

# Front-end Development

# **Visual construction and interaction**

GeneXus 17

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## Considerations about this material

We still don't have a specific course for GeneXus developers who need to focus on building and maintaining the application front end. In the meantime, here is an ordered list of existing materials that you may find useful.

We recommend you start by watching this presentation focused on today's challenges in relation to application design modeling and implementation with GeneXus.

[DesignOps Strategies: From Design to Code the GeneXus Way.](#)

GeneXus is at a turning point, moving from the use of the Theme object to its evolution, the Design System object. With GeneXus 18, the new default Design System—Unanimio— will be released leaving behind the current one—Carmine.

In some cases, we have different materials to approach the same topic from different perspectives or levels, so you are free to choose a path according to your knowledge, needs, and interests. We will try to make your choice easier by describing each suggested material. Many of the materials use the Theme and not the Design System Object. Keep in mind that the explanations there will be conceptually valid for the Design System Object as well.

If you're only looking for an introduction, we suggest you read items 1, 2, 2a, 2b, and 3 of the following table of contents.

## Table of contents of materials

### GENERAL VISUAL CONSTRUCTION AND WEB APPLICATIONS

- 1) [Design System. Introduction](#)  
GeneXus Core course video (4:46 min) that introduces the Design System.
- 2) [Design System in GeneXus](#)  
GeneXus Core course video (14:16 min) that shows how Carmine is already a default Design System. It describes the case of having to develop the first screens of a customer-facing application and an overview of all the players involved in the development of an application's front end (both using the Theme and its evolution, the Design System object).
  - a) [Web screens with back-office focus: default Design System \(Carmine\)](#)  
Additional video (28:37 min) of the Core course. It shows how to add design elements to the controls of your screens (with the Theme). In particular, how to use the default Design System (Carmine) to follow its guidelines and apply them to your web screens for a consistent look, making the necessary adjustments on the Theme.

Key features: web responsiveness through responsive tables and class variations, various grid controls and tables to achieve different visual and behavioral effects.

(In GeneXus 18, the default Design System will be called [Unanimo](#); you can learn more about it in this video or do it later).

If you are interested, you can continue with the following subtopics or go to item b) or directly to 3).

i) [Convert a Theme to Design System \(DSO\)](#) - wiki

If you don't want to continue expanding the design through the Theme but instead want to move on to the new DSO, you can go directly to item 3 and study the DSO language.

ii) Responsiveness: To learn more about this topic (either with Theme or with DSO), you can click [here](#) and return later.

iii) [Positioning of controls on the screen \(with Theme\)](#)

Absolute positioning is currently implemented with the [Canvas control](#) (both Web and Native) and it is not necessary to do so at a low level. However, this video (18:06 min) using GeneXus 16 is useful, among other things, to see how to inspect HTML and how to leave spaces between controls.

iv) [Stencils con Theme](#)

GeneXus 16 video (12 min) that shows how to modify table classes and give them rounded borders, padding, margin, and so on. In addition, it provides an introduction to the Stencil design object.

b) [Web screens with back-office focus: customized Design System \(Carmine theme\)](#)

Additional video (20 min) of the GeneXus Core course that shows how to import a design modeled in Sketch by a designer, for a back-office screen and the master panel. It is imported in the Carmine theme. Later on, item 8.a) of this table of contents addresses the topic of importing in relation to the Design System object instead of the Theme.

3) [Design System object. Fundamentals](#) - wiki

The evolution of the Theme object, available from GeneXus 17 upgrade 6. In GeneXus 18, it will be the default (instead of the Theme). Reading it is recommended.

4) **Design System object language**

Three options are available here: a) videos, b) written in overview format, and c) technical documentation. You can choose one or combine them because they address the topic with different approaches and scopes. You can leave option c) for later if you are just starting out.

a) **Overview (videos) through a demo/sample**

[How to model and use a Design System](#) (27 min)

i) [Inheritance between DSOs](#) (15 min)

ii) [Web responsiveness \(modifying DSO classes according to screen size\)](#) (13:30 min)

iii) [Specific GeneXus properties for classes in DSO](#) (12 min)

iv) [Design System for native mobile application](#) (20 min)

v) [Design System for Angular application](#) (18 min)

b) Guided overview (in writing, on the wiki) that provides concepts and rationale

[Design abstractions for your screens](#) (wiki)

i) [What controls do you need?](#) (wiki). Reading it is recommended. Some options are presented in item 5 below.

ii) [How to provide style data to your controls](#) (wiki)

(1) [Classes to separate what is particular from what is shared](#)

(a) [DSO: Declaring the classes of the application's Design System](#)

(b) [Untyped classes](#)

(c) [Classes that can be combined](#)

(2) [Tokens: Design constants \(semantic\)](#)

(a) [Design constant options](#)

(b) [How to configure the DSO option](#)

(c) [How to change an image according to the DSO option](#)

(3) [How to associate a DSO to your screens](#)

c) Technical documentation (wiki)

[Design System object](#)

i) [Styles](#)

(1) [Class](#)

(a) [Class properties](#)

(b) [Read-only class](#)

(2) [Rules](#)

(3) [Structuring classes](#)

(4) [Precedences for controls](#)

ii) [Tokens](#)

(1) [Token options](#)

(2) [Image variation by Token options](#)

5) Controls

Controls are essential to build the front-end screens. Below is a list of some related material for you to refer to:

a) Container controls: tables (table, responsive, smart, flex, canvas), group, section, tab, etc. ([GeneXus controls](#), wiki)

b) Atomic controls: attribute/variable, button, image, text block, etc. ([GeneXus controls](#), wiki)

c) [Menu and action group controls](#) (GeneXus 16 course in PDF)

d) User controls:

i) [User controls](#) (bonus videos (8 min) of the Core Course - GeneXus 17)

ii) [GeneXus controls and user controls](#) (GeneXus 16 course video -12 min)

iii) [GeneXus controls and user controls for Angular](#) (video (14 min) Angular course – GeneXus 17)

6) [Converting an application with Theme to an application with DSO](#) - wiki

When you want to start from an application that uses a Theme object but also want to continue extending or maintaining it using the new DSO.

7) [DS Overview: Design by the designer and implementation by the front-end developer](#)

Overview (video: 8 min) of the Atomic Design methodology, or component-based design. It brings together everything that was discussed before but from the point of view of the design methodology. It is useful to integrate all the concepts that you have learned. Import from Figma is now available, as you will see later.

8) **Import from Design**

a) [Benefits of modeling multi-experience apps](#)

This video (16 min) shows how to incorporate a design for Web, Android, and Apple applications from Sketch, from the front-end developer's point of view, with DSO. When the video was made, the Import from Figma option was not available yet.

i) [DesignOps methodology](#) (video, 14 min)

Methodology to reduce handoffs between designers and front-end developers.

ii) [DesignOps and GeneXus](#)

Here you will find a wiki TOC where documentation for designers and developers is combined and you can explore everything you want. In particular, in the section [Blogs, webinars, and media](#) you will find the latest webinars on related topics. This page is always up to date, so we recommend that you keep it handy at all times.

b) [Customized Design System](#) (additional video—20 min—for the GeneXus Core course, the same as in item 2b of this table of contents)

Very simple example on how to incorporate a Master Page and a Web panel designed in Sketch by a designer into the back office with Carmine. It comes from the GeneXus Core course so it is at a simple level.

Below are links to specific materials for native mobile and web Angular applications.

## NATIVE MOBILE APPLICATIONS

- [Design Systems](#) (video, 14 min)
- [Images and Theme object](#) (video, 11 min)
- [Stencil object](#) (video, 10 min)
- “Controls” section of the [GeneXus for mobile course](#) (videos)

## ANGULAR WEB APPLICATIONS

- “User Experience and Interface” section of the [GeneXus for Angular course](#) (videos)
- [“Design” section](#) of the GeneXus for Angular Course (videos)

## Additional materials

Here are some additional materials that may be of interest to you.

### RESPONSIVENESS

They show how to specify variations by screen size both with:

- Theme: [Introduction to GeneXus: Responsiveness](#): video (5 min) in GeneXus 16
- DSO: [Modify classes according to screen size](#): video (13:30 min)

### OVERLAPPING OF CONTROLS

- [Ways of overlapping controls through classes](#) (video, 18 min)  
When there was no canvas control for the web, overlapping had to be specified with CSS properties. Nonetheless, the video is instructive because it shows how to inspect HTML and create spaces between controls.
- [Canvas control](#) for overlapping (wiki, Mobile)

Examples of use of Canvas with DSO:

- [DSO from scratch for web panels](#) (video, 27 min)
- [DSO for mobile](#) (video, 20 min)

### STENCILS

- [Stencils with Theme](#): video (12 min) made using GeneXus 16, also useful to learn how to manipulate table classes to give them rounded borders, etc. (padding, margin, etc.).
- [Stencil for mobile](#): video (10 min) made with GeneXus 17.

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