**RELATED WORK**

Much related work can usually be identified for an article that compares various technologies. However, if it deals with cutting-edge technology, the number of similar papers shrinks dramatically. General papers on the technologies dealt within this paper are cited in the appropriate sections, particularly in Section 3.

Thus, this section assesses existing work that compares two or more approaches for cross-platform app

development. Until recently, papers only discussed mobile platforms – or rather operating systems – for mobile devices.

An example is the paper by Cho and Jeon (2007). Comparison papers such as by Lin and Ye (2009) only marginally help developing multiplatform apps. The same applies to very specialized papers. They usually rather concern the business perspective than deal with technology. An example is a study of mobile service platforms (Tuunainen et al.,

2011). But even technically-driven papers that address multiple platforms do not necessarily help to develop cross-platform apps. For instance, a study of smartphone malware (Felt et al., 2011) only roughly hints to platform particularities. Anvaari and Jansen (2010) have compared the predominant mobile platforms with regard to the *openness* of their architectures. Their approach takes a very close look at one aspect and thus can be seen

as complementary with our work. Charland and Leroux (2011) compare the development of native apps and Web apps. In contrast to our approach, they do not take a cross-platform perspective.

A comparison of iPhone and Android development is presented by Goadrich and Rogers (2011). Despite the topic, which is similar to our work, their aim is different. In fact, they try to answer which platform should be used for the education of students.

Another study deals with mobile cloud apps (Lakshman and Thuijs, 2011). While the authors deal with cross-platform development, they focus on native thin clients that access cloud services.

A number of publications address more than one platform (David, 2011; Anderson and Gestwicki, 2011; Firtman, 2010). While these publications foster a better understanding of the platforms, they do not really compare the different approaches. Rather, they explain how to use a technology on a multitude of platforms or devices. Due to the high relevance for practitioners, the topic is also recognized in technology weblogs (Newman, 2011; Behrens, 2011). Although such articles give valuable advice, they cannot be compared to our structured approach.