

SAP NetWeaver Web Dynpro ABAP vs. Web Dynpro Java - FAQ



Applies to:

SAP NetWeaver 7.0 (2004s) and Ehp1 for SAP NetWeaver 7.0 (a.k.a 7.0.1)

SAP NetWeaver Composition Environment 7.1 and Ehp1 for SAP NetWeaver Composition Environment 7.1 (a.k.a 7.1.1)

For more information, visit the [User Interface Technology homepage](#).

Summary

This FAQ paper aims to explore the similarities and differences between the Web Dynpro for Java and Web Dynpro for the ABAP programming languages, and obtain guidance to help choose the right tool.

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What is Web Dynpro?

Web Dynpro is SAP's standard UI technology for developing business applications that have Web-based user interfaces. It consists of a runtime environment and a graphical development environment with special tools that are integrated into either the ABAP or Java development environments.

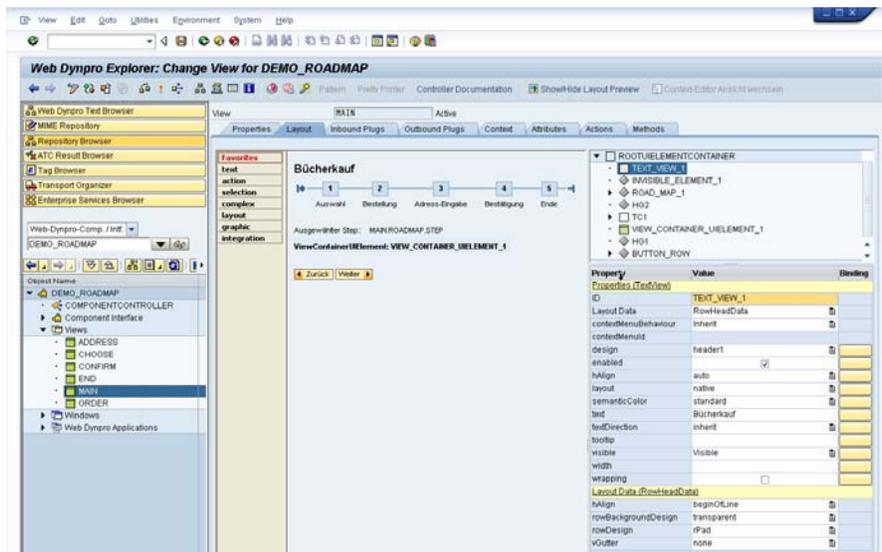
Web Dynpro is based on a powerful and flexible architecture that utilizes the Model-View-Controller design pattern. This pattern creates a clear separation of user interfaces from backend services and business logic, supports reuse and better maintenance, extensibility and flexibility (by using components), and provides declarative and graphical tools to minimize development efforts.

In addition, the UI definition of Web Dynpro is independent of client technology; hence, the Web Dynpro application can run on different platforms (browsers, rich clients, mobile devices & future technologies clients) without additional development or configuration.

What is Web Dynpro for ABAP?

ABAP (Advanced Business Application Programming) is SAP's object oriented, proprietary programming language for developing business applications within an SAP system.

Web Dynpro ABAP (WDA) is the main SAP standard UI technology for developing Web application UIs in the ABAP environment. It consists of a runtime environment and a graphical development environment with special tools that are completely integrated into the ABAP development environment - the ABAP Workbench (transaction SE80):



This full integration with the ABAP development environment provides direct access to ABAP data, business logic, and to Data Dictionary Search Helps.

To align and support the development of the ERP User interfaces, a Floorplan Manager (FPM) for WDA framework is also available within the ABAP stack.

The FPM provides central implementation of floor plans (Object Instance Floorplan, Quick Activity Floorplan, and Guided Activity Floorplan), support for WDA screens integration, and tools to adapt and configure the applications by the customers.

WDA has been available since October 2005 (SAP NetWeaver 7.0 (2004s) – Web Application Server 7.0) and is widely used by the SAP Business Suite and will continue to be the UI technology of choice for mainstream Business Suite applications (ERP, PLM, SCM, SRM, FIM).

FPM is available since WDA 7.00 SP13 and is used by all ERP projects using WDA as of SAP EhP4 for SAP ERP 6.0.

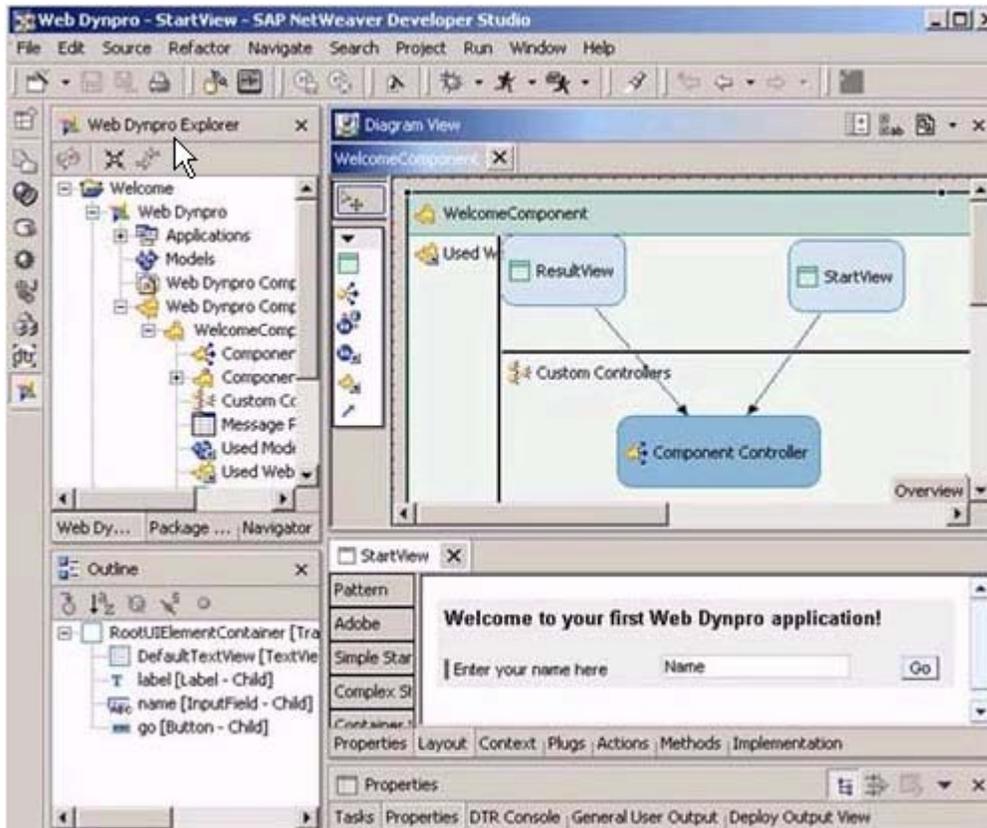
Additional information about WDA can be found [here](#).

What is Web Dynpro for Java?

Java is a standard, platform independent and object-oriented programming language, for developing web-based business applications.

WDJ is the SAP standard UI technology for developing Web application UIs in the Java environment. It consists of a Java / JEE runtime environment and an Eclipse-based (3.x) development environment – the SAP NetWeaver Developer Studio, which offers a development environment to easily design, develop, deploy and maintain business applications.

This standard, open source-based Eclipse framework also provides Web services tools for connectivity based on open standards, and a Java dictionary for centralized data type and data structure management.



WDJ has been available since early 2004 (SAP NetWeaver 2004 – Web Application Server 6.40), and is used within SAP to produce robust and highly scalable J2EE applications, such as the Employee Self Service (ESS) and Manager Self Service (MSS) and different SAP Portal applications like User and Role management transaction and Universal Work List (UWL).

In addition to the releases of WDJ as part of the NetWeaver releases, SAP NetWeaver Composition Environment 7.1 also introduces a new and improved release of WDJ, which provides architectural improvements, new capabilities, and integration with the other CE modeling tools (BPM, Visual Composer, CAF, component modeler...)

Additional information about WDJ can be found [here](#).

Web Dynpro for Visual Composer (WD4VC)

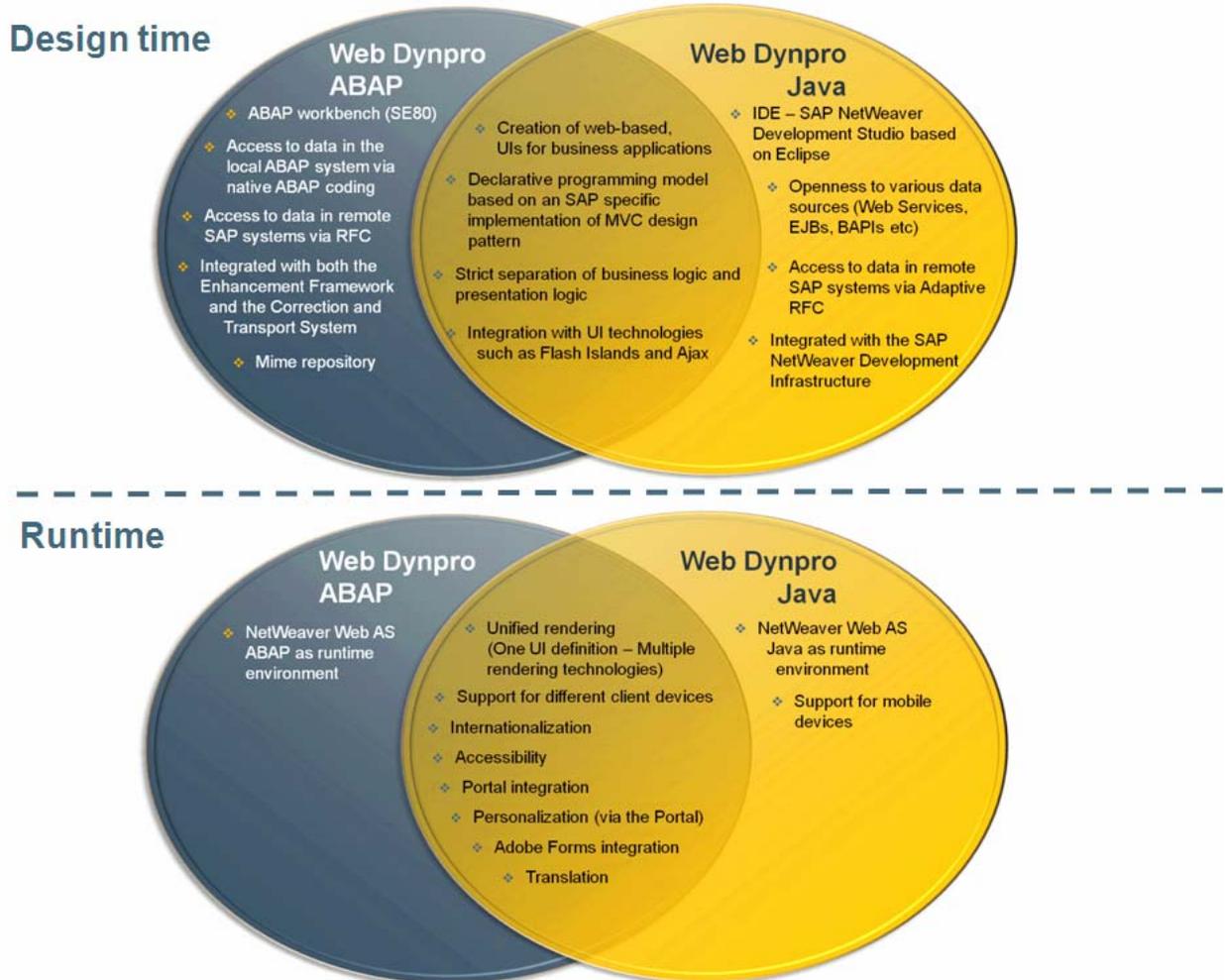
WD4VC is the runtime environment for Visual Composer for Composition Environment (CE) 7.1 applications.

It is a subset of the of WDJ runtime, and was implemented with the Web Dynpro foundation. The result is a ready to run WDJ application.

In Ehp1 of Composition Environment 7.1, we have a strong interoperability between Web Dynpro and Visual Composer, i.e. All development projects can start with Visual Composer, and once they hit a 'wall' (e.g. have a need for a complex data transformation), a faceless Web Dynpro component can be easily created to pass around the 'wall', and consumed by Visual Composer. This integration (inside the NWDS) means that it is no longer necessary to choose between starting a project in Web Dynpro or in Visual Composer, one can do both, utilizing the strengths of each of the technologies where required. Additional information about the differences between Web Dynpro Java and Visual Composer and the integration capabilities can be found in the "[SAP NetWeaver Visual Composer and Web Dynpro Java – FAQ](#)" paper.

What are the similarities and differences between the tools?

Web Dynpro Java and ABAP have many similar capabilities for creating application UIs, but also unique capabilities and differences:



As depicted by the diagram above, both tools create web-based business application UIs and use the MVC design patterns to support a strict separation of business and presentation logic.

In addition, they both will support (in EhP1) integration with high interactivity islands to enrich the basic Web Dynpro UI offering with pixel-perfect high, animated, and improved UIs.

Naturally, there are also differences, mainly because WDJ is implemented in Java and offers an Eclipse-based development environment, while WDA is implemented in ABAP and completely integrated into the ABAP stack.

With WDJ, developers can create their UI applications based on various data sources such as enterprise services or EJBs and attach these UIs to an end to end business process using the new BPM (Business Process Modeling) tool (will be available with CE7.1.1).

On the other hand, when using standard business logic from the SAP operational systems it is much easier to access it using WDA and consume the data directly from the ABAP system via native ABAP coding. In addition, WDA offers a MIME repository to manage and use different objects such as graphics and icons.

The Web Dynpro application runtime and the UIs' look and feel are also similar since the rendering of the different UI controls in both flavors is provided by the same Unified Rendering (UR) layer. This approach guarantees the same unified look and feel for all Web Dynpro user interfaces independent from the implementation language, together with additional services like accessibility, personalization and right to left rendering.

Although the UR concept promises the same UI controls offering in both flavors, due to resource and release schedule reasons some UI element implementations (Calendar and Column layout) are currently missing in the WDA flavor and vice versa, the AcfExecute and AcfUpDown are only implemented in WDA.

In the coming release of both WDJ (CE7.1.1) & WDA (NW7.0.1), the rendering frameworks are improved and use Ajax technology to provide a better user experience. (The new framework will provide AJAX functions like: suggestion support, in-place editing, and asynchronous input-validation for numeric fields, enhanced keyboard support and more).

Key considerations to assess which tool to use

To determine which tool should be used for creating your application UIs, key considerations should include:

1. The skills and experience which are available for the application development

What background do your developers and maintenance staff have? Where do the bulk of your in-house development skills lie?

While the Web Dynpro architecture and MVC concepts are similar – each flavor still requires coding in its native programming model (Java or ABAP), hence in order to create an optimal, efficient, robust & high quality application, select the tool that your resources feel the most comfortable with. The quality of the code and the application will depend mainly on the developer development skills and experience.

2. The required business logic and data services for your application

One of the major differences between the Web Dynpro flavors is the data access support.

While WDA is integrated into the ABAP stack and provides direct access to ABAP services, in order to consume the same business logic in WDJ, you need to wrap these entities as remote function calls and use the adaptive RFC layer to communicate between the two systems.

On the other hand, with WDJ you can consume EJBs or other java entities directly, but in order to consume them in WDA you have to wrap them as web services first.

You can find more information on the data access support in this [table](#).

3. The Development starting point

Do you plan to create new applications from scratch or extend existing ones?

In many cases, it will be necessary to extend or adapt an existing ABAP applications delivered by SAP or ones that already exist. Unstructured changes to the source code or layout of an application can cause conflicts when a new release of the application program is imported.

To avoid such conflicts, WDA creates independent development objects that include the new changes and are being managed separately from the respective original object. The original objects they are based on are not affected by this enhancement and can therefore be updated usually without any problems whenever there is a release change.

4. The company landscape

Do you already have a DEV/QA/PROD infrastructure in place?

All WDA components, applications and parts of the components (e.g. mime objects like images) are integrated parts of the standard correction and transport system (CTS). As such they can be developed in one system and transported to the destination system as is the case for all other ABAP development objects like programs or classes. Thus, the standard ABAP lifecycle concepts (e.g. transport, versioning) fully apply to all Web Dynpro based applications.

To manage the lifecycle of your Java-based business application, you have to work with the SAP NetWeaver Development Infrastructure (NWDI) environment, which consists of a design time repository (DTR); Component based Build (CBS) and Change Management (CMS) systems.

In general, the change management systems capabilities are similar, but if you still don't have an NWDI instance in your landscape – you have to install one in order to use Web Dynpro Java and manage all the lifecycle management tasks (Transport, versioning, translation, and more).

You can find more details about the differences between the systems in this [table](#).

5. The required integration with other tools

Do you plan to tie your UIs to an end to end process using the new Business Process Modeling tool? Do you intend to run your Web Dynpro application in a mobile client?

In general, Web Dynpro is independent of client technology; hence, the Web Dynpro application can run on different platforms (browsers, rich clients, mobile devices & future technologies clients) without additional development or configuration. Nevertheless, due to resource and release schedule reasons with WDA there is no support for the Mobile client nor integration with the new Business Process Modeling tool.

You can find more details integration capabilities of the tools in this [table](#).

6. The UI elements and functionality requirements

Although both flavors should support the same UI elements and functionality, as mentioned above – not all the UI elements and functionality was implemented in both flavors:

The UI elements and functionalities that are available only within WDJ for CE7.1 are:

- Calendar UI element support for Year, Week and Month view
- Analytics Chart UI element
- Column Layout - Enables positioning of UI Elements to be aligned across container borders
- Component modeler – New graphical tool for creating wd components and defining the component Interface.
- Improved data modeler with enhanced layout options
- View designer that provides true WYSIWYG and preview in different browsers with different themes.
- Drag and drop capabilities (will be available in Ehp1 of WDA)

The UI elements and functionalities that are available only within WDA are:

- Mime repository
- Data dictionary
- Search help
- Select-Options
- ACFExecute
- ACFUpDownload

Summary

Web Dynpro is SAP's strategic UI programming model, which offers two programming languages for creating all kinds of business applications:

- WDA which is the main SAP standard UI technology for developing Web application UIs in the ABAP environment. This flavor is widely used by the SAP Business Suite to create the mainstream Business Suite applications.
- WDJ which is a standard, open source-based Eclipse framework UI technology for developing Web application UIs in the Java environment. This flavor is heavily used by System Integrators and ISVs, who innovate on top of the existing SAP applications and create new processes using open software solutions and services such as enterprise services and other Java components

Since the main differences between the tools are due to the different programming languages, the decision on which flavor to use should first and foremost be based on the available development resources, location of business data/processes and existing infrastructure.

In addition to these major differences there are also lots of technical and functional implementation differences. These differences are temporary, and in general should be implemented in both tools but currently implemented only in one of them due to resources and release schedule reasons. You can find the detailed information about these differences in the [Appendix](#).

The decision on which tool to use shouldn't be based only on these differences. Comparing both Web Dynpro flavors on a functional level is highly time-consuming and very technical. In many cases the differences only affect special mini-features. Nevertheless a mini-feature can sometimes exactly hit a specific application requirement that you need (e.g. mobile access is supported only with WDJ).

Appendix

Data access support

	Web Dynpro ABAP	Web Dynpro Java
Direct interaction with ABAP services	Supported	Not possible
SAP Enterprise Services	Supported	Supported - Enterprise service model
SAP BAPIs and RFC modules	Supported	Supported – Adaptive RFC Model
3 rd party web service	Supported	Supported – Adaptive Web Service Model
Enterprise Java Beans (EJBs)	Not supported	Supported – Enterprise Java Bean model
JDBC stored procedures	Not supported	Supported
SAP BI queries	Supported	Not supported
Non-SAP BI data	Not supported	Not supported
Standard ABAP Search Help	Supported	Not supported

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Lifecycle Management support

	Web Dynpro ABAP	Web Dynpro Java
SAP NetWeaver Development Infrastructure (NWDI)	Not supported	Supported
CTS	Supported	Supported (using the CTS+)
3 rd party source control system	Supported	Not supported

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Tools integration

		Web Dynpro ABAP	Web Dynpro Java
ABAP Workbench		Supported	Not Relevant
Floorplan Manager (FPM)		Supported	Not supported
SAP NetWeaver Developer Studio (NWDS)		Not Relevant	Supported
Composite Application Framework (CAF)		Not supported	CAF web services & EJBs support
SAP NetWeaver Portal	iViews for displaying the application in the portal	Supported	Supported
	Add Eventing (EPCM) to the application	Supported	Supported
	Page builder	Not supported	Supported
Interactive forms by Adobe		Supported	Supported
Flash Islands		Supported	Supported
SAP NetWeaver BPM		Not supported	CE7.1.1 - Supported
SAP NetWeaver Guided Procedure (GP)		Supported	Supported
Mobile		Not supported	Supported (only for online scenarios)**
BeX WAD		Integration via URLs (using the BIApplicationFrame UI element)	Integration via URLs
Java script programs		Not supported*	Not supported*
JSF integration		Not supported	Supported

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*Since Web Dynpro is designed to be client independent, it is not possible to add custom JavaScript to a rendered HTML page.

** Mobile support

- PieClient (Pocket PC based on PPC 2000) replaced through Pie03Client
- Support for Windows Mobile 5.0-based devices
- RFID Extensions (ability to Write and Delete RFID Tags)
- setFocus on InputField

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