



**Selecting an Approach  
for  
Industrial SAP Data Collection Solutions**

<b><i>Introduction</i></b> .....	<b>3</b>
<b><i>SAP Data Collection Technology Overview</i></b> .....	<b>3</b>
<b>SAP Console</b> .....	<b>4</b>
<b>ITSMobile</b> .....	<b>5</b>
<b>Mobile Web Dynpro</b> .....	<b>6</b>
<b><i>Technology Comparison Matrix</i></b> .....	<b>7</b>
<b><i>Solution Approach Summary</i></b> .....	<b>14</b>
<b>The Evolution of Data Collection</b> .....	<b>14</b>
<b>Additional Approaches</b> .....	<b>14</b>
<b>SAP Console Lifecycle</b> .....	<b>15</b>
<b>Solution Profiles</b> .....	<b>15</b>
<b><i>Final Thoughts</i></b> .....	<b>18</b>

## Introduction

The purpose of this paper is to provide guidance in selecting an approach for use in implementing an **SAP Data Collection Solution** in industrial environments. Although some technical details are presented in support of the conclusions, intricate details of each approach are not the focus of this paper. It is not the objective of this paper to position any one approach as being the single best solution; rather the reader is provided with information for understanding why one approach might be a better fit for a given situation.

All of the technologies discussed in this paper are solutions created and maintained by SAP Labs, and are capable of creating real-time solutions for mobile devices in an SAP environment. Typical SAP host environments are SAP ERP with WM, decentralized WM and TRM, or SCM with EWM. The focus is primarily on three approaches, SAP Console, ITSMobile and Mobile Web Dynpro. This paper does not explicitly address middleware solutions or SAP NetWeaver Mobile (formerly Mobile Infrastructure). However, in the summary section, it does offer insight into why such solutions become a viable option.

## SAP Data Collection Technology Overview

Throughout the last 25 years, the use of industrial mobile terminals in warehouse environments has become one of the most popular methods of increasing efficiency and eliminating errors. In general, mobile solutions can be defined and categorized by many characteristics, however, for the purposes of this paper we separate them into two categories: real-time and occasionally connected. The approaches discussed here are all real-time solutions and therefore are appropriate for industrial, mission-critical applications operating in high availability environments.

Currently there are four primary approaches for implementing an SAP data collection system. The four approaches are SAP Console, Web SAP Console, ITSMobile and Mobile Web Dynpro. Each solution was introduced for different reasons over the past 8 years, has evolved over time and provides organizations with a wide range of options. Note that moving forward, the Web SAP Console approach is no longer discussed as a viable solution due to its limited product roadmap and the emergence (and preference) of using ITSMobile.

In general, SAP Console and ITSMobile share a similar implementation model, while Mobile Web Dynpro represents a very different approach for developing mobile applications. Each technology has specific advantages and limitations, which should influence the decision making process when evaluating a data collection solution. Before examining the unique characteristics of each approach, we present a brief background of the technologies to better understand how each solution works in practice.

## SAP Console

Of all approaches, SAP Console has the longest history within the SAP Warehouse Management (WM) and Data Collection domain. Introduced in 1999 as the first native SAP Radio Frequency (RF) solution, it initiated the decline of RF middleware, which had long dominated the RF market. Although lacking various capabilities inherent to RF middleware, using SAP Console for RF data collection has been embraced by the market due to its relative ease of implementation, cost, and its continued support from SAP.

SAP Console is considered both a technological and functional solution. To understand this further, an SAP Data Collection solution using SAP Console can be defined as having several primary components: 1) The SAP Console translator, 2) a Telnet Server 3) SAP Configuration (Mobile Data Entry) 4) RF transactions, which can be the Mobile Data Entry or Custom RF transactions. In practice, a solution built for use with SAP Console must have all four components, but as we will discuss in the next section, it is not the only method of using mobile terminals to access RF transactions written in ABAP.

The basic premise of SAP Console is to convert the SAPGUI screens of ABAP dialog programs into text screens, which are then accessed via industrial mobile devices through the telnet server. It was originally created to address adding RF processing capabilities to SAP Warehouse Management, and remains the only solution dedicated to that specific objective.

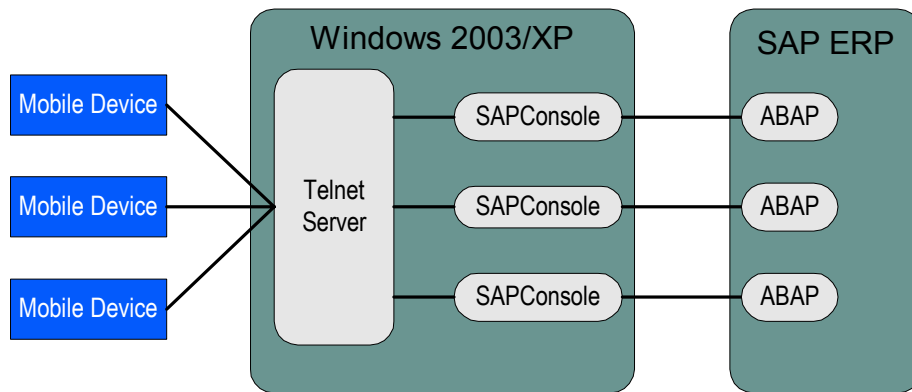


Figure 1 - SAP Console Approach

## ITSMobile

ITSMobile (Internet Transaction Server for Mobile Devices) is the indirect successor to the Web SAP Console solution, which is now “in maintenance” and not recommended for use in future implementations. It is referred to as an indirect successor of Web SAP Console since it is not built from the same technology, but rather makes use of different technology to achieve similar goals. ITSMobile offers numerous advantages over Web SAP Console, which are documented in the *ITSMobile Quick Guide* and related OSS notes located on the SAP Service Marketplace.

ITSMobile, which was formally released in 2007 and essentially consists of two related components: 1) The ITS template generator and 2) the core ITS platform. Note, the core ITS platform has been in use for many years as a separate SAP product, however with the introduction of NetWeaver Basis 6.40 it became integrated with the SAP kernel (Integrated ITS). The primary objective of core ITS was to allow web-based application development within the SAP environment (on-line store, etc.). ITS was the original web-based application builder for SAP, whereas now it is possible to use ITS, Business Server Pages (BSP), Web Dynpro, the Enterprise Portal or other technology for creating these solutions.

The ITS template generator is a more recent offering, released throughout 2007 inside various support packs associated with different SAP versions. It is a utility within the ABAP development workbench (SE80) that basically converts ABAP-based screens (Dynpros) into HTML based screens, which are then accessed by mobile users connecting through ITS. As screen generation occurs at design time, the ability of enhancing the ITS screens to suit different circumstances is possible and even encouraged.

Although SAP Console and ITSMobile use very different technologies, either solution can make use of the SAP Mobile Data Entry configuration (Queues, menus, users, etc.), the RF transactions (LM01, LM02, etc.) and any other custom transactions written in ABAP for use on mobile devices. In general, ITSMobile offers greater flexibility than SAP Console, however each approach offers distinct advantages under different circumstances.

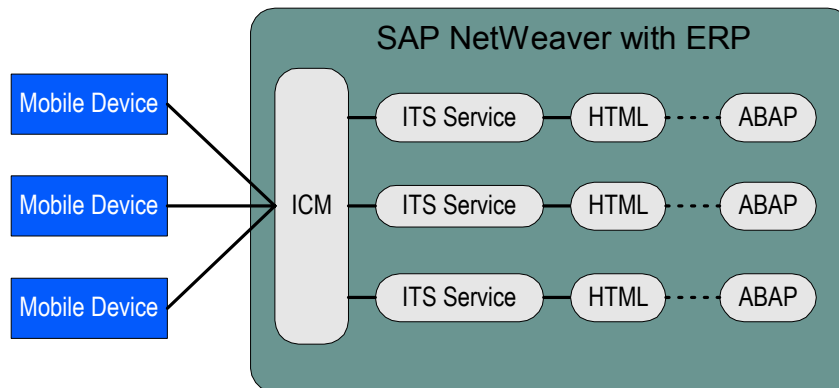


Figure 2 - ITSMobile Approach

### Mobile Web Dynpro

Web Dynpro is the current SAP framework for creating web user interfaces for business applications and offers a very different approach than the other solutions discussed in this paper. Web Dynpro comes in two completely different options: Java and ABAP. Web Dynpro for ABAP does not currently offer support for mobile devices and therefore is not discussed further in this paper. The remainder of this section concentrates on Mobile Web Dynpro, which is simply Web Dynpro for Java and an associated library of special components for creating mobile applications.

At a high level, Web Dynpro for Java (WD Java) is a development environment within the SAP NetWeaver Developer Studio. It is a model-based approach for designing applications that ensure the separation of the user interface from the backend business logic. WD Java applications are a combination of metadata and Java, run in the SAP NetWeaver J2EE environment and communicate with SAP backend business logic (e.g. Warehouse Management, EWM, etc.) using remote function calls (RFC's). Prior to SAP NetWeaver, an application such as this could not be created within the SAP environment and would be considered RF middleware.

Similar to ITS, Web Dynpro is a broader platform targeted for creating any type of web-based application, one of which might be for industrial mobile devices using real-time connectivity. Support for mobile devices, barcode scanning, etc. was added to Web Dynpro for this specific purpose and is the essence of Mobile Web Dynpro.

As stated previously, the differences between ITS and WD Java are significant, even though they can both be used to create a real-time data collection solution. ITS is an open, HTML-based environment that requires little overhead or restrictions on customizing the user interface. WD Java uses a model-based concept within a Java environment. It requires a more complex run time environment and with a few exceptions, limits the user interface design to specific patterns and client platforms.

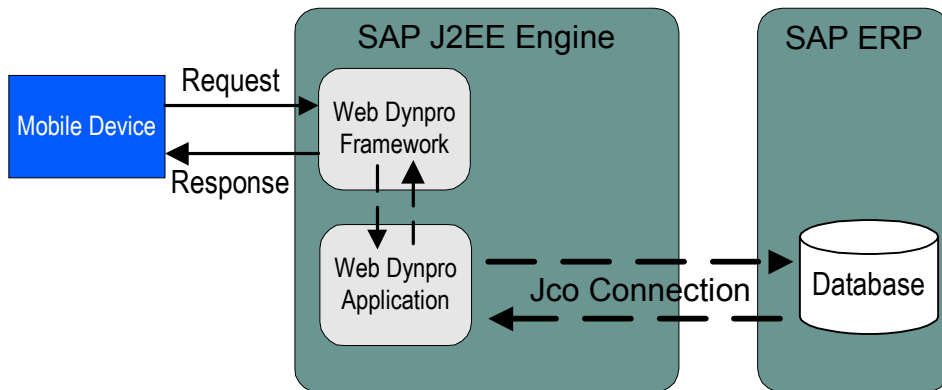


Figure 3 - Mobile Web Dynpro Approach

## Technology Comparison Matrix

This section provides a side-by-side comparison of each approach and provides a snapshot of the similarities and differences between each of the solutions.

Characteristic	SAP Console	ITSMobile	Mobile Web Dynpro
<b>Solution Profile</b>	<ul style="list-style-type: none"> <li>Original SAP RF solution</li> <li>Solely focused on industrial mobile devices</li> <li>Mature solution (1999)</li> <li>ABAP-based</li> <li>Fulfills both global or local strategies</li> <li>Supported by SAP SCM Group</li> </ul>	<ul style="list-style-type: none"> <li>Replacement for Web SAP Console</li> <li>Any web-based application</li> <li>Recent offering, built on mature ITS platform</li> <li>ABAP and HTML</li> <li>Fulfills both global or local strategies</li> </ul>	<ul style="list-style-type: none"> <li>Targeted for web-based business applications</li> <li>Any web-based application</li> <li>Relatively mature, but platform still evolving</li> <li>Java-based</li> <li>Larger scale web development</li> <li>More of a global strategy</li> </ul>
<b>Solution Maturity</b>	<ul style="list-style-type: none"> <li>SAP Console has been in use since 1999, has many installations across the globe, is considered stable and hence is a very mature solution.</li> <li>Using industrial RF devices with terminal emulation has a long history (~25 years) and is well understood.</li> </ul>	<ul style="list-style-type: none"> <li>The ITS technology has been in use for many years (~1998), but only recently became part of the SAP kernel (~2004).</li> <li>ITSMobile, the concept of using ITS as a platform on which to create applications for mobile devices was formally introduced in 2007.</li> </ul>	<ul style="list-style-type: none"> <li>WebDynpro Java was introduced in 2003 and is still evolving as a development platform.</li> <li>Limited use in industrial mobile environment.</li> </ul>

Characteristic	SAP Console	ITSMobile	Mobile Web Dynpro
<p><b>Solution Availability &amp; Support</b></p>	<ul style="list-style-type: none"> <li>SAP Console is considered a component of NetWeaver 7.0 and is currently officially supported through 2013, the NetWeaver 7.0 stated maintenance period. (Note: NetWeaver 7.0 was formerly named NetWeaver 2004s)</li> <li>The existence of text-based device support will prolong the support of SAP Console beyond 2013 if necessary.</li> </ul>	<ul style="list-style-type: none"> <li>Integrated ITS (NetWeaver 6.40 and above) is considered part of the SAP kernel and thus can be viewed as being supported in perpetuity.</li> </ul>	<ul style="list-style-type: none"> <li>Like ITS, Web Dynpro is considered part of SAP NetWeaver, and thus can be viewed as being supported in perpetuity.</li> </ul>
<p><b>Solution Architecture</b></p>	<ul style="list-style-type: none"> <li>Requires a separate Windows based machine (for Telnet and SAP Console)</li> <li>SAP Console connections are basically SAPGUI dialog users.</li> <li>Telnet (or SSH) over TCP</li> <li>Options for redundancy and load balancing</li> </ul>	<ul style="list-style-type: none"> <li>Mobile devices running a client browser connect directly to SAP NetWeaver server via ICM (Internet Communication Manager).</li> <li>HTML over HTTP/HTTPS</li> <li>Options for redundancy and load balancing.</li> </ul>	<ul style="list-style-type: none"> <li>Mobile devices running a client browser connect to the Web Dynpro framework, which then calls the WD application.</li> <li>Connects to ABAP system and database using SAP JCo (Java Connector).</li> <li>WD runtime renders WD UI on client device</li> <li>XML metadata over HTTP/HTTPS</li> </ul>

Characteristic	SAP Console	ITSMobile	Mobile Web Dynpro
<p><b>Application Platforms</b></p>	<ul style="list-style-type: none"> <li>• Works with any release of SAP.</li> <li>• Requires separate Windows NT, 2000, XP, 2003 Server (32-bit)</li> <li>• Microsoft Vista support is TBD.</li> </ul>	<ul style="list-style-type: none"> <li>• NetWeaver 7.0 from SAP Basis 7.00 SP11</li> <li>• NetWeaver 04 from SAP Basis 6.40 SP21</li> </ul> <p><i>*Note: Integrated ITS information only</i></p>	<ul style="list-style-type: none"> <li>• NetWeaver 04 or above</li> </ul>
<p><b>Device Compatibility</b></p>	<ul style="list-style-type: none"> <li>• SAP Console relies on VT220 terminal emulation. This basically includes all text and graphical industrial mobile devices in use today.</li> <li>• The only solution from SAP that supports text devices and terminal emulation.</li> </ul>	<ul style="list-style-type: none"> <li>• Any device with an HTML browser is supported</li> </ul> <p>Note: The caveat to this statement is that the world of graphical devices and associated browsers change at a rapid pace – hence there will ALWAYS be some tweaking required to make a device work.</p>	<ul style="list-style-type: none"> <li>• Support provided only for devices running specific operating systems and browsers, including Pocket PC, Blackberry and Nokia.</li> <li>• Has specific support for certain Industrial mobile devices through its Mobile Add-on library. Requires use of vendor browser.</li> </ul>
<p><b>User Interface &amp; Ease of Use</b></p>	<ul style="list-style-type: none"> <li>• Text-based interface.</li> <li>• Simplistic interface.</li> <li>• Screen navigation primarily driven by function keys.</li> <li>• Touch screen possible with certain 3<sup>rd</sup> party clients</li> </ul>	<ul style="list-style-type: none"> <li>• Browser-based interface.</li> <li>• Potential to make UI simple or too complex</li> <li>• Screen navigation supports both function key and touch screen input</li> <li>• UI enhancements possible.</li> </ul>	<ul style="list-style-type: none"> <li>• Browser-based interface.</li> <li>• Screen navigation supports both function key and touch screen input.</li> <li>• UI elements strictly controlled by WD. Mixed feedback on ease of use for industrial mobile applications.</li> </ul>

Characteristic	SAP Console	ITSMobile	Mobile Web Dynpro
<p><b>Development environment</b></p>	<ul style="list-style-type: none"> <li>All development done in ABAP Workbench.</li> <li>SAP Console solutions are developed in ABAP and rely on the RF screens being traditional SAPGUI Dynpro screens.</li> </ul>	<ul style="list-style-type: none"> <li>All development done in ABAP Workbench (ABAP and HTML editors).</li> <li>Primary programming language is ABAP, although development could also be HTML-based. All conversion to HTML is done at design time in ABAP Workbench.</li> </ul>	<ul style="list-style-type: none"> <li>All development in NetWeaver Developer Studio using Web Dynpro Java development model.</li> <li>Focus is on design and automated code generation.</li> </ul>
<p><b>Extensibility &amp; Scalability</b></p>	<ul style="list-style-type: none"> <li>SAP Console itself offers little flexibility since all the screens are translated and typically not open for customization.</li> <li>SAP Console can practically support about 200 users per Windows server.</li> <li>Offers distributed model by having local Windows server.</li> </ul>	<ul style="list-style-type: none"> <li>ITSMobile offers the most flexibility, as it is the most open environment in which to create extensions that can be used to resolve different types of data collection or user challenges.</li> <li>Full control over screen conversion process allows for advanced capabilities and device support.</li> <li>ITS was designed to handle a large number of user connections.</li> </ul>	<ul style="list-style-type: none"> <li>WD offers better capabilities for reuse due to UI separation</li> <li>Limited information on scalability for large industrial mobile implementations.</li> </ul>

Characteristic	SAP Console	ITSMobile	Mobile Web Dynpro
<b>Functional Components (WM, IM, EWM)</b>	<ul style="list-style-type: none"> <li>SAP Console can be used with any SAP functional area (WM, EWM, IM, etc.)</li> <li>SAP Console can utilize the RF transactions in WM or EWM as they are written in ABAP.</li> </ul>	<ul style="list-style-type: none"> <li>ITSMobile can be used with any SAP functional area (WM, EWM, IM, etc.)</li> <li>ITSMobile can utilize the RF transactions in WM or EWM as they are written in ABAP.</li> </ul>	<ul style="list-style-type: none"> <li>Web Dynpro can be used with any SAP functional area (WM, EWM, IM, etc.)</li> <li>WebDynpro cannot utilize the RF transactions in WM or EWM as they are written in ABAP.</li> </ul>
<b>Security</b>	<ul style="list-style-type: none"> <li>SAP Authentication is performed by standard SAP Logon screen functionality. Every RF user must be a valid SAP dialog user. Login information is passed over the network in clear text when using telnet (encrypted if using ssh).</li> <li>Network and application security can be added using 3<sup>rd</sup> party solutions such as ssh.</li> </ul>	<ul style="list-style-type: none"> <li>Supports standard SAP Logon via logon screen</li> <li>Since ITS is integrated in the NetWeaver Application Server, features like Single Sign On (SSO2) and connection encryption (SSL, SNC) are provided by the application server.</li> </ul>	<ul style="list-style-type: none"> <li>Supports SAP Logon via logon screen</li> <li>Like ITS, WD offers a wide range of security options depending on the design.</li> </ul>
<b>Performance</b>	<ul style="list-style-type: none"> <li>SAP Console performance is primarily dependant on the SAP backend system (WM, EWM) where the ABAP program is running.</li> <li>In general, performance is better than browser-based solutions due to less overhead and less complex screens.</li> </ul>	<ul style="list-style-type: none"> <li>ITSMobile performance is primarily dependant on the ITS core engine and the SAP backend system where the ABAP/HTML program is running.</li> <li>In general, it is doubtful that users will notice any significant difference from SAP Console – otherwise something is setup incorrectly</li> </ul>	<ul style="list-style-type: none"> <li>Web Dynpro has more complex run-time environment</li> <li>The numerous components and settings for both the WD and J2EE run-time can affect performance.</li> <li>Performance information for industrial data collection still being analyzed</li> </ul>

Characteristic	SAP Console	ITSMobile	Mobile Web Dynpro
<p><b>Solution Complexity</b></p>	<ul style="list-style-type: none"> <li>SAP Console is the most simplistic solution of the three</li> <li>Only requires knowledge of ABAP; it avoids the complexity of browser-based solutions, and essentially works out of the box.</li> </ul>	<ul style="list-style-type: none"> <li>ITSMobile should be considered a solution of medium complexity.</li> <li>ITSMobile has the fewest “moving parts” (e.g. no extra server).</li> <li>The open architecture offers the potential to become quite complex due to customization.</li> </ul>	<ul style="list-style-type: none"> <li>Web Dynpro is the most complex of the three solutions.</li> <li>Complex run-time environment</li> <li>Requires special browsers on mobile device</li> <li>Powerful java development model</li> </ul>
<p><b>Run-time Operation</b></p>	<ul style="list-style-type: none"> <li>Very few run-time settings</li> <li>No true monitoring capability</li> <li>SAP system does not “see” connections as RF users</li> <li>Must coordinate settings for Telnet Server, SAP Console and SAP</li> </ul>	<ul style="list-style-type: none"> <li>Run-time settings for core ITS that affects memory consumption and other application behavior.</li> <li>Run-time monitor for viewing and manipulating ITS connections</li> <li>All run-time settings located in SAP NetWeaver</li> <li>Potential for core ITS optimization conflicts when managing both mobile and non-mobile users.</li> </ul>	<ul style="list-style-type: none"> <li>J2EE server and WD runtime contain a large amount of settings</li> <li>Web Dynpro Content Administrator allows run time monitoring and manipulation of WD applications</li> <li>Requires System Landscape Directory (SLD) be accessible to run WD applications</li> <li>J2EE engine may not be optimized for mobile users due to conflicts with other WD users</li> </ul>

Selecting an Approach for Industrial SAP Data Collection Solutions

Characteristic	SAP Console	ITSMobile	Mobile Web Dynpro
<p><b>Business Continuity</b></p>	<ul style="list-style-type: none"> <li>Continuity capabilities when using SAP Console can be accomplished using two techniques –                             <ul style="list-style-type: none"> <li>Session saver capabilities of certain telnet servers</li> <li>Application logic to save context in case of disconnect.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Must build into application logic</li> </ul>	<ul style="list-style-type: none"> <li>Must build into application logic</li> </ul>
<p><b>Limitations</b></p>	<ul style="list-style-type: none"> <li>Cannot use debugger with live connections running on RF devices</li> <li>Requires 3<sup>rd</sup> party Telnet (or SSH) Server</li> <li>Limited support of SAP UI elements (lists, etc.)</li> <li>RFID support</li> </ul>	<ul style="list-style-type: none"> <li>Load balancing not trivial</li> <li>No standard support for device function keys, scanner, field control, local printing, etc.</li> <li>Advanced capabilities requires knowledge of Jscript</li> <li>Limited history as industrial data collection solution</li> </ul>	<ul style="list-style-type: none"> <li>Overly complex architecture (for industrial data collection systems)</li> <li>Limited device support</li> <li>Strict design concepts geared towards mainstream applications don't work well within industrial environment</li> <li>Limited history as industrial data collection solution</li> </ul>

## Solution Approach Summary

This section now looks towards defining profiles where each approach is most appropriate for building a data collection solution. Before identifying these profiles, we examine a few important concepts that help shape our understanding of the solutions and offer commentary on the continuing evolution of data collection systems in an SAP environment.

### The Evolution of Data Collection

For roughly 25 years, terminal emulation (e.g. text-based screens) has been the standard when using industrial data collection devices. The steady emergence of graphical devices utilizing web-based interfaces has been both a boon and curse. Although offering powerful capabilities that were previously not possible with terminal emulation, Internet browsers are simply not designed with data collection applications in mind, and can often lead to unanticipated results. A non-dedicated operating system, limited control over the browser, caching behavior, cursor focus issues and other such behaviors makes for a poor data collection environment. Using one of the special browsers designed for data collection can be well worth the extra cost and minimize on-going challenges presented when using graphical environments.

### Additional Approaches

Although not addressed in this paper, there are other SAP technologies for developing mobile applications, namely Business Server Pages (BSP) or Java Server Pages (JSP). BSP and JSP are similar approaches that live in different parts of the SAP NetWeaver environment; BSP in the ABAP stack and JSP in the J2EE stack. Again, neither of these approaches have any explicit support for industrial mobile devices and any solutions developed are directly related to the skill and experience of the integrators.

Each of the approaches discussed in this paper are solutions that require online connectivity to the host SAP system. However, NetWeaver Mobile (NW Mobile) is one solution that is designed specifically for *occasionally connected* solutions, and will be discussed in a future white paper. Occasionally connected solutions typically operate by connecting to the host system when possible and then synchronizing the data; all processing is done locally on the mobile device. In general, many of the same capabilities and advice related to Mobile Web Dynpro apply equally to NW Mobile. There are some notable exceptions: (1) NW Mobile is specifically designed for mobile applications, (2) designing occasionally connected applications is almost always more complex, (3) the solution involves both the ABAP and Java environments, and lastly (4) it is a separate product within NetWeaver with its own lifecycle and maintenance.

### SAP Console Lifecycle

It is a common misconception that Web Dynpro is the successor to SAP Console. In truth, SAP Console remains an important component to the SAP suite, as it allows the ability to build native real-time RF solutions for WM and EWM. Practically, the lifecycle of SAP Console is linked to two factors: the future availability of Windows 2003 (support for Windows Vista is not firm) and the demand for supporting text-based devices from the SAP user community. For most current or future SAP Console users, planning for the worst case simply means migrating to ITSMobile when your company upgrades beyond NetWeaver 7.0.

### Solution Profiles

As stated in the introduction, the purpose of this paper is to help the reader determine why a solution is more appropriate under certain conditions. Listed below are the solution profiles that identify both specific constraints and expert advice. Constraints identify absolutes; where there is no other choice. The expert advice comments are extracted from years of industry best practices.

Since each approach shares some overlap with other approaches, each profile may also identify the overlapping approaches and the associated constraints that apply equally to both solutions.

**Table 1 - SAP Console Profile**

<b>SAP Console</b>	
<b>Constraints</b>	<ul style="list-style-type: none"> <li>• Current SAP release is not sufficient for other approaches</li> <li>• Desires use of text-based devices (or avoid using browser user interface)</li> </ul>
<b>Expert Advice</b>	<ul style="list-style-type: none"> <li>• The simplest solution available</li> <li>• Typically used only for industrial data collection applications</li> <li>• Recommended for first time RF users</li> </ul>
<b>SAP Console &amp; ITSMobile</b>	<ul style="list-style-type: none"> <li>• Prefer ABAP environment</li> <li>• Desire to utilize the Mobile Data Entry transactions provided by SAP in WM or EWM</li> </ul>

**Table 2 - ITSMobile Profile**

<b>ITSMobile</b>	
<b>Constraints</b>	<ul style="list-style-type: none"> <li>• Sufficient SAP release for running ITSMobile <i>(Note: Non-integrated ITS, which requires a separate Windows-based server running ITS, allows ITSMobile support back to SAP 4.6C with appropriate support pack levels)</i></li> <li>• Desire use of any mobile device manufacturer</li> <li>• Prefer ABAP and HTML based development environment for mobile applications</li> <li>• Desire more control over user interface design</li> </ul>
<b>Expert Advice</b>	<ul style="list-style-type: none"> <li>• ITSMobile can be used in parallel with SAP Console or as a migration path</li> <li>• Consider potential integration challenges when implementing advanced capabilities</li> <li>• May be the best choice for use with EWM</li> </ul>
<b>ITSMobile &amp; Mobile WD</b>	<ul style="list-style-type: none"> <li>• Desire a web-based solution</li> <li>• Require mobile RFID capabilities</li> <li>• Can be used for any web-based applications</li> </ul>

**Table 3 - Web Dynpro Profile**

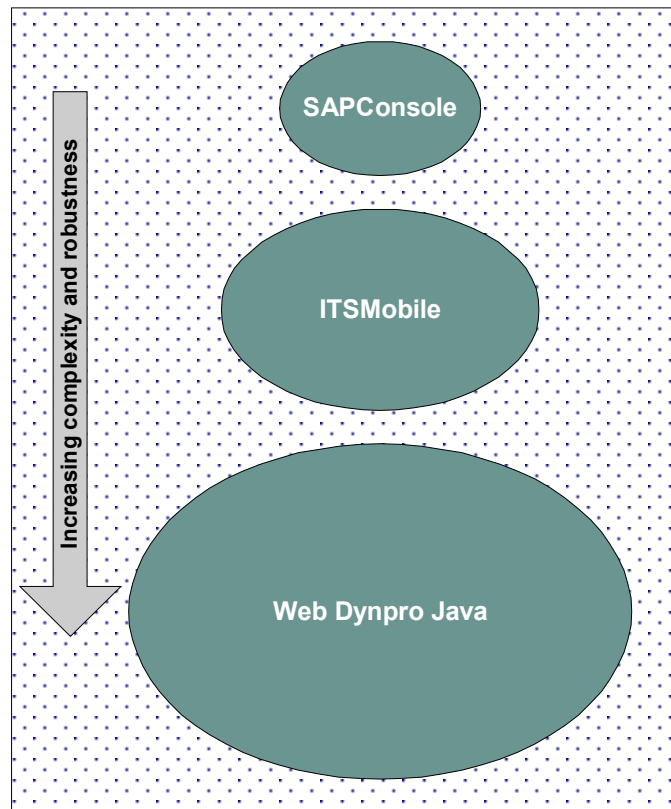
<b>Mobile Web Dynpro</b>	
<b>Constraints</b>	<ul style="list-style-type: none"><li>• Sufficient SAP release for running Web Dynpro Java</li><li>• Exclusively use the device manufacturers supported by Mobile WD</li><li>• Prefer Java-based development environment (NetWeaver Developer Studio)</li><li>• Prefer the WD user interface model (e.g. look and feel of the screens)</li></ul>
<b>Expert Advice</b>	<ul style="list-style-type: none"><li>• Complexities introduced by a J2EE and Web Dynpro runtime dictate that an industrial data collection system is not the ideal initial Web Dynpro project for an organization.</li><li>• Particularly consider WD if future projects involve using both industrial and non-industrial real-time applications</li></ul>

## Final Thoughts

This paper has examined the three primary SAP approaches for creating real-time industrial data collection solutions, and now offers a few final thoughts.

Each approach outlined in this paper has its merits and limitations, as do any projects that have different options for achieving similar goals. We can now state that the primary gates between the solutions are 1) text-based or web-based, 2) ABAP or Java, and 3) simple and limited or complex and robust. The diagram below represents the three approaches and their increasing level of complexity and robustness.

As we have observed, SAP Console is the most mature and simplistic RF solution. Frankly, it's the easiest to implement and typically leads to stable and less risky implementations. ITSMobile is relatively new, but a very attractive and flexible alternative to SAP Console. It does however require some advanced skills, as it's a more open approach and not everything works out of the box. Think of ITSMobile as a better and more flexible Web SAP Console. Lastly, Mobile Web Dynpro is a very modern approach that might fit into a global strategy, however it is still evolving for industrial environments and is the most complex of the three approaches.



**Figure 4 - Approach Complexity and Robustness**

The primary goals of most data collection systems are typically the same; implement a cost-effective system that meets the company's needs, makes its users more efficient, reduces errors and is maintainable. Industrial data collection systems are mostly mission critical operations that have a direct affect on the bottom line. Complex mobile applications such as high speed picking in the warehouse should not be confused with "office" mobile applications like entering timesheet information. They are not the same and often demand different approaches to creating the best solution.

The secrets to implementing a successful and usable system using the approaches in this paper begin with a crucial conceptual understanding. Each approach is broken up into three parts: 1) the application, 2) the user interface and 3) the integration. If any part is ignored, the system does not measure up to its potential. The application addresses the operational functionality or "the work" in the world of the end users. Poor application design leads to poor results. The user interface is directly related to efficiency and to some extent user morale. Giving users a system that creates more work or adds extra time to their activities is a losing proposition. Lastly and most often overlooked is the integration, as it basically consists of many intangibles. How everything fits together can make or break a solution. Imagine a solution with a great application and user interface that is slow, constantly losing its connection with the host or uses a poor choice of mobile device for the given operation. Plan to equally address all three areas of data collection using in part the guidance outlined in this paper, and successful implementations will follow.

### **About PEAK Technologies**

PEAK Technologies, a Platinum Equity Company, is a systems integrator of SAP supply chain automation and inventory management solutions delivering tangible return on investment to some of the world's largest corporations. PEAK's primary applications include solutions for warehousing, manufacturing, and distribution operations. PEAK's portfolio of solutions and services include business process consulting, enterprise resource planning (ERP) systems integration, wireless professional services, project management, printing/media solutions, and life-cycle support services. PEAK Technologies has locations throughout North America providing a comprehensive "foot print" for national, multi-site life cycle service and support.

### **About the Author**

Chris Schultz has worked in the systems integration and data collection business for 17 years, and has implemented numerous industrial data collection systems in SAP environments across a variety of industries. At PEAK, Chris is chartered with further developing PEAK's architecture and development strategy in support of SAP solutions to help ensure a common platform for rapid deployment of SAP solution-based supply chain transactions and applications. For more information on PEAK Technologies' data collection solutions for industrial SAP data collection, contact us at 888-ASK-PEAK (275-7325) or email [info@peaktech.com](mailto:info@peaktech.com).