This chapter walks through your options for making cloud and on-premise self-service functionality available on mobile applications.
In a world teeming with smartphones and tablets, deploying successful self-service on mobile devices is increasingly important for companies both big and small. In this chapter, we tackle the challenges associated with making ESS and MSS services on mobile devices a reality.

7 Mobility for Self-Services

Mobility has long been an aspiration on many executives' minds, for whom the idea of an "always connected" workforce is intriguing. If employees have continuous access to their work, whether it's on a desktop, tablet, or smartphone, then an increase in productivity will inevitably occur. Meanwhile, many nonexecutives bemoan the whittling away of the "work–life" balance by continued and ubiquitous use of mobile devices in our lives. Either way, it's certainly an exciting time in the enterprise mobility space, especially for Human Resources.

In a world in which consumer applications such as Facebook, Instagram, and Twitter are setting the bar for user experience, businesses must react quickly or be faced with a dilemma. Without a solid mobile strategy and footprint in your organization, employees will not have opportunities to learn, contribute, and collaborate to the degree they are accustomed to with their consumer apps.

To set the context of how important mobility has become in the workforce, let's first take a brief look at the history of computing to remind ourselves of how far we have come (and where we are going!), beginning in the 1960s.

Table 7.1 lays out a diagram of the popular computing technology from the 1960s to the current day—that is, from mainframe, to the client–server model, to the age of the Internet, and now to mobile.

What's interesting is that we are almost back where we started. The mainframe concept of yesteryear was essentially a cloud-enabled environment, with a central hub linked to computers remotely wired in (e.g., an IBM mainframe engaging in so-called "timesharing"). In our current mobile Internet computing world, the cloud now works this same way—connecting remote devices (smartphones, tablets, etc.) to servers—but without the wires.
Much of the current IT workforce has been employed for at least two of those decades. It’s astonishing when you think about how much influence mobile has in our personal and professional lives today. When’s the last time you left your house without your smartphone (and didn’t go back for it)? How many participants didn’t have smartphones or tablets with them at the last meeting you attended in person? Even on vacation, work travels with us; many employees now use their mobile devices to connect to the office even when they’re “off the clock.”

Whether or not we like it, mobile is here to stay and is only becoming increasingly popular as millennials enter the workforce. Consequently, HR organizations who want to remain attractive to employees need to stay on top of the implications for mobile access in the coming years. The ease with which employees can consume HR policies, procedures, and transactions via mobile devices will be an increasingly important topic for companies.

In some areas of the world, mobile devices are employees’ only way to access company systems. More people own mobile devices than have electricity on the planet. In the developing world in particular, companies are increasingly looking to invest in applications delivered on mobile devices as a primary method of reach, versus technologies such as IVR and kiosks.

Although mobile innovations are at the forefront of technologists’ minds now, the next stages of our computing age consist of even more intriguing possibilities:

- Wearable devices (glasses, watches or wristbands, and e-textiles)
- Avatars, surrogates, and robotics
- Universal translators
- Holography

These are subjects for entire (volumes of) books, so for now, suffice it to say that the future of innovative self-service will certainly not end with mobile and is sure to advance into these (and other) concepts. What will the impact on HR be in a global economy? The possibilities are certainly exciting. For example, in the recruiting field, could wearable glasses influence how you interview a candidate for a position? Perhaps the glasses could guide the interviewer through a matrix of questions. Could HR use holograms to interview candidates sitting in the conference room as a hologram, speaking another language that is being translated through a universal translator?

For now, we can only wonder and dissect important trends in mobile technology today. These trends will influence how you may deploy and roll out your self-service initiatives on a mobile device.

### 7.1 Important Trends in Mobility

Before talking about the specifics of SAP’s mobile capability within a self-service context for HR, it’s important to cover some important trends in mobility happening today. The following points will give us a better context for how we should consider deploying and using mobile technology within our HR systems:

- **Bring your own device**
  Bring your own device (BYOD) is the policy of permitting employees to bring personally owned mobile devices (laptops, tablets, phablets, and smartphones) to their workplace and to use those devices to access privileged company information and applications. BYOD policies are more popular than ever and will become increasingly popular if the current trend stays on pace. CIOs want to appear open-minded, modern, and trusting by allowing employees to bring their own devices to work. Employees want to feel that their workplace respects their preferences, and they feel that having their own devices at work lends them more freedom.
  
  BYOD is important when considering mobile in a few different aspects. On a technical layer, it can influence your deployment method (discussed in Section 7.2). The full implications of BYOD (allowing such a policy) is not within the scope of this book, but it is clearly a trend we should be aware of.

- **Mobile first**
  The phrase “mobile first” is by now cliché, but it is still considered to be an
important part of any software development philosophy. The idea is that applications should first be built with mobile in mind before other devices; the best practice is to develop first for phones, then for tablets, and finally for PCs or laptops. Because more and more users will consume HR services via mobile devices, it’s of utmost importance that our software be built mobile friendly. Starting with a mobile first strategy in mind makes developers consider how to get something done in a simple way.

Device agnosticism
Device agnosticism refers to the capability for software to be compatible with multiple devices, browsers, operating systems, and/or channels. Regardless of whether you are consuming a service via a tablet or a PC, on Safari or Internet Explorer, and so on, the experience of a web application should be intuitive and seamless for the end user.

Responsive design
Responsive design is a concept that specifically caters the user experience of a user to the type of device. The main objective of responsive design is to optimize the viewing experience regardless of the device used. Responsive web design, then, goes hand in hand with device agnosticism.

Figure 7.1 shows an example of responsive design with the Leave Request service within the SAP Fiori suite of applications. The SAPUI5 screens dynamically render the screen layout based on the device being used. This means that different elements are shown onscreen if you’re using a smartphone compared to a tablet or on a tablet compared to a laptop or PC.

What’s important here is that some HR applications (for example, leave request) are well-suited for mobile scenarios. We need to be aware of how we can take advantage of responsive design concepts in our self-service strategy.

7.2 Deployment Options and Why It Matters

How you deploy mobile solutions is a vital part of your strategy, because it impacts the user experience for your end users. An organization with a modern HR portal instead of a noticeably antiquated one will inevitably reflect positively on the company for its employees. Portals and self-service applications that are accessible via mobile devices are even better.

There are generally three methods available to deploy mobile solutions:

1. **Directly via a web page**
   This isn’t really a formal strategy. Web pages, including a company’s intranet and portal, can be accessed via a URL directly, constituting a typical “pinch and zoom” experience. Figure 7.2 shows a consumer example of a website deployed via a mobile device that has not been designed with mobile in mind.

   One example is the Twitter app, shown in Figure 7.3. From within the Twitter app, the user can take pictures with the smartphone’s camera and send a tweet.

2. **Via a mobile or native application**
   These applications are typically downloaded from a store or marketplace online (e.g., the Apple Store or Google Play). When using this method, the mobile application is deployed locally on the device, and access to the device’s hardware functions (e.g., camera or contact list) is native. These applications do not use a web browser on the device.

   One example is the Twitter app, shown in Figure 7.3. From within the Twitter app, the user can take pictures with the smartphone’s camera and send a tweet.

3. **Via a mobile web application**
   Accessed through your device’s web browser, web pages are built and optimized for viewing on a mobile device. As shown in Figure 7.4, web pages conform to size of the device and feel like a native application, but the screen is not, in fact, being accessed through a native app.

   Typically, the browser URL is redirected. For example, a URL could be automatically changed from www.company.com to m.company.com. Yahoo’s website becomes m.yahoo.com on a smartphone or www.yahoo.com/tablet on a tablet.
Table 7.2 compares some of the important features, functions, and technologies that support both mobile apps and mobile web apps.

<table>
<thead>
<tr>
<th></th>
<th>Mobile Apps</th>
<th>Mobile Web Apps</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Performance</strong></td>
<td>Faster, more direct access to optimized OS modules and hardware features</td>
<td>(Generally) slower and dependent on the browser (Safari, Chrome, etc.)</td>
</tr>
<tr>
<td><strong>User experience</strong></td>
<td>Smoother, more polished, more integrated into the OS</td>
<td>Via Web browser, so the look and feel are relegated to browser capabilities</td>
</tr>
<tr>
<td><strong>Maintenance</strong></td>
<td>One application developed per OS (iOS, Android, Windows Phone, etc.)</td>
<td>The same application: WORA, write once, run anywhere Easier to deliver updates/ enhancements</td>
</tr>
</tbody>
</table>

Table 7.2 Mobile Apps vs. Mobile Web Apps
Mobile applications are native to the operating system of the smartphone or tablet and therefore have more inherent hardware capabilities. Mobile web apps, by contrast, leverage the web browser and do not have as much device control but do make up for it in other areas. A major advantage of mobile web applications is on the support and maintenance side, because an enhancement can be implemented centrally and doesn’t have to be downloaded as another release on a marketplace.

Now that we have seen the differences between the deployment and technology associated with native apps and mobile apps, we can dig into SAP’s capabilities within the on-premise and cloud HCM platforms, beginning with the options available for customers who need self-service mobile capabilities for their on-premise SAP ERP HCM systems.

### 7.3 Self-Services on Mobile (On-Premise)

SAP offers a wide range of mobility offerings to support on-premise SAP ERP HCM processes. Table 7.3 lists the four primary ways to deploy mobile solutions for your SAP ERP HCM system.

<table>
<thead>
<tr>
<th>Solution</th>
<th>Enabling Technologies</th>
<th>System</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP Mobile Platform on-premise</td>
<td>SAP Afaria, SAP MEAP, etc.</td>
<td>SAP ERP</td>
</tr>
<tr>
<td>SAP Enterprise Portal mobile edition</td>
<td>SAP NetWeaver 7.3</td>
<td>SAP ERP</td>
</tr>
<tr>
<td>SAP Fiori</td>
<td>SAPUI5, SAP Gateway</td>
<td>SAP ERP</td>
</tr>
<tr>
<td>SAP Partner solutions</td>
<td>Web services, APIs, etc.</td>
<td>SAP ERP</td>
</tr>
</tbody>
</table>

**Table 7.3** Mobile Platforms for On-Premise SAP ERP HCM

Let’s first discuss SAP’s hallmark mobile platform: the SAP Mobile Platform.

#### 7.3.1 SAP Mobile Platform, On-Premise

The SAP Mobile Platform is SAP’s on-premise offering for building, deploying, and managing mobile applications. SAP Mobile Platform offers an end-to-end solution for enabling mobility in the company, including full mobile device management (called SAP Afaria). SAP Mobile Platform is a *mobile enterprise application platform* (MEAP), which means that you can tweak purchased applications as necessary and even develop your own apps. It contains the functionality once provided by Sybase Unwired Platform.

Figure 7.5 shows the SAP Mobile Platform runtime architecture, including the four Cs:

- **Connect** to databases, web services, and applications.
- **Create** apps using the Eclipse platform.
- **Consume** services using the SAP-provided SDK for connecting to any device.
- **Control** devices via device and security management tools.

From a self-service perspective, several SAP Mobile Platform applications are available, but they’re not free. You can make further enhancements using the SAP Mobile Platform development tools, such as AppBuilder, SMS Builder, and Agentry Editor, but you’ll incur additional cost for services if these enhancements are performed by an external resource.

**Additional Information**

For detailed information on SAP’s mobile platform and technology, refer to the SAP PRESS book *Mobilizing Your Enterprise with SAP* by Sanjeet Mall, Tzanko Stefanov, and Stanley Stadelman (2012). This book is not specific to Human Resources, but it does contain some good use cases that might be useful for HR professionals with a technical background.

Four mobile applications are available for employees within the SAP Mobile Platform:

- **SAP Employee Lookup**
  
  Provides a searchable directory of coworkers and their organizational details.
- **SAP Timesheet/SAP Timesheet Lite**
  Allows employees to create, review, submit, and manage time entries.

- **SAP Leave Request/SAP Leave Request Lite**
  Provides employees with a quick way to create and review leave requests on the go.

- **SAP Learning Assistant**
  Provides on-demand, online training available anytime and anywhere so that users can access required classes to address compliance and job requirements.

Three mobile applications are available for managers within the SAP Mobile Platform:

- **SAP Manager Insight**
  Access employee profiles and KPI reports—including headcount, diversity, and talent by location.

- **SAP HR Approvals**
  View and respond to leave requests and timesheet entries. Check for incomplete timesheets, overbooking, and overlapping leave requests. Review team calendars and employees' time account balances to evaluate requests.

- **SAP Interview Assistant**
  Display open requisitions, candidates, applications, and résumés or CVs, review candidates, schedule interviews, and evaluate candidates before, during, and after the interview.

All of these apps can be viewed and purchased on the SAP store by going to store.sap.com. The cost of these applications can be a challenge for some organizations to muster.

### Additional Resources


HR resources are often called upon by Finance colleagues to assist in travel and expenses (T&E) projects, because there are strong links between these subjects. To that end, it’s important for some of us to be aware of the mobility offerings available from SAP that focus on T&E:

- **SAP Travel Receipt Capture**
  Users can capture receipt photos, and record voice notes for expenses.
  - Create travel expense entries as they happen.
  - Send expense entries and attachments to the back-office system.

- **SAP Travel Expense Report**
  Users can record, organize, submit, and track expenses during a trip, direct from a mobile device.
  - Create new expense reports.
  - Capture photos of receipts with the phone’s camera.
  - Save expense reports, expense entries, and attachments to SAP.
  - Enter expense line items.
  - Send the expense report for approval.

- **SAP Travel Expense Approval**
  Users can approve expense reports from a mobile device.
  - Receive notification of travel expense reports awaiting approval.
  - View policy violation details to ensure adherence to company policy.
  - View a list of all travel expense approvals in a manager’s workflow.
  - Add comments and approve or reject travel expense reports.

In addition to the SAP Mobile Platform, SAP has invested in another standard offering, one that involves leveraging the SAP Enterprise Portal platform. We’ll talk about the mobile edition of the SAP Enterprise Portal next.

### 7.3.2 SAP Enterprise Portal Mobile Edition

The SAP Enterprise Portal mobile edition is a role-based, multichannel portal that aggregates applications, documents, and content on multiple devices, providing a mobile-ready solution (without the SAP Mobile Platform infrastructure). You may hear about this solution as “SAP Portal on Device,” which was its original product name.

Like other mobile solutions, the SAP Enterprise Portal mobile edition allows you to consume services across devices (tablets, smartphones, etc.). This is a key feature of the solution. The portal operates as an aggregator of various content, whether the content is a native SAP app, a non-SAP native app, or a web app.
Figure 7.5 shows the App Gallery, which is accessed from the launch menu. The App Gallery can be configured to launch both native web apps (such as the Price and Availability app seen in Figure 7.5) and browser-based apps, such as an SAP Fiori app (or any SAPUI5 app) for Timesheet Approvals. In this way, the portal becomes your multichannel gateway to disparate mobile technologies (if your landscape becomes this complex). You can also house links to SuccessFactors or other third-party applications here if you have some of your other processes in the cloud.

There are three general methods for delivering mobile technologies employed by SAP partners:

- **SAP Mobile Platform based**
  Partners have developed mobile applications using the MEAP and mobile device management (MDM) within the SAP Mobile Platform.

- **Web-services based**
  Expose web services through a broker system (such as SAP Gateway), using OData or other open protocols, such as remote function calls (RFC) and enterprise services (i.e., web services).

- **Portal based**
  Use SAP’s existing portal as a service connectivity layer to access SAP ERP business logic and data.

Consider these solutions. They can often be cost-effective, can solve a specific organizational need, and offer a lightweight alternative to SAP’s more ambitious offerings. For example, if your company only needs a way to approve simple work items, then purchasing the full SAP Mobile Platform is likely overkill. Instead, implementing a partner solution or leveraging the Work Item app in SAP Fiori might be the more streamlined option.

Now that we have reviewed the available solutions for mobile on-premise, let’s turn to the mobile cloud solutions in HR.

### 7.4 Self-Services on Mobile (Cloud)

Table 7.4 lists two major ways to enable mobility by using cloud technologies.

<table>
<thead>
<tr>
<th>Solution</th>
<th>Enabling Technologies</th>
<th>System</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP HANA Cloud Platform</td>
<td>SAP MEAP and SAP Afaria</td>
<td>SAP ERP</td>
</tr>
<tr>
<td>mobile services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SuccessFactors Mobile</td>
<td>Native app on Apple, Android, and Blackberry devices</td>
<td>SuccessFactors</td>
</tr>
</tbody>
</table>

Table 7.4 Mobile Technologies for Self-Services

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**Additional Resources**

If you decide to implement the SAP Enterprise Portal mobile edition as your mobile solution, then you should review some of the known limitations and issues associated with the solution in SAP Note 1705067 (Known Issues for Portal on Device).

**7.3.3 Various Partner Solutions**

Some SAP partners offer third-party alternatives for mobile solutions, built with various technologies. Some vendors have developed applications on the SAP Mobile Platform, whereas others have looked for more “lightweight” alternatives.
The main difference between SAP HANA Cloud Platform mobile services and SuccessFactors Mobile is the backend system. Because many companies have gone (or are going) hybrid, it’s important to understand how we can bridge the cloud and on-premise SAP ERP HCM systems. This has become a pain point for many customers for which data exists in two (or more) disparate systems, such as SAP ERP and SuccessFactors. The vision is of an integrated platform in which the end user of the mobile application is unaware of which system he or she is using. A seamless user experience doesn’t exist yet, but SAP and its partners are moving quickly to try to overcome this gap.

### 7.4.1 SAP HANA Cloud Platform Mobile Services

SAP HANA Cloud Platform mobile services is a cloud subscription service that offers a more lightweight option for customers who want the extensibility of the SAP Mobile Platform solution but don’t want to maintain the infrastructure.

Also referred to as “SAP Mobile Platform on SAP HANA Cloud” and “mobile as a service” (MaaS), SAP HANA Cloud Platform mobile services allow you to connect mobile solutions hosted in the cloud with SAP ERP data (via the SAP Gateway), SAP HANA applications (via the Concept Gateway), or SAP BusinessObjects BI.

Figure 7.6 illustrates this concept.

The architecture behind the SAP HANA Cloud Platform mobile services is based on a three-tiered delivery mechanism organized into the concepts of connect, configure, and try/buy:

- Connect to an SAP or non-SAP system via open protocols, such as OData and Open HTTPS,
- Configure the SAP Mobile Platform to manage application security, notification management, application lifecycle, and other important aspects of mobility.
- Try and (potentially) buy applications built either natively or with third-party frameworks, such as HTML5.

### 7.4.2 SuccessFactors Mobile

The SuccessFactors Mobile offering is only available for users who have some or all of their applications in a SuccessFactors subscription (in the cloud). Like SAP Fiori for on-premise HCM, the mobile application is part of the overall product cost (for SuccessFactors, this is the subscription).
The following mobile applications are available from SuccessFactors:

- **To Dos**
  Use work item to dos, such as job change, LOA, and so on.

- **Touchbase**
  Set the right priorities and make one-on-one meetings more efficient.

- **Jam**
  Stay on top of projects, find experts and content, and contribute new videos and photos.

- **Org Chart**
  Find people in your company fast, and then connect via email, phone, or a text.

- **Candidate Assessment**
  View and assess candidates as part of the SuccessFactors recruitment module.

- **Job Requisition Approvals**
  Approve or decline job requisitions as part of the SuccessFactors recruitment module.

- **Learning**
  Sign up for courses, connect with experts, and even complete entire classes while on the go; instructors can manage their classes and enrollment.

- **Goals**
  Allows employees and managers the ability to track and update goals.

- **Time Off**
  Employees can request and cancel time off via a mobile device. Managers can approve the time off requests. HR admin maintains each employee’s accounts and absences.

- **Headlines**
  View analytics for key metrics within the organization.

In contrast to the SAP Mobile Platform offerings from SAP, the SuccessFactors Mobile functionality is encapsulated into one mobile application (see Figure 7.7). There are native mobile applications available for iPhone, Android, and BlackBerry devices (but not yet Windows, as of fall 2014). There is no current HTML5 version of the mobile version of SuccessFactors, but the use of SAP Fiori as an umbrella technology to fuse on-premise and cloud-based HR applications is a promising area to watch.

The iPhone application also recently refreshed its look, and it now matches the user experience in the iPad.

### 7.5 Summary

Deploying self-service solutions on a mobile device is a robust way to empower the employees, managers, and HR professionals within your organization. Knowing the various technologies and deployment methods available is critical to the success of any company’s mobile strategy. Now more than ever, employees—who carry high expectations of mobile apps into work from the outside world—expect their self-service functionalities on mobile devices to be intuitive and consumer-grade.
The next chapter reviews the offerings available with SAP Fiori, which is one of SAP’s latest offerings of self-service for the casual user. As we will explain—and regardless of its original intent—it’s important to understand the functionality offered and the importance it has within the current SAP ecosystem.
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