Towards a better multi-device notification system

Duration: 6 months
Team: Loki (Inria Lille - Nord Europe & CRIStAL)
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The project consists in designing, implementing and evaluating novel solutions to propagate notifications across a multi-device environments in a way that is more adapted to users needs.

Description

Our digital ecosystem consists in various connect devices and it becomes common to own several of these devices (laptop computer, smartphone, smartwatch) and to articulate our activity around these devices. The interaction becomes more “mobile” and less attached to a single device. Handling phone calls is a typical example: when the user receives a phone call, all her connected device notify her so she can answer on the device she prefers to use in this specific situation.

Several problems are associated with this relatively naive approach that does not exploit the rich information that is user activity in order to notify her a “smarter” way. Indeed, notifications are often randomly delayed depending on the device, requiring the user to answer on a device she was not interacting with at this time. Moreover, if all the devices are co-located (i.e., in the same room), they will all notify the user at the same time, which may create additional frustration. This project consists in designing, implementing and evaluating novel solutions to propagate notifications across a multi-device environments in a way that is more adapted to users needs and preferences.

Objectives

The objectives of this project are :

- Implement simple activity monitors for desktop computers, smartwatches, smartphones, etc.
- Implement a server (Web or local) that receives data from the activity monitors running on the devices and can distribute notifications to these devices
- Designing and implement interaction techniques, user interfaces and smart algorithms that will help user to configure multi-device notifications propagation in more elaborated and advanced ways.
- Run qualitative and quantitative user evaluations to investigate the benefits of the proposed solutions

The student will explore Human-Computer Interaction (HCI) research questions in this project. It is also an opportunity to discover/improve mobile programming skills (smartphones, smartwatches) through a particularly timely project.

Candidate

A successful candidate must be MSc student in computer science or equivalent, and demonstrate a strong interest in HCI and in mobile devices programming, as well as strong skills in object oriented programming (ideally in Java, C++, Objective-C and/or Swift). He/she should demonstrate technical and conceptual creativity.

Environment

This project is in collaboration with Nicolai Marquardt and Duncan Brumby from the University College London Interaction Centre (UCLIC). The internship will take place in the Loki research group, based in the Inria — Lille Nord Europe research centre at Villeneuve d'Ascq, under the supervision of Sylvain Malacria.