

Affective Interactions and Quality of Experience in Mobility Contexts

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The paradigm shift in HCI, made possible by ubiquitous computing, has created a number of opportunities to interact with end users. Smart systems leverage this context to perceive and adapt the environment, with the goal of providing an enhanced user experience. *Quality of Experience*, a measure of users’ mood in relation to their environment, is further explored in the context of public transport.

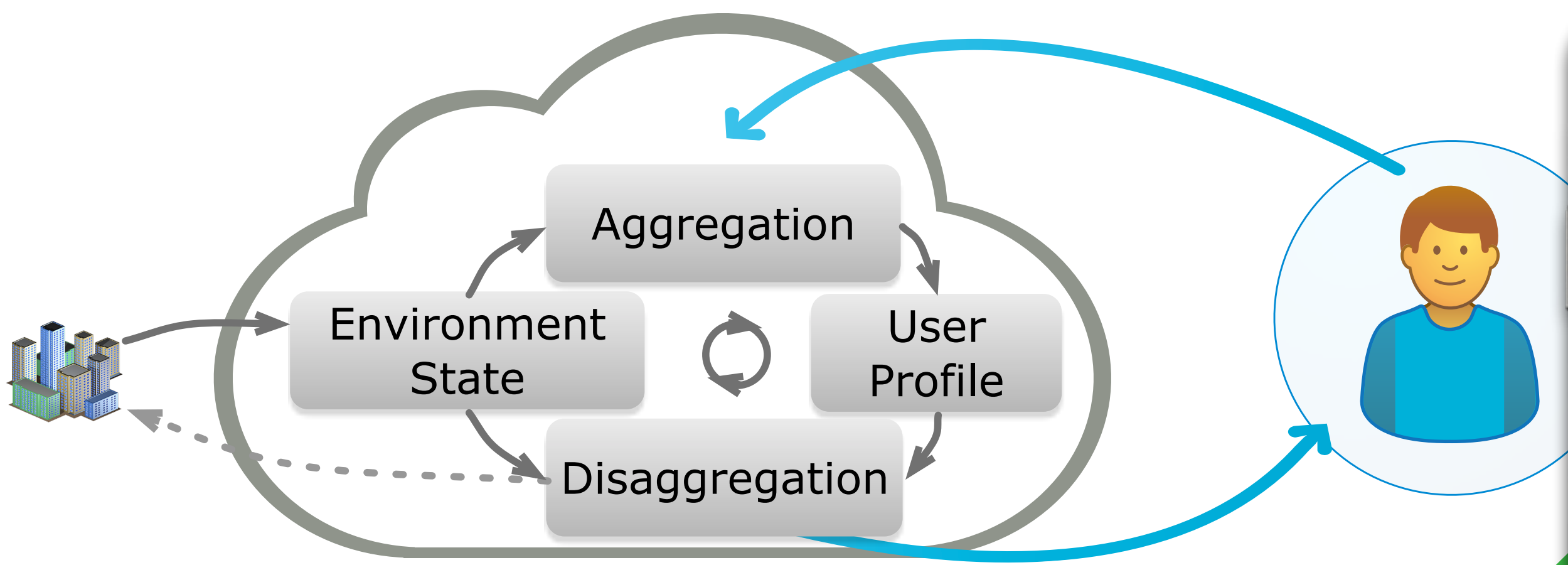
Affective Interaction Loop

Quality of Experience - “an affective state that is the emotional reaction to a product or service”

Cloud2Bubble, a cloud-based framework, leverages the loop of interaction by introducing an affective dimension, enabling the measurement of *Quality of Experience* in smart environments:

- collects user affective state and context;
- aggregates user and environment data;
- generates actions for enhancing QoE;
- delivers affective- and context-aware services.

The assessment of users’ affective state, or *Mood*, in relation to their surroundings enables the delivery of empathic services, with the potential to enhance the overall experience.



Cloud2Bubble Prototype

The prototype collects user and environment data *in-situ*, and is composed of a cloud-based platform and a mobile application.

Cloud-based Platform

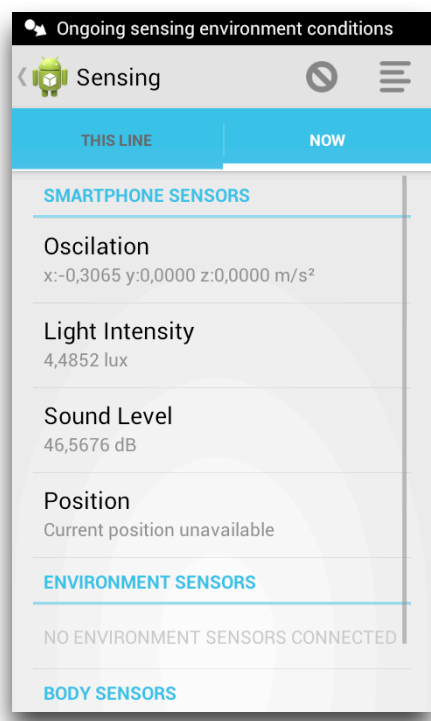
- supports the collection of multiple data sources, data aggregation and processing.

Mobile Application

- integrates within users’ routines for the collection of relevant data while in transit.

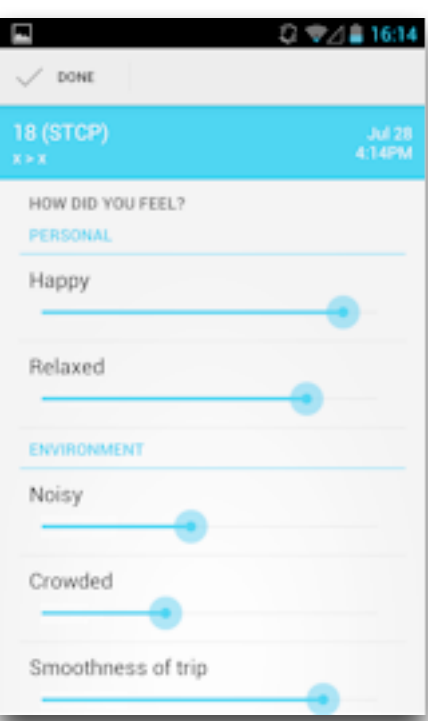
Environment Data

records data from the sensors available on the smartphone during the journey, eg: *accelerometer* and *microphone*



User Data

collects users’ *Mood* and perceived *Context* per journey: *Happy, Relaxed, Noise, Saturation, Smoothness, Ambience, Reliability* and *Speed*



Exploring Quality of Experience

This experiment aims at investigating the *Quality of Experience* in public transport through users’ personal devices, and will be conducted in two stages.

Stage 1

- explores the correlation between *Mood* and *Context*;
- gathers services with the potential to influence QoE.

Stage 2

- investigates the effects of delivering QoE-aware services.

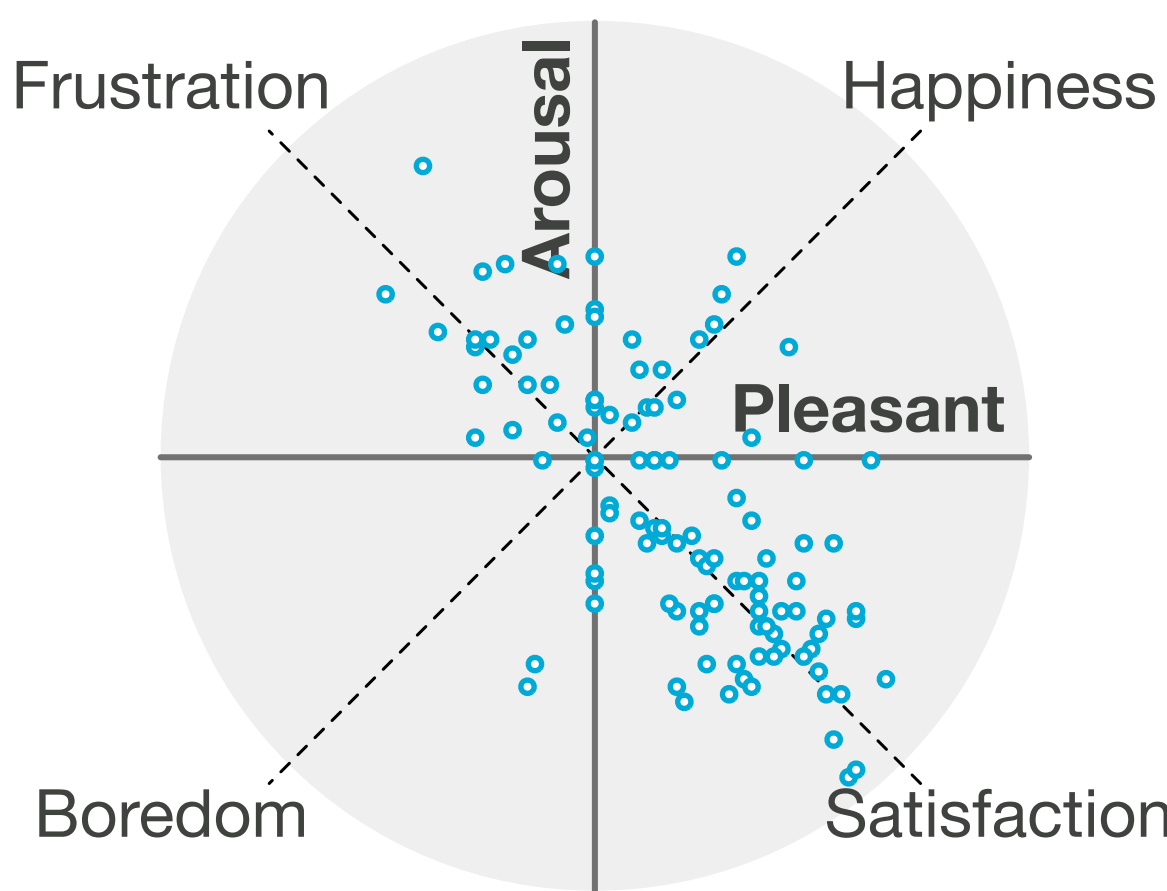
Results (stage 1)

The results were obtained from the data collected and a set of interviews with the participants. The relationship between *Mood* - a measure of QoE - and travelling *Context* shows an association with the following characteristics:

- presence of a strong *Mood-Context* correlation;
- *Mood-Context* correlation is subject dependent.

The findings support the convergence of affective-aware systems and personalised services in smart environments, particularly in contexts of urban mobility.

Date	1 - 16 June, 2012
Location	Porto, Portugal
Sample	10 participants
Results	110 journeys (30h)



Participants’ mood in transit, Russell’s circumplex of emotion

Public Transport

Public Transport is a desirable domain of application due to the following characteristics:

- provides an existing environment with environment sensing capabilities;
- high demand for personalised information services;
- infrastructure and service management to support providers;
- public incentive towards a sustainable alternative for urban mobility.

