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Integrating Adobe Interactive Forms in SAP Netweaver

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ABSTRACT

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Systems, Applications and Products in Data Processing (SAP), the leader in Enterprise Resource Planning Software (ERP) as a strategy is moving its technology into Virtualization. In light of that, this project utilized SAP Netweaver VMware edition which is licensed for developers to illustrate the integration of Adobe interactive forms.

SAP as a practice has installation notes for every solution, but they are not uniformly released. Thus technical consultants encounters compatibility challenges in installing, integrating and implementing SAP systems. For example, a technical support would read about twenty to thirty released notes (SAP Note) to install a solution with its patches. Something hitherto seems simple as Microsoft software, and this is no exaggeration.

So the goal of this project is to produce a detailed practical and non-duplicated document on how Adobe interactive forms can be integrated into Netweaver Application Servers in order to provide robust solutions to the inevitable hiccups confronting SAP developers in Marx Consulting.
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<td></td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABAP</td>
<td>Advanced Business Application Programming</td>
</tr>
<tr>
<td>ADS</td>
<td>Adobe Document Services</td>
</tr>
<tr>
<td>ALD</td>
<td>Adobe LiveCycle Designer</td>
</tr>
<tr>
<td>ERP</td>
<td>Enterprise Resource Planning</td>
</tr>
<tr>
<td>GUI</td>
<td>Graphical User Interface</td>
</tr>
<tr>
<td>HTML</td>
<td>Hypertext Markup Language</td>
</tr>
<tr>
<td>IFbA</td>
<td>SAP Interactive Forms by Adobe</td>
</tr>
<tr>
<td>J2EE</td>
<td>Java 2 Platform Enterprise Edition</td>
</tr>
<tr>
<td>NAT</td>
<td>Network Address Translation</td>
</tr>
<tr>
<td>NWDS</td>
<td>Netweaver Developer Studio</td>
</tr>
<tr>
<td>PDF</td>
<td>Portable Document Format</td>
</tr>
<tr>
<td>SAP</td>
<td>Systems, Applications and Products in Data Processing</td>
</tr>
<tr>
<td>SLD</td>
<td>System Landscape Directory</td>
</tr>
<tr>
<td>SDN</td>
<td>SAP Developers Network</td>
</tr>
<tr>
<td>TCO</td>
<td>Total Cost of Ownership</td>
</tr>
<tr>
<td>URL</td>
<td>Uniform Resource Locator</td>
</tr>
<tr>
<td>T-Code</td>
<td>Transaction Code</td>
</tr>
<tr>
<td>XML</td>
<td>Extensible Markup Language</td>
</tr>
</tbody>
</table>
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Table 8: SAP Users  
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1 INTRODUCTION

In today’s intelligent digital documents world electronic forms offers a perfect clone of static printed materials and a promised of far greater rewards for enterprises. The advantages of using intelligent digital documents cannot be overemphasized enough, as they can be customized with application data specifically defined for the targeted recipients: results are forms that can be populated dynamically online or offline with adjustment possibilities. That is the level intelligent digital document technology of today points to: a completely digitized business documents workflow. The application of intelligent digital documents like Adobe Interactive Forms has unique advantages: for example, it enables companies to reduce the costs of storing, printing, producing paper brochures and other external materials crucial to meeting customers’ needs etc. (SAP; AG, 2006). And, it is estimated that an average costs of paper to typical global enterprise is circa thirty million US dollars per year in materials and labor. (SAP, 2008; AG, 2006)

By placing intelligent digital documents relevant to their enterprise applications, businesses are now able to streamline their operational cost, at same time satisfying target audiences, ensuring their materials are accurate and current. This also gives them an edge above their competitors, whereby customer satisfaction is enhanced. All these are achieved without affecting the bottom-line, rather minimizes their total cost of ownership (TCO). Thus reducing greatly, time-consuming bureaucracy usually associated to large corporation business processes (AG, 2006).

These benefits of this high-intelligent document are now possible with the
strategic collaboration of Adobe Systems and SAP. This collaboration ensures SAP customers to deploy fully automated digital forms called SAP Interactive Forms by Adobe (IFbA). Customers will not only be able to generate personalized forms directly from SAP ERP solutions, but also be able to enter new and updated data back into the system. With this new solution, most bottlenecks usually faced in traditional document processing by customers will be significantly reduced (Adobe, 2011; SAP, 2008; AG, 2006).

The key enabler of this technology is Adobe Portable Document Format (PDF): the standard for digital collaboration and document exchange worldwide. The ubiquitous PDF serves as a holder for dynamic Extensible Markup Language (XML) content that mirrors the recognized paper forms. The Result is an interactive digital document that clones its paper-based original, and contained dynamic data that is within SAP Application Server (; SAP, 2008; Dr. Michael Hahsler, 2004; AG, 2006).

Businesses can now embed their processes into intelligent documents that are delivered (online and offline), which exactly translates digitally the paper forms they represents. This empowers them to serve millions of internal and external users, providing users equipped with the free Adobe Reader to quickly complete an interactive form and in real-time return the data to SAP server. (SAP, 2008; Zeller, 2004; AG, 2006)

1.1 SAP Forms Roadmap

Going further, SAP has hinted that its forms strategy will be more IFbA focused. That means SAPscript and Smart Form developers would have to embrace IFbA as those becomes less used. Here is the official SAP position: "The SAP forms strategy is based on SAP Interactive Forms by Adobe (IFbA). This applies to both Print and Interactive forms. In this context, most Business Suite solutions have already been converted to the IFbA technology (more than 2300 forms), and new standard SAP forms will be created using IFbA instead of Smart Form or
SAPscript and Smart Forms shall continue to be supported in line with SAP's maintenance strategy, thereby ensuring the ability to protect existing customer investment” (Lax, 2008). Good thing is that ABAP developers are still going to be relevant though the Portal has given Java developers some distinct edge.

1.1.1 SAPscript

SAPscript is a legacy integrated User Interface (UI) tool for form printing and text input for SAP ERP applications. It customizes SAP provided documents or creating newer ones for printing. The following are advantages and disadvantages in using SAPscript:

Table 1: SAPscript

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is a popular tool because of its legacy advantage.</td>
<td>Limited features output - multiple page formats not possible.</td>
</tr>
<tr>
<td>It has many existing preconfigured form templates</td>
<td>Unfortunately, it is not user-friendly.</td>
</tr>
<tr>
<td>beneficial to customers.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stops evolving because of the introduction of Smart Forms.</td>
</tr>
</tbody>
</table>

(Lax Jason, 2008; SAP, 2006)

1.1.2 Smart Form

Smart Form was introduced in SAP Basis 4.6 to replace SAP script. A tool for creating and maintaining forms within SAP ERP applications. Here are the advantages and disadvantages in using Smart Forms:
Table 2: Smart Form

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>User-friendly graphical with table and templates painter tool that aids the overall TCO.</td>
<td>Unlike SAPscript, it has fewer form templates.</td>
</tr>
<tr>
<td>It supports more output options- PDF, XML etc.</td>
<td>No further improvement after IFbA introduction, except for bug fixes.</td>
</tr>
</tbody>
</table>

(Hub, 2011; Zeller, 2004)

1.1.3 IFbA

Here are the advantages and disadvantages in deploying IFbA:

Table 3: IFbA

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>It supports certification and digital signature.</td>
<td>Unlike Smart Forms, it cannot convert to SAPscript.</td>
</tr>
<tr>
<td>It can also serve as print form with more advance features to explore.</td>
<td></td>
</tr>
<tr>
<td>Forms can be interactive in both offline and online scenarios.</td>
<td></td>
</tr>
</tbody>
</table>
Overcomes the defects of papers based forms as it is prone to mistakes, often outdated and exposed to manual date entry that leads to inaccurate data.

(Lax Jason, 2008; Lax, 2008; Zeller, 2004; Hub, 2011)

1.2 Licensing

In production scenario SAP delivers over two thousands forms (Print and IFbA) through different module solutions to meet its customer’s forms workflow business process needs. Before discussing the licensing complexities further, there is a need to understand the differences between Print Forms against Interactive Forms. Also and more importantly poor knowledge of licensing issues can be a big disadvantage to Interactive Forms developers in production scenarios as lots of errors stem from violations.

Table 4: Interactive Forms versus Print Forms

<table>
<thead>
<tr>
<th>Interactive Forms</th>
<th>Print Forms</th>
</tr>
</thead>
<tbody>
<tr>
<td>The forms fields are reactive to data inputs both in online and offline situations. It should be noted that IFbA can also function as a print form too.</td>
<td>The fields are static and must be printed before filling in data, usually by hand.</td>
</tr>
</tbody>
</table>

1.2.1 Licensable and Non-Licensable Scenarios (SAP, 2006)

Table 5: Licensable and Non-Licensable

| Licensable | Non-Licensable |
1.2.2 Cosmetic and Non-Cosmetic Modifications

The table below highlights cosmetic and non-cosmetic modifications of IFbA delivered in Production system:

Table 6: Cosmetic and Non-Cosmetic Modifications.

<table>
<thead>
<tr>
<th>Cosmetic Modifications</th>
<th>Non-Cosmetic Modifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deleting a form fields.</td>
<td>Inserting a new image field that function calls data from an SAP application or submits image data in the form data.</td>
</tr>
<tr>
<td>Modifying logos or static graphics</td>
<td>Inserting a new image field that function calls data from an SAP application or</td>
</tr>
</tbody>
</table>
elements or deleting, adding. submits image location URL in the form data.

Modifying the color, font, content or formatting of boiler-plate. Re-position of a field in the form.

Modifying the color, position, or style of lines, circles, arcs, boxes in form adding, deleting. Transferring copied field from a form design to another.

Inserting an interactive field on a form.

1.2.3 Localization of Forms

By default SAP create and stamp forms in English, whereby customers can translate to local languages using internal translation capabilities. Some of these localizations are licensable and are detailed below:

- It is not licensable if only the form designs translated and the stamp unchanged.
- It is not licensable if only the strings are affected and the stamp remained unchanged.
- In the scenario say, a customer creates custom form design and requires about ten of the said forms, then if the customer uses SAP internal translation only one of the said forms would count for licensing, whereas
licensable if the forms were localized manually and then copies form designs ten times many (s. 7; SAP, 2008).

2 TECHNOLOGY PREREQUISITES

SAP started supporting Adobe Document Services (ADS) from Netweaver 04-Web Application Server 6.40, ADS has since evolved. ADS as shown below (figure 1) functions as web services which runs on J2EE engine generating documents for Adobe LiveCycle Designer (ALD), the user interface tool contributed by Adobe Systems in this collaboration (p. 9; AG, SAP, 2007). These are the core components of IFbA.

Before explaining this project further, I highlighted and gave below an overview of this technology. So those that are new to SAP can have an easy time to understanding IFbA and this thesis.
2.1 Adobe Document Services (ADS)

ADS were specifically developed by Adobe for SAP Web Server, so it is platform defined. As a web services server components, ADS handles the backend jobs for Adobe interactive forms in SAP NetWeaver Application Server. Main functions are to generate the output of data in PDF form format or generates printer codes if it is a print form scenario. When it is interactive, it extracts the user’s input from the PDF form into the system. (AG, SAP, 2007; SAP, 2007)
2.2 Adobe LiveCycle Designer (ALD)

ALD is an easy-to-use tool for designing form templates use in development projects in SAP system that significantly reduces TCO. SAP has its version of ALD different from the one being marketed by Adobe Systems. ALD can be integrated into both ABAP workbench and Java Netweaver developer Studio [See figure 1] (SAP, 2008).
2.3 SAP GUI

SAP is a three-tier architecture Enterprise Resource Planning software (SAP R/3), which consists of Presentation (GUI), Application layer and Database layer. Although its name has evolved to SAP ERP, still its underlying architecture remained same. The presentation layer has three types for different platforms (Eyal Katz, 2012; SAP, 2001):

- GUI for Java environment being used by non-Windows operating systems to access SAP applications on systems like Linux/Unix, Mac OS X etc.
- GUI for the Windows environment - which is used for this project runs on Windows operating systems, and for now the only GUI that supports ALD [figure 4].
- GUI for HTML - SAP GUI for HTML emulates R/3 transaction screens (SAP Easy Access) in web browser [Figure 10]. It is an implementation
model for SAP Internet applications, but IFbA is not supported (SAP, 2001).

**Figure 4:** ALD in SAP GUI for windows.

### 2.4 Adobe Reader

Adobe Reader is a free proprietary software by Adobe Systems that is the de facto standard for reading PDF files (Version 7 and above).
2.5 ABAP

ABAP is the basis language in which all SAP ERP applications were implemented (ABAP stack). It is a very robust language for business programming with an evolutionary strategy—now at its fourth generation (ABAP/4). SAP later morphed ABAP into a fully featured object-oriented language called ABAP Objects (Margaret Rouse, 2010; SAP, 2008).

2.6 SAP Netweaver Developer Studio (NWDS)

This is an Integrated Environment for developing Java based business applications in SAP. NWDS is solely based on Eclipse which makes it quite beneficial, not only for its open source communities but also make it easier for generic Java programmers moving into SAP careers (s. 6).

2.7 System Requirements

Below is the system configuration for this project and probably going to be the same for those with like intent:

- A Windows Server (2003/2008) or 7, Intel Pentium 4 or higher minimum 1536MB recommended, 2GB RAM or higher, 30GB hard disc space. 32-Bit Version for x86 based upon DB2 9.1. Must be a Server system if you intend to use it with IFbA for ABAP and but home windows system is good for Java stack, otherwise personal computer windows systems suffice.

- Downloaded files from SAP Developer Network (SDN), SUSE SLES 10 SAP version from Novell and VMware Player from VMware website. Adobe LiveCycle Designer (version 8 not higher) requires SAP marketplace password at SAP Note 962763.

- Downloaded SAP NetWeaver7.0 - Trial Version on Linux - VMware Edition files from SDN and, SAP GUI for Windows (version 7.20 or lesser
with patches) which supports most windows operating system. (requires SAP market place password)

- Download SAP Netweaver Developer studio 730 (requires SAP market place). Unfortunately, we will have to install NWDS as a stand-alone and integrate into NetWeaver7.0 - Trial Version on Linux - VMware Edition Web Dynpro for Java as it has no portal.

**Note:** If you are using a home computer you should enable Virtual Technology (VT) in **Bios** set-up to have less troubled installation.
3 INTEGRATION

Interactive Forms can only be integrated into Netweaver Application Server with dual instances (ABAP and Java Stack) or single Application Server for Java like Composite Environment family solutions. The system used here has dual instances.

Except for the root user (Username: root; Password: sap123), below are all created users by SAP for use during and after installation of SAP NetWeaver7.0 - Trial Version on Linux - VMware Edition:

Table 7: Operating System Users

<table>
<thead>
<tr>
<th>Username</th>
<th>Password</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dasusr1</td>
<td>dasusr1</td>
<td>DB2 Administration Server User</td>
</tr>
<tr>
<td>n4sadm</td>
<td>n4sadm</td>
<td>SAP System Administrator</td>
</tr>
<tr>
<td>db2n4s</td>
<td>db2n4s</td>
<td>SAP Database Administrator</td>
</tr>
<tr>
<td>sapn4s</td>
<td>sapn4s</td>
<td>Database Connect User</td>
</tr>
<tr>
<td>sapn4sdb</td>
<td>sapn4sdb</td>
<td>J2EE Database User</td>
</tr>
</tbody>
</table>
Table 8: SAP Users

<table>
<thead>
<tr>
<th>Username</th>
<th>Password</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDIC</td>
<td>sapn4sadm</td>
<td>Data Dictionary User</td>
</tr>
<tr>
<td>developer</td>
<td>developer</td>
<td>Developer User</td>
</tr>
<tr>
<td>Sap*</td>
<td>sapn4sadm</td>
<td>SAP Administrator</td>
</tr>
<tr>
<td>J2EE_ADMIN</td>
<td>J2EE_ADMIN</td>
<td>J2EE Administrator</td>
</tr>
</tbody>
</table>

Note: All passwords are subject to change except for the root password.

Table 9: Port

<table>
<thead>
<tr>
<th>Application</th>
<th>Ports</th>
</tr>
</thead>
<tbody>
<tr>
<td>J2EE</td>
<td>54200</td>
</tr>
<tr>
<td>SDM</td>
<td>54218</td>
</tr>
</tbody>
</table>

3.1 Netweaver

First, start by installing VMware player on the local Windows System, and thereafter extracted the SAP Netweaver files and SUSE SLES components into common directory. Then start the virtual appliance by going to file and double-click on the SLES10SP1_Test_Drive in the folder to start the virtual machine. A dialog will come up, click on I copied it and OK:

Automatically, the boot process will start, and after some minutes you will see the boot screen. To return the console to boot screen press ctrl g. If interested in
seeing the boot process at the background, press ALT F2 and then start-up console will be displayed.

Below is the logon after system has booted- Username root and the Password sap123:

![Logon Screen](image)

**Figure 5: Logon Screen**

(Gregor Wolf, 2008)

After logging into the Linux System SAP Application Server will not start automatically, always going to be started manually. Open the Gnome Terminal to give a command. At this point, you will notice that the keyboard layout is set to German, the default language. If you are not familiar with German keyboard layout, you can change it in SUSE Enterprise Linux by going to YaST administrator tools. Now to get the required hardware key to request for the renewable 90-days developer’s license, change to administrator’s domain and issue the hardware key command: saplicense -get

You can now go to [http://www.sap.com/minisap/](http://www.sap.com/minisap/), fill all the required fields and the developer’s license will be mailed to you in few minutes with an attached text file.

### 3.1.1 Application Server for ABAP

To install the license key, the Application Server has to be started manually and always going to start-up this way. Now issue the command startsap n4shost and wait patiently like below:
Installing License

At this point, it will be wise to configure virtual machine and the Firefox browser to access the host internet connection. This procedure is necessary to import the attached license text file to the Application Server. On the browser, click Edit > Preferences > Advanced Tab > Settings button and choose “Direct connection to the internet”; remember to first set VMware router to NAT. In a corporate setting, you can ask technical support to provide you with the right configuration. Now that there is an internet connection in virtual machine; to import the license file, minimize the terminal window and then save it on the desktop.

Note: There are two ways to installing license in SAP Netweaver: ABAP stack- License Administrator when it is dual stacks which are discussed here, and in single Java stack- Netweaver Administrator. In newer releases of Application Server for Java Virtual Administrator is no longer supported.
On the desktop there is a SAP logo double-click on it and launch the image as above-GUI for Java. Click on connect button and log into client one with username: sap*, password: sapn4sadm. It is the default administrator’s password which can be changed like most passwords in SAP.

Now use slicense (T-code) to go to the License Administration page:
Figure 8: SAP License Administration

Import the already saved license file (N4S.txt) and OK it, a success message will appear confirm it and your page should be like above.

Now you have to restart Application Server to apply the license by issuing this command: \texttt{stopsap n4shost} and thereafter the \texttt{startsap n4shosthand} command. Then we can access the Java stack (Application Server for Java) and to configure the ADS. (Gregor Wolf, 2008)

\textbf{Note}: Java stack shut downs after 30 minutes if license is invalid; usually works that way after every start-up until a valid license is applied.

\subsection*{3.1.3 Internet Communication Framework (ICF)}

All ICF services by default are in inactive mode for security reasons; we have to decide which services to activate for the application you want to use. However since this system is licensed for educational purposes we are going to activate all
and test a service. For specific Web Dynpro for ABAP and Java application nodes, see SAP Note 1109215, 724804.

Below are the following steps to active ICF:

- Use the menu Service then click on execute or issue F8.
- Now right-click and active all nodes tree.

Figure 9: Internet Communication Framework

Note that if the appropriate nodes are not activated there will be no access to ADS, Java stack, Web Dynpro for ABAP Java, GUI for HTML etc.
Working in virtual machines slows time thus setting up an external frontend connection is necessary; in this case SAP GUI for Windows. More importantly, ALD only works in windows front end. So to start, install ALD in the Server system, before the GUI for Windows. Installing GUI for Windows is a bit fuzzy, and deserves further discussion.
3.2.1 Configuring SAP GUI for windows

The two most important points to note here amongst others when configuring GUI for windows with the intention of using IFbA are as follows:

- After unpacking the GUI files, you sort out `NwSapSetupAdmin` in folder `PRES1>GUI>WINDOWS>WIN32>setup`, then double-click on it and import product-ALD in its unpacked directory, finally `Verify`.

- Now select the executable `Nwsapsetup` file for guided installation (Figure 4).

![Figure 11: ALD Integration](image)

After integration and installation there will a SAP logon logo on your desktop, double click on it > right-click on connection > add new entry > users specified system, and issue the following parameter:
This Connection parameter is only good for Application Server ivml2005, but the same approach applies for most GUI connections just short of differences of host name, instance number and System ID.

IFbA is almost good to go but there lies the problem which actually the most important section of this project: ADS configuration. To have the ADS working properly, we first have to set the System Landscape Directory (SLD) in the Java stack before checking or troubleshooting the ADS.
3.3 Application Server for Java

Since we have activated all the ICF services in the previous topic, Java stack is already accessible with home page- http://<localhost><port> showing all the function and Administrator tools. Unlike in ABAP stack that you will have to issue T-codes to get to a page, Java stake is just segmented with detail instructions to surf around like for example, System Information page gives a full systems breakdowns like ports, System ID etc. However, we are going to configure the System Landscape Directory (SLD) and then test for ADS.
Figure 13: Java Stack

**Note:** Microsoft internet explorer is best with the Java stack as Mozilla tends to be slow (not fully support by SAP).

### 3.3.1 System Landscape Directory

SLD is the central information repository for the SAP landscape. Things in SLD which can be viewed and managed are data about business systems, technical systems, landscapes, products, and software components of Netweaver landscape. Missing software components in SLD for example can be downloaded at SAP developers site (SAP, 2004).

We are going to configure the SLD so we can integrate NWDS into Java Web Dynpro.
Figure 14: Netweaver Administrator

We signed into Netweaver Administrator as predicted the SLD cannot be accessed hence it is not configured. Now to activate the SLD execution template as seen below, go to deploy and change then click Executive Template to start:
Figure 15: SLD

There are seven template identification scenarios to go through, just choose which to install and then set connection. To see if successful, go to Web Dynpro to check the connection. For more information go to http://<hostname> <port>/sld click on help.

3.3.2 Testing ADS

ADS must be sound and working otherwise Adobe Interactive Forms will be giving errors messages. To test ADS in Java stack go to the Web Services Navigator page click ADS > Test> log in as an ADSUSER then see if version
number comes up. If you do not see it (version number) then ADS is not working, then you have not installed ADS **special key**.

Figure 16: Testing ADS

Now that ADS is working, IFbA is ready to be deployed but we are going to put it to test only after installing and integrating NWDS the final puzzle to this jigsaw.
As we can see the version number is highlighted on the right meaning configuration is good.

**Note:** In ABAP stack you test for ADS by issuing T-Code SE38 using executing test report *FP_TEST_00*.

### 3.3.3 NWDS

NWDS 730 only work with jdk_1_6_7 or higher upgrades of still version 6 (SAP do not support version 7 at this time). So if you have version 7 then you must uninstall it re-create new path and class-path for version 6 and then install NWDS. Failure to use version 6 will result it not installing with error messages.
After successful installation we are greeted by this welcome page. Note: Do not use an old version workspace with a new version, create new workbench when installing.

Now to integrate NWDS into the Web Dynpro go to Windows > Preferences on the left list > Application Server for Java > Add then apply appropriate parameter but remember to set system to default.
Finally, we can now start developing interesting and challenging Interactive Forms in both instances but first going to test the system. Check Appendix for detailed steps.
4 DEPLOYING INTERACTIVE FORMS

4.1 Online Forms Scenarios

It is online when a user enters data onto a pre-filled PDF form and sends it to a company intranet Enterprise portal or website database. Below are the technical characteristics of online Interactive forms:

- Adobe Interactive form is executed in ABAP browser using Adobe reader plug-in.
- An ADS generates the form and update it with relevant data.
- After the ABAP system receives the data, ADS extracts the data from the PDF file and then enters the received data to the back-end system. (s. 7)

![Diagram of an online scenario](image)

Figure 20: Online Form scenario

Here is a diagram of an online scenario depicting the workflow process of an employee updating an *Interactive Form* in real-time.
4.2 Offline Forms Scenarios

The end-user would download PDF *Interactive form* to its system and print, fax or email it after filling with data. Below are the technical characteristics of Offline Interactive forms:

- SAP system access is not necessary in this scenario.
- The end-user downloads the interactive PDF form to his local system.
- The form can only work with the right version of Adobe Reader.
- The end-user can manipulate forms using Adobe Reader.
- Uploads the interactive form from local system into the portal.
- The interactive form can be sent via email or fax using in-built ABAP business communication service.
- Some Interactive forms are developed with E-mail submit button or print button which triggers sending IFbA as an attached message, or a print out. (p. 12; SAP, 2008)

![Figure 21: Offline Form Scenario](image)

Here is a business process diagram of an offline scenario depicting workflow of a factory Supervisor making requisition to the Procurement Manager for approval of inventories.
5 CONCLUSION

There are a lot of resources about SAP Interactive Forms by Adobe, but what this thesis achieved like no other is its detailed approach; highlighting every important step from installation to integration then testing based on Netweaver 7 VMware Edition. The purpose was to make developers have a reliable resource to implement Adobe Interactive Forms in SAP. This thesis also discussed licensing in a way that is beneficial to developers as poor licensing knowledge usually result in errors in production scenarios.

The core of this integration is Adobe Document Services which requires deep knowledge to configure, and where most this project time was spent. A good understanding of System Landscape Directory is necessary; its applications, connections to other components in the ecosystem, before ADS would make sense. This project also provided the opportunity to learn Linux at an advance level in order to completely comprehend the installation of developer’s and ADS licenses. Basically, it avail a window to SAP Netweaver technology which was quite impactful to an aspiring technical consultant.

Overall, it was a challenging journey, picking up new skills while unlearning impatience as there are no short cuts in SAP.
6 REFERENCES


APPENDIX

Testing online forms in this system:

1. Log in as a developer issue T-Code SFP and create interface
Creating interface local Object

Now double click on import and click on create to set parameter.
Applying ABAP parameter saves go back and do the same for again. This time is for form interface.
Creating another interface forms:
### Test Function Module: Initial Screen

- **Test for function group**: /1BCDWB/SM0000005
- **Function module**: /1BCDWB/SM0000005
- **Uppercase/Lowercase**: 

<table>
<thead>
<tr>
<th>Import parameters</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>/1BCDWB/DOCPARAMS</td>
<td></td>
</tr>
<tr>
<td>CARRID</td>
<td>RA</td>
</tr>
</tbody>
</table>