

Web Browser Control

PxPlus 2017 (v14) & PxPlus 2018 (v15)

Agenda

- Web browser control
- Internet Explorer control
- Chromium control
 - Properties
 - Methods
 - Events
- Switching to the Chromium control
- Backwards compatibility



Web Browser Control

Practical deVices
eXtraordinaire

1234 Mystreet Ave.
Suite 999
Markham, ON
Canada
M1M 1M1

Invoice Number: 000002
Invoice Date: 2015-12-01

Sold To: Flagship Importers
7599 whatever
New York
NM, U.S.
07685

Ship To: Flagship Importers
7599 whatever
New York
NM, U.S.
07685

Attention: Lauren Newton

Account #	Customer Phone	Payment Type	Sales Rep
000011	510-239-9481 x950	Visa	Justin Case

Quantity	Product Code	Product Description	Unit Cost	Total
90	0000700SWH	Whatsit - Small, White	89.00	8,010.00
8	0000300SSS	Jigger - Small, Stainless Steel	70.40	563.20
3	0000300LWH	Jigger - Large, White	64.00	192.00

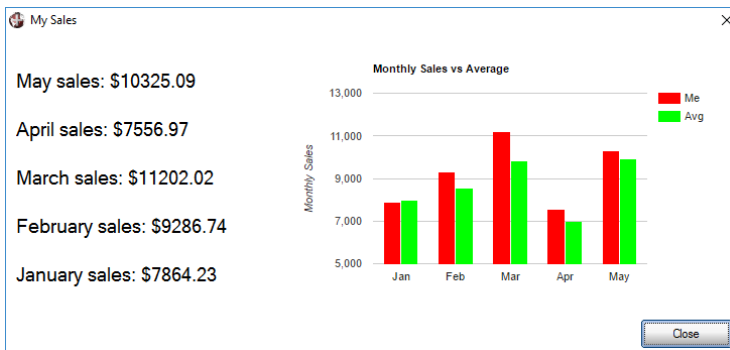
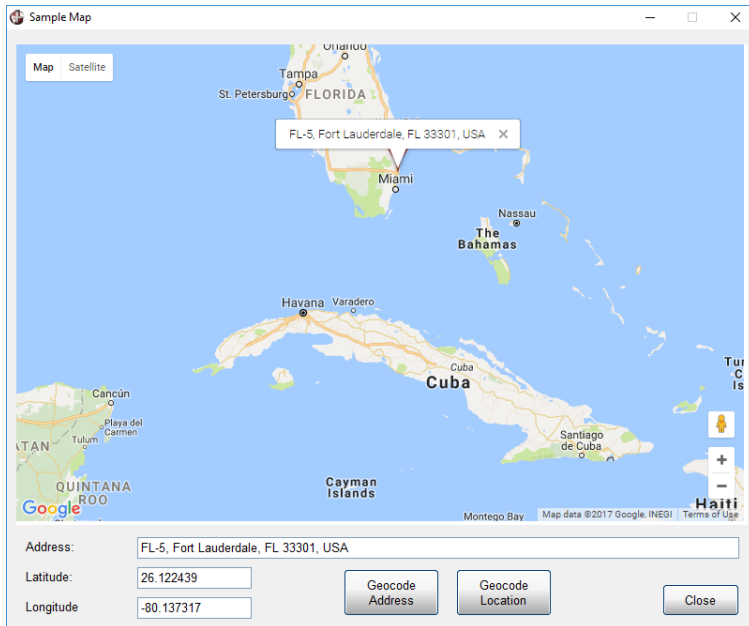
Merchandise Total: 8,765.20
Tax: 525.91
Balance Due: 9,291.11

Due Date: 2015-12-31

- Embed a web browser into your screens
 - HTML and JavaScript rendering
 - Local or remote
 - Print
- Form submission
- Playing videos
- Viewing PDF documents
- Web applications

Web Browser Control

- Examples
 - Google Map control
 - Ed+ editor
 - Chart controls
 - Display help



Web Browser Control

- Two types of web browser control
 - Microsoft Internet Explorer control
 - Also known as Shell.Explorer



-
- Chromium control



2017



Internet Explorer Control

- COM control provided by Microsoft that allows you to embed a web browser
 - Available by default on all versions of Windows
- Reliable for simple web sites
- Easy to use if just loading a web site
- Prior to PxPlus 2017 used by PxPlus utilities

Internet Explorer Control



- Drawbacks
 - Windows updates can break your application
 - Less web standards compliance
 - Slow performance
 - Cannot view PDFs
 - Cannot execute JavaScript directly



Internet Explorer Control

- Ways to use
 - Nomads COM control
 - Select ActiveX control and then select Microsoft Web Browser
 - COM object

```
DEF OBJECT ie, @(1,1,30,30) = "shell.explorer.2"
```

- Microsoft defined properties, methods, and events



Chromium Control

- Embedded Chromium web browser built into PxPlus
 - Built using Chromium Embedded Framework
 - No need to have Chrome/Chromium installed
- Reliable for simple and complex web sites
- Easy to use for loading and interacting with web sites



Chromium Control

- Windows updates will not break it, we control when it is updated
- Execute JavaScript directly
- Built-in spell checker
- Drop in replacement for Internet Explorer control

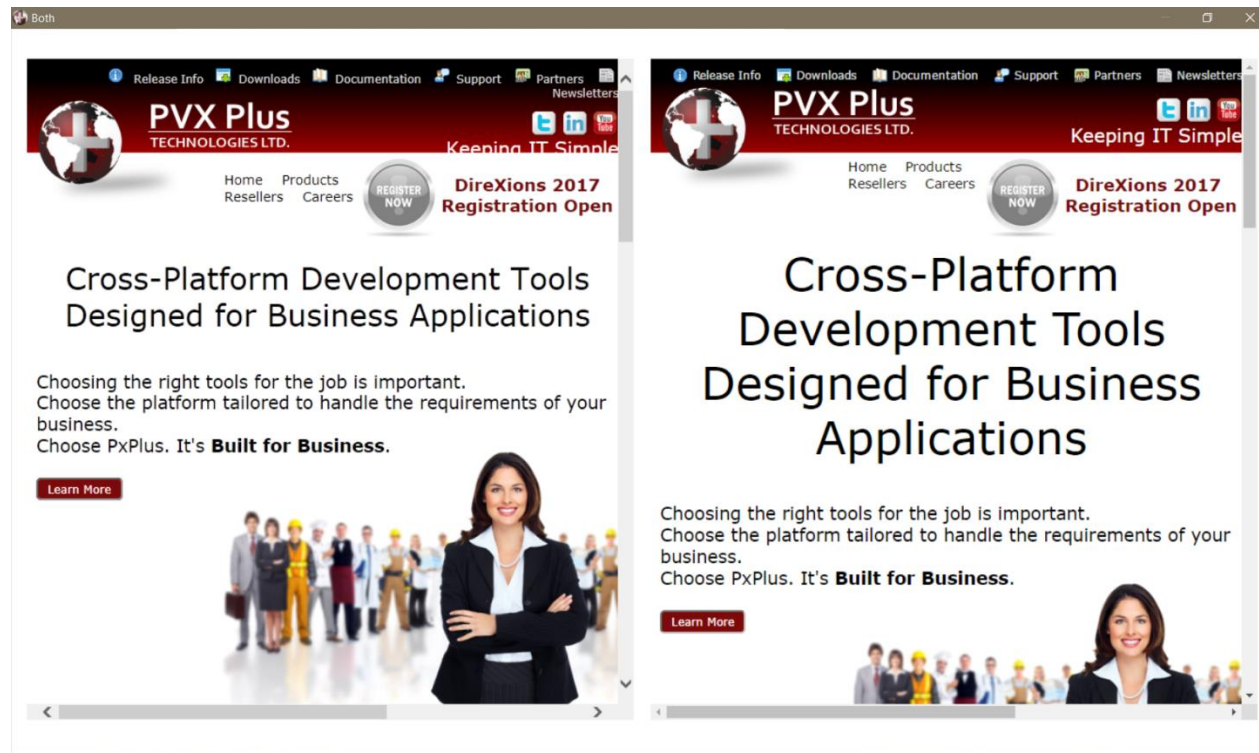
Chromium Control



- Best in-class web standards compliance

Shell.Explorer

Chromium



DireXions 2018

Chromium Control

- Defaults to incognito mode
 - Browser Incognito mode ('BI') system parameter
- Ways to use
 - Nomads COM control
 - Select Chromium browser via COM control drop down
 - ***BROWSER** system object



```
DEF OBJECT chrome, @(1,1,30,30) = "*browser"
```



Chromium Control Properties

- Position and size (Get/Set)
 - Col, Cols, [Pvx]Height, [Pvx]Left, Line, Lines, [Pvx]Top, [Pvx]Width
 - chrome'Height=100
 - chrome'Width=35
- Web page title (Get)
 - Title\$, LocationName\$
 - PRINT 'CAPTION'(chrome'Title\$)
- Web page URL (Get/Set)
 - URL\$, LocationURL\$
 - chrome'URL\$="www.pvxplus.com"
 - chrome'URL\$="file:\\C:\pdfs\custList.pdf"

Chromium Control Properties



- HTML document object (Get)
 - Document
 - Used to access and/or change the contents of the web site
- Browser objects (Get)
 - History, Location, Navigator, Screen, Window
 - Used to access and/or change things about the embedded browser



Chromium Control Properties

- Event info (Get)
 - PvxEvents
 - PxPlus class object that is handling events
 - PvxEvents\$
 - list of events names
- For Internet Explorer control compatibility (Get)
 - PvxExtData\$
 - Always an empty string



Chromium Control Methods

- Navigation
 - `Navigate[2](url$), GoBack(), GoForward()`
- Control
 - `Refresh[2](), Stop()`
- Execute JavaScript
 - `ExecJS[$](javascript$)`
 - Returns the result, if any

Chromium Control Events



- Just **before** navigating to a new resource URL
 - ***BeforeNavigate[2]***

Argument	Description
pDisp	Always zero (Shell.Explorer2 Compatibility)
URL	Variant object containing the URL to be navigated to as a string
Flags	Variant object containing 0 (Shell.Explorer2 Compatibility)
TargetFrameName	Variant object containing the name of the frame to be navigated to as a string
PostData	Variant object containing the navigation request post data as a string
Headers	Variant object containing the navigation request headers as a string
Cancel	A number that can be set to non-zero in the event handler to cancel the navigation



Chromium Control Events

- Perform a **DEF OBJECT** on arguments, to convert them to a PxPlus ***VARIANT** object.
 - Use the **VAL** property to access what the variant stores.
- Any PxPlus event handler for this event must **not** use any of the following; otherwise, the system will hang if used:
 - **ExecJS** method
 - HTML Document object or related properties
 - Browser objects or related properties

Chromium Control Events



- Just after the title changes
 - ***TitleChange***

Arguments	Description
NewTitle\$	String with the new title

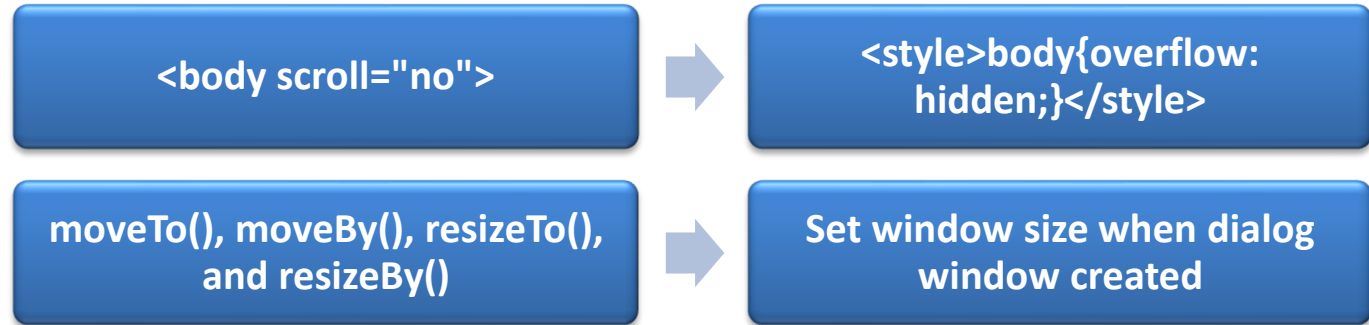
- When a download begins or completes
 - ***DownloadBegin***
 - No arguments
 - ***DownloadComplete***
 - No arguments

Switching to the Chromium Control

- How to switch
 - In Nomads, COM Control Properties select Chromium browser
 - In code, just change "Shell.Explorer.2" to "*browser" on a DEF OBJECT
- Changed all PxPlus programs that used the Internet Explorer control to use Chromium control
 - Almost all required little or no extra work

Switching to the Chromium Control

- Possible changes needed
 - Convert Internet Explorer specific HTML and/or JavaScript



Switching to the Chromium Control

- Possible changes needed
 - Optionally remove any `WAIT` directives after navigate
 - No longer needed as Chromium waits by default
 - Workaround unsupported less common Internet Explorer control properties, methods, and events
 - Use the document property and/or JavaScript
 - Call to OS specific extensions such as `mailto:...`
 - Added in PxPlus 2018
 - Not available in 2017



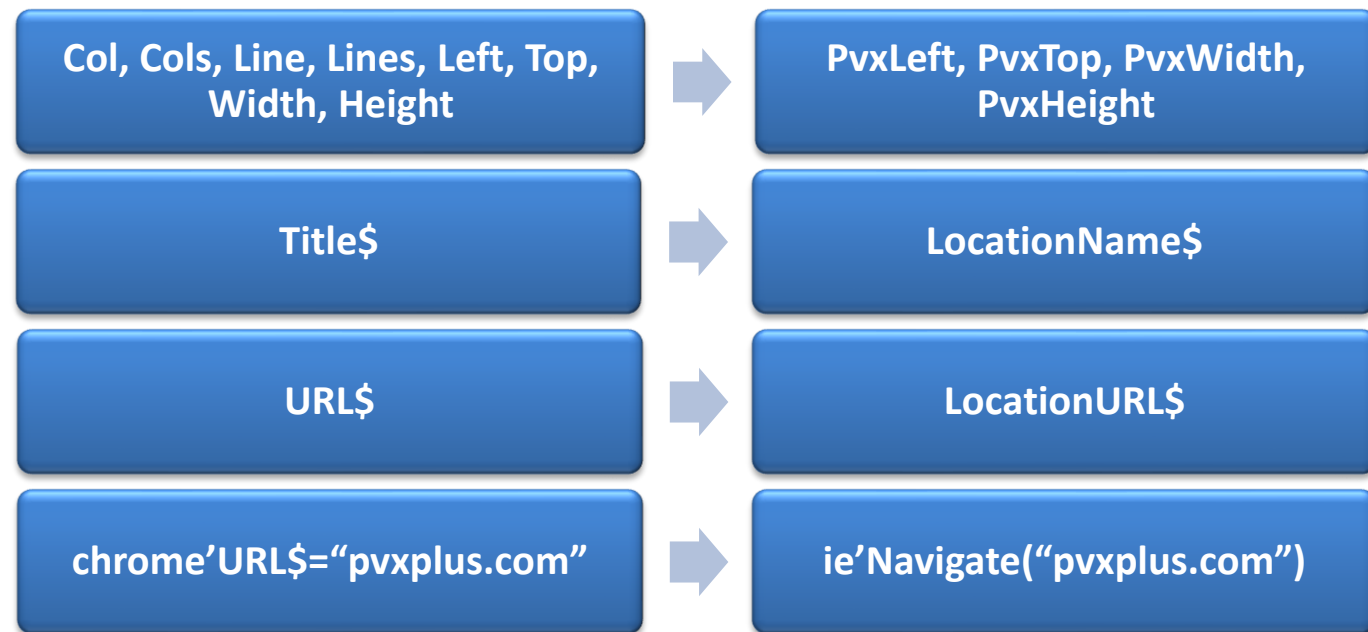
2018

Backwards Compatibility

- Is it possible to switch from the Chromium control back to the Internet Explorer control?
 - Yes, quite easily
 - Less likely you will need or want to do this
- Likely a simple change from the Chromium control to the Internet Explorer control is all that is required

Backwards Compatibility

- Possible changes needed
 - Convert new Chromium control property names



Backwards Compatibility

- Possible changes needed
 - Workaround executing JavaScript directly
 - Use document object and write JavaScript function that simply evaluates JavaScript then call it using the `document.parentWindow` object
 - Rework Chromium specific HTML or JavaScript
 - If you access the document object immediately after navigation you will need to add a short WAIT

Review

- PxPlus 2017 includes new *BROWSER control
- Compared Internet Explorer and Chromium
 - Differences and why the change
- Reviewed Chromium control
 - Properties, Methods and Events
- Programming changes needed to switch
- Compatibility Issues

Additional Resources

The help link(s) below refer to the current on-line help pages. The functionality may have been further updated since the PxPlus 2018 (version 15) release.

- [*Browser Chromium Browser Object](#)
- [Browser Incognito Mode](#)
- [COM Control](#)