

Cross-platform User Interfaces

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DYALOG

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(Big) Bets We Are Placing



1. Parallel Processing is getting Critical
2. New Platforms will soon be Important
3. Most new User Interfaces will use either HTML5/JS or WPF/XAML



2. New Platforms



- UNIX variants
 - ARM Linux (Raspberry Pi), Apple OSX, Android
- Windows variants without Win32
 - **UWP**, New Servers, Windows for ARM
- Our new tools are designed to be cross-platform
 - RIDE, MiServer, SAWS, R-Connect, DyaCrypt
 - Some old ones too: Conga, SQAPL, ...
- Our goal is to allow future apps to be developed on (any) one platform and deployed on (any) other



3. User Interfaces



- **Cross-platform apps will use HTML5 and Javascript** to define the user interface (for at least 5 years)
- **Some New Microsoft Desktop and UWP apps will use WPF. UWP is also XAML-based.**
 - WPF and "UWP" will morph into a single toolset
- We will support data binding and "MVVM" style application building with both these tools
- We are looking at embedded HTML5/JS rendering engines to allow the same UI to service Web and Desktop or "Phablet" applications.



Dyalog-Supported UI Technologies

All of the following are being actively enhanced:

- Win32 / WC
 - Occasional addition of features on demand, like support for touch & high DPI screens - underlying platform is now "stable"
- Windows Presentation Foundation => UWP
 - DataBinding and other .NET interface enhancements
 - Syncfusion Controls bundled with Dyalog APL
 - Working with Michael Hughes on tools and training materials
- HTML5/JavaScript
 - MiServer
 - Syncfusion Controls bundled with Dyalog APL



MiServer Growing Up

- Has been coming for some time
 - Stefanos WildServer
 - Mortens MildServer 1.0
 - Brians MiServer 2.0
 - Adám, Dan, Morten - but still mostly Brians MiServer 3.0
- Each was usable to a larger group than before
- With MiServer 3.0 we think everyone can play



What is MiServer?



Well... First - What is `□WC`?

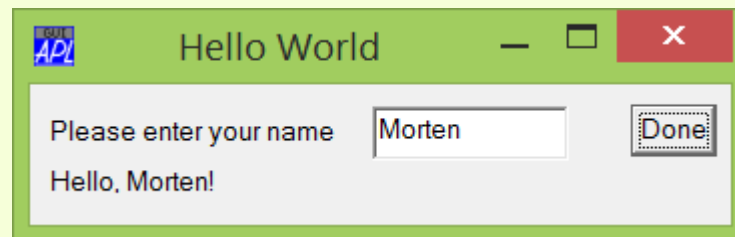
- A set of classes for creating GUI

```
'F1'□WC'Form' 'Hello World'('Coord' 'Pixel')('Size'(70 300))
'F1.label'□WC'Label' 'Please enter your name'(10 10)
'F1.name'□WC'Edit' ''(10 170)(θ 100)
'F1.done'□WC'Button' 'Done'(10 300)
'F1.done'□WS'Event' 'Select' 'CallbackFn'
'F1.result'□WC'Text' ''(40 10)
```

▽ CallbackFn

```
F1.result.Text←'Hello, ',(F1.name.Text),'!'
```

▽

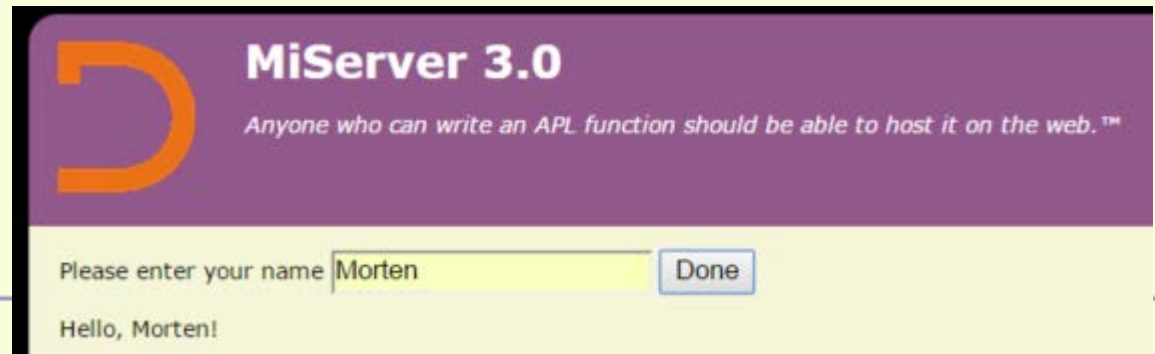


What is Mi Server?

- A set of classes for creating GUI

```
F1←Add _.Form ◊ Add _.Title 'Hello World'
('for' 'name') F1.Add _.label 'Please enter your name'
'name' F1.Add _.EditField
done←'done' F1.Add _.Button 'Done'
done.On 'click' 'CallbackFn'
'result' F1.Add _.div
```

```
▽ r←CallbackFn
:Access Public
r←'#result' Replace _.p ('Hello, ',(Get'name'),'!')
▽
```



Rosetta Code – WC vs MiServer

```
'F1'⎕WC'Form' 'Hello World'('Coord' 'Pixel')('Size'(70 300))
F1←Add _.Form ⋄ Add _.Title 'Hello World'

'F1.label'⎕WC'Label' 'Please enter your name'(10 10)
('for' 'name') F1.Add _.label 'Please enter your name'

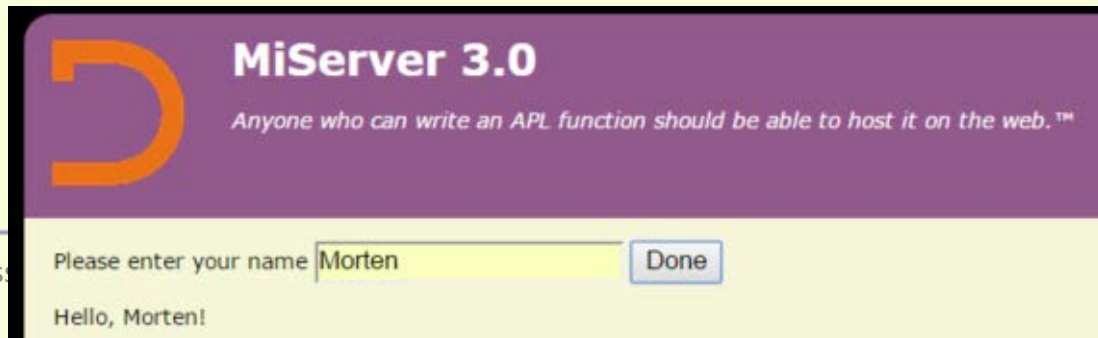
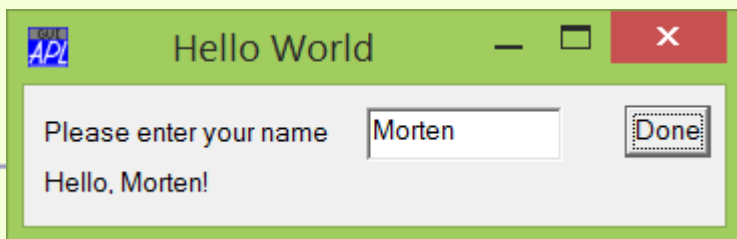
'F1.name'⎕WC'Edit' ''(10 170)(θ 100)
'name' F1.Add _.EditField

'F1.done'⎕WC'Button' 'Done'(10 300)
done←'done' F1.Add _.Button 'Done'

'F1.done'⎕WS'Event' 'Select' 'CallbackFn '
done.On 'click' 'CallbackFn'

'F1.result'⎕WC'Text' ''(40 10)
'result' F1.Add _.div

▽ CallbackFn
F1.result.Text←'Hello, ',(F1.name.Text),'!'
r←'#result' Replace _.p ('Hello, ',(Get'name'),'!')
```



Let's Take a Look

- The MiServer Home Page
<http://miserver.dyalog.com>



Uses of MiServer

At Dyalog'15

- **(U06) Ants, AJAX and APL**
Ray Cannon
- **(U13) TamStat, a Statistical Package**
Steve Mansour & Jerry Brennan
- A demonstration UI build for a new insurance application:
<http://127.0.0.1:8081>



Automated Testing with Selenium

- Selenium is a cross-platform tool for web ui testing
- <c:\devt\Selenium\selenium.dws>



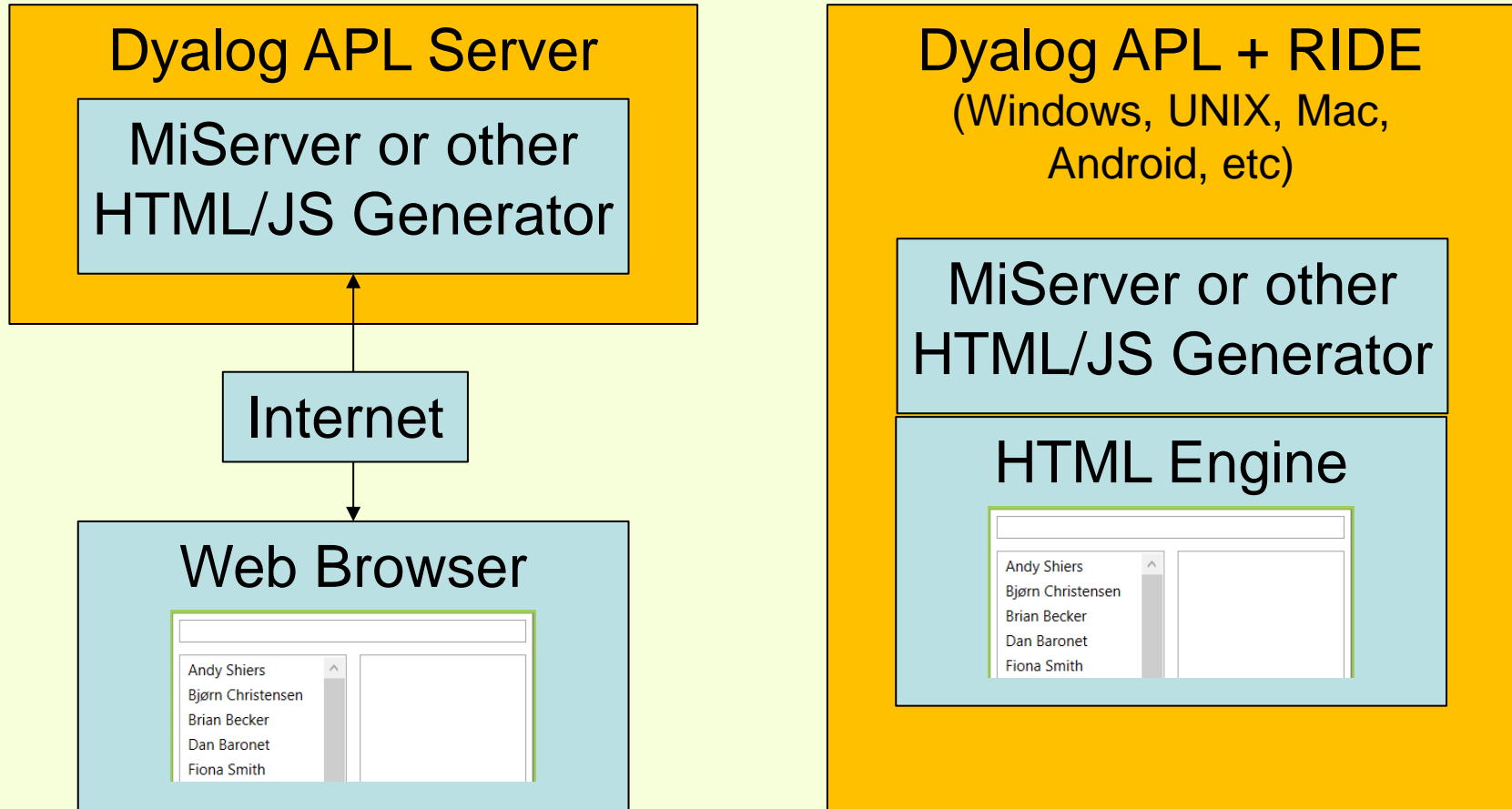
How to Get Started?

- Get it from <https://github.com/Dyalog/MiServer>

```
)LOAD miserver.dws  
Start 'MS3' @ The sample site  
]open http://127.0.0.1:8080
```



Not Only Web Applications



<c:\dropbox\Dyalog15\cefsimple\Release\loadurl.dws>



What else is Mi Server?

- A set of classes for creating GUI plus...
- A Web Server to deliver content to Web Browsers
 - And receive input from browsers
- Classes for delivering *Web Services* to application clients which render own GUI
 - "SAWS" is being integrated with MiServer and will also support RESTful web services
- A Framework for multi-user application deployment
- <C:\devt\miserver\ms3>



Summary – Cross Platform UI

- With version 3.0, MiServer is ready for use by “anyone who can write an APL function”
- Dan & Adám will present the growing library of supported Controls or “Widgets” tomorrow
- Easy to use by non-technical developers but easy for experts to extend using Javascript etc
- You can start writing apps that will render UI’s from Windows, Linux, AIX & OSX now!
- Android, UWP and iOS “soon”



Cross Platform

- From Cross Platform UI
to
Cross Platform File Functions

... Next up is Richard Smith

