

Self-Service Management Support Systems— There’s an App for That

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1 Managers and Their IS Support

Management support systems (MSS) help managers to perform their jobs more productively and efficiently by serving as their central, hands-on, day-to-day source of information [1]. As an umbrella term, “MSS” represents a major class of information systems (IS) covering management information systems, decision support systems, executive information systems, and, more recently, knowledge management and business intelligence (BI) systems [2].

The present moment is favorable for redesigning MSS for two reasons: On the one hand, managers have to make decisions faster than they have in the past and they want *self-service* MSS to help them to do so [3]. On the other hand, the more companies become larger and dispersed, the more managers become mobile workers [4].

In parallel, technical progress has been made in recent years, so that managers should be able to operate MSS themselves—even when they are mobile. However, recent developments have been driven by the consumer market, when Apple launched the iPhone in 2007 and the iPad in 2010. Their multi-touch, direct-manipulation user interfaces have raised managers’ expectations significantly towards easy-to-use *smart devices* (smartphones, tablets, hardware perspective) [5]. Furthermore, thanks to Apple’s million-dollar slogan “There’s an app for that” [6] managers’ awareness of *apps* (small capsulated software programs) is growing (software perspective).

The objective of this article is to lay out an app to investigate the boundaries of self-service MSS. Taking Continental as an example, the prototype on hand complements their managers’ paper-based management reporting working routines especially when they are mobile.

2 The Continental Case

The Company and Project Objective: Continental is a large European automotive supplier with, as of December 31st, 2011, annual revenues of EUR 30.5 billion (USD 39.5 billion) and about 164,000 employees at 200 production sites [7]. Along with digital immigrants who learned to engage with IS, *digital natives* populate Continental’s management [4]. These new-generation managers accept MSS more naturally, but also have higher expectations of how these IS should accommodate their user preferences.

The project “self-service MSS” aimed at aligning the upcoming requirements of their new-generation managers with “modern” IS capabilities in two respects (1) to deliver an *electronic version* of the “green report” which Continental managers can easily navigate themselves and (2) to complement it with *add-ons “beyond the financials”* to make managers’ mobile MSS use easier. Complementing the financial reporting with other MSS domains such as risk and compliance management and project management will follow step-by-step in mid 2013.

The *green report* contains Continental’s management reporting to Level 1 (group CxO) and Level 2 managers (group directors and heads of divisions) covering their balance sheet, P/L statement, calculated key performance indicators (KPIs) such as economic value added, working capital, and more detailed KPIs such as days sales outstanding (DSO), etc. The green report runs on Continental’s “Financial Reporting” (FIRE) IT which consists of SAP ERP 6.0 as the enterprise resource planning system, BW 7.3 as the data warehouse, and SEM-BCS 6.34 as the business application. It is available to managers by insertion as a page-by-page pdf-tile in Lotus Notes and most often used as paper-based printouts.

Results: A two-person BI-team and two IS-researchers started a five month project in September 2012. Firstly, to complement the FIRE IT, they evaluated different *front-end applications* focusing on easy-to-use IS handling, compatibility with the upstream SAP Business Warehouse, and mobile capabilities on smart devices [8]. The attached prototype shows two management reports with SAP Design Studio 1.0 as their new frontend application.

Secondly, regarding the end-user device, Continental voted for *tablets* as its new MSS smart devices. One reason was that tablets are expected to exceed conventional notebooks in units shipped in 2013 [9]. Although Apple currently dominates the tablet market, Gartner expects tablets running Microsoft (MS) Windows 8 as their operating system to reach a 39% market share in 2016—even more in business scenarios [10]. Continental specifically appreciate the fact that the new MS Surface Pro runs a full Windows 8 version and can handle full-fledged Windows desktop applications. Thus, the new self-service MSS app we present in the prototype is a MS Windows-8-native app on the Surface Pro.

Thirdly, equipped with these new IT capabilities, the BI team worked interactively with the business department on the app design. To avoid inconsistencies, the green report in the portable document format (PDF) is the basic content of the new Continental MSS. Leveraging on MS’ new design philosophy, *tiles* provide an intuitive, consistent navigation and—with *cundus cNews* as an add-in—Continental can simulate

an active navigation between the different PDFs by means of hyperlinks. Furthermore, dynamic inlays enable multi-media content such as videos. An integrated web browser offers analyst managers interactive “drill-throughs” such as queries on the data warehouse or external data sources with which new-generation managers are familiar. Complementing links to business apps such as flight plans and “semi-business” apps such as a restaurant finder (see the prototype), increase the utility of the Continental app on hand—unexpectedly for both analyst and consumer managers.

3 Design Recommendations for Practice and Impact for Researchers

Practice can benefit from our findings by leveraging the following three value propositions of our attached MSS app design: Firstly, the bunch of management reports which typically exists in companies can easily be clustered through an electronic index and two types of information channels. That allows managers to compile and instantly adapt their individual management reporting by subscribing from the available channels the information channels that are most useful to them, such as financial reporting or board presentations (see the prototype)—instead of receiving a print-out and then selecting the currently most important reports and pages. Furthermore, hyperlinks between several reports can rebuild “typical” scenarios of analysis carried out in prior board meetings or address special issues for the next meeting.

Secondly, reworked reports with new annotations are automatically synchronized with a central server. This triggers an action on the server side and the reports are distributed to all devices using the Windows 8 push notification mechanism. This ensures that managers can access coherent, up-to-date information both mobile online and mobile offline. Annotations added offline (e.g., in a plane or a car with a driver) are automatically merged when the mobile device is back online.

Thirdly, private and public annotations can be made by users anywhere in the management reports, for example, to obtain details or to interact with support staff and manager colleagues. This feature includes a topic-specific, direct dialogue which outperforms communication by emailing in terms of time and convenience of handling. Emails continue to be offered for communication with recipients who do not have access to the Continental app.

Our case study enables researchers to better understand MSS design in a natural setting [11]. This should help them focusing on relevant topics within an IS domain of growing importance as follows: Firstly, native apps can handle managers’ mobile offline challenge. In contradiction to the “typical” consumer user, the case study reveals that managers are often mobile offline. Native apps that cache content on mobile devices can handle such offline MSS use situations and, thus, do not suffer from poor internet connectivity as browser-based applications do. The possibility of losing a device was dealt with by Continental by encrypting all stored data.

Secondly, taking Continental as an example, tablets accessing MSS can create their own use case in three ways [12]: They serve as (a) an advanced PDF reader more efficiently than smartphones, (b) they are handier than notebooks, thus they serve as

an electronic typewriter for complex emailing especially when office documents are attached, and (c) tablets are starting to become managers' preferred device for simple ad-hoc analysis "on the fly."

4 Avenues for Future Research

Embracing self-service MSS and managers' new mobility, this article discussed a new MSS native app running on MS Windows 8 and the MS Surface Pro. The Continental prototype can serve as a blueprint for investigating managers' boundaries of IS use. However, a next design cycle with a broader demonstration and evaluation should follow. From the content perspective, strategies towards a powerful and flexible app IS infrastructure is another avenue for future research. Regarding end-user device selection, it should not be too difficult to define a company-specific profile, but how to generalize patterns for making such a selection, while bearing in mind the different use situations should be particularly interesting.

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