



Microsoft Surface 2.0

IHM - Evolution des Interfaces / 2013-2014

Polytech Nice Sophia / Michael LAGUERRE

Présentation

- Dans le mobile et les IHM depuis 6 ans
- J2ME, WindowsMobile, Android, iOS, WindowsPhone
- J2ME-NFC chez [ST-Ericsson](#) - 2008
- Ingénieur mobile et IHM au [Laboratoire I3S](#) - 2008/2010
- Ingénieur R&D mobile et responsable développement Android chez [Playadz](#) - 2011/2013

michael.laguerre@playadz.com



Tablettes

Bornes interactives

Mobile

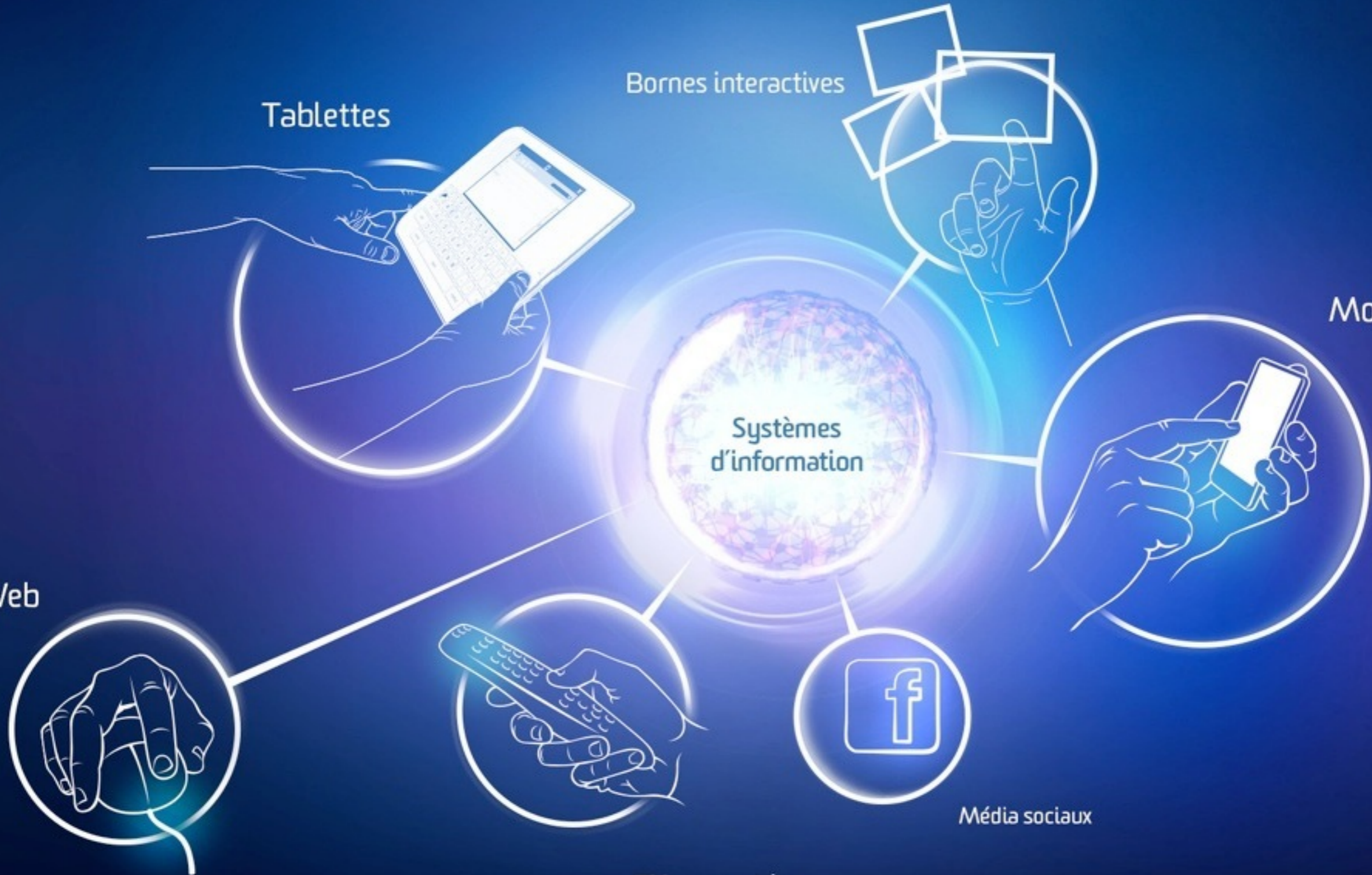
Systemes
d'information

Web

Média sociaux

TV connectée

playadz®



Playadz

- Société fondée en 2007 par des anciens de l'ESINSA et de l'EDHEC
- Spécialisée dans le développement d'applications multi-canal (mobile, borne tactile, web)
- Une 60aine d'applications disponibles Android/iPhone
- 10 personnes + 1 apprenti, basés sur Sophia-Antipolis



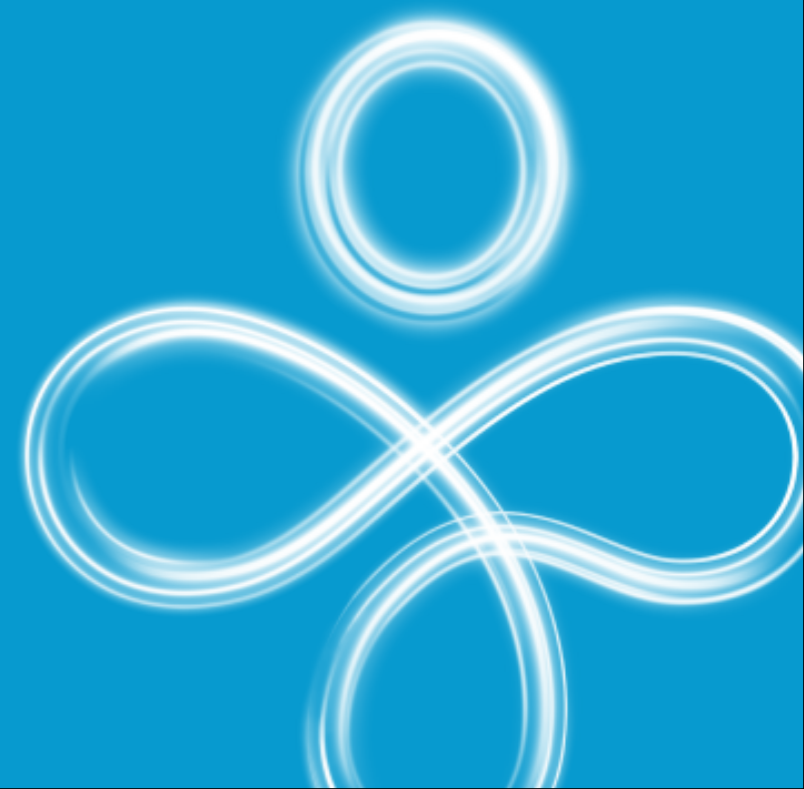
Playadz

- Nos références
 - Conseils généraux 06 et 64
 - Ville de Cannes
 - Ports de la Côte d'Azur
 - Aéroports de Paris
 - Métro
 - BVLGARI
 - Schneider Electric
 - ...

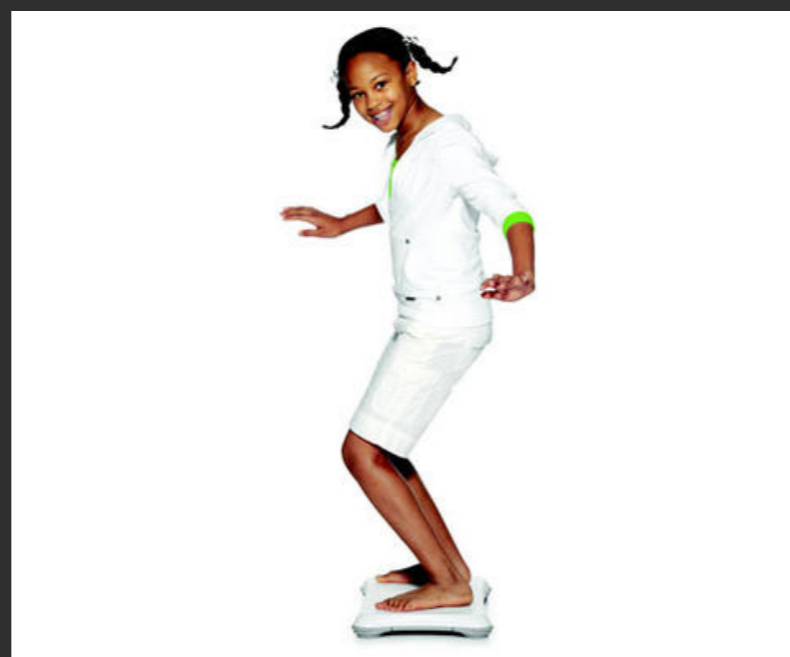




Etat de l'art



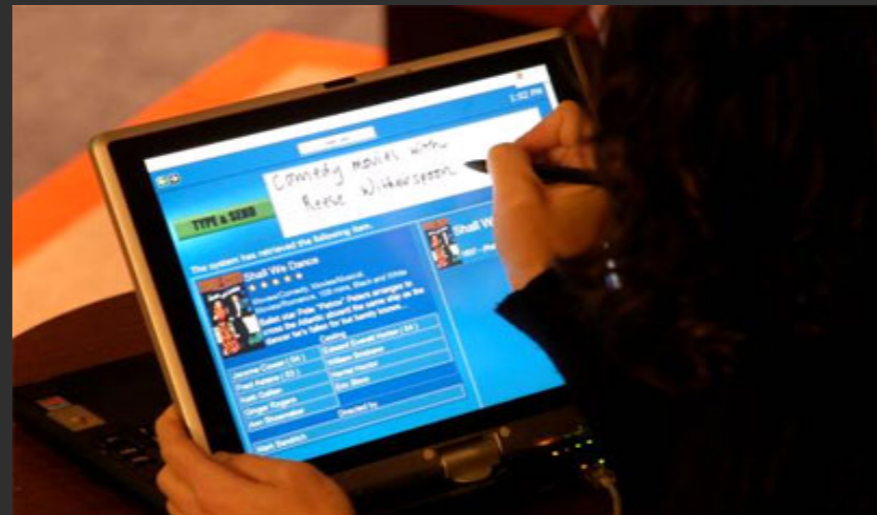
Nouvelles modalités d'interactions



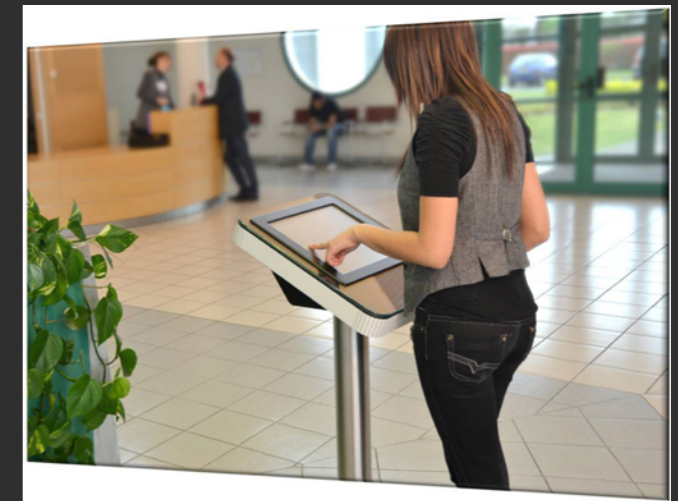
Systemes tactiles unipersonnels



Cube tactile



Ecrans tactiles



Bornes



Smartphones
et tablettes

Systemes tactiles multi-personnel

Tables interactives



Murs interactifs

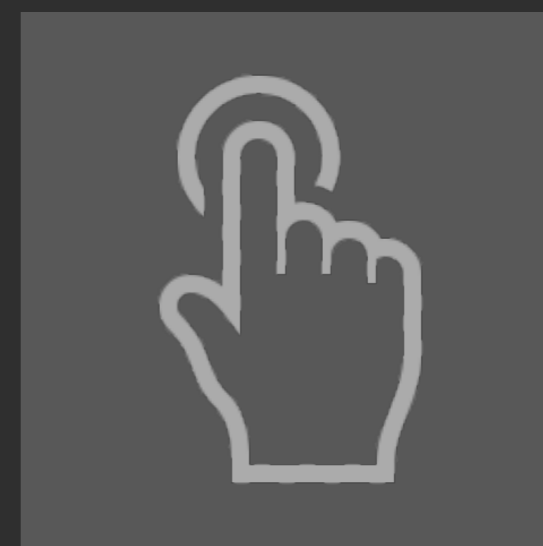
Paradigmes d'interface



CLI



GUI



NUI

Paradigmes d'interface | *CLI*



CLI

- Command Line Interface
- Mono utilisateur
- Une seule action à la fois
- Représentation du monde sous forme **textuelle**

Paradigmes d'interface | *GUI*



GUI

- Graphical User Interface
- Mono utilisateur
- Plusieurs actions à la fois
- Représentation du monde sous forme graphique

Paradigmes d'interface | *NUI*

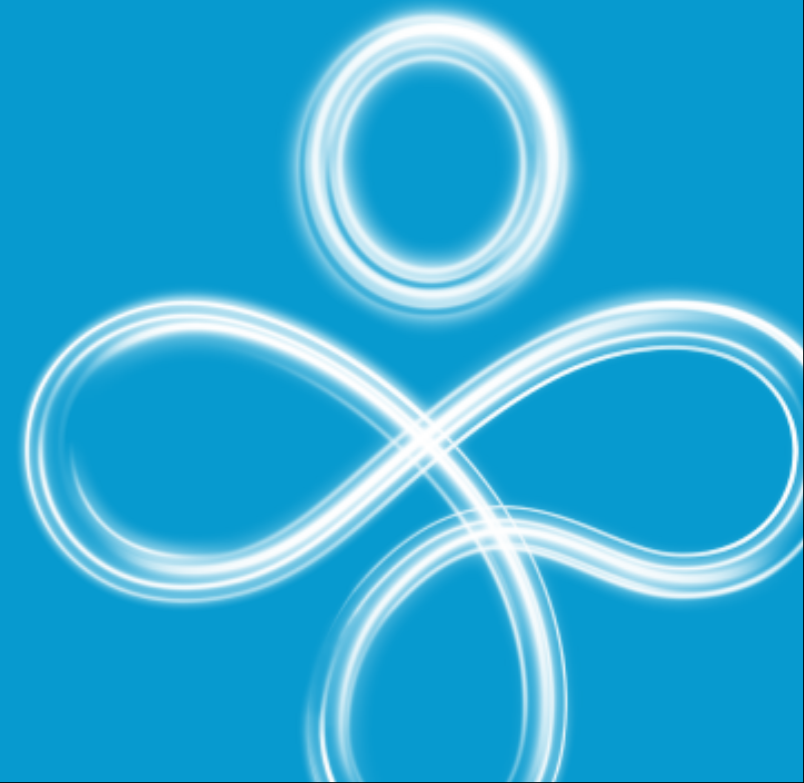


NUI

- Natural User Interface
- Multi utilisateurs
- Plusieurs actions à la fois
- Représentation du monde sous forme **tangible et palpable**



Surface, c'est
quoi ?



Microsoft Surface | v1.0

- Vidéoprojecteur
- Détection infrarouge par caméra
- Table imposante
- Résolution : 1024x768



Microsoft Surface | v2.0

- Technologie **PixelSense**
- Détection infrarouge au **niveau des pixels**
- Ecran plat montable au mur
- Résolution : **1920x1080**



Particularités



Interaction directe



Multi-contact



Reconnaissance d'objets



360°

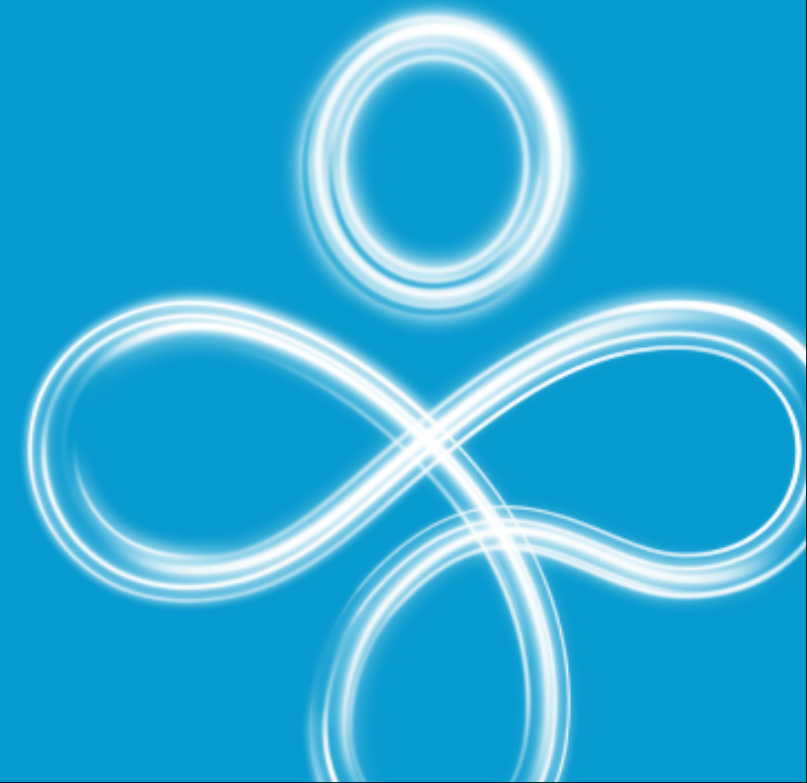


Multi-utilisateur

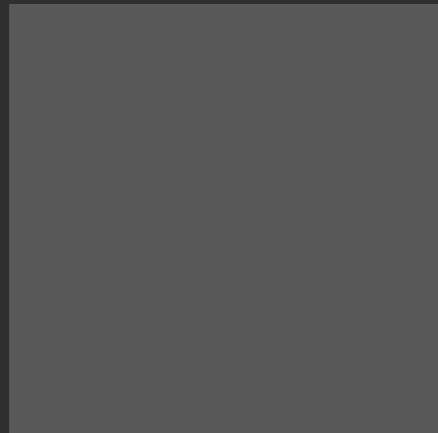


Développer sur Surface 2.0

- Les outils
- La vision



Comment développer pour Surface ?



Développeur

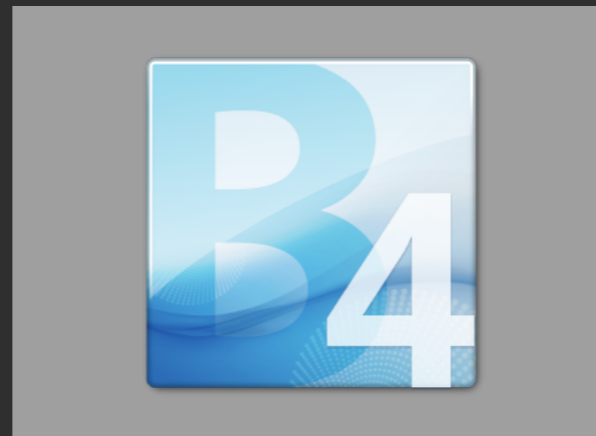


Intégrateur



Designer

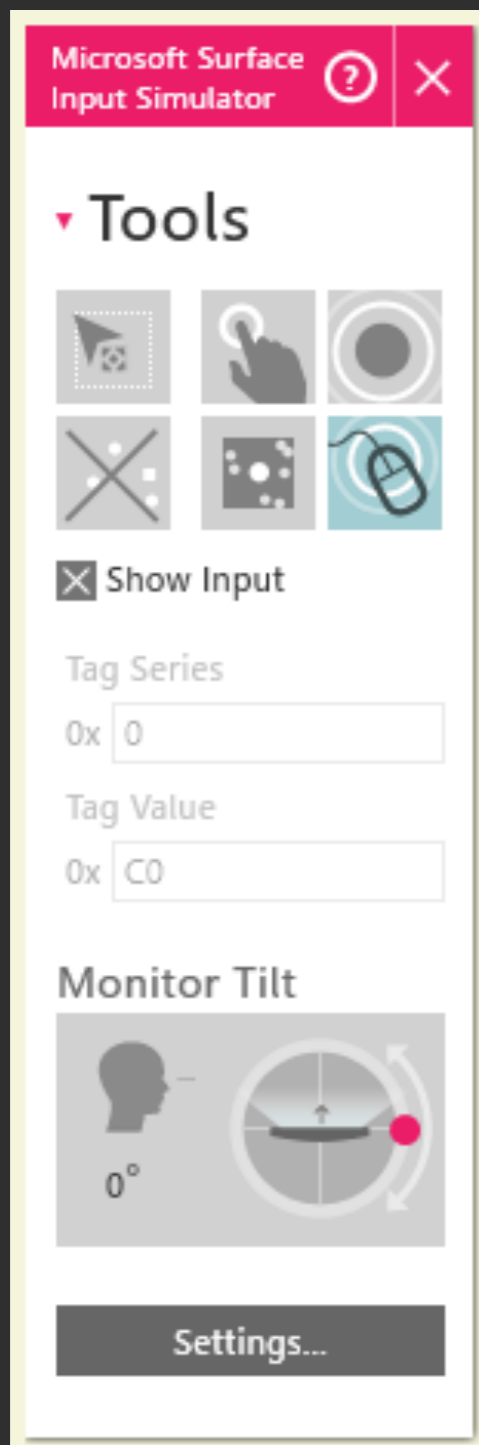
Comment développer pour Surface ?



<https://www.microsoft.com/expression/fra/>

<http://msdn.microsoft.com/en-US/windows/desktop/hh241326.aspx>

Surface Input Simulator



- Simulation d'un environnement **multitouch**
- Gestion des **tags**
- Gestion des **blobs**
- Gestion des **fingers**

Expression Blend

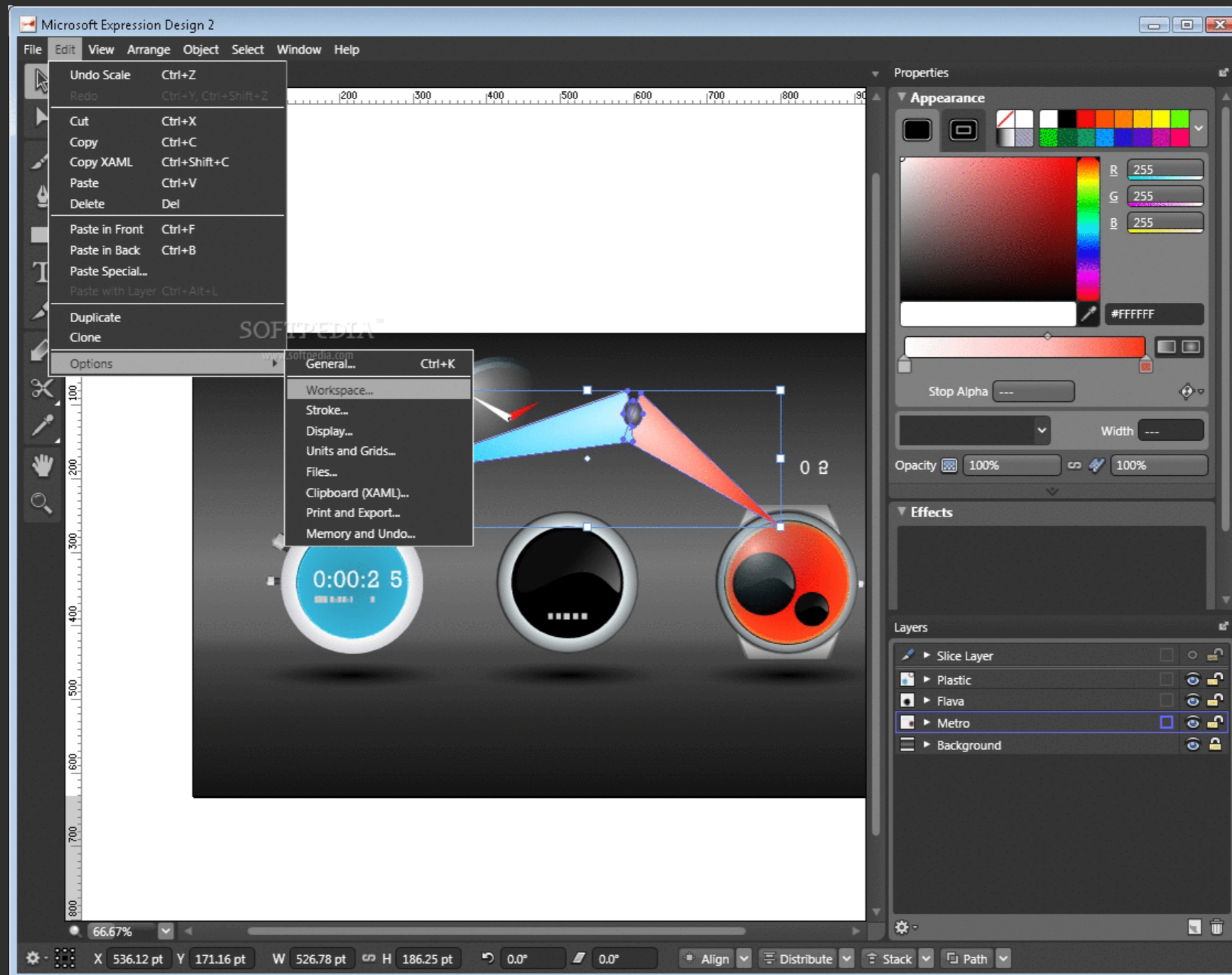


Expression Blend

- Editeur graphique
- Orienté développeur - intégrateur
- Création d'animations
- Gestion des états
- Exportation en XAML + C#



Expression Design



Expression Blend

- Equivalent à [Photoshop](#)
- Dessin [vectoriel](#)
- Uniquement [interface graphique](#)
- Destiné aux [designers](#)
- Exportation en [XAML](#)





Social



Simplicité /
Intuitivité



Interaction



Attraction



Echange



Les bases du développeur

- Le langage
- Les widgets
- Les templates
- L'API Touch

Le langage : WPF

• XAML

- Interface graphique
- Basé sur XML
- Définition des composants graphiques et des layouts

```
1 <s:SurfaceWindow>
2   <Canvas s:Contacts.ContactDown="OnContactDown">
3     <s:SurfaceButton Click="OnButtonClick"/>
4   </Canvas>
5 </s:SurfaceWindow>
```

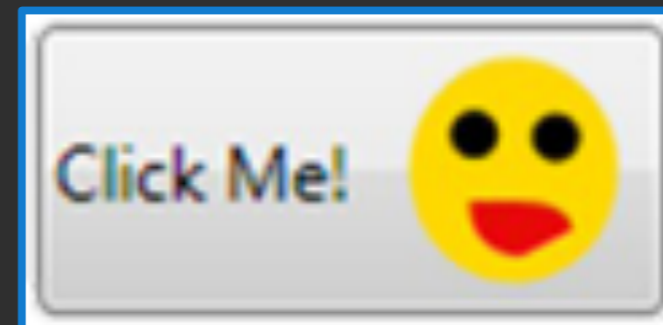
• C#

- Logique fonctionnelle
- Code-behind

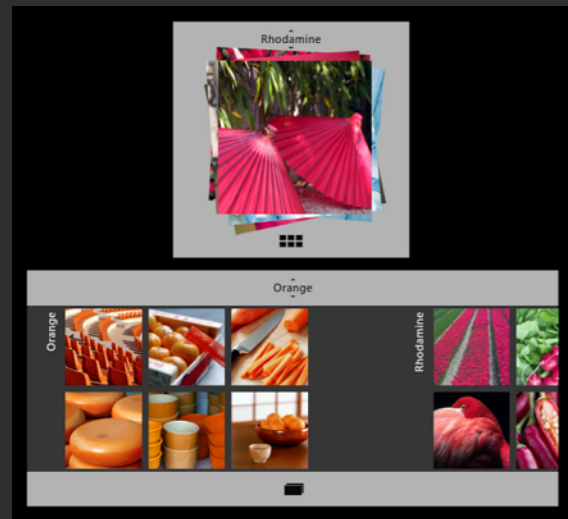
```
1 void OnContactDown(object sender, ContactEventArgs e)
2 {
3   // Some code
4 }
5
6 void OnButtonClick(object sender, RoutedEventArgs e)
7 {
8   // Some other code
9 }
```


XAML : Tout est conteneur

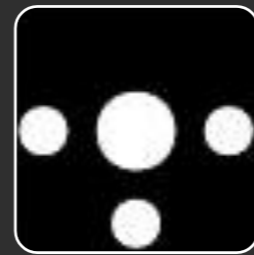
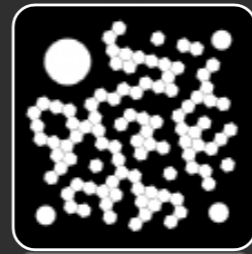
```
1 <!-- Bouton englobant -->
2 <Button>
3
4 <!-- Layout horizontal -->
5 <StackPanel>
6
7 <!-- Titre du bouton -->
8 <TextBlock>
9     Click Me!
10 </TextBlock>
11
12 <!-- Smiley -->
13 <Canvas>
14     <Ellipse/>
15     <Ellipse/>
16     <Ellipse/>
17     <Path/>
18 </Canvas>
19
20 </StackPanel>
21
22 </Button>
```



Widgets qui valorisent la table



LibraryContainer



Tags

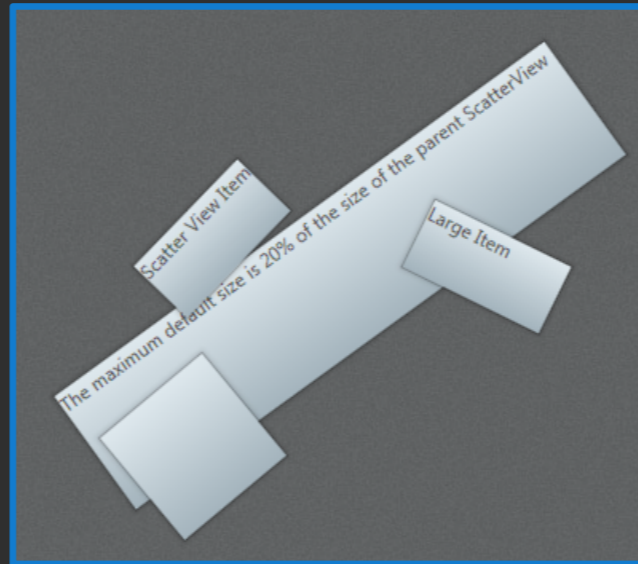


ScatterView



ScatterView

- Déplacement
- Redimensionnement
- Rotation

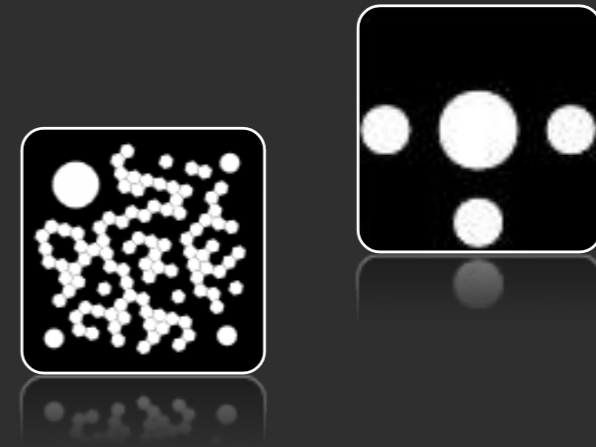


```
1 <s:ScatterView HorizontalAlignment="Stretch" VerticalAlignment="Stretch">
2   <s:ScatterViewItem Height="100" Width="200">Large Item</:ScatterViewItem>
3   <s:ScatterViewItem>Scatter View Item</s:ScatterViewItem>
4   <s:ScatterViewItem>
5     The maximum default size is 20% of the size of the parent ScatterView
6   </s:ScatterViewItem>
7   <s:ScatterViewItem></s:ScatterViewItem>
8 </s:ScatterView>
```

ScatterView

TagVisualizer / TagVisualization

- Reconnaissance de tags physiques
- Affichage d'un fragment d'interface
- Types de tags :
 - **Byte tags** : 256 valeurs
 - **Identity tags**
 - organisés en séries
 - 3×10^{38} valeurs

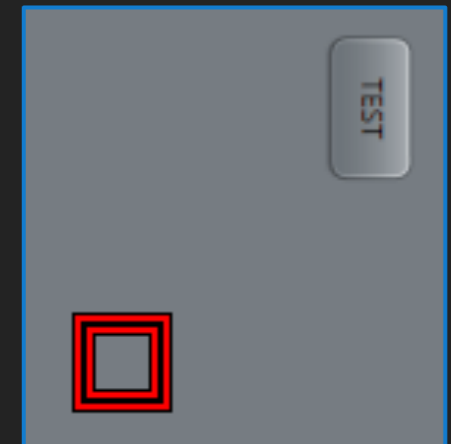


TagVisualizer / TagVisualization

```
1 <s:TagVisualizer>
2   <s:TagVisualizer.Definitions>
3     <s:IdentityTagVisualizationDefinition
4       Series="0x17E235BFBCF17A07" Source="SimpleVisualization.xaml"
5       OrientationOffsetFromTag="90" PhysicalCenterOffsetFromTag="-2,-2"
6       UsesTagOrientation="True" TagRemovedBehavior="Fade" />
7   </s:TagVisualizer.Definitions>
8 </s:TagVisualizer>
```

TagVisualizer

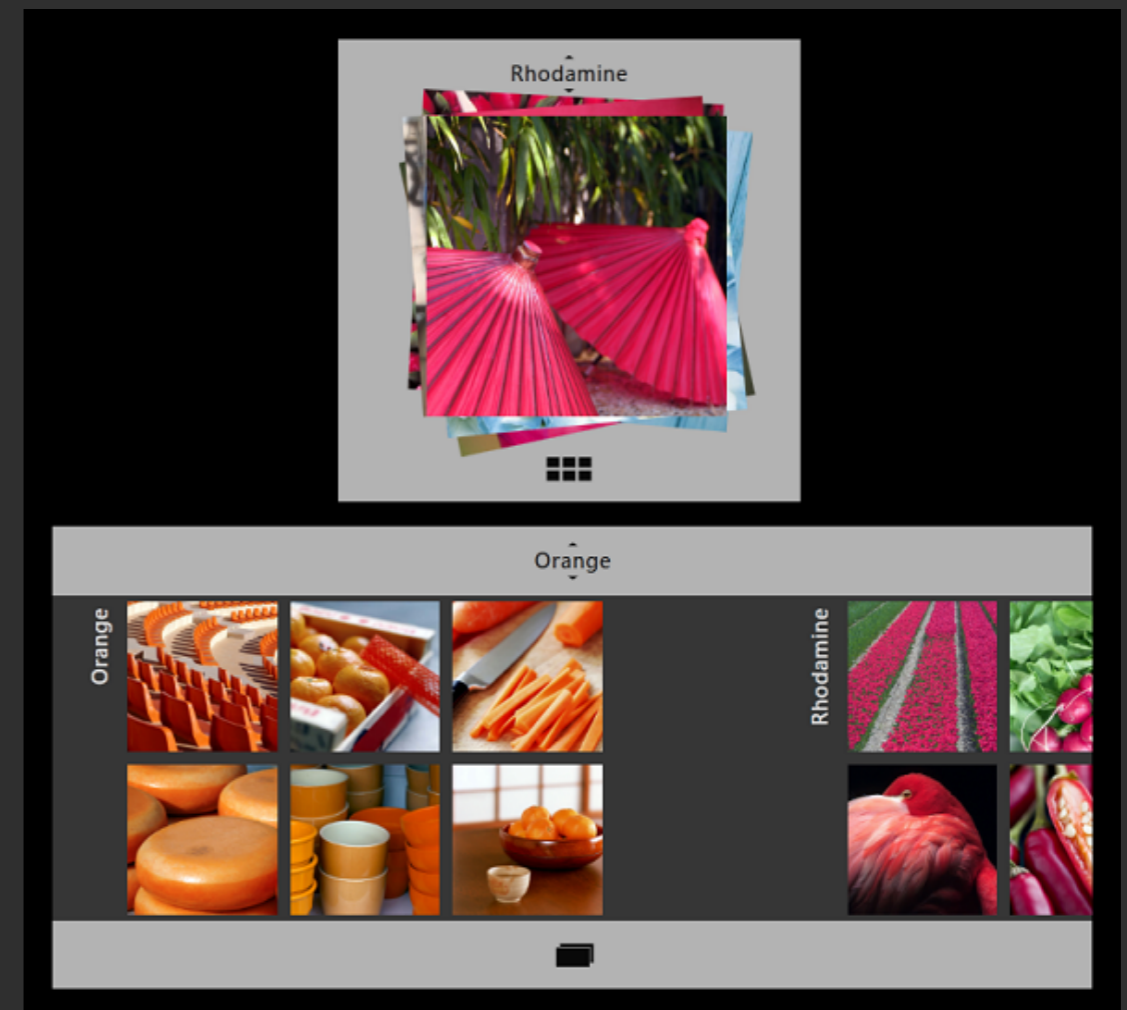
```
1 <s:TagVisualization x:Class="MyApplication.SimpleVisualization"
2   xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
3   xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
4   xmlns:s="http://schemas.microsoft.com/surface/2008"
5   Loaded="SimpleVisualization_Loaded">
6   <Grid>
7     <s:SurfaceButton>TEST</s:SurfaceButton>
8   </Grid>
9 </s:TagVisualization>
```



TagVisualization

LibraryContainer

- Collections d'objets
- Gestion Drag'n'Drop native
- 2 formes
 - `LibraryBar` : grille
 - `LibraryStack` : pile
- Possibilité de `permutation` entre les deux modes d'affichage



LibraryContainer

```
1 <s:LibraryContainer Name="MainLibraryContainer" Height="250" Width="860"
2   ViewingMode="Bar" ItemsSource="{Binding Source={StaticResource Source}}">
3
4   //Mode pile
5   <s:LibraryContainer.StackView>
6     <s:StackView NormalizedTransitionSize="1,1"
7       ItemTemplate="{StaticResource ContainerItemTemplate}"/>
8   </s:LibraryContainer.StackView>
9
10  //Mode grille
11  <s:LibraryContainer.BarView>
12    <s:BarView Rows="3" NormalizedTransitionSize="2.5,0.8"
13      ItemTemplate="{StaticResource ContainerItemTemplate}"/>
14  </s:LibraryContainer.BarView>
15
16 </s:LibraryContainer>
```

LibraryContainer

Les templates

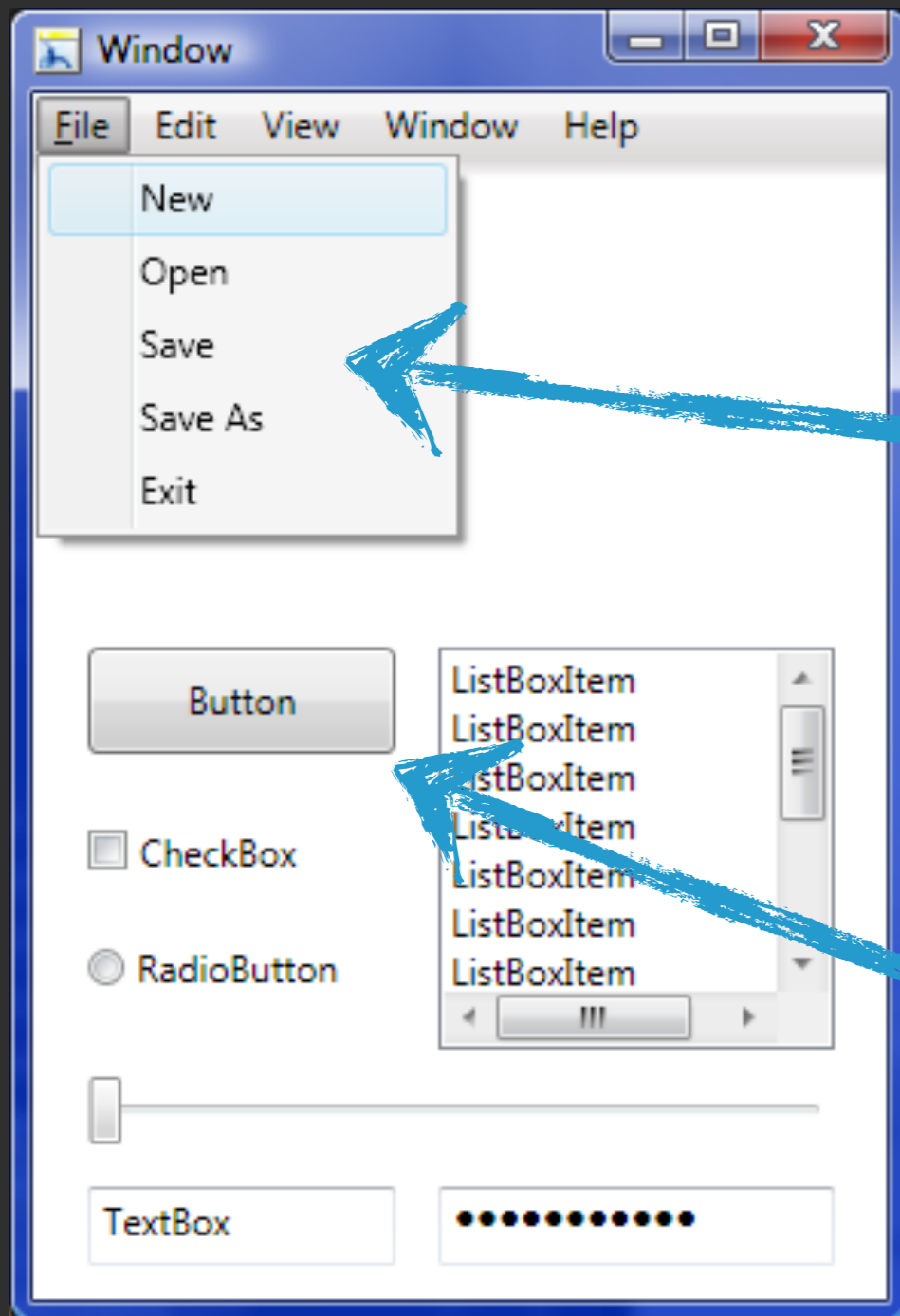
- Style permettant de définir la façon d'afficher un élément
- Puissance du Binding



```
1 <s:ScatterView Grid.Row="1" Name="MyPhotos" >
2   <s:ScatterView.ItemTemplate>
3     <DataTemplate>
4       <Image Source="{Binding}" />
5     </DataTemplate>
6   </s:ScatterView.ItemTemplate>
7 </s:ScatterView>
```

Template

Equivalents avec les widgets classiques

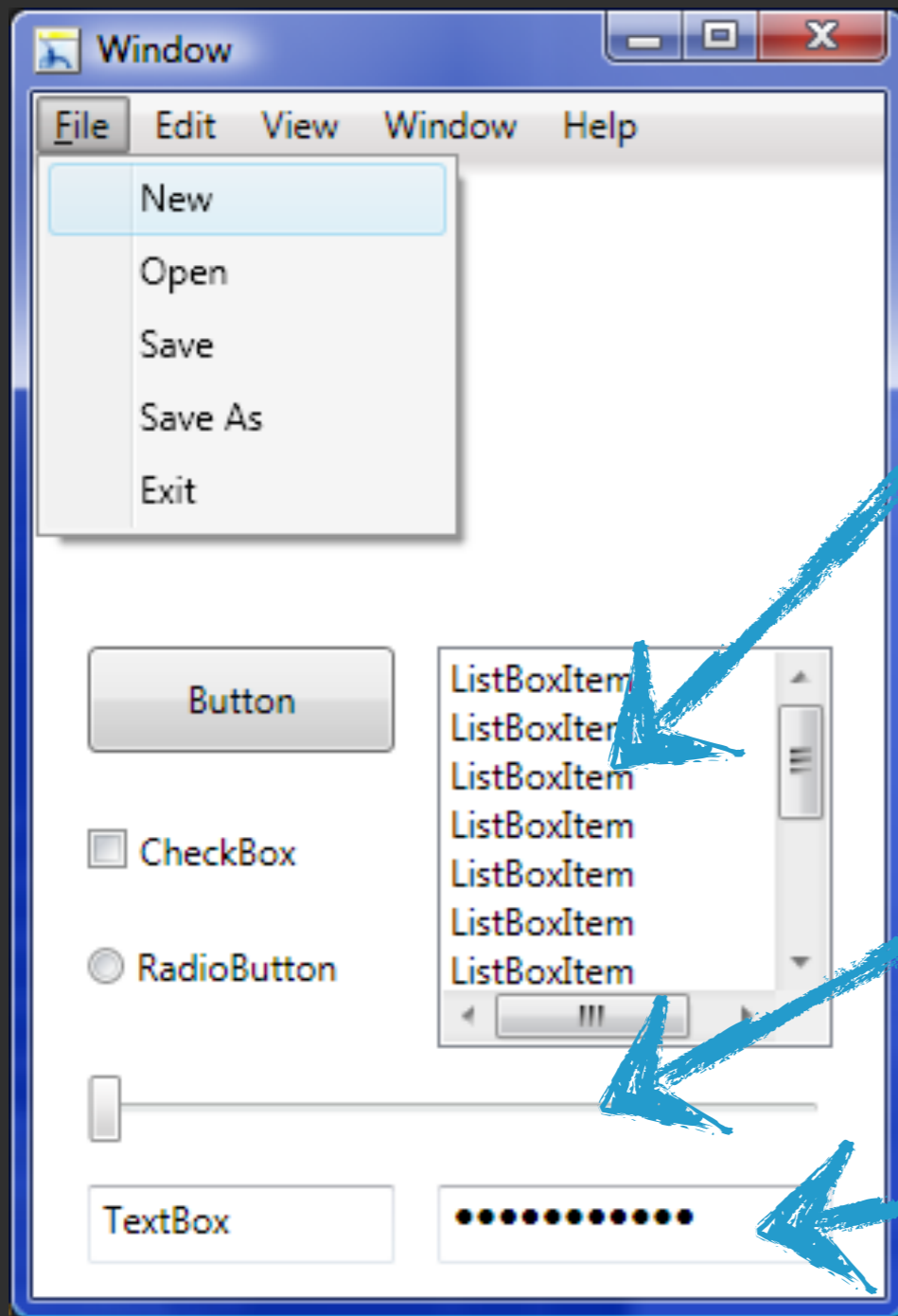


SurfaceWindow

SurfaceMenu
SurfaceContextMenu
SurfaceMenuItem

SurfaceButton
SurfaceRadioButton
SurfaceCheckBox
SurfaceToggleButton

Equivalents avec les widgets classiques



SurfaceListBox
SurfaceScrollView

SurfaceSlider
SurfaceScrollBar

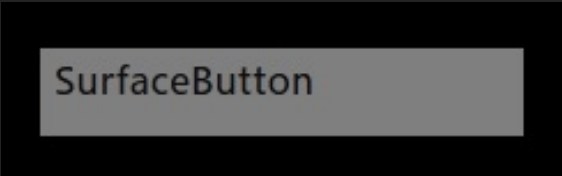
SurfaceTextBox
SurfacePasswordBox

Widgets Surface

```
1 <s:SurfaceWindow xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
2   xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
3   xmlns:s="http://schemas.microsoft.com/surface/2008" >
4
5   <!-- Some code -->
6
7 </s:SurfaceWindow>
```

SurfaceWindow

```
1 <s:SurfaceButton Height="50" Width="300"
2   HorizontalAlignment="Center" VerticalAlignment="Center">
3   Surface Button
4 </s:SurfaceButton>
```

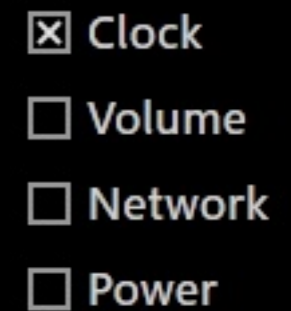


SurfaceButton

SurfaceButton

Widgets Surface

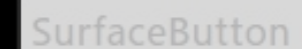
```
1 <s:SurfaceCheckBox HorizontalAlignment="Center"  
2   VerticalAlignment="Center" >  
3   Surface Check Box  
4 </s:SurfaceCheckBox>
```



Clock
 Volume
 Network
 Power

SurfaceCheckBox

```
1 <s:SurfaceToggleButton Height="50" Width="300"  
2   HorizontalAlignment="Center" VerticalAlignment="Center">  
3   Surface Toggle Button  
4 </s:SurfaceToggleButton>
```

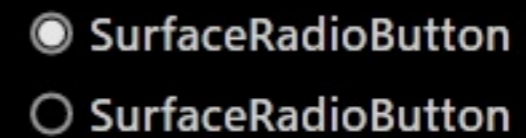


SurfaceButton

SurfaceToggleButton

Widgets Surface

```
1 <s:SurfaceRadioButton HorizontalAlignment="Center"
2   VerticalAlignment="Top">
3   Surface Radio Button
4 </s:SurfaceRadioButton>
```



SurfaceRadioButton

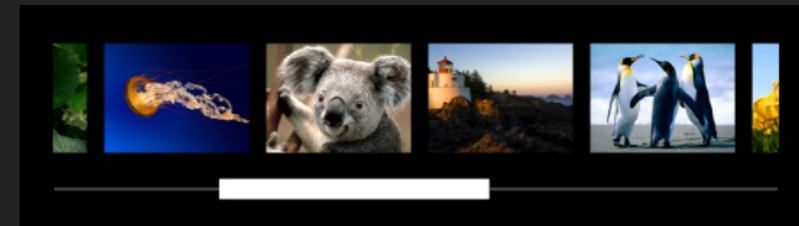
```
1 <s:SurfaceSlider VerticalAlignment="Center"
2   HorizontalAlignment="Stretch"/>
```



SurfaceSlider

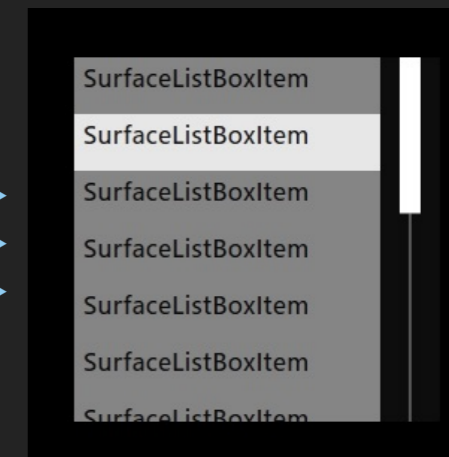
Widgets Surface

```
1 <s:SurfaceScrollViewer>
2   <StackPanel>
3     <Label Background="LightGray">Item 1</Label>
4     <Label Background="DarkGray">Item 2</Label>
5     .
6     .
7     <Label Background="LightGray">Item 19</Label>
8     <Label Background="DarkGray">Item 20</Label>
9   </StackPanel>
</s:SurfaceScrollViewer>
```



SurfaceScrollViewer

```
1 <s:SurfaceListBox Name="ContentSelector"
2   VerticalAlignment="Center" HorizontalAlignment="Left"
3   Margin="15" SelectionChanged="OnSelectionChanged" >
4
5   <s:SurfaceListBoxItem>SurfaceListBoxItem</s:SurfaceListBoxItem>
6   <s:SurfaceListBoxItem>SurfaceListBoxItem</s:SurfaceListBoxItem>
7   <s:SurfaceListBoxItem>SurfaceListBoxItem</s:SurfaceListBoxItem>
8
9 </s:SurfaceListBox>
```



SurfaceListBox

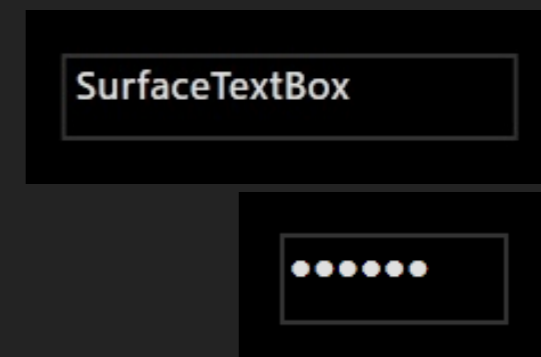
Widgets Surface

```
1 <s:SurfaceInkCanvas Name="SampleInkCanvas"  
2   Height="470" HorizontalAlignment="Stretch"  
3   VerticalAlignment="Top" />
```



SurfaceInkCanvas

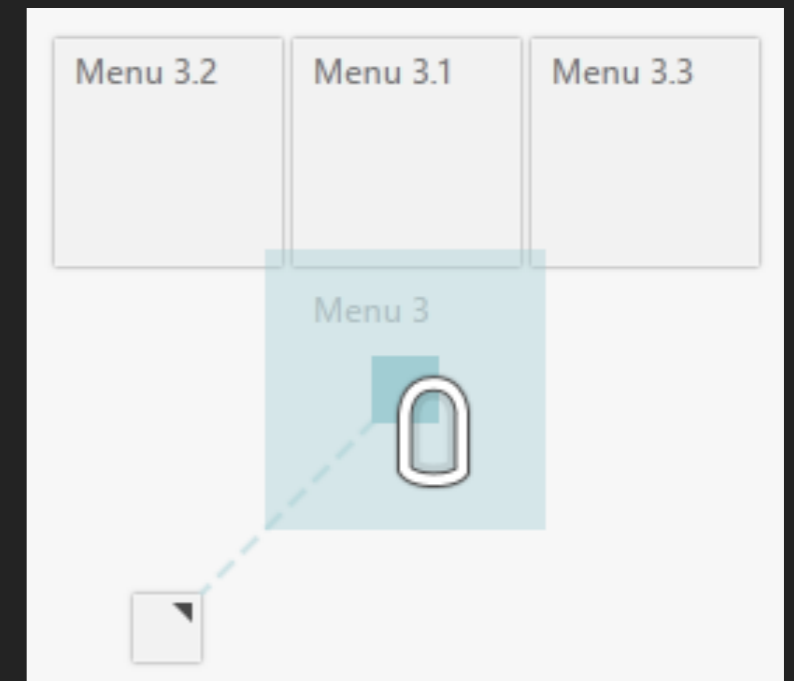
```
1 <s:SurfaceTextBox Height="50" Width="300" >  
2   SurfaceTextBox  
3 </s:SurfaceTextBox>  
4  
5  
6 <s:SurfacePasswordBox Height="50" Width="300" />
```



SurfaceTextBox / SurfacePasswordBox

Widgets Surface

```
1 <s:ElementMenu VerticalAlignment="Top"  
2   HorizontalAlignment="Center" Margin="0,-25,0,0">  
3  
4   <s:ElementMenuItem Header="Menu 3.1" Click="RemoveClicked"/>  
5   <s:ElementMenuItem Header="Menu 3.2" Click="AddClicked"/>  
6   <s:ElementMenuItem Header="Menu 3.3" Click="TestClicked"/>  
7  
8 </s:ElementMenu>
```

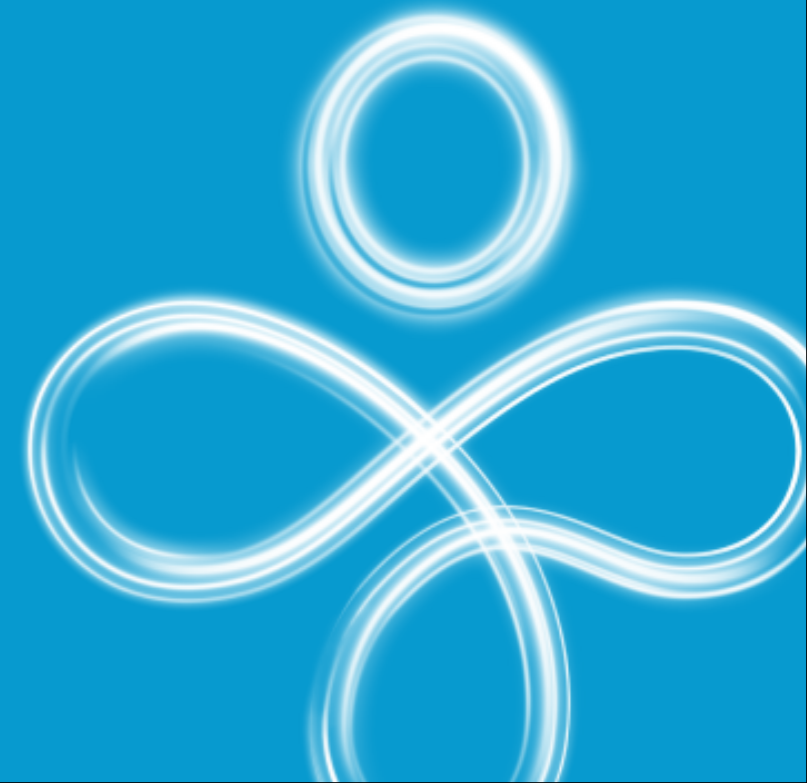


ElementMenu



En vrac

- **Déploiement d'une application**
- **Lancement avec un TAG**



Comment déployer une application ?

- Créer un raccourci (.lnk) vers « MonApplication.xml » au sein du dossier :
 - C:\ProgramData\Microsoft\Surface\v2.0\Programs\

```
1 <?xml version="1.0" encoding="utf-8" ?>
2 <!--
3 This file contains the information needed to install your application
4 with the Surface Shell. Please refer to the documentation for deployment
5 instructions.
6 -->
7 <ss:ApplicationInfo xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
8   xmlns:ss="http://schemas.microsoft.com/Surface/2007/ApplicationMetadata">
9
10   <Application>
11     <Title>SurfaceApplication</Title>
12     <Description>My new Surface application description</Description>
13     <ExecutableFile>SurfaceApplication.exe</ExecutableFile>
14     <Arguments></Arguments>
15     <IconImageFile>InstalledAppInfo\AppIcon.png</IconImageFile>
16   </Application>
17
18 </ss:ApplicationInfo>
```

MonApplication.xml

Lancer une application avec un TAG

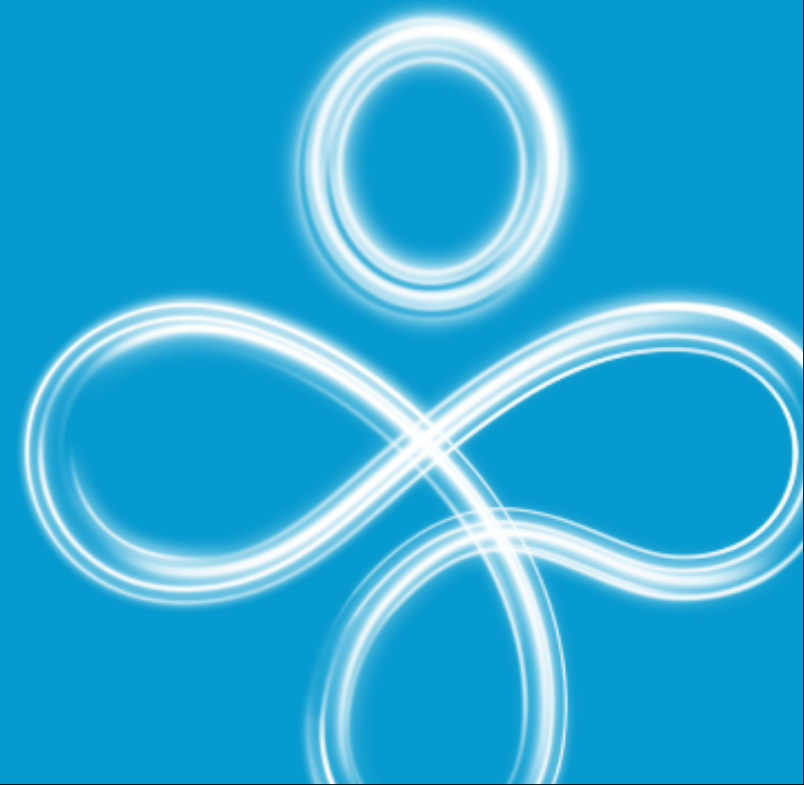
- Ajoutez une balise <Tags> au sein du fichier « MonApplication.xml »

```
1 <?xml version="1.0" encoding="utf-8" ?>
2 <!--
3 This file contains the information needed to install your application
4 with the Surface Shell. Please refer to the documentation for deployment
5 instructions.
6 -->
7 <ss:ApplicationInfo xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
8   xmlns:ss="http://schemas.microsoft.com/Surface/2007/ApplicationMetadata">
9
10  <Application>
11    . . .
12
13    <!-- Tags -->
14    <Tags>
15      <Tag Value="0xC1">
16        <Actions>
17          <Launch/>
18        </Actions>
19      </Tag>
20    </Tags>
21  </Application>
22 </ss:ApplicationInfo>
```



Conclusion

L'interaction est la clé
Le design joue un rôle très important
L'utilisateur est au centre



Webographie

- **Documentation Surface**

- [http://msdn.microsoft.com/en-us/library/ff727815\(Surface.20\).aspx](http://msdn.microsoft.com/en-us/library/ff727815(Surface.20).aspx)

- **Site Surface**

- <http://www.microsoft.com/en-us/pixelsense/default.aspx>

- **Surface development center**

- <http://msdn.microsoft.com/fr-fr/windows/desktop/hh241326.aspx>

