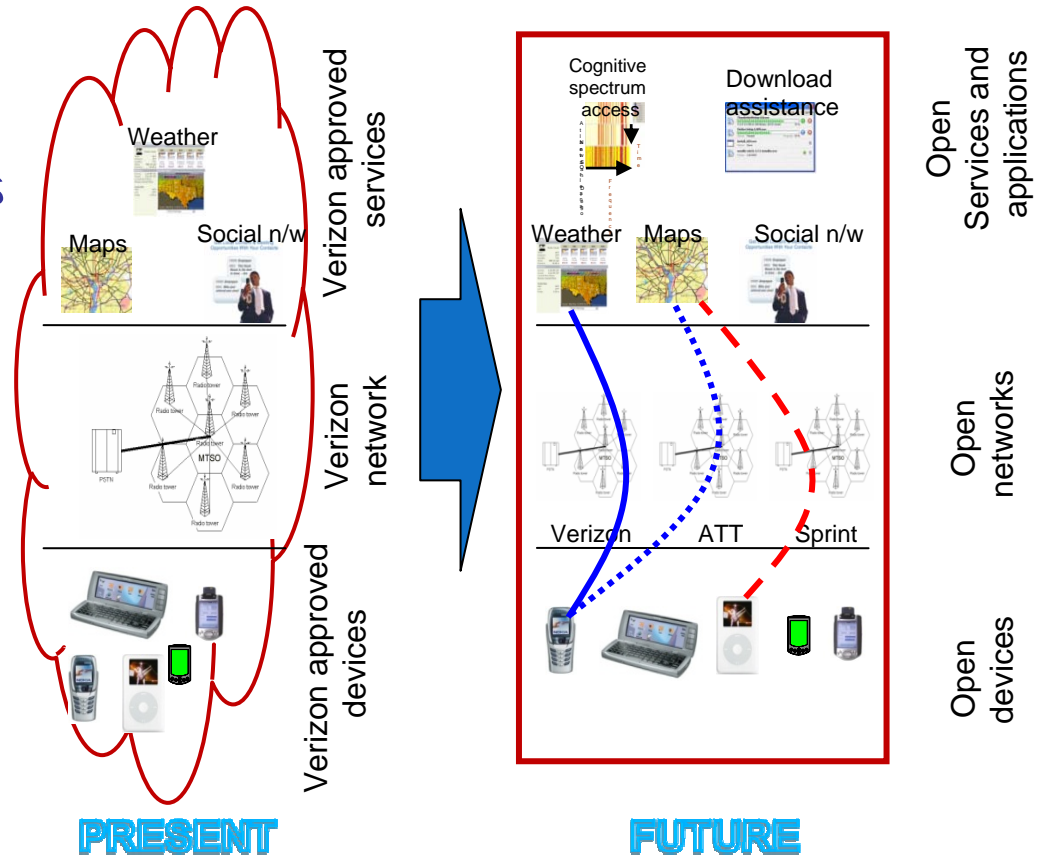


# Enabling Location Specific Real-time Mobile Applications

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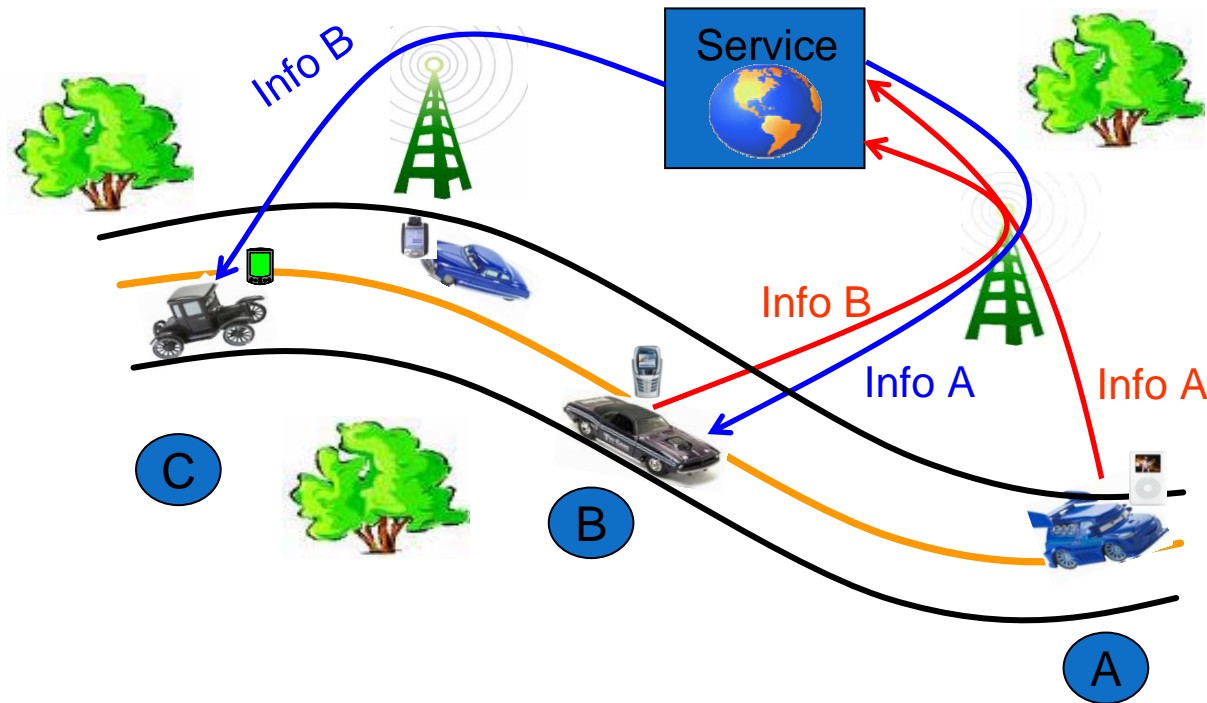
# Trends in the Mobile Networking Domain

- Ubiquity of Mobile Devices
- Feature-rich Mobile Devices
- Emerging openness
  - Open Services, Open Networks, Open Devices,...



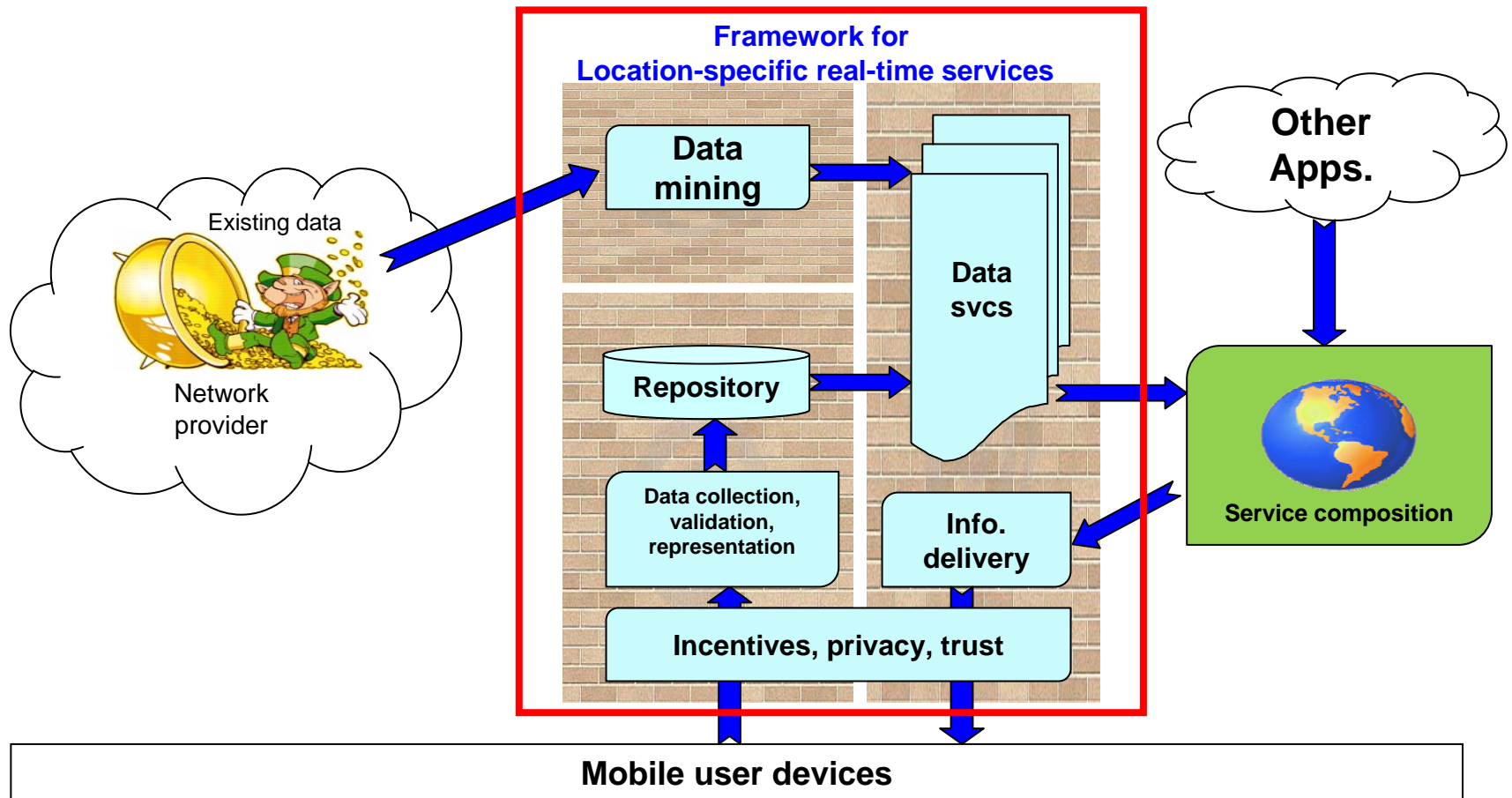
Our objective: enable rapid deployment of mobile applications

# Focus: Location Specific Real-time Applications



**Mobiles themselves can act as sensors** to provide updates to applications in real-time.

# Proposed Approach and Challenges



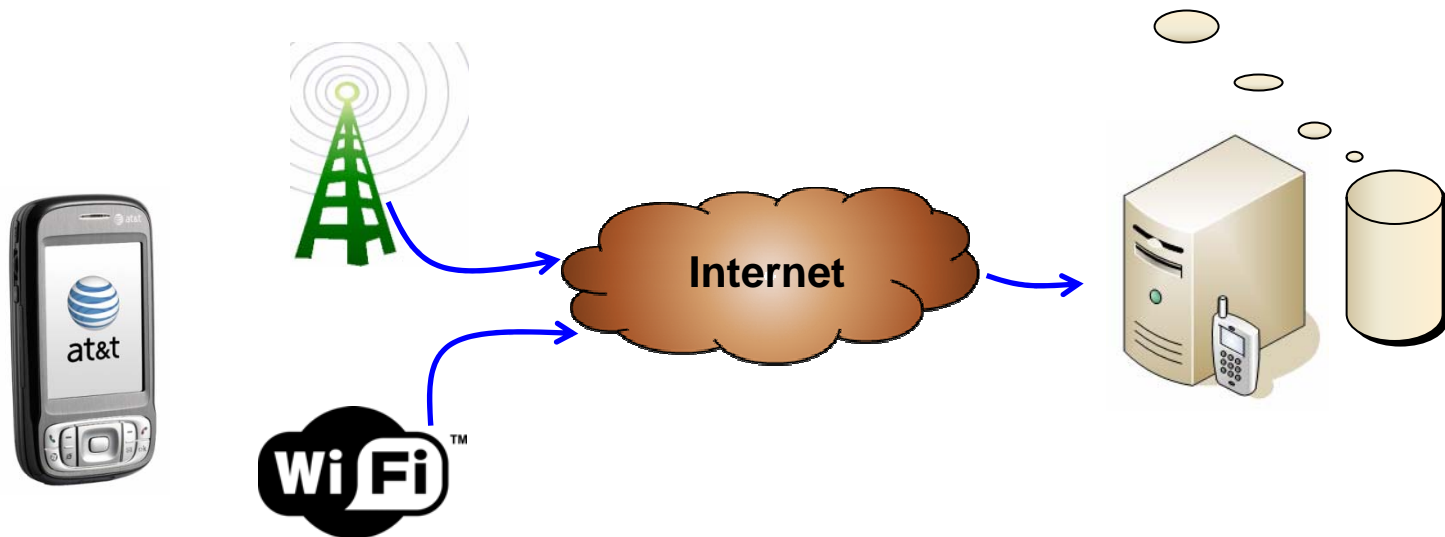
1. Design and implement the framework
2. Build a few sample applications

# Related Work

- Vs. P2P file sharing
  - Amount of information a user has to upload is inversely proportional to the number of users present at the location
    - Incentive design more complex
- Vs. Pub-sub systems
  - Subscribers are also participating in publishing
    - incentive design, privacy, trust very important
  - Publishers and subscribers per location change dynamically
    - need highly adaptive info. gathering and delivery mechanisms
- Some other related work in the proposal...

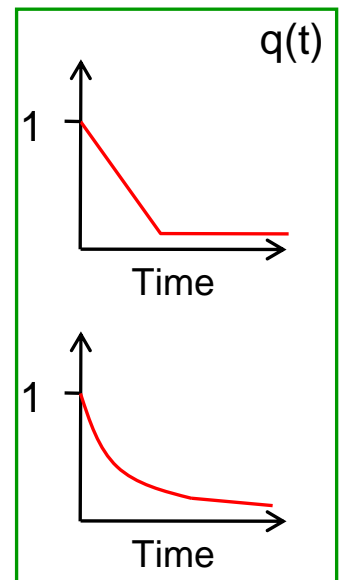
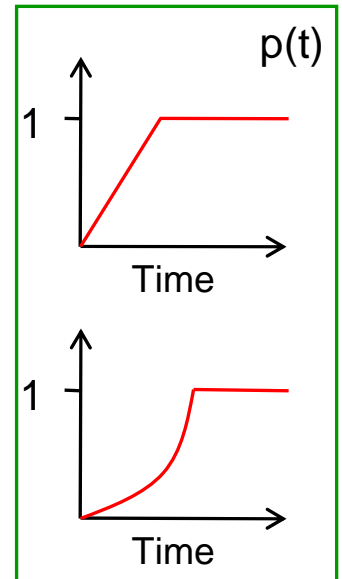
# PARK-ASSIST: Application Case Study

Help each other  
find parking

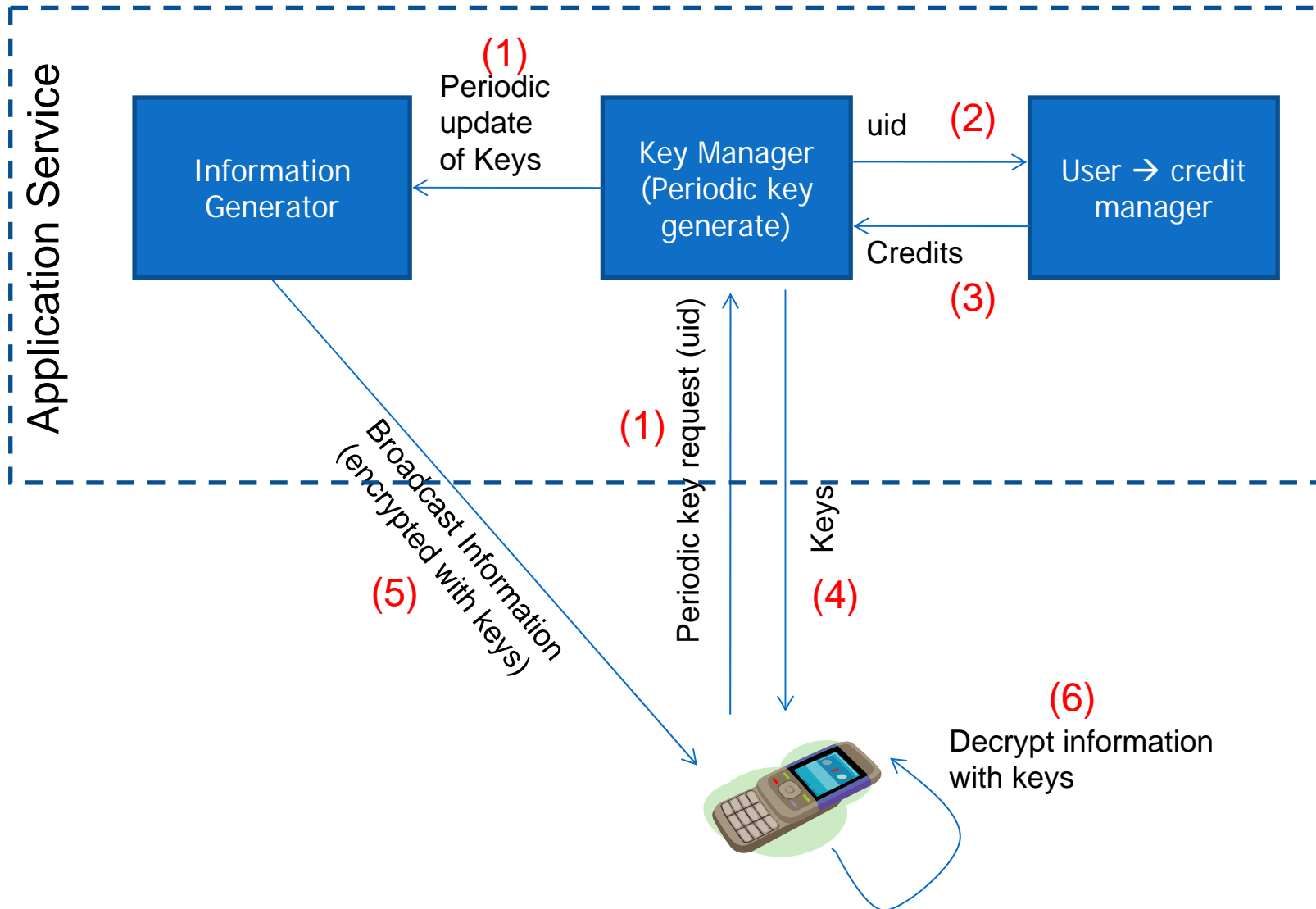


# Credit Management

- Pricing function is the key
  - Relative value of an update  $p(t)$ ,
  - Relative charge per info. delivered  $q(t)$ ,
  - Max. absolute value of an update:  $V_m$ ,
  - Max. absolute charge for info:  $C_m$
- Updates: Credit per update =  $V_m * p(t)$ 
  - $t$  is time since last (set of) useful updates
- Information requests: charge =  $C_m * q(t)$ 
  - $t$  captures info. recentness/confidence
- Limitations (Work in Progress):
  - Update credit does not capture # of other users
  - Users oblivious to variable credit



# Incentive compatible Information Delivery





# Summary

- Enabling Location-Specific Real-time Mobile Applications
  - Ubiquity, resourcefulness, openness
- Several interesting challenges to be addressed
  - Incentives, trust, information delivery,...
- Approach: Develop core set of mechanisms
  - enable rapid deployment of such applications