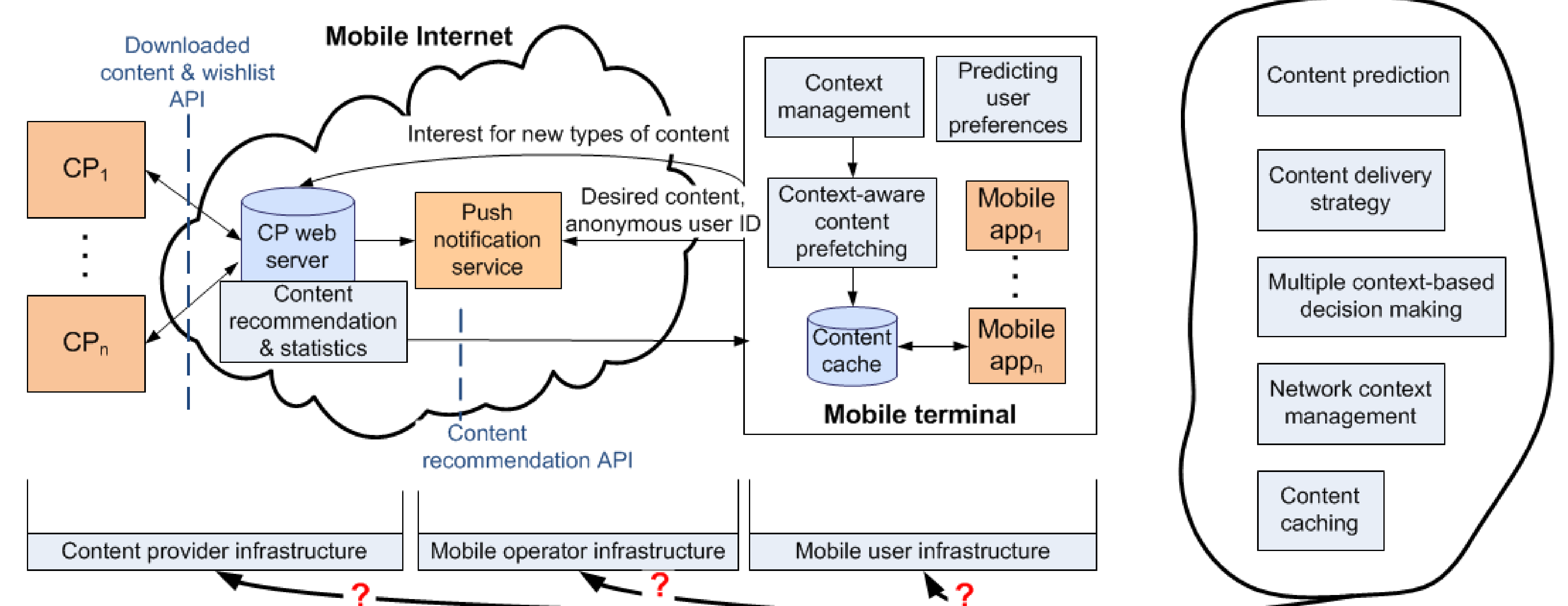
Mobile video content delivery

- Wireless and mobile Internet access enabled content providers to make their content available on mobile devices
- Number of mobile handheld devices exceeded the number of sold PCs
- With multiple network interfaces and operating systems enabling development of mobile apps, smartphones paved the way to mobile Internet
- Video drives the mobile data usage, but is bandwidth intensive
- Need for novel video content delivery techniques that optimize available capacity and provide rich QoE to mobile users when accessing desired content

Privacy concerns



- Previous research has shown that out of 30 popular Android apps, 20 apps made 24 privacy violations, sending user private information to different web servers without user authorization:
 - 2 apps leaked the phone number, IMSI, and ICC-ID (unique serial SIM ID)
 - 7 apps leaked device unique ID (IMEI)
 - 15 apps leaked location data
- 20 out of 30 apps required permissions to read phone state and access Internet!
- Correlating sensitive data with the phone identity enables one to create a user's behavior model
- Another study has shown that out of 940 Android apps about 30% are overprivileged, requesting more permissions than their APIs use
- Permissions can even be aggregated by communication between 2 apps with different individual permissions



Results of previous work

- In my licentiate thesis I proposed a context trigger construct to initiate an action based on the context update and preferences set in the updated context
- Implementation and evaluation of context management framework has been described in several publications that are available at my home page: <http://web.it.kth.se/~devlic>

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Abstract

This poster presents the proposal for context- and privacy-aware delivery of video content to mobile devices over wireless and mobile network infrastructure. Since the video streaming applications are bandwidth intensive and with an ever increasing number of mobile Internet users, there is a risk of quickly running out of the available capacity in the mobile network. Our goal is to design a framework that can optimize the use of limited network resources by considering the users preferences regarding the desired content and caching (pieces of) this content in the user's terminal and potentially in different parts of the radio network, in order to provide a rich quality of experience (QoE) to users when accessing the desired content. Based on the available network resources, terminal status, and user context (location, mobility pattern, and speed of movement), the content prefetching and caching strategy will be created in the way that preserves the user privacy. The proposed framework must not leak user private information outside of the user terminal or share it with other applications. To achieve this, we identified the main functions that need to be provided by the framework. These functions can be implemented at the content provider's, the mobile network operator's infrastructure, or in the user's mobile device, or by any combination of them. In this poster we outline the research questions, which when answered, will provide us guidelines on how to integrate the identified functions in the resulting framework.

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