

SAP NetWeaver Visual Composer and WebDynpro Java – FAQ UI and Modeling Recommendations with CE



Applies to:

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

Summary

This FAQ provides guidance on when and how to use SAP NetWeaver Visual Composer and Web Dynpro Java. It shows the relationship between the two UI modeling tools that are delivered with SAP NetWeaver Composition Environment (CE) in the short and midterm.

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What mainstream UI tools does SAP offer to create applications on top of its business process platform?

SAP NetWeaver offers two major development toolsets for creating Web-based business application UIs on top of the business platform: Web Dynpro and Visual Composer.

These tools provide both the design time infrastructure and flexibility to facilitate the application development processes and execute such applications within a single runtime environment – Web Dynpro.

In the past there have been other tools for delivering web-based access to business applications such as: BSP (Business Server Pages), PDK (Portal Development Kit), ITS (Internet Transaction Server), and HTMLB.

What is Web Dynpro?

Web Dynpro is a development toolset and a runtime environment for creating business applications that have web-based user interfaces.

Web Dynpro applications can be developed using either Java or ABAP. In Web Dynpro for Java, applications are developed within the SAP NetWeaver Developer Studio using SAP's implementation of the Model-View-Controller design pattern. It allows the programmer to design and build reusable units of code known as components that can be extended with Java coding.

Additional information about Web Dynpro Java can be found [here](#).

Web Dynpro for ABAP applications are developed within the SAP system using the ABAP Workbench (SE80). Business applications based on Web Dynpro ABAP are more suitable applications that derive their data entirely from R/3 data sources.

Additional information about Web Dynpro ABAP can be found [here](#).

Note that for the rest of the document, when mentioning “Web Dynpro”, I am referring to Web Dynpro for Java.

What is Visual Composer?

Visual Composer is a graphical modeling environment designed for the rapid creation of web-based user interface applications.

Visual Composer has been designed to enable people without traditional programming skills to create enterprise application UIs using standardized components that meet SAP standards and quality criteria.

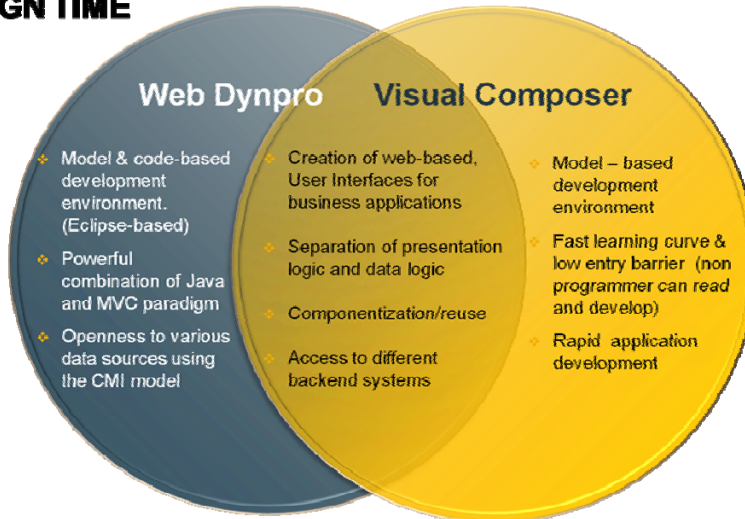
The latest version of Visual Composer (Visual Composer for CE) also introduces new tools for creating portal content (worksets, roles, pages, and iViews), embedding BI data and creating Voice applications from the Visual Composer modeling environment.

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

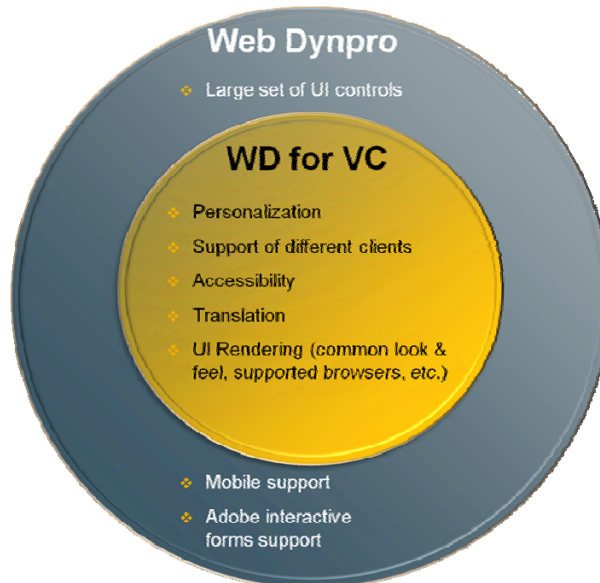
What are the complementary capabilities of these tools?

Visual Composer and Web Dynpro have many complementary design time capabilities for creating application UIs with the same professional SAP look and feel. You can find out more about the relationships of these tools in the below diagram:

DESIGN TIME



RUNTIME



What are the key considerations before deciding which tool to use?

To determine which tool should be used for creating your application UIs, review the following assessment criteria:

A. What is the source of your data?

Are you extracting information from a variety of SAP backend systems (e.g. BI, R/3, CRM)? Do you need to consume data from a variety of complex services that require additional manipulation and adaptation?

Both Visual Composer and Web Dynpro can consume data services from different SAP backend systems (such as BAPIs and RFCs), and Web services (such as SAP enterprise services and third-part Web services) and use them for building the application UIs.

However, Visual Composer 7.1 does not yet provide the same complex data structure support as Web Dynpro (for example, it does not yet support required fields). In addition, Visual Composer cannot consume pure EJBs. (Note that with CE7.1.1, Visual Composer provides better support for complex data services and required fields and uses the CMI mechanism to consume EJBs).

On the other hand, Web Dynpro does not provide out-of-the-box connectivity to BI data services, while in Visual Composer you can connect to different BI systems (Visual Composer for CE7.1.1 also supports connectivity to non-SAP BI systems and consumes relational and multidimensional services) using the BI consumer service layer.

In the [appendix](#), you can find additional information and details about the differences between the tools, and suggestions for which tool to use for each type of data source.

B. Which action do you want to perform?

Do you want to use a single chart, table or form to display the output of one or more data services? (For example, do you intend to join the data from two or more services to a single output?). Do you have complex data mapping between the different data services in your application? What kind of data manipulations do you want to perform on the data returned from the service?

The Web Dynpro development environment supports the MVC paradigm and provides tools and support for handling complex business logic (such as a join of two data services in a single chart) and data manipulation.

Since Visual Composer goal is to remain simple and relevant to non-developers, it offers less functionality and tools to define complex business logic.

You can find additional information and details about the differences between the tools [here](#).

C. What are your business application UI requirements?

Do you need standard table and form layouts? Or do you need special controls (such as calendars, tree browsers) and islands of high interactivity?

Both Visual Composer and Web Dynpro provide a finite set of UI elements for application UI development. While Visual Composer provides a fairly large amount of UI elements (including charts, pop-ups, tabstrips, and date pickers), it does not provide all the UI elements offered by Web Dynpro (tree control, file upload control, geo map, and Gantt diagram).

Note that with CE7.1.1, Visual Composer includes an option to integrate Web Dynpro components into the Visual Composer model in order to extend and enrich the application UI. In addition, with this version of CE there will also be support for Flash island integration into both Web Dynpro and Visual Composer

In these links you can find a list of the UI elements supported by [Web Dynpro](#) and Visual Composer ([Design](#) and [Layout](#) board). Links to the help.sap.com.

D. What type of skills and experience are available for the application development?

Will your application be created by people with traditional Java programming skills, or do you want a non-programmer to build the application?

In selecting a tool, it is also appropriate to ascertain the skill level of your team, and the required skills for each tool.

Visual Composer can be utilized by developers who use it to streamline and speed up their development efforts, and also by non-developers, who can use the modeling tool to fully build or simulate their required applications.

Web Dynpro also provides a wide range of modeling and design capabilities, but in the end, it remains a development environment, hence requiring a Java developer to code and develop the application.

E. Do you have integration requirements for other SAP tools?

Would you like to integrate your UI with other SAP tools, such as SAP Enterprise Portal or the SAP NetWeaver Developer Studio? Can you simply connect your application to the back end through standard enterprise /Web services or RFC? Or do you need additional service and / or legacy connectivity?

If you plan to tie your UIs to an end-to-end process using the new Business Process Modeling tool (available with CE7.1.1) or intend to run the applications in a mobile client – Web Dynpro should be your tool of choice.

For a full list of supported integration with other tools –check this [table](#).

- ❖ You can find further in-depth details regarding the tools supported for each of the above questions, for CE 7.1 and CE7.1.1 in the [appendix](#) below.

If, after having evaluated the aforementioned five decision criteria elements above, you have additional questions as to the applicability of one tool versus the other, a non-programmer can create a prototype of the application UI using the Visual Composer elements. The main purposes of creating such a user-interface prototype are:

- Validation for the application modeler: enable the application builder to instantly see how the end result will look and behave as he is building it up, validating his work and detecting potential design flaws before the real design and development starts.
- End user validation: enable bringing in end user feedback early in the development process
- Stakeholder buy in: use prototypes to get a buy in for relevant stakeholders, helping to trigger the actual development project
- Developer handover: use the prototype as an additional communication tool for development requirements.
- ❖ The advantages of using Visual Composer for prototyping are:
 - Using Visual Composer requires significantly less learning than using Web Dynpro, while having enough capabilities to support meaningful functionality. (Same look and feel, relative layout support, etc.)
 - No need to understand the backend layer – A non-programmer can simulate the application and define the data flow between the views (forms, tables, etc.) by using simulated (dummy) services.
 - Note that Visual Composer is not a limited to prototyping, but starting the development project with Visual Composer gives a sense of which part of the application is feasible to implement with Visual Composer and which part requires Web Dynpro.
- ❖ Should the decision be taken to create the application from scratch with Web Dynpro Java, then there is no means of converting the Visual Composer models to Web Dynpro code. Nevertheless, the prototype step is crucial since it enables the collaborative work of the non-programmer and programmer and facilitates the definition of the application requirements.

How to use these tools to create business processes?

- For a composite application implementing a process for one user or one role from the organization you can use both Visual Composer and Web Dynpro.
- For a process that involves more than one role or user from the organization you should use a process engine – guided procedures for CE7.1 and SAP NetWeaver BPM for future versions.
The workflow tool determines the process flow between the different roles (and users), while the user interfaces developed in Web Dynpro and Visual Composer are used (and can be reused) for each process step that requires human interaction.
- Since Visual Composer CE executed within Web Dynpro runtime, it is very much possible to model some of the application's UIs using Visual Composer while other using Web Dynpro. From the UI developer's point of view this means that both screens will have the same look and feel.

How will these tools work together in the future to bring more value and benefits to the customer?

While CE 7.1 is a first step towards providing a cohesive environment for creating composite applications, in CE7.1.1 both the UI and process tools will reside in the NetWeaver Developer Studio (NWDS) and will display much tighter integration.

- In CE7.1.1 there will be an additional entry-point to access the Visual Composer models – the Visual Composer will be integrated within the Eclipse and will enable access to the models from the NWDS.
- This new entry-point will support integration between Visual Composer and Web Dynpro by providing the option to start working in Visual Composer and, if you reach a point where Visual Composer is unable to provide certain functionality (such as missing views, service adaptation or data transformation), it can be created in Web Dynpro and incorporated as a Web Dynpro component into to your Visual Composer model.

Double-clicking on the Web Dynpro component from the Visual Composer model, will open the Web Dynpro perspective allowing you to code the needed functionality. Once the coding is done, closing and saving the component will enable the programmer to return to the Visual Composer model and combine the Web Dynpro component with the other parts of the Visual Composer model.

Summary

Although Web Dynpro and Visual Composer are similar in the way they create Web-based business application UIs and support the separation of presentation and data logic, they are also different in many significant ways. This is mainly because Web Dynpro is an Eclipse-based development environment, while Visual Composer was designed as a modeling tool for non-developers.

In general, when all the necessary services for working with back-end data and the views for displaying the data are available in Visual Composer, the task of creating a Web-based front end can be performed by non-developer using Visual Composer.

If back-end services or required functionality do not exist, or the business requirements demand that a more complex UI be built, then Web Dynpro should be the technology of choice because it provides the flexibility to accomplish all these goals. However, this also means that developers with Web Dynpro development experience must be available.

With CE 7.1.1, the use of custom-developed Web Dynpro components within Visual Composer provides additional choices to include areas of high interactivity or more sophisticated controls/ data manipulation into the UI design.

Appendix

The details below refer to the provided support for both Visual Composer and Web Dynpro Java for CE7.1 and CE7.1.1.

What is the source of your data?

	Visual Composer	Web Dynpro
SAP Enterprise Services	CE7.1 - No support for: <ul style="list-style-type: none"> ▪ Required fields (where xsd:nilable is permitted) ▪ Datatypes (see full list...) See limitation - 01200314691 000112724 CE7.1.1 – Supported	Supported - Enterprise service model
SAP BAPIs and RFC	Supported	Supported
3rd party web service	Supported	Supported
EJBs	CE7.1 – Not supported CE7.1.1 – Supported	Supported
JDBC stored procedures	CE7.1 – Not supported CE7.1.1 – Supported	Supported
SAP BI queries	CE7.1 - Support for: <ul style="list-style-type: none"> • Queries • QueryViews • InfoProviders • Characteristics (master data) 	CE7.1 – Not supported CE7.1.1 - Not supported
Non-SAP BI data	CE7.1 – Not supported CE7.1.1 – Support access to both relational and multidimensional sources through open connectivity standards is planned: XMLA: BW 3.5, BI7.0 MDX Provider, MSSQLServer / Analysis Services 2005 JDBC: MaxDB 7.0 und 7.1, MS SQLServer 2005	CE7.1 – Not supported CE7.1.1 - Not supported

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Which action do you want to perform?

		Visual Composer	Web Dynpro	
Flat services*	I want to display the output of a service in a UI Element (form, table, chart)	Supported	Supported	
	I would like to join two or more services and display the output in one screen (Join operation)	Not supported**	Supported	
	I need to map the data coming from one service to another (service chaining)	Supported	Supported	
	I want to manipulate the returned data using operators	Supported operators- Filter, Sort, Aggregate, Distinct, Union, Switch	Supported	
Complex services*	I want to display the output of a service in a UI Element (form, table, chart)	Supported	Supported	
	I would like to join two or more services and display the output in one screen (Join operation)	Not supported**	Supported	
	I need to map the data coming from one service to another	The services share identical topological and semantics structure	Supported	Supported
		The services have a different topological or semantics structure	Not supported**	Supported
	I want to manipulate the returned data using operators	Manipulate the data coming from a root node (top node of the data hierarchy)	Supported operators- Filter, Sort, Aggregate, Distinct, Union, Switch	Supported
		Manipulate the data coming from a child node	Not supported**	Supported

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* The definition of Flat and Complex services is as follow:

- **Flat services** – The data structure of the service input/output parameters is composed of fields having a primitive data type (byte, short, int, long, float, double, char, boolean). These fields may be joined together to form a scalar structure known as a record.
- **Complex services** - The data structure of the service input/output parameters is composed of multiple instances of such records structured as tables. Tables may be nested within tables to form what is known as “deep structures”.

** CE7.1.1 will support a break out from the Visual Composer model scenario. This means that if a complex service adaptation or data transformation is needed, the programmer will be able to break out from the Visual Composer model, open the Java EE layer, code the complex functionality and add it to the Visual Composer model as an EJB component.

Do you have integration requirements for other SAP tools?

		Visual Composer	Web Dynpro
NWDS integration		CE7.1 - Not supported CE7.1.1 – Supported	Supported
CAF		CE7.1 - CAF web services support CE7.1.1 – CAF web services & EJBs support	CAF web services & EJBs support
Portal	Add Eventing (EPCM) to the application	CE7.1 - Not supported CE7.1.1 – Supported	Supported
	Run the application in the portal as iViews	Supported	Supported
Interactive forms by Adobe		Not supported	Supported
Flash Islands		CE7.1 - Not supported CE7.1.1 – Supported	CE7.1 - Not supported CE7.1.1 – Supported
SAP NetWeaver BPM		Not Supported*	CE7.1 - Not supported CE7.1.1 – Supported
Guided Procedure		Supported SAP Note 1110880	Supported
Mobile		Not supported	Supported
BeX WAD		Integration via URLs	Integration via URLs
NWDI	Team Work (check in, Check out)	Supported	Supported
	Build and deploy	Supported	Supported
	Versioning	Supported in the NWDS version of Visual Composer Not supported in the Browser version of Visual Composer	Supported
	Track support	CE7.1 - Not supported CE7.1.1 – Supported	Supported
	Modification	Not supported	Supported
	Extension	Not supported	Supported
	Transport	Supported	Supported

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** Visual Composer and Business Process Management integration will be supported in CE7.2.

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