



NIAGARA SUMMIT 2026

SEAMLESS CONNECTIVITY,
POWERFUL INTELLIGENCE

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Theme APIs in Niagara 5

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Flamingo

The screenshot displays the Niagara Workbench interface. The top bar shows the 'niagara' logo and a series of navigation icons. The left sidebar contains a 'Nav' pane with a tree view of the project structure, including folders like 'bacnet', 'bacnetAws', and 'bacnetUtilTest'. Below this is a 'Palette' pane with a dropdown set to 'bajai' and a list of widget categories: Widgets, Shape, Panes, and Examples. The main workspace shows a directory list for the 'x16' module. The directory list has a header with columns for Name, Type, Size, and Modified. The 'alarm' directory is highlighted in red. Below it, a list of files and sub-directories is shown, including 'badges', 'charts', 'control', 'files', 'job', 'navOnly', 'r2', 'shapes', 'unused', 'views', 'whitelcons', and 'widgets'. A list of PNG files follows, each with a size of 1 KB and a modification date of 01-Feb-80 12:00 AM EST.

Name	Type	Size	Modified
alarm	ModuleDirectory		
badges	ModuleDirectory		
charts	ModuleDirectory		
control	ModuleDirectory		
files	ModuleDirectory		
job	ModuleDirectory		
navOnly	ModuleDirectory		
r2	ModuleDirectory		
shapes	ModuleDirectory		
unused	ModuleDirectory		
views	ModuleDirectory		
whitelcons	ModuleDirectory		
widgets	ModuleDirectory		
action.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
add.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
addCalendar.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
alarm.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
alignBottom.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
alignCenter.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
alignLeft.png	PngFile	1 KB	01-Feb-80 12:00 AM EST

Dark Flamingo

niagara

Nav

- My Network
- My Host : HON-CL3ML94 (bajai)
 - My File System
 - My Modules
 - Platform
 - Station (bajai)

Palette

- bajai
 - Widgets
 - Shape
 - Panes
 - BorderPane
 - CanvasPane
 - ConstrainedPane
 - EdgePane
 - ExpandablePane
 - GridPane
 - ScrollPane
 - SplitPane
 - TabbedPane
 - TransformPane

My Host : HON-CL3ML94 (bajai) / My Modules / icons / x16

Directory List

x16 403 files

Name	Type	Size	Modified
addCalendar.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
alarm.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
alignBottom.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
alignCenter.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
alignLeft.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
alignMiddle.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
alignRight.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
alignTop.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
allDescendants.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
alphabetize.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
animate.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
antiAlias.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
app.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
appContainer.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
apple.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
arrowDown.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
arrowLeft.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
arrowRight.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
arrowUp.png	PngFile	1 KB	01-Feb-80 12:00 AM EST
asterisk.png	PngFile	1 KB	01-Feb-80 12:00 AM EST

New Public Styling API

- Style cascade
- Whitespace control
- Better aesthetics



Still bajai
Just better

Applying Styles With NSS2

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Niagara 5.0: NSS2

- Niagara Style Sheets
- Know CSS? You (mostly) know NSS2

NSS2

```
myModule | MyWidget | {  
  > bajoui | Label | [name=title] | {  
    font-weight: bold;  
  }  
  
  &.in-alarm-status { background-color: red; }  
  
  &:hover { border: 1 solid black; }  
}
```

NSS2 is (still) not CSS

- Smaller subset of CSS
- Implementation of rules: up to the BWidget
- Layout is Java
- Style syntax is Niagara

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Core Interfaces, Part 1

IStyle

—Represents a kind of style

IStyle

Font

Spacing

Color

Sizing

IStyle

```
color: aqua;
```



```
IStyle.COLOR
```



```
BBrush.make("aqua")
```

IStyle

```
color: aqua;
```

```
IStyle.COLOR
```

```
BBrush.make("aqua")
```

IStyle

```
color: aqua;
```



```
IStyle.COLOR
```



```
BBrush.make("aqua")
```

IStyle

```
color: aqua;
```



```
IStyle.COLOR
```



```
BBrush.make("aqua")
```

IStyle

```
color: aqua;
```



```
IStyle.COLOR
```

IStylable



—What can be given a style?

IStylable

getStyleId()

getStyleClasses()

getTagName()

hasPseudoClass()

getStyleAttribute()

getStyleParent()

IStylable

getStyleId()

getStyleClasses()

getTagName()

hasPseudoClass()

getStyleAttribute()

getStyleParent()

IStylable

getStyleId()

getStyleClasses()

getTagName()

hasPseudoClass()

getStyleAttribute()

getStyleParent()

IStylable

getStyleId() #id

getStyleClasses()class

getTagName() <tag/>

hasPseudoClass() :hover

getStyleAttribute() [attribute = value]

getStyleParent() (inheritance)



ISty1able: Gives NSS Something To Target

NS 26

Hello Developers!

Cancel

IStylable

nss

```
module | CustomWidget {  
  > .cancel-button {  
    &:hover {  
      color: red;  
    }  
  }  
}
```

IStylable

nss

```
module | CustomWidget {  
  > .cancel-button {  
    &:hover {  
      color: red;  
    }  
  }  
}
```

getTagName()

IStylable

nss

```
module|CustomWidget {  
  > .cancel-button {  
    &:hover {  
      color: red;  
    }  
  }  
}
```

getStyleClasses()

IStylable

nss

```
module|CustomWidget {  
  > .cancel-button {  
    &:hover { hasPseudoClass("hover")  
      color: red;  
    }  
  }  
}
```

IStylable

nss

getTagName()

getStyleClasses()

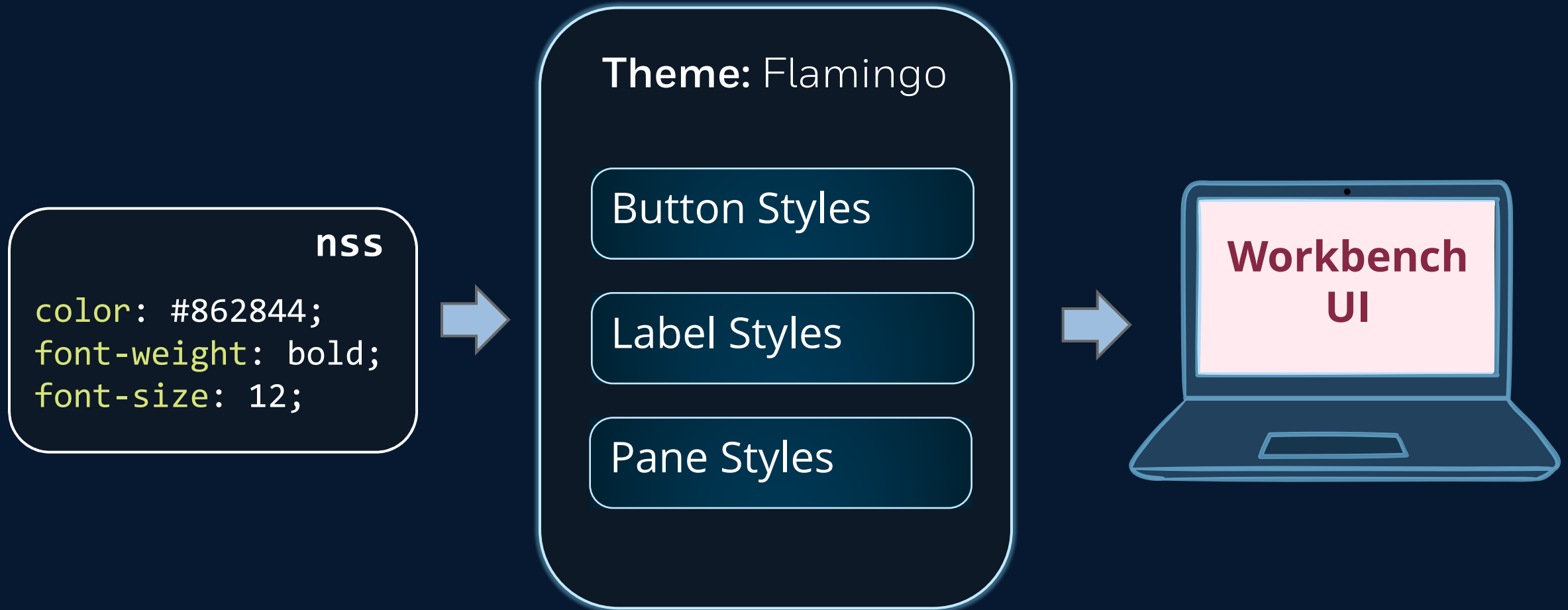
hasPseudoClass()

```
module | CustomWidget {  
  > .cancel-button {  
    &:hover {  
      color: red;  
    }  
  }  
}
```

IBajau iTheme

—Collection of themes

IBajouiTheme



IBajouiTheme



IBajauTheme

 General

 Time Format	(default)
 Unit Conversion	None 
 Auto Logoff Enabled	 false 
 Auto Logoff Period	+00000h 15m 00s - +
 Prompt For Name On Insert	 true 
 Font Size	Normal 
 Active Theme	N5/flamingo 



Recap

`IStyle` Defines a type of style

`IStylable` Exposes selectors

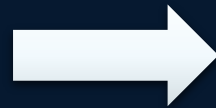
`IBajauiTheme` Brings it together

**Styles Affect
Layout Too**

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BoxModel

```
bajoui|GridPane {  
  > bajoui|Label {  
    padding: 5;  
    border: red;  
    margin: 10;  
    background-color:  
      lightblue;  
    border-radius: 5;  
  }  
}
```



BoxModel

- Standard CSS Box Model stuff:
 - o border, border-radius, outline
 - o padding, margin
 - o background-color
 - o width, min-width, max-width
- Already in core Panes

Core Interfaces, Part 2

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IRenderContext

–What styles are applied to me right now?



IRenderContext 🤝 IBajouiTheme

IRenderContext

java

```
renderContext.select(widget, IStyle.COLOR);
```

IRenderContextAware

—Give me a RenderContext, please!

```
public class MyCustomWidget
    extends BWidget
    implements IRenderContextAware
{

}
}
```

```
public class MyCustomWidget
    extends BWidget
    implements IRenderContextAware
{
}
}
```

```
public class MyCustomWidget
    extends BWidget
    implements IRenderContextAware
{
    doComputePreferredSize(..., IRenderContext cx);

    doLayout(..., IRenderContext cx);

    doPaint(..., IRenderContext cx);
}
```

```
public class MyCustomWidget
    extends BWidget
    implements IRenderContextAware
{
    doComputePreferredSize (..., IRenderContext cx);
    doLayout(..., IRenderContext cx);
    doPaint(..., IRenderContext cx);
}
```

```
public class MyCustomWidget
    extends BWidget
    implements IRenderContextAware
{
    doComputePreferredSize(..., IRenderContext cx);

    doLayout (..., IRenderContext cx);

    doPaint(..., IRenderContext cx);
}
```

```
public class MyCustomWidget
    extends BWidget
    implements IRenderContextAware
{
    doComputePreferredSize(..., IRenderContext cx);

    doLayout(..., IRenderContext cx);

    doPaint(..., IRenderContext cx);
}
```

```
public class MyCustomWidget
    extends BWidget
    implements IRenderContextAware
{
    doComputePreferredSize( ..., IRenderContext cx);

    doLayout( ..., IRenderContext cx);

    doPaint( ..., IRenderContext cx);
}
```


Button doPaint Text

java

```
@Override
public void doPaint(Graphics g, IRenderContext cx );
{
    BBrush b = cx.select(this, IStyle.COLOR);
}
}
```

Button doPaint Text

java

```
@Override
public void doPaint(Graphics g, IRenderContext cx );
{
    BBrush b = cx.select(this, IStyle.COLOR);
    g.setBrush(b);
    g.drawString("Hello!", ...);
}
```

Recap

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Button Wants To Know:

What's my
text color?



Button:



I'm RenderContextAware

Button asks IRenderContext

```
public void doPaint(Graphics g, IRenderContext cx) {  
    BBrush color = cx.select(this, IStyle.COLOR);  
}
```

IRenderContext

IRenderContext asks Theme

IRenderContext

IBajauTheme
→ Name: "flamingo"

Theme designer wrote NSS

```
nss  
bajoui|Button {  
  color: pink;  
}
```

IBajouiTheme
→ Name: "flamingo"

```
doPaint(Graphics g, IRenderContext cx)
```

IRenderContext

```
nss  
bajoui|Button {  
  color: pink;  
}
```

IBajouiTheme
> Name: "flamingo"

```
cx.select(this, IStyle.COLOR)
```

PINK



A large Ferris wheel is the central focus of the image, set against a clear blue sky with some light, wispy clouds. The wheel's intricate metal structure and numerous passenger cars are visible, creating a complex geometric pattern. The overall tone of the image is a deep, muted blue, which serves as a background for the white text.

Is Migration Required?

No Custom bajauri Code?

- You are not affected

Use Private Theme API?

- (e.g., `Theme.widget().getTextFont()`)
- It's going away!
- You **must** migrate to public API

Extend a Core BWidget Subclass?

- (e.g., BLabel, BButton, BPane...)
- They have migrated
- And so have yours
- Special paint/layout code?
 - Must migrate
- Just being a pane?
 - Off the hook

Extend BWidget Directly?

Hardcoded colors?

Children wrapped in Panes

Paints children directly

Broken in dark mode

No changes required

Must Migrate

A large Ferris wheel is the central focus of the image, set against a clear blue sky with some light, wispy clouds. The wheel's intricate metal structure and numerous passenger cars are visible, creating a radial pattern that draws the eye towards the center. The overall tone of the image is bright and airy.

You should migrate

Thanks!

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