

## UMOBILE

# Integration of social aspects into the architectural model

**Rute Sofia**  
**Rute.sofia@sen-ception.com**

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# Social Aspects

## Which Social Aspects?



### Sociability Forecasting

- **What:** Prediction of conditions for social interaction to occur derived from shared interests, affinities, and wishes via the application of social indicators to forecast sociability in space and time (e.g. If the conditions around favour social interaction to a specific user or group)
- **How:** UMOBILE service (module); **NAMING**, and ROUTING
- **Why:** Improve social cohesion; stimulate social interaction (if user wants)

### Speed up local group forming / local communities

- **What:** Prepare the UMOBILE system to be able to convey information in an opportunistic way (no e2e path), and locally
- **How:** UMOBILE ROUTING; UMOBILE service
- **Why:** Stimulate the emergence of local groups; promote local business; local interests (e.g. communication in a specific neighborhood, or rural area).

### Optimize Opportunistic Communication

- **What:** Allow communication to occur anywhere anytime
- **How:** New apps (as the UMOBILE system integrates this social aspect in its basic design); NAMING
- **Why:** Any smartphone today can deliver this (Wi-Fi direct; bluetooth), but requires tackling some issues from a networking perspective – apps that stimulate this need are a MUST.

# Social Aspects

## Why: Use-case Matching



Social Aspect	Use-case 1: micro- blogging	Use-case 2: Emergency	Use-case 3: Civil Protection	Use-case 4: Social Routing Improvement
<b>Sociability forecasting</b>	-	Looking for missing people; quicker communication establishment due to optimized clustering (based on people)	Prevent critical issues in the context of e.g. crowds	Other than shortest-path routing based on regular social interaction indicators
<b>Speed Up Group Emergence</b>	Shared interests; assist the user in finding peers quicker	-	-	Assist in the selection of viable/optimized next-hops
<b>Optimize opportunistic communication</b>	No need to always access the Internet (good in large events); <b>optimization based on wishes, needs, interests</b>	No need for an infrastructure; self-organized; <b>optimization based on collective behavior (group)</b>	Consider context-awareness and no infrastructure available, to transmit data quicker; <b>optimization based on geo location</b>	Social-aware routing (with sociability forecasting); <b>optimization based on human-centric aspects (e.g. roaming patterns of the user)</b>

# Architectural Perspective

## Content Plane (Naming, Caching)



### Sociability Forecasting

- Add tags to objects that take into consideration a collective “sociability” perspective (a sociability weight/indicator) – **usage indicator over time and space**
  - e.g. Popular in Lisbon, not so popular in London
- Consider an additional scope for sociability, namely, **offer** or **search**

### Speed up local group forming / local communities

- Similarity aspects: matching of tags (for needs, wishes, interests).
- Consider a difference between offer or search
- Caching, distributed data synchronization (for small groups?)

### Optimize Opportunistic Communication

- Ensure that the naming can carry a collective perspective and not just individual
- Ensure that we can “track” locality, and group dependency
- Support pre-fetching

# Architectural Perspective

## Context Plane



### Sociability Forecasting

- **User context:** local device(s); roaming habits (visited locations); intrinsic aspects (activity classification via the device, e.g. Sleep)

### Speed up local group forming / local communities

- **Usage context:** correlation of individual activities/patterns from a network perspective
- **User context:** affinities matching
- **Network context:** collective behavior definition derived from networking interaction

### Optimize Opportunistic Communication

- **Network context:** collective behavior definition derived from networking interaction
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# Architectural Perspective

## Data Sharing Plane



### Sociability Forecasting

- **Trust and cooperation:** correlation of sociability indicators in a distributed way to improve cooperation and strengthen trust circles based on sociability forecasting

### Speed up local group forming / local communities

- **Flow control:** prioritize local traffic – e.g. geo location
- **Trust and cooperation:** take into consideration group dynamics (e.g. similar routines and movement)
- **Data forwarding:** adjust replication schemes

### Optimize Opportunistic Communication

- **Data forwarding** based on “social strength” (sociability indicators; trust circles established; shared locations)

