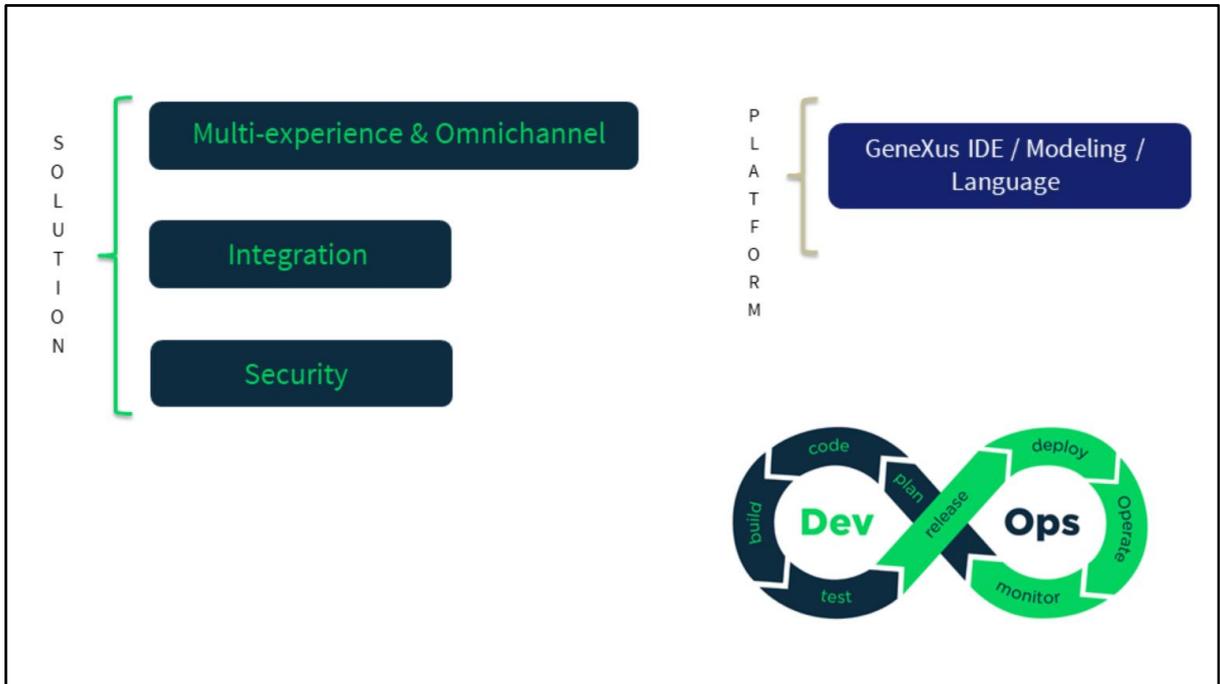


GeneXus[™]
The power of doing

Development

GeneXus™ 16

My name is Federico, with Martin we form part of the technical team in Genexus and we are going to be focusing on development of version 16.



Let's talk about Design Systems.

Mobile & Web



Multi-experience & Omnichannel

- Design systems
- Streams of information



Web/ Web mobile

Native mobile

Chatbots

Wearables/TV/AR

Design Systems

This is something that we've been talking quite a lot about in Gx28, there were special tracks about design system in fact. And we talk about a design system as something that is quite advanced much higher but I'd say that just applying designs to apps.

Design Systems raises the bar much higher.

Principles

Patterns

Practices

And it talks about principles, patterns and practices on the basis of design.

Screens must behave what the interaction with users and software must be, we have to respect some patterns.

So this is a far broader concept than simply applying a design for things to look nicer.

Design Systems



Well what we can see is large companies that started focusing on it and started implementing their own design systems to be consistent in the broad products that they offer so that they are all seen in the same way they all have the same interactions with users independent on the platform they are executed on.

We've got very big ones, you have IBM, GE, Mozilla, you know companies that started with this idea of unifying their designs and their interactions of the products with their users. And that's why we believe that the design system is very important and we have to start introducing it into GeneXus Knowledge Base.

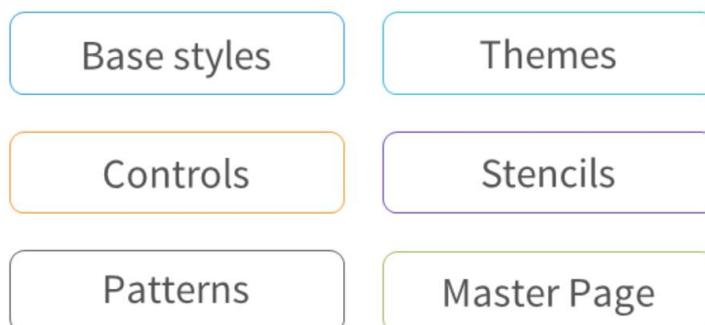
Integrate the designers (Design Ops)



Design System also talks about integrating designers as Armin said earlier. A concept that we are discussing quite a lot is the question of a DevOps (development operation).

Now the design system also talks about design ops, integrating designers in the DevOps, working together with developers so that results are truly the ones expected in the way that they propose. What we can see at the bottom are the main tools used by designers to do their work and to carry out the entire integration pattern.

Design system



Now the design system that we have in Genexus involves certain structures as Armin said, you know, patterns, master page, we are all used to using them. They form an important part of that UIX we've had in our apps but in version 16 we've included new components that improve this group of structures that must work together to get results.

We're talking about Base styles in this case, user controls and stencils.



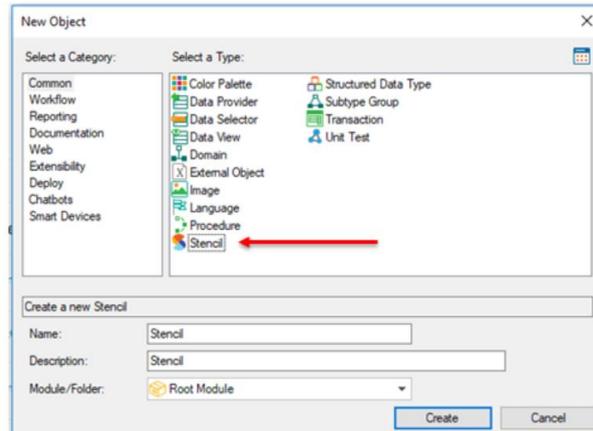
Another concept on the table making a lot of noise is CSS frameworks. These are the ones that are going to give us that interface, that nice design that we see in apps.

They are part of those design systems and they are the ones that define the way we're going to look at that app. Design systems are very much related to user controls and styles and I've worked quite a lot with semantic UI.



As Fede said I'm going to refer to this new object in Genexus 16. It's been available since Genexus 15 .12.

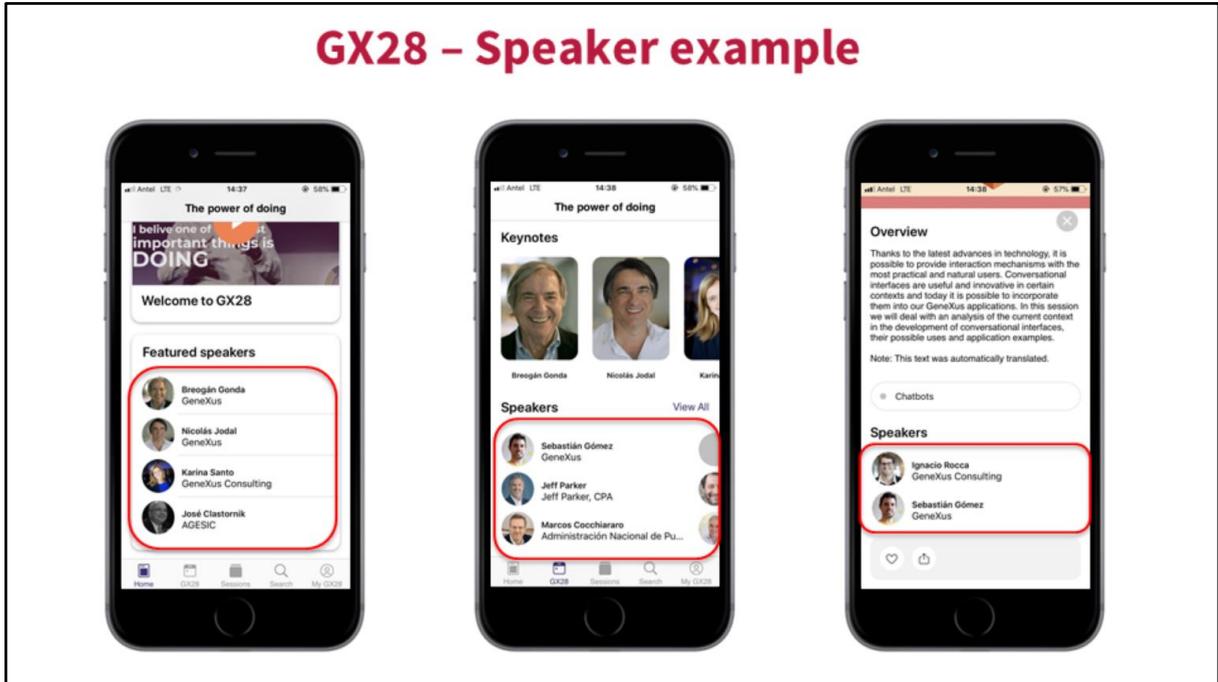
What is a Stencil?



Well let's start by defining a stencil. It's a new object that allows us and helps us to do what Fede was saying, to create Design Systems more easily. They help us to create. These are design objects that allow us to create user interfaces decoupled from the code and they favor reuse and everything that can be modified.

So as you can see it's Ctrl-N(ew) and we've got the new object to create it from scratch.

GX28 – Speaker example



Now, in what cases am I going to use a stencil? Well I thought that a very clear example is the app in this event where we use this new object and as you can see, we've got 3 screens here.

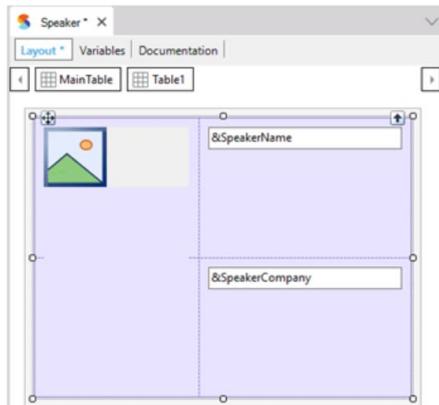
On the left hand side, we've got the speakers, favorite speakers.

The second one shows a full list of speakers.

The third one shows a detail of one lecture in particular, one talk in particular, showing those speakers that are in charge of that lecture.

Stencil Object

Controls + design properties

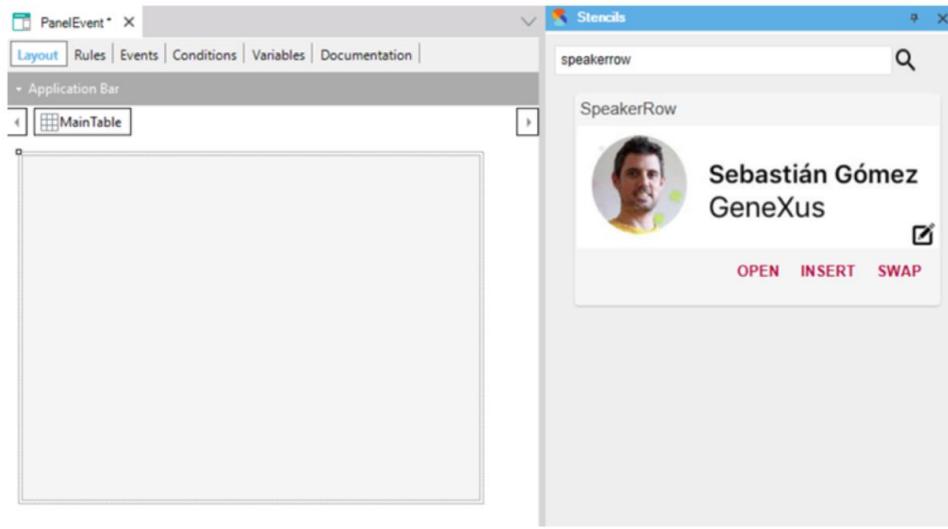


Sebastián Gómez
GeneXus

I have a question. Is this the equivalent of a web component?

Well, yes that is one of the largest differences is what I said at the end. This is completely decoupled from the code. And so this is a stencil object. This is a layout which is very similar to a Web panel we are used to working with but it's easier because it's only got what is related to design. There is no code here. It is the design properties. So here we define the layout as to how we want to see a speaker, how we load the variables, the data. Well what refers to codes is separated. So that's one of the largest differences and it's far easier to share because of those qualities.

Inserting an Stencil on my layout



And to insert it on my layouts I have to go to my Web panel or SD panel, I have to search in my stencil toolbox the stencil I want to insert. And so I simply insert it to the layout and I can program how to manage that behavior.

Can that stencil be created on a sketch design? Yes. We're going to see this. We're going to see that in a minute.

So, this would be the toolbox to insert stencils. As you can see, we have a screenshot to be able to identify what we are adding more easily to our layout, on our layout, and so we would insert it simply, insert it on this panel or on any panel where I want to use it. And I simply modify the stencil later on and that change will impact everything.

Stencil versions

V.1



Sebastián Gómez
GeneXus

V.2

Sebastián Gómez
GeneXus



V.3



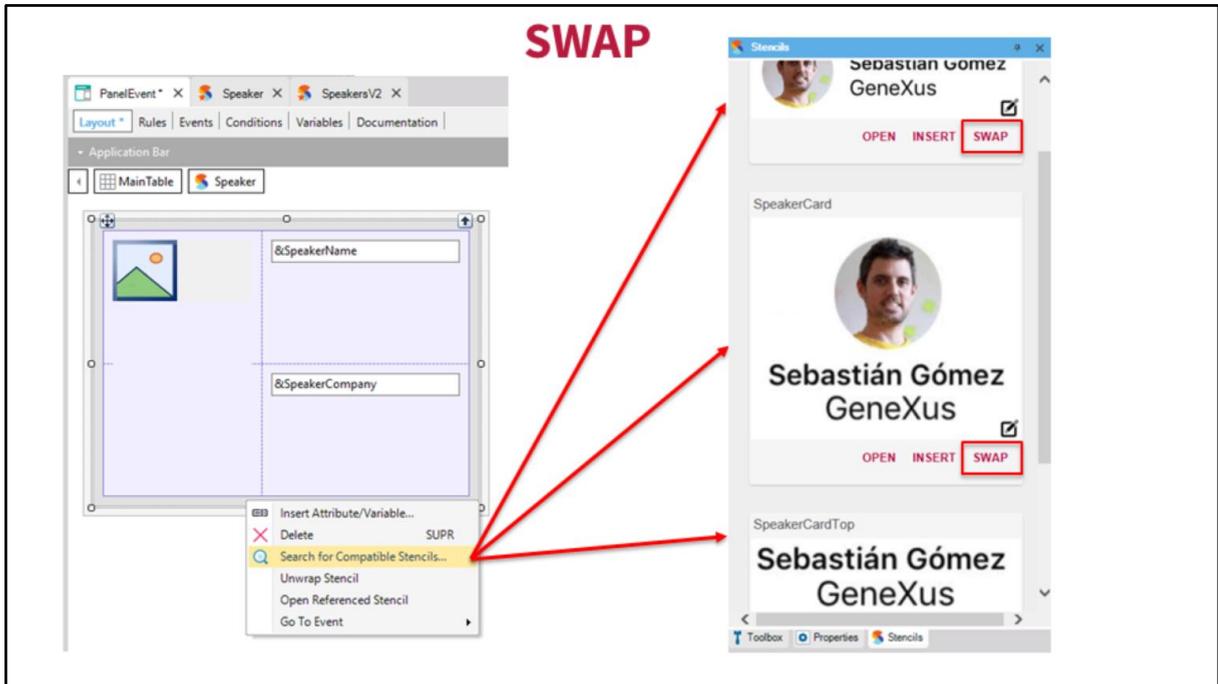
Sebastián Gómez
GeneXus

V.n...



Lorem Ipsum

Stencils also help us with versions. Now what happens if we are working with design people and they give us new ideas or perhaps your client says "I would like speakers to be seen in this other way"? So we may have different versions how to show that visual language, how to show a speaker. You see at the top, at the bottom, on the right, on the left, you know. So, stencils can help us to create different instances with each one of these representations.



And to make this exchange in our panels, you have to go back to your first panel with the stencil inserted on, click with the secondary button, select "Search for Compatible Stencils". I'll be shown the toolbox and with the stencils that are compatible with my scheme and here you see everything that I've just shown you. The only thing I do here is to choose any and press "swap". And that changes the stencil.

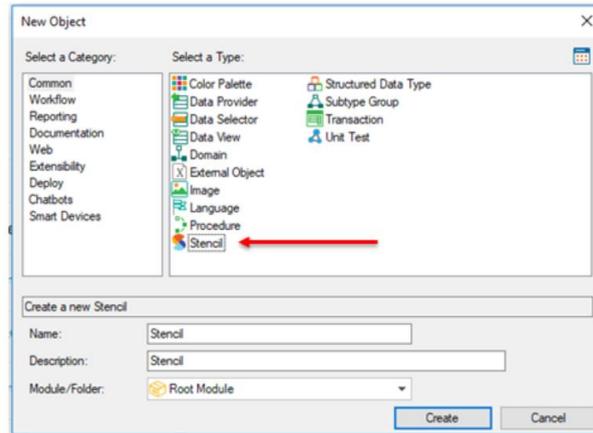
How do I create a new Stencil?

1. Create new stencil object
2. Wrap as stencil an existing design
3. Import from Sketch 

Yes. All right let's go on.

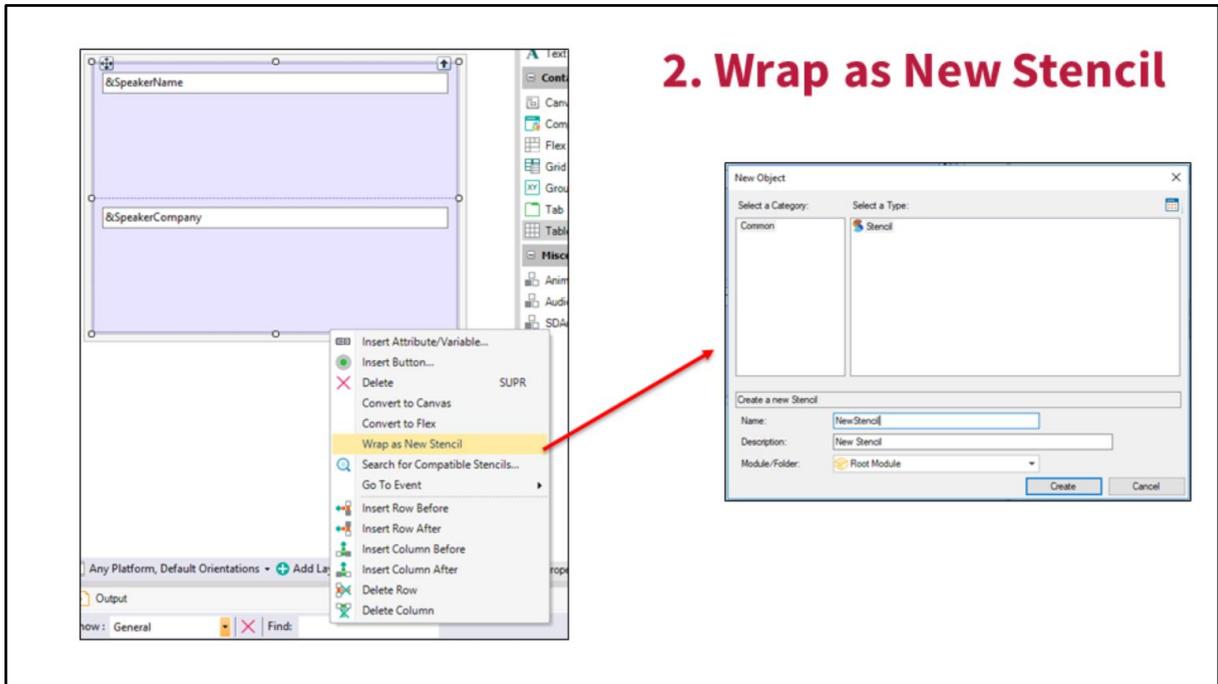
This is the way to create stencils. In this talk we were looking as to how to create a stencil from scratch and I'll start creating my new stencil with an empty layout.

1. Create new Stencil



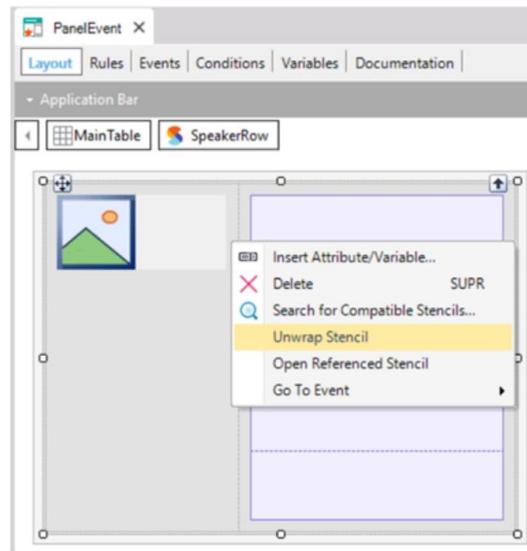
There is a way of creating a stencil with a Knowledge Base I've already got. I've got the design and I want to reuse it.

2. Wrap as New Stencil



So what we should do is do the layout version that I want to encapsulate, secondary button, stencil and automatically you'll get this dialog to customize the name and storage and save it. And so what it does is, it decouples it from the code and saves it as a stencil to be used in the screens I showed you earlier.

Unwrap Stencil



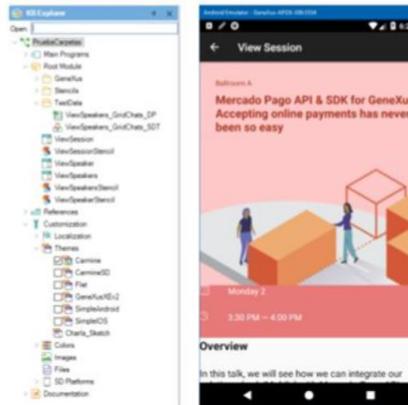
The same thing would happen the other way round. What happens if I'm working with a stencil and I want to unwrap it? I want to cut the umbilical cord from my layout.

So what I've got to do is, I have to unwrap the stencil and what happens automatically is that there is no longer a connection with the stencil. If I modify the stencil, this screen isn't going to be modified but I'm going to keep all the design properties and I'll be able to work freely with those controls, completely decoupled from the stencil.

3. Import from Sketch (Coming soon)



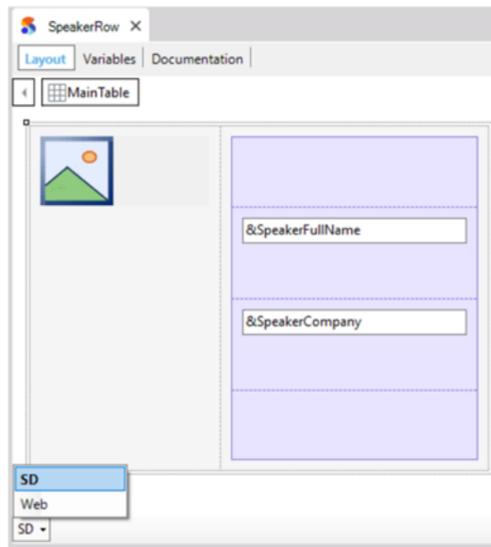
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And what you are asking, just now, the next way to create stencils that is coming soon is on the basis of the extensions sent by designers, for instance, sketch. Here on the right hand side of the screen you can see the sketch file with its screens and designs and navigation. And what I'm going to do from Genexus is, I'm going to import that file.

So what Genexus does is it creates the SD panels, it creates stencils navigation between those panels. So I'll be able to execute with a role or design without code. What I would have to do is to modify that behavior, I would bring in the design and create the stencils.

SD & WEB



Someone asked whether this is for SD and Web. Well, stencils have layouts and in general although the presentation of a web page and SD are not the same, the concept line behind what we want to show is the same. I'd like to show speakers in one way in the web or SD. But we've got a layout to keep that hierarchy of stencils. So there is an SD layout or a web layout that we can modify.



+ Modifiability
+ Reuse
+ Flexibility

“Stencils help to define standards and consistency, simplifying the implementation of Design Systems.”

So to sum up, stencils define a standard, they give us consistency, they help us create design systems, they increase the modifiability, they also make it easy to share designs and they give us extreme flexibility.

Federico is going to be referring to User Control.

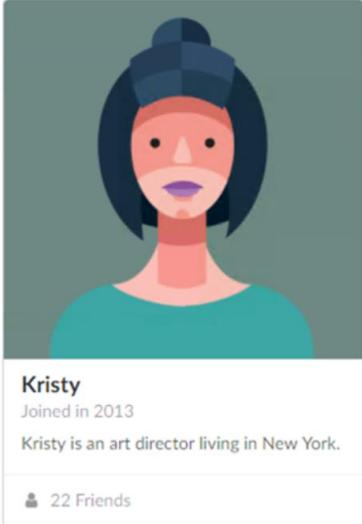


User Control Object

Now as regards User Control Object, those of you having experience developing user controls, you know, it's quite a well-known concept and we've had it in previous versions. User control object is a new way of modelling those controls that is not replacing the previous one but user controls will continue existing. But user control object has several advantages facilitating integration with the model of UIX or the native code. I attended a presentation yesterday about this thing and please watch it because you're going to have many details about the object but it allows you to facilitate the way of modelling user control.

There are several advantages since it is a KB Genexus object it is built-in so, the control modelling maintenance is much easier. For the previous user control we had a user control editor as part of the Genexus suite allowing you to model the control. But it was a satellite, to control wasn't part of that Genexus knowledge. You had to model it from outside. You had to introduce it in the KB incorporating it then, it was tedious and boring and you had to be very careful because it could fail. Now with the fact that it's built-in, things are much easier.

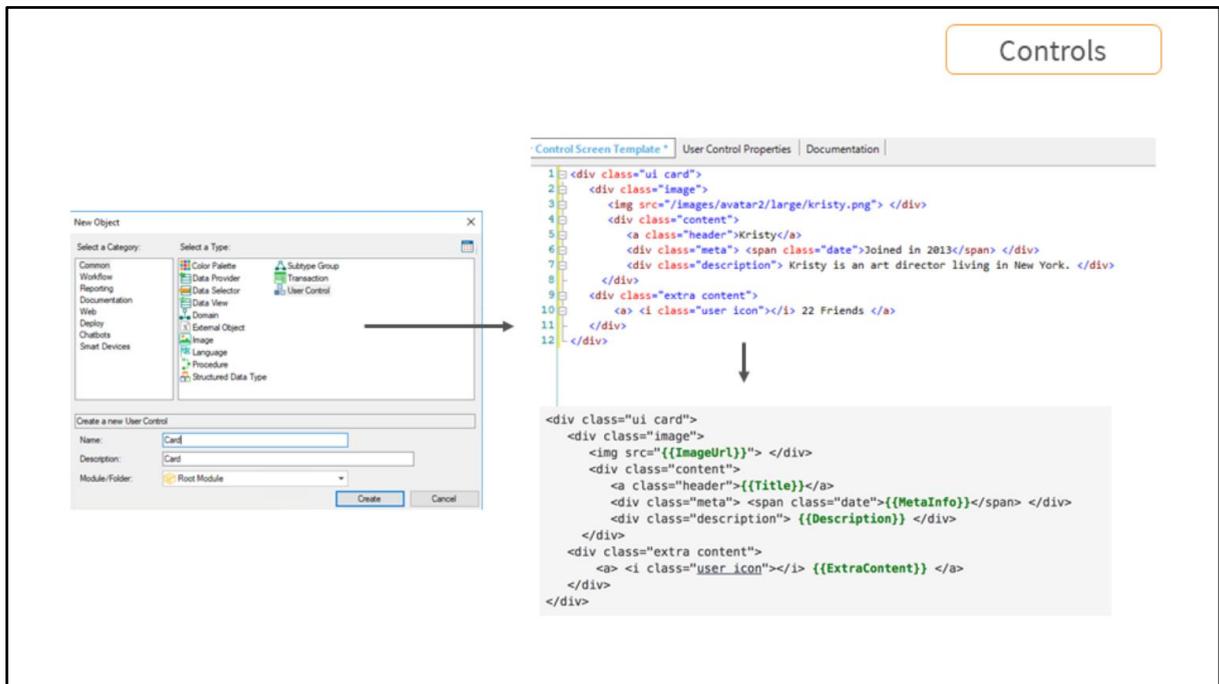
ControlsBase styles



```
<div class="ui card">
  <div class="image">
     </div>
  <div class="content">
    <a class="header">Kristy</a>
    <div class="meta"> <span class="date">Joined in 2013</span> </div>
    <div class="description"> Kristy is an art director living in New York. </div>
  </div>
  <div class="extra content">
    <a> <i class="user icon"></i> 22 Friends </a>
  </div>
</div>
```

What we see here is a card control that basically shows information of users of lines or whatever, in a much nicer way. You choose the photo of the person, the age in this case when she joined the network and also some bio.

What we see here is modelled with these 10 code lines which are HTML and are provided by the framework. So we are going to go to the page and look for the control and what we're going to do is copy is this HTML code, paste it in the user control structure and automatically when we use that control in Web panel or an object that has a graphic interface, we are going to see it the same way. What we see here is that this control has classes that are defined, they take part of semantic UI and these classes are going to be available inside the KB Genexus when we use the base style, which as you see, is directly related to the User Control.



Here you see the creation of a user control object.

My question is the following: here we make reference to a library that is packaged in the cloud, etc. Now is the size in the KB growing a lot? I imagine that you build it to run it in a disconnected manner.

Yes, as you have seen, CSS works on the basis of name references. When you define the HTML, the class you're using is defining the CSS framework, in this case, UI is going to take it automatically (the class) but you are importing to the set of classes of semantics UI, you are importing the whole set. It shouldn't be too heavy that static file. But it can increase a couple of kilobytes in size.

SemanticUI

- BSBreadcrumb
- BSPanel
- ButtonLike
- Card
-



```
Event Start
  card1.Title = "Facundo"
  card1.MetaInfo = "Nacio en 2011"
  card1.Description = "Minecraft fan"
  card1.ExtraContent = "No tiene Facebook"
  card1.ImageUrl = "https://genexususa.com/wp-content/uploads/2017/08/Gaston-Milano-GeneXus-CT0-cropped.jpg"
EndEvent
```

Here we see several controls inside the toolbox. When we create the user control, Genexus puts it automatically as part of the built-in controls in the toolbox. And here we have several controls and we have the initialization I told you about, the title for the person, the data that we saw the previous example. And this is the generation of the result in execution.



- + Portability**
- + Load Performance**
- + Easy to extend & share**

What can we conclude from these user control objects?

Firstly, the portability, because of what I told you about firstly, the facility to work with Genexus server because it's built-in, it is easy to maintain, it is a one more structure of Genexus.

Better load performance because the applications have to respond rapidly because the user decides in one second if he wants to continue surfing that or not and then it's easy to extend and share.

Would it be possible to put one of these controls inside a grid for example? Would we put several controls in the grid?

**Streams of information
and more about grids**

Flex layouts



We're going to tell you about the Flex layouts. They allow us to have more flexibility as Armin said, we want to work not only with the power that Bootstrap offers in the concept of dividing the screen in twelve columns and how the data has to get organized when I have different sizes of screens.

This is complementary and gives greater flexibility because as said Armin before, it allows for this kind of interface.

Web/SD

GeneXus



Flex layout container, Flex Grid

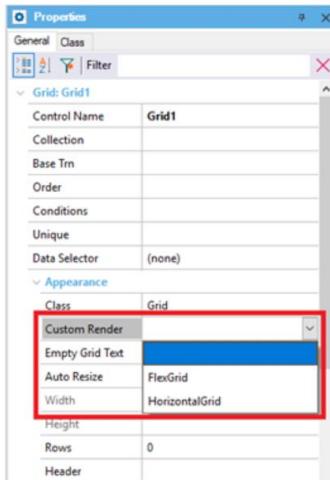
We don't know exactly the width of each one of the elements, it may vary. And it also allows us to calculate and move these elements based on the size of the screen and not only moving the element but also adjusting the tables and the content of each element based on the size.

In this web execution we see each one on the photo with its actions in the right hand side. In this small screen the actions go down. That is why we say it's a flex grid, each has certain functionalities that CSS in the case of web allow us to model these kind of interfaces in a much more powerful way than Bootstrap initially did with the division in 12 columns.

Web

Flex layout container, Flex Grid

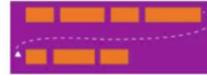
GeneXus



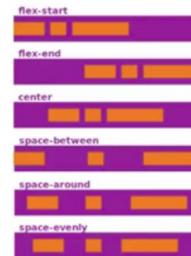
Flex Direction



Flex Wrap



Justify Content



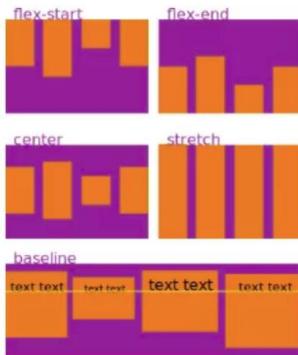
For the case of web we have a new way of visualizing the grids that allow us to define it as a flex grid and makes available these other properties which establish how the Flex layout has to behave, whether there will be inverted columns or inverted lines.

What happens when I have aligned a certain quantity of elements and I don't have enough space to show them all?

How the content is going to be justified, from left to right, right to left, whether it's going to be centered, there will be space or not between the elements that are here, several options that allow us to have this flexibility.

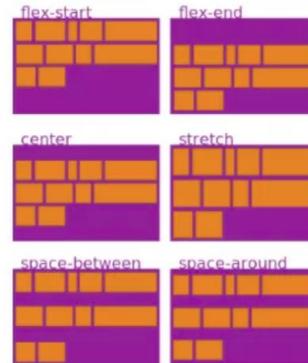
Align Items

It defines the alignment of the items in the rows.

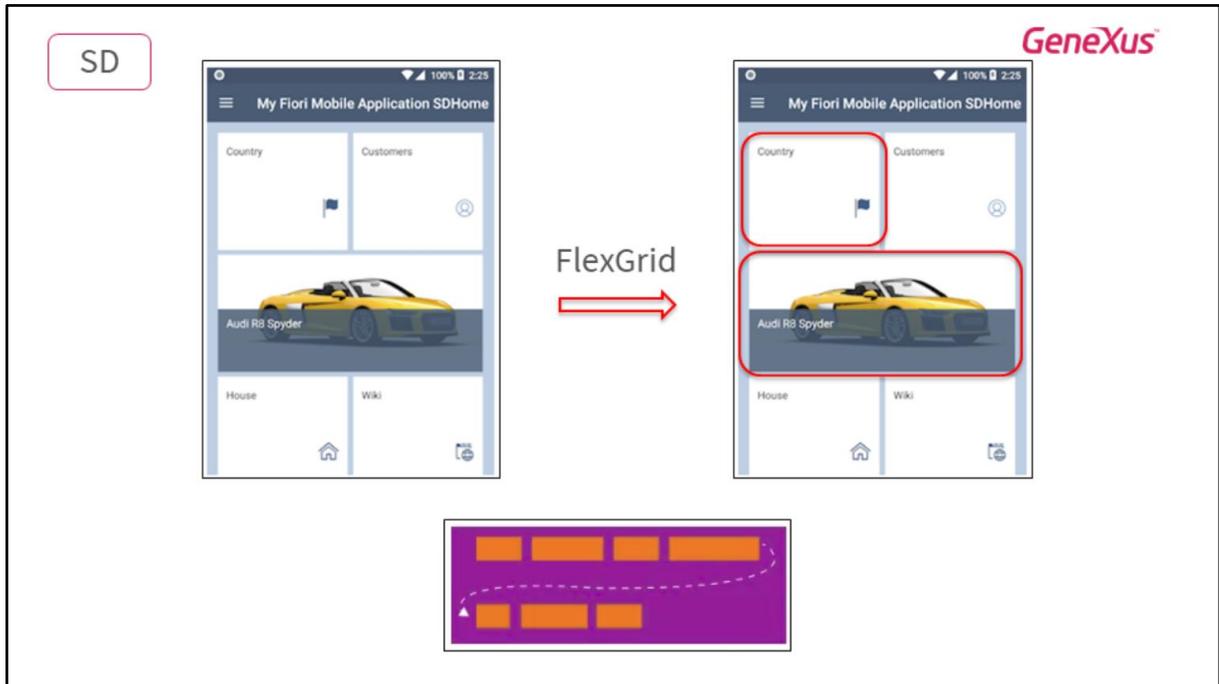


Align Content

Aligns the row when there is extra space in the container.



These are more options inside Flex layout, the alignment of the items, how we put them in lines, how we align the lines when there is extra space in the containers. In that case we can visualize the content in various ways.



With regard to SD the same concept applies. In this case we want to show components with a variable width. So this is an example.

We have this kind of components that have a certain width and this one that takes all the width of the screen.

So they are going to take their place with the FlexGrid according to the space of the container. If we see it in the tablet, they would be in just one line at that, they would continue down and run out of space.

In the drawing you see the behavior, how it is loading the items.

SD

BitBitNews

GeneXus
Flex + Nested Grids

GRID
flex-end

Justify Content

&Categories.item(0).CoinCode

&ArticleTitle

So to give you one more element we have in the WikiLeaks example of the application of news "BitBitNews".

We have a grid with the news about bitcoins and then, the bitcoins associated to the news. A priori we don't know the quantity or the size. So we say that with "justify content", these contents will be grouped from left to right in the other part of the news.

Smart Grids

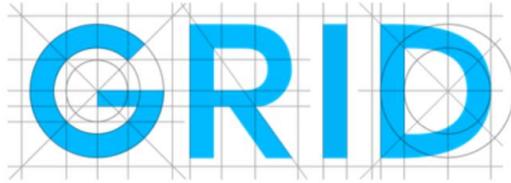
Control Info	
Control Type	SD Smart Grid
Auto Grow	False
Scroll Direction	Horizontal
Snap To Grid	True
Items Layout Mode	Multiple by Quantity
Items Per Column	3

More about grids. We have the smart grids in its version and they give much more power to the grids on which we have been working.

This shows an example of the KB of the event, with the speakers. In order to have these grids of speakers as a page on the right hand side (and we see a hint that shows the division to the right because there is a little bit of the item that is hidden) there are there items, three items by column and that layout for pages.

We could do it in the past but we had to code much more, here it is just with the image you see on the right hand side applying this smart grid with this scrolling in a horizontal direction and the item in column and the result is the one you see on the screen just by doing that.

More about...



More about grids

More about Grids

SD

- Unique property for grids (Web & SD)
- Inverse Loading property
- Grid Refresh method is available on SDPanels and Work With for Smart Devices
- Improvements to Grids with Multiple Selection for Smart Devices
- ShowPageController property in runtime

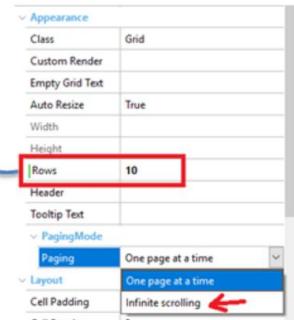
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The "unique" property for grids for web and smart devices was added, also "inverse loading" property. It could be in a chat application and the messages are loaded inversely. We also have the refresh method for the web and smart devices, improvements with regard to the multiple selection in smart devices and then change in the runtime of the property.

More about Grids

Web

- Unique property for grids
- Inverse Loading property (when **Rows \neq 0**) → use case: chat
- It's possible to set up a Fixed Grid header with vertical scroll
- Header property and Header Text Class property (for grids and tables)
- Select method and Deselect method



Genexus

More about grids, the grids in web also have improvements: the property unique, also the inverse loading as you see for the case of the charts when they're different from 0. It is also possible to set the direction of the grids and the modelling of the styles will also be much simpler and you see here the other features with regard to the properties, etc. With regard to the CSS frameworks, you said that you could upload them as files, reference them, etc. Will some of them already be included in Genexus? Can we already put the HTML and Genexus will have it among its classes or references?

Well, in principle no, because we don't see the need to supply things that overload the KBs starting from zero. It is a decision of the user. But Bootstrap that is already included in the packaging of Genexus. Bootstrap has the special feature that we use it to solve the question of the columns. That is why we use Bootstrap initially with all its set of things, not only the scripts that solve how the application is going to behave on the basis of the size but also some styles that were applied to controls that we distribute. Now we have decoupled this.

Mobile & Web



Multi-experience & Omnichannel

- Design systems
- Streams of information
- **Conversational UI: Chats/ Chatbots**



Web/ Web mobile

Native mobile

Chatbots

Wearables/TV/AR

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