

Chapter 2

ARIS:

An Open–Source Platform for Widespread Mobile Augmented Reality Experimentation

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ABSTRACT

This chapter describes ARIS, an open source tool for creating educational games, narratives, and field research activities on mobile devices. The tool is the result of years of design-based research into educational gaming, design pedagogy, and place-based learning. It has been used in a variety of educational contexts from after-school game-design workshops to university-level language courses. Deeply committed to open and democratic education, the project invites involvement at all levels and continues to innovate as a community of users matures.

INTRODUCTION

ARIS consists of both an authoring tool as well as an iPhone application that work together to create mobile, locative, narrative-centric, interactive experiences: i.e. augmented reality games.

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In a nutshell, augmented reality couples virtual data or representations with real world locations and contexts. This can be accomplished in many ways via the various affordances of mobile devices and their ecologies of use. A decade ago, the idea was somewhat abstract, but today the concept is a commercial commonplace (e.g. SCVNGR, Layar) even to the point of not being billed as

such (Foursquare creates a game world that sits on top of the real one). As a design response to a number of theories and examples from various disciplines of learning science, curriculum studies, media studies, contemporary social media and game design, ARIS serves a complex continuum of user-designers including artists, teachers, students, administrators and researchers. This user base has found interesting ways to use it in a different capacities ranging from a rapid prototyping tool for interactive stories to a mobile scientific data collection tool. Consequently, ARIS has attracted significant funding from partners to continue to provide a free resource and further develop the platform.

In this chapter, we offer a glimpse into the affordances and constraints of ARIS, as a free and open source mobile educational design platform. We have broken it down into four main parts. First, we describe the ARIS platform and its design, including the intellectual, social, and technological climates within which it was conceived. Second, we dig deeper into the complexities of the tool itself outlining our design goals, its features, and the general ethos of openness that permeates our efforts. Third, we describe the community that has emerged and grown around ARIS, and the expanding relationship that has developed between ARIS users and developers. Fourth, we provide a few use cases as illustrative examples of what ARIS is capable of. We will, then, provide a quick picture of the challenges ahead in these areas of mobile learning and the directions this project is heading next.

BACKGROUND

ARIS was conceived through a unique fusion of intellectual, social, and technological contexts that shaped its formation and development in meaningful ways. In this section, we briefly outline some of these major influences and offer a foundational

description of the ARIS platform and essential vocabulary to describe its use.

INTELLECTUAL CONTEXT

At the time of ARIS' inception in 2008, both the constructionist and multiliteracies movements were well underway and had gained a great deal of traction in educational contexts, particularly in the form of games (Eisenburg & Buechley, 2007; Gee, 2003; Ito et al., 2008; Kafai & Resnick, 1996;). This, combined with the increasing adoption of new media among young people (e.g. the Internet, mobile devices, social networking, micro-blogging, and video-sharing), offered a fertile ground in which to plant the ARIS platform. Researchers were recognizing that the nature of those media provide a window into how people think and learn (Gee, 2003; Kozma, 1991; McLuhan & Lapham, 1994; New London Group, 1996), and were looking for ways to leverage them to create new learning opportunities.

Mobile technologies, in particular, showed promise in shaping how we think about learning and the design learning of environments. In addition to its rising ubiquity, mobile technology has fundamentally changed how people go about their day-to-day activities and relate to their surroundings (Squire, 2009; Squire & Dikkers, 2011). Additionally, in the spirit of situated learning theory (Brown, Collins, & Duguid, 1989; Lave & Wenger, 1991), the natural integrative characteristics and large-scale impact of mobile technologies reveal a need to makes sense of mobile. As a result, scholars began pointing to a requisite in higher education and education writ large: to innovate around mobile technologies (Johnson, Levine, Smith, & Stone, 2010).

With this movement, educational researchers examined a number of transformative uses of mobile technology, and one of the most promising is augmented reality (e.g. Squire & Klopfer, 2007), where virtual data or representations are

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