Chapter 1
NRU ("near you"):
Real–World Interaction with a Mobile Phone

Mathias Dahlström
lastminute.com labs, UK

Richard Lewis Jones
lastminute.com labs, UK

Marko Balabanović
lastminute.com labs, UK

ABSTRACT

NRU ("near you") is a new mobile phone application for finding nearby activities. The application displays restaurants, bars, cafes, and so forth close to the user, on a display that updates as the user rotates it and moves it around his or her body, encouraging real-world interaction. This device is a simplified form of augmented reality that works on an existing consumer phone handset, combining location and orientation sensors with a touchscreen interface. In this paper, the authors explain the design of the system and the technologies involved, and share some experiences from the application's first 6 months in operation.

INTRODUCTION

A common challenge for people in cities is to find places to go and activities to do. Where to eat? Is there a nice cafe nearby? How about a bar or pub? These questions are especially valid in an unfamiliar city, for instance when travelling, but we also have them in our home cities. Part of the joy of visiting and living in the world's big cities is the ever-changing flow of new places to be discovered and unfamiliar neighbourhoods to explore. One solution is a guidebook or magazine, with recommendations of places to visit, maps, photos and additional information. Clearly, however, the printed page is a static information source, increasingly out of date as establishments open and close, and is of limited size. With the advent of mobile technologies the move began

to migrate this guidebook content onto small devices users could carry with them. Initially these were straightforward interfaces to the same static content. It has become common to carry a mobile phone with both a very large memory capacity and a connection to the internet. This enables the content to be delivered on-demand, so the user has access to a large and ever-changing source of data about a city, drawing on web sites ranging from content supplied by writers and editors to reviews and ratings supplied by users. Visitors to a city don't just need an idea about where to go or what to do, they will also need to know where they are and how to reach their destination. Once again mobile technologies are becoming an increasingly common solution, supplanting or replacing printed maps that are carried or available in the environment. A variety of positioning technologies are in common use:

- Detecting nearby mobile phone cell towers and using a map of known locations of cell towers
- Using a Global Positioning System (GPS) receiver
- Detecting nearby WiFi access points and using a map of known locations of access points

In the last few years detailed street mapping imagery has also become widely available, driven by the adoption of internet services such as Google Maps[1]. Today's visitor to a city has in their pocket a device capable of retrieving a vast array of information relevant to their location.

At lastminute.com we help customers find and book places to visit and things to do, chiefly through our web site. We feature both travel products (such as flights, hotel rooms, car rentals, package holidays, cruises, train tickets) and entertainment products (such as theatre tickets, restaurant bookings, spa treatments, music or comedy tickets, etc). Although today our customers transact their business from a desktop or laptop computer, we see that over time the mobile phone is a much more natural channel. After all, everything we do is for people travelling or out and about in cities. The goal of our lastminute.com labs innovation team is to explore what kinds of interaction we can create to help people visiting cities make the most of their time.

This paper will explain the design of our new nru ("near you") mobile application and our initial findings since its launch. The goal of nru is to help a visitor to a city find nearby things to do. For us this is also an exploration of the newest mobile phone technologies available to today's consumers, to see whether the kind of immersive, physical interaction often prototyped in research labs is a feasible and usable paradigm in the real world today.

The remainder of the paper is structured as follows. First we introduce the challenges of designing and building mobile user interfaces for location-based systems. We then introduce some technologies that enabled and motivated our design. Next we explain the design concept that motivated the nru application, followed by a detailed walk-through of the nru interface. Finally, we summarise the lessons we've learned from its first six months of operation

THE CHALLENGES OF MOBILE USER INTERFACES FOR LOCATION-BASED SYSTEMS

In a typical simple interaction, a location-based system will fetch a number of nearby results (for instance in nru these might be restaurants), and display them to a user. The very simplest interface is just a list of nearby things, still often used in mobile applications. A more common approach taken in recent years is to show a street map with graphical "pins" for each result, with an accompanying list to show more detail for each item. For example see Figure 1 showing the results from the lastminute.com "fonefood" mobile web

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