



# What's New in PxPlus

DireXions 2025 – Pathways to Progress



# Agenda

Major Enhancements

Language Enhancements

Graphical Enhancements

Create Base Webster+ Page(s)





What's New in PxPlus 2025

# Major Enhancements

Pathways to Progress



# .NET Interface

- The [.NET Interface](#) establishes a direct integration pathway with the .NET ecosystem, enabling PxPlus applications to interoperate with .NET libraries, frameworks, and tools
- Opens access to the vast .NET ecosystem, allowing developers to extend PxPlus applications with modern functionality, leverage existing .NET components, and streamline cross-platform development
- Two ways to define and interact with a .NET object
  - PxPlus program
  - NOMADS panel

Learn more at the .NET Interface  
Presentation



# JSON Object

- The new [JSON Object](#) provides a more intuitive and efficient way to work with JSON data compared to associative arrays
- The new object behaves like an associative array but extends functionality with methods that simplify data manipulation

Learn more at the JSON Object  
Presentation

# Security Updates and Enhancements

To maintain continued compliance, compatibility, and protection against known vulnerabilities, the following core security modules have been updated:

- **OpenSSL 3.5.0** - Provides the cryptographic library used for secure communications (TLS/SSL)
  - Importance: Updates address security vulnerabilities, adds support for stronger ciphers, and maintains compliance with modern security standards
- **Curl 8.13.0** - Handles secure data transfer over multiple protocols (HTTPS, FTP, etc.)
  - Importance: Updating Curl ensures compatibility with the latest server-side requirements, improves performance, and patches security flaws
- **Plink 0.83** - Command-line connection tool for SSH, that supports secure remote connections and tunneling
  - Importance: The update enhances SSH security, fixes protocol issues, and ensures stronger authentication support
- **CA Root Certificates (Latest Set)** - Provides the trusted certificate authorities used to validate SSL/TLS connections
  - Importance: Ensures that encrypted connections remain trusted and secure by including newly recognized authorities and removing expired ones

# Security Updates and Enhancements

Updated **PxPlus SQL ODBC Driver** and **PxPlus SQL Server** to utilize OpenSSL 3.5.0 for enhanced security and compliance. Now at 8.10.0000

- Importance: Ensures compatibility with the latest cryptographic standards, addressing known vulnerabilities, improving TLS performance, and maintaining alignment with current industry security practices

Added OAuth2 authorization support to the SMTP and Web Email utilities to replace legacy username/password authentication

- Security: OAuth2 removes reliance on less secure basic authentication, mitigating risks of phishing, credential stuffing, and password leaks
- Compliance: Many providers (Google, Microsoft, etc.) have deprecated or are deprecating basic authorization in favor of OAuth2
- User Experience: Tokens can be refreshed automatically without forcing users to repeatedly enter credentials
- Future Proofing: Keeps the utilities compatible with evolving email standards and cloud-hosted providers



What's New in PxPlus 2025

# **Language Enhancements – Directives and Objects**

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# Directives – Dump Disable

Directive	Description		
<a href="#">Dump Disable</a>	<p>The <b>Dump Disable</b> directive has been enhanced to accept pattern strings, giving finer control over which variables (both regular and global) are excluded from the dump. Wildcards such as *, ? are supported</p> <table><tr><td><pre>%var_a\$="abc", %var_b=123 c_test\$="xyz", d_test=345 myvar\$="zzz", myvar=99</pre><p><b>Dump</b></p><pre>d_test=345 myvar=999 c_test\$="xyz" myvar\$="zzz" !Global variables (%...) %var_a\$="abc", %var_b=123</pre></td><td><pre>%var_a\$="abc", %var_b=123 c_test\$="xyz", d_test=345 myvar\$="zzz", myvar=99</pre><p><b>Dump Disable "%var_*","?_test"</b></p><p><b>Dump</b></p><pre>myvar=999 myvar\$="zzz" !Global variables (%...)</pre></td></tr></table>	<pre>%var_a\$="abc", %var_b=123 c_test\$="xyz", d_test=345 myvar\$="zzz", myvar=99</pre> <p><b>Dump</b></p> <pre>d_test=345 myvar=999 c_test\$="xyz" myvar\$="zzz" !Global variables (%...) %var_a\$="abc", %var_b=123</pre>	<pre>%var_a\$="abc", %var_b=123 c_test\$="xyz", d_test=345 myvar\$="zzz", myvar=99</pre> <p><b>Dump Disable "%var_*","?_test"</b></p> <p><b>Dump</b></p> <pre>myvar=999 myvar\$="zzz" !Global variables (%...)</pre>
<pre>%var_a\$="abc", %var_b=123 c_test\$="xyz", d_test=345 myvar\$="zzz", myvar=99</pre> <p><b>Dump</b></p> <pre>d_test=345 myvar=999 c_test\$="xyz" myvar\$="zzz" !Global variables (%...) %var_a\$="abc", %var_b=123</pre>	<pre>%var_a\$="abc", %var_b=123 c_test\$="xyz", d_test=345 myvar\$="zzz", myvar=99</pre> <p><b>Dump Disable "%var_*","?_test"</b></p> <p><b>Dump</b></p> <pre>myvar=999 myvar\$="zzz" !Global variables (%...)</pre>		

# Directives – Def Object

Directive	Description
<a href="#">Def Object</a>	<p>The <b>Def Object</b> directive has been enhanced to support the creation of .NET objects, enabling seamless interaction between PxPlus and the .NET ecosystem</p> <pre>Def Object ext_id, [@(col,ln,wth,ht),] objDef\$[, arg_1[\$], arg_2[\$], ..., arg_n[\$]]</pre> <p><b>objDef\$</b> is a string of the format "[.NET]DLLName,ObjectName"</p> <p><b>arg_1[\$]-arg_n[\$]</b> are optional numeric or string variables that can be passed to the .NET object on creation</p>

# Objects - ArrayList

Object	Description
<a href="#">Array List</a>	<p>Enhanced array list handling with new methods for appending and inserting. Similar data structures in other languages include C++ vectors and Java ArrayLists</p> <p><b>Append_from_array</b> - Adds all the values from another array to the end of the array list. Returns new array size</p> <p><b>Insert_from_array</b> - Adds all the values from another array at an index in the array list. Returns new array size</p>



# Objects – ArrayList Example

```
!Create objects
animals = new("*obj/ArrayList")
numbers = new("*obj/ArrayList")

! Append values to animals
animals.append("Cat")
animals.append("Dog")
! animals = (Cat, Dog)

! Append values to numbers
numbers.append(1)
numbers.append(2)
! numbers = (1, 2)

animals.append_from_array(numbers) ! Append numbers to animals
! animals = (Cat, Dog, 1, 2)
print animals.get$(3)
>1

numbers.insert_from_array(2, animals) ! Insert animals into numbers at index 2
! numbers = (1, Cat, Dog, 2)
print numbers.get$(2)
>Cat
```

# Objects - OAuth2

Object	Description
<a href="#">OAuth2</a>	<p>The OAuth2 authorization object now supports a Microsoft service type in its Service property. It will automatically set the authorization and token URLs for the service</p> <p>! Initialize OAuth2 object</p> <pre>OAuth2=new("*obj/oauth2") OAuth2.Service\$="microsoft"</pre>

# Objects – Excel/Word

Object	Description
<a href="#">Excel</a> <a href="#">Word</a>	<p>Added the ability to bind to a running instance of Excel object or Word object with new options</p> <p>Binding to a running instance of Excel, you may pass the <b>[running]</b> option</p> <pre>excel_obj=NEW("*obj/excel","running")</pre> <p>Binding to a running instance of Excel, but are unsure if it's running, you may pass the <b>[running or new]</b> option</p> <pre>excel_obj=NEW("*obj/excel","running or new")</pre>



# Objects – Excel

Object	Description
<a href="#">Excel</a>	<p>New cell formatting methods added to Excel object</p> <p><a href="#">AutoFitAll</a> - Sets the AutoFit property for all columns and rows in a worksheet</p> <p>AutoFitAll( ) – active worksheet AutoFitAll(worksheet) – specified worksheet index AutoFitAll(worksheet_name\$) – specified worksheet by name</p> <p><a href="#">AutoFitColumns</a> - Sets the AutoFit property for the columns for a range of cells in a given worksheet</p> <p>AutoFitColumns( ) – entire active worksheet AutoFitColumns(cells\$) – cell range ("A2:D5") AutoFitColumns(cells\$,worksheet) – cell range and specified worksheet index AutoFitColumns(cells\$,worksheet_name\$) - cell range and specified worksheet name</p>

# Objects – Excel

Object	Description
<a href="#">Excel</a>	<p>New cell formatting methods added to Excel object</p> <p><a href="#">AutoFitRows</a> - Sets the AutoFit property for the rows in a range of cells in a given worksheet</p> <p>AutoFitRows( ) - entire active worksheet AutoFitRows(cells\$) - cell range ("A2:D5") AutoFitRows(cells\$,worksheet) - cell range and specified worksheet index AutoFitRows(cells\$,worksheet_name\$) - cell range and specified worksheet name</p>

# Objects – Google Workspace

Object	Description
<a href="#">Google Workspace</a>	<p>New cell formatting methods added to <a href="#">Google Sheets Object</a></p> <p><a href="#">AutoFitAll</a> - Auto resizes all column widths and row heights based on cell content in a sheet</p> <p>AutoFitAll( ) AutoFitAll(sheet) AutoFitAll(sheet_name\$)</p> <p><a href="#">AutoFitColumns</a> - Auto resizes all column widths and row heights based on cell content in a sheet</p> <p>AutoFitColumns( ) AutoFitColumns(cells\$) AutoFitColumns(cells\$, sheet) AutoFitColumns(cells\$, sheet_name\$)</p>



# Objects – Google Workspace

Object	Description
<a href="#">Google Workspace</a>	<p>New cell formatting methods added to <a href="#">Google Sheets object</a></p> <p><a href="#">AutoFitRows</a> - Auto resizes row heights based on cell content for a range of cells in a given sheet</p> <p>AutoFitRows( ) AutoFitRows(cells\$) AutoFitRows(cells\$,sheet) AutoFitRows(cells\$, sheet_name\$)</p>

# Objects – XML

Object	Description
<u>XML</u>	<p>New methods added to XML object</p> <p><u>Load_json</u> - Sets the XML object using a JSON object Load_json(jsonObj)</p> <p><u>Load_xml_file</u> - Loads the XML object from the data in the given XML file Load_xml_file(path\$)</p> <p><u>Save_xml_file</u> - Saves the XML data from the object to a file Save_xml_file(path\$)</p>



What's New in PxPlus 2025

## **Utilities – OAuth2 Support**

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# Utilities - *\*web/email*

*\*web/email* utility was enhanced to add support for OAuth2 authentication

CALL "*\*web/email*"[,ERR=stmtref], fromaddress\$, replyaddress\$, toaddress\$, ccaddress\$, bccaddress\$, subject\$, message\$, attachments\$, option\$, smtpserver\$, servertimeout, linewrapsat, body encoding\$, eraseit, errormsg\$, senddirectory\$, savedfilename\$[,**accesstoken\$**]

**accesstoken\$** - OAuth2 access token

- If it has a value, OAuth2 authentication will be used with the SMTP server
- If blank, no OAuth2 authentication is done
- Default is blank



# Utilities - \*web/email Example

**Example** – To send email with the OAuth2 authorization code

```
oAuth2=new("*obj/oauth2")
oAuth2'Service$="microsoft" ! Setting the service to use
oAuth2'client_id$=clientID$
oAuth2'client_secret$=clientSecret$
oAuth2'Enable_Certification("Consent granted to Example App to send e-mail via your Microsoft account")
WAIT 1
url$=oAuth2'Get_Authorization_URL$("https://outlook.office.com/SMTP.Send,offline_access")
system_help url$
input "Press any key to continue after logging into account and allowing PxPlus access:",*;print "" ! Wait for
user
oAuth2'Get_Access_token()
refreshToken$=oAuth2'Refresh_token$
accessToken$=oAuth2'Access_token$ ! Access token being set
drop object oAuth2

call "*web/email","example@outlook.com","", "someone@example.com","", "", "Test Please Ignore", "Hi this is a test
from PxPlus."+$0D0A$+"Hello World","", "N", "smtp-mail.outlook.com"+" ";"+"587"+" ";"+"example@outlook.com",0,-
1,"",1,errormsg$,"",savedfilename$,accessToken$
```

# Utilities - *\*web/testemail*

*\*web/testemail* utility was enhanced to add support for OAuth2 authentication

CALL "*\*web/testemail;test\_name*",from\$,smtp\_server\$,username\$,password\_or\_accesstoken\$,to\$

- Added two new options to **test\_name**
  - **OAUTH\_SSL\_TEST** - Uses OAuth2 authentication, enables SSL and uses the default SSL/SMTP Port 465. It will connect encrypted via SSL
  - **OAUTH\_STARTTLS\_TEST** - Uses OAuth2 authentication and uses the default STARTTLS/SMTP Port 587. It will connect encrypted via STARTTLS
- **accesstoken\$** - The OAuth2 access token if using OAuth test type

CALL "*\*web/testemail;OAUTH\_STARTTLS\_TEST*", "test@myserver.ca", "smtp.myserver.ca", "test@myserver.ca", "**myaccesstoken**", test@yourserver.com

# Utilities - *\*web/smtp*

*\*web/smtp* utility was enhanced to add support for OAuth2 authentication

```
CALL "*web/smtp"[,ERR=stmtref], filename$, smtpserver$, timeout, eraseit, errormsg$[, senddirectory$[, accesstoken$]]
```

**accesstoken\$** - OAuth2 access token

- If it has a value, OAuth2 authentication will be used with the SMTP server
- If blank, no OAuth2 authentication is done
- Default is blank

```
CALL "*web/smtp", "out/cur.eml", "smtp.myserver.ca;587;example@myserver.ca", 60, 0, errormsg$, "", accesstoken$
```

# Object - *\*web/pop3*

*\*web/pop3* object was enhanced to add support for OAuth2 authentication

- **Added two new methods**
  - **OAuthConnect**(srvr\$,userid\$,accesstoken\$) - Connect to mail server and authenticate via OAuth2 (non-encrypted)
  - **OAuthSSLConnect**(srvr\$,userid\$,accesstoken\$) - Connect to mail server and authenticate via OAuth2 (encrypted)

# Object - \*web/pop3 Example

**Example** – Logic to get OAuth2 access token

```
oPop=new("*web/pop3")
sts=oPop'OAuthSSLConnect("outlook.office365.com","example@outlook.com",access
Token$)
if sts<>1 \
    then print oPop'LastError$;
    end
print oPop'MailCount
oPop'Disconnect()
```



# Extended System Commands

- New and updated [Extended System Commands](#)
  - [cls](#) - Clears the Command Line editing screen
  - [fmgen](#) - Opens an existing file maintenance panel in the File Maintenance Generator or allows a new panel to be defined
    - **fmgen** [fm\_name\$,library\_file\$]
  - [popup](#) - Opens an existing NOMADS popup menu definition or allows a new popup menu to be defined
    - **popup** [popup\_menu\_name\$,library\_file\$]
  - [qry](#) - Opens an existing NOMADS query definition or allows a new query to be defined
    - **qry** [query\_name\$,library\_file\$]
  - [nom](#) – Enhanced to allow a file maintenance panel to be opened either in the File Maintenance Generator or the NOMADS Panel Designer. A message will be displayed to choose
    - **nom** [panel\_name\$,library\_file\$]

# WindX

- Added additional parameters for improved SSH connectivity
  - Term (Terminal Type) – Allows you to select winterm, xterm, or ansi
  - PxPlus Path – Specifies the location of the PxPlus exe on the connecting server
- Now supports launching PxPlus directly when using SSH

The screenshot shows the 'WindX Plugin' window with the 'Connection Manager' tab active. The title bar includes a close button and a 'Help' button. The main area is titled 'Select/Create Thin Client Connection'. On the left, there is a table with two columns: 'Name' and 'Server'. The table contains one entry: 'ssh' under 'Name' and 'My Server' under 'Server'. To the right of the table are several input fields: 'Connection Name' (set to 'ssh'), 'Connection type' (set to 'SSH' with a dropdown arrow), 'Server' (set to 'My Server'), and 'Port' (set to '22' with a spinner). Below these are 'User' (set to 'len') and 'Password' (masked with '\$' characters and a toggle icon). At the bottom right, there are two more fields: 'Term' (set to 'winterm' with a dropdown arrow) and 'PxPlus Path' (set to 'c:\pxplus'). A 'Default Host' checkbox is located below the 'PxPlus Path' field. At the bottom of the window are four buttons: 'Make Link File', 'Save', 'Connect', and 'Exit'.

Name	Server
ssh	My Server

Connection Name: ssh  
Connection type: SSH  
Server: My Server  
Port: 22  
User: len  
Password: \$\$\$\$\$\$\$\$\$\$  
Term: winterm  
PxPlus Path: c:\pxplus  
☐ Default Host

Make Link File Save Connect Exit



What's New in PxPlus 2025

# Graphical Enhancements

Pathways to Progress





What's New in PxPlus 2025

# Control Object Properties

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# Control Object Properties

- [Control Object Properties](#) are configurable settings that define the visual presentation of individual control objects
- Various settings can be defined such as background/foreground colors, fonts, borders, and other attributes
- Applicable to the following graphical controls:
  - Buttons
  - Charts
  - Check Boxes
  - Drop Boxes
  - Grids
  - List Boxes
  - Multi-Lines
  - Radio Buttons
  - Scroll Bars
  - Tree Views
- Can be used for both NOMADS and non-NOMADS applications

## Properties added in PxPlus 2025:

- Check Boxes
- Radio Buttons
- Grids
- Drop Boxes
- Variable Drop Boxes
- Multi-Lines
- Multi-Lines Rich Text



# Control Object Properties

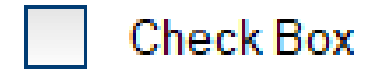
- Setting Control Object Properties
  - Various properties of graphical control objects (i.e. Button, Drop Box, etc.) can be referenced and modified dynamically
  - Use the control's assigned CTL value (ctl\_id) followed by the apostrophe operator and the associated property name





## Examples

```
StateDropBox.ctl'FrameColor$="Light Green"
```

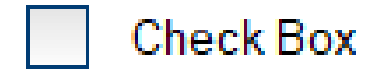
```
ExitButton.ctl'BorderColor$="Red"
```




# Check Box Properties



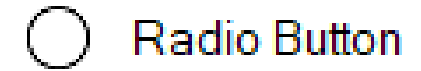
Property	Description	Example
CbDisableFrameColor\$	Sets the frame color for disabled standard Check Boxes	 Check Box
CbDisableMarkColor\$	Sets the color of the check mark or X for disabled standard Check Boxes	 Check Box
DisableBackColor\$	Sets the disabled background color for standard Check Boxes	 Check Box
ActiveBackColor\$	Sets the active background color for standard Check Boxes	 Check Box





# Check Box Properties



Property	Description	Example
HoverBackColor\$	Sets the hover background color for standard Check Boxes	 Check Box
HoverBorderColor\$	Sets the hover border color for standard Check Boxes	 Check Box
HoverTextColor\$	Sets the hover text color for standard Check Boxes	 Check Box

# Radio Button Properties






Property	Description	Example
RbDisableFrameColor\$	Sets the frame color for disabled standard Radio Buttons	 Radio Button
RbDisableMarkColor\$	Sets the color of the circle for disabled standard Radio Buttons	 Radio Button
DisableBackColor\$	Sets the disabled background color for standard Radio Buttons	 Radio Button
ActiveBackColor\$	Sets the active background color for standard Radio Buttons	 Radio Button

# Radio Button Properties



Radio Button

Property	Description	Example
HoverBackColor\$	Sets the hover background color for standard Radio Buttons	 Radio Button
HoverBorderColor\$	Sets the hover border color for standard Radio Buttons	 Radio Button
HoverTextColor\$	Sets the hover text color for standard Radio Buttons	 Radio Button



# Grid Properties

	Code	Name	Dept		Hold
1	AK	Anya Kowalski	NORTH	...	<input type="checkbox"/>
2	MA	Mark Anderson	EAST	...	<input checked="" type="checkbox"/>
3	OM	Omar Mansour	WEST	...	<input type="checkbox"/>
4	PR	Priya Reddy	NORTH	...	<input type="checkbox"/>




Property	Description	Example																														
CbMarkColor\$	Sets the color of the check mark or X in the Check Box	<table><tr><td></td><td>Code</td><td>Name</td><td>Dept</td><td></td><td>Hold</td></tr><tr><td>1</td><td>AK</td><td>Anya Kowalski</td><td>NORTH</td><td>...</td><td><input type="checkbox"/></td></tr><tr><td>2</td><td>MA</td><td>Mark Anderson</td><td>EAST</td><td>...</td><td><input checked="" type="checkbox"/></td></tr><tr><td>3</td><td>OM</td><td>Omar Mansour</td><td>WEST</td><td>...</td><td><input checked="" type="checkbox"/></td></tr><tr><td>4</td><td>PR</td><td>Priya Reddy</td><td>NORTH</td><td>...</td><td><input type="checkbox"/></td></tr></table>		Code	Name	Dept		Hold	1	AK	Anya Kowalski	NORTH	...	<input type="checkbox"/>	2	MA	Mark Anderson	EAST	...	<input checked="" type="checkbox"/>	3	OM	Omar Mansour	WEST	...	<input checked="" type="checkbox"/>	4	PR	Priya Reddy	NORTH	...	<input type="checkbox"/>
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HdrLineColor\$	Sets the color of the border lines drawn between columns when the 'ExcelStyle' property is set. Only for top row	<table><tr><td></td><td>Code</td><td>Name</td><td>Dept</td><td></td><td>Hold</td></tr><tr><td>1</td><td>AK</td><td>Anya Kowalski</td><td>NORTH</td><td>...</td><td><input type="checkbox"/></td></tr><tr><td>2</td><td>MA</td><td>Mark Anderson</td><td>EAST</td><td>...</td><td><input checked="" type="checkbox"/></td></tr><tr><td>3</td><td>OM</td><td>Omar Mansour</td><td>WEST</td><td>...</td><td><input checked="" type="checkbox"/></td></tr><tr><td>4</td><td>PR</td><td>Priya Reddy</td><td>NORTH</td><td>...</td><td><input type="checkbox"/></td></tr></table>		Code	Name	Dept		Hold	1	AK	Anya Kowalski	NORTH	...	<input type="checkbox"/>	2	MA	Mark Anderson	EAST	...	<input checked="" type="checkbox"/>	3	OM	Omar Mansour	WEST	...	<input checked="" type="checkbox"/>	4	PR	Priya Reddy	NORTH	...	<input type="checkbox"/>
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Property	Description	Example																														
LockBackButtonColor\$	Sets the background color for locked system-generated buttons, including Drop Box and Query buttons	<table><tr><th></th><th>Code</th><th>Name</th><th>Dept</th><th></th><th>Hold</th></tr><tr><td>1</td><td>AK</td><td>Anya Kowalski</td><td>NORTH</td><td>...</td><td><input type="checkbox"/></td></tr><tr><td>2</td><td>MA</td><td>Mark Anderson</td><td>EAST</td><td>...</td><td><input checked="" type="checkbox"/></td></tr><tr><td>3</td><td>OM</td><td>Omar Mansour</td><td>WEST</td><td>...</td><td><input checked="" type="checkbox"/></td></tr><tr><td>4</td><td>PR</td><td>Priya Reddy</td><td>NORTH</td><td>...</td><td><input type="checkbox"/></td></tr></table>		Code	Name	Dept		Hold	1	AK	Anya Kowalski	NORTH	...	<input type="checkbox"/>	2	MA	Mark Anderson	EAST	...	<input checked="" type="checkbox"/>	3	OM	Omar Mansour	WEST	...	<input checked="" type="checkbox"/>	4	PR	Priya Reddy	NORTH	...	<input type="checkbox"/>
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LockForegroundButtonColor\$	Sets the foreground text color for locked system-generated buttons, including Drop Box and Query buttons	<table><tr><th></th><th>Code</th><th>Name</th><th>Dept</th><th></th><th>Hold</th></tr><tr><td>1</td><td>AK</td><td>Anya Kowalski</td><td>NORTH</td><td>...</td><td><input type="checkbox"/></td></tr><tr><td>2</td><td>MA</td><td>Mark Anderson</td><td>EAST</td><td>...</td><td><input checked="" type="checkbox"/></td></tr><tr><td>3</td><td>OM</td><td>Omar Mansour</td><td>WEST</td><td>...</td><td><input checked="" type="checkbox"/></td></tr><tr><td>4</td><td>PR</td><td>Priya Reddy</td><td>NORTH</td><td>...</td><td><input type="checkbox"/></td></tr></table>		Code	Name	Dept		Hold	1	AK	Anya Kowalski	NORTH	...	<input type="checkbox"/>	2	MA	Mark Anderson	EAST	...	<input checked="" type="checkbox"/>	3	OM	Omar Mansour	WEST	...	<input checked="" type="checkbox"/>	4	PR	Priya Reddy	NORTH	...	<input type="checkbox"/>
	Code	Name	Dept		Hold																											
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3	OM	Omar Mansour	WEST	...	<input checked="" type="checkbox"/>																											
4	PR	Priya Reddy	NORTH	...	<input type="checkbox"/>																											

# Drop Box Properties

Property	Description	Example
HoverBackColor\$	Sets the hover background color for Drop Boxes and Variable Drop Boxes	
HoverBorderColor\$	Sets the hover border color for Drop Boxes and Variable Drop Boxes	
HoverTextColor\$	Sets the hover text color Drop Boxes and Variable Drop Boxes	

Note: In PxPlus 2024, we added the ability to control drop arrow colors and drop arrow background colors

# Multi-Line Properties

ABC Company Ltd

Property	Description	Example
HoverBackColor\$	Sets the hover background color for Multi-Lines and Rich Text Multi-Lines	ABC Company Ltd
HoverBorderColor\$	Sets the hover border color for Multi-Lines and Rich Text Multi-Lines	ABC Company Ltd
HoverTextColor\$	Sets the hover text color for Multi-Lines and Rich Text Multi-Lines	ABC Company Ltd

# NOMADS Grid Presets

## New Properties Added

- [CbMarkColor\\$](#) - Sets the color of the check mark or X in the check box
- [HdrLineColor\\$](#) - Sets the color of the border lines drawn between columns when the 'ExcelStyle' property is set for the top row only of the grid and does not affect the leading left column
- [LockButtonColor\\$](#) - Sets the background color for locked system-generated buttons in a grid, including drop box buttons and query buttons
- [LockForegroundButtonColor\\$](#) - Sets the foreground text color for locked system-generated buttons in a grid, including drop box buttons and query buttons
- [RowHeaderLineColor\\$](#) - Sets the color of the border lines drawn between rows when the 'ExcelStyle' property is set for the leading left column only of the grid and does not affect the grid top row





What's New in PxPlus 2025

# Themes and Visual Classes

Pathways to Progress

# Themes and Visual Classes

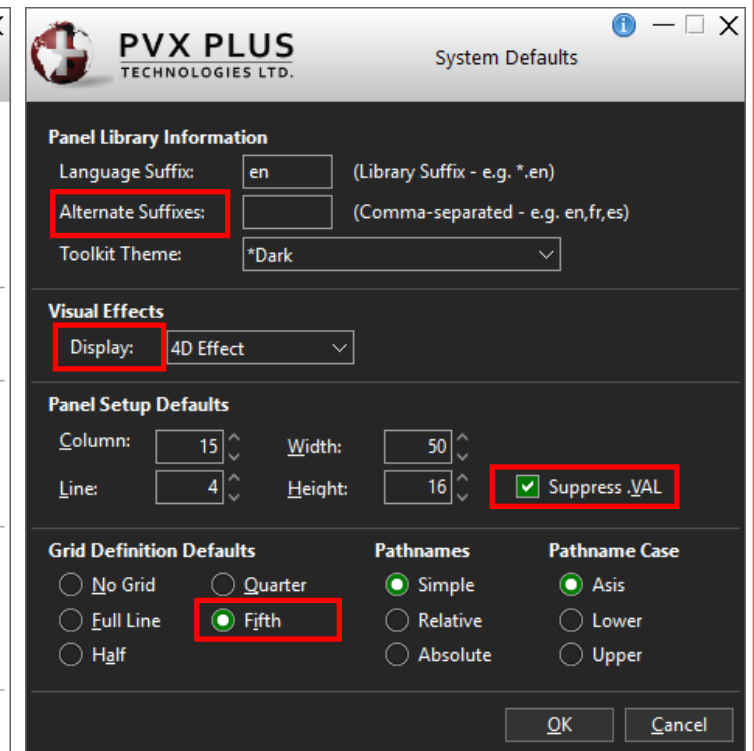
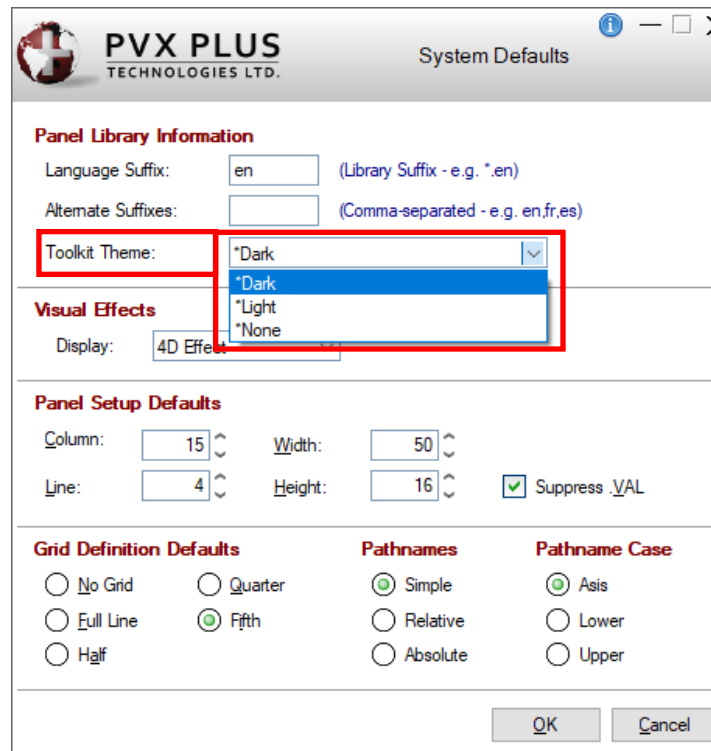
- Are used to define style settings and other attributes for a group of controls or individual controls
  - [Themes](#) are used to set the style for all controls of the same type
    - Set globally, library defaults, panel header
  - [Visual Classes](#) are used to set the style of individual controls
    - Visual Classes override the Theme
- All new control object properties have also been incorporated into applicable Themes and Visual Classes

## Classes enhanced in PxPlus 2025

- Check Boxes
- Tri-State Check Boxes
- Drop Boxes
- Variable Drop Boxes
- Grids
- Multi-Lines
- Radio Buttons

# Modernization

- With these new properties, we're advancing the modernization of our toolkit and helping your applications stay ahead
- In 2024, we introduced Dark and Light Toolkit Themes to enhance the toolkit experience
- Easily set your Toolkit Theme right from System Defaults
- Enhanced the Dark & Light mode themes with new properties
- Implemented new modern font in both Themes

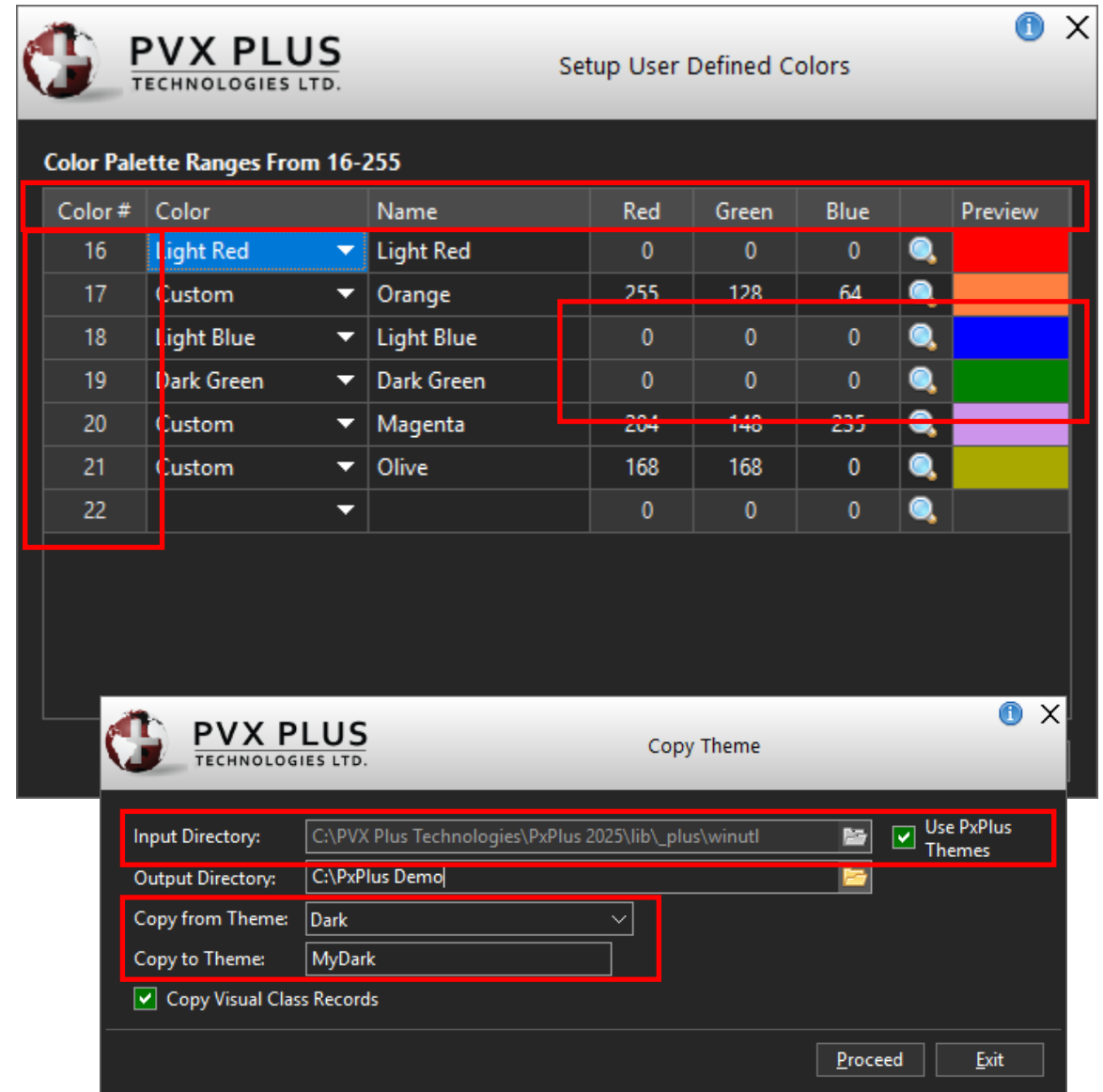


# Modernization

- These screens highlight the many options available to customize and enhance your application
- The Copy Theme utility, introduced in 2024, makes it easy to create multiple themes—including your own Dark and Light modes from our system themes
- Control Object Properties, Themes/Visual Classes, and Option Mnemonics are designed to improve your application's interface
- At last year's DireXions, we showcased how these tools can be used—whether your application is built with NOMADS or non-NOMADS

## Useful Links

[Application Look and Feel – DireXions 2024](#)



# Projects

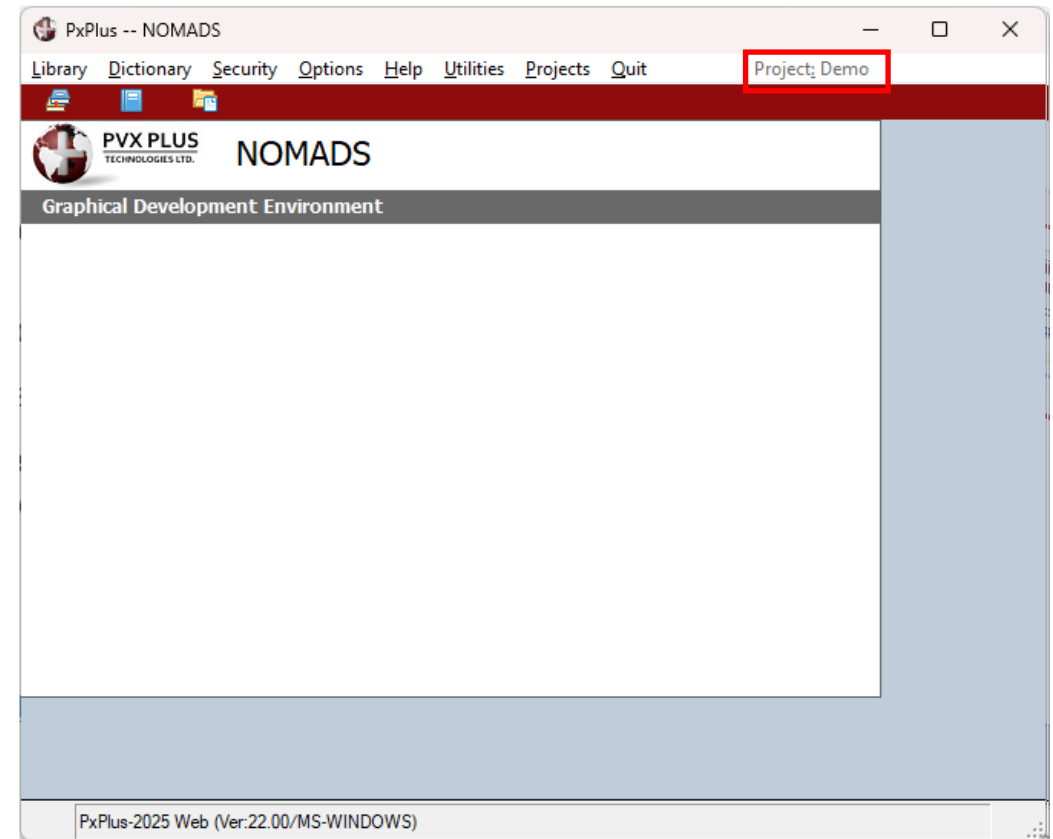
- Since the introduction of the IDE, Projects were always an integral piece
- Added Project capability to NOMADS Session Manager (Command Line)
- New Projects menu for quick access to all Project tasks
- Project displayed once set
- Setting a Project also sets current directory that will be used as the working directory

## Useful Links

[Working with Projects](#)

[Benefits of Using Projects](#)

[How to Use Projects from the NOMADS Session Manager](#)







What's New in PxPlus 2025

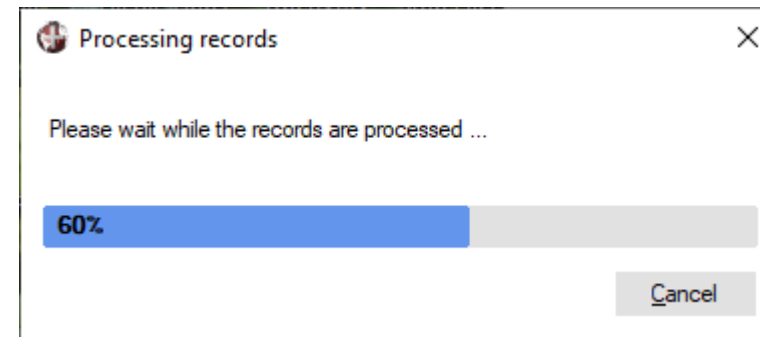
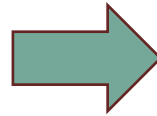
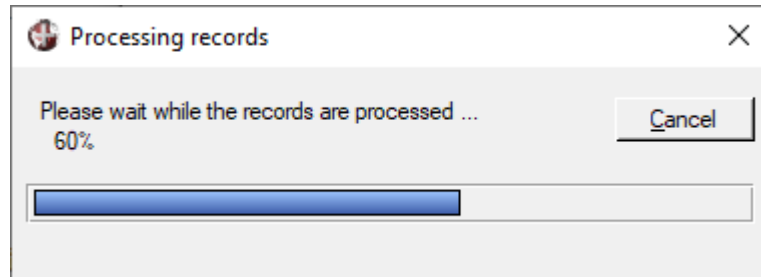
# **Progress Bar Enhancements**

Pathways to Progress

# Standard Progress Bar

## Modernized the Appearance

Redesigned the standard progress bar with a modern, polished look



- White background
- Moved Cancel button below the progress bar

- Flatter progress bar appearance
- Moved Percentage indicator inside the progress bar



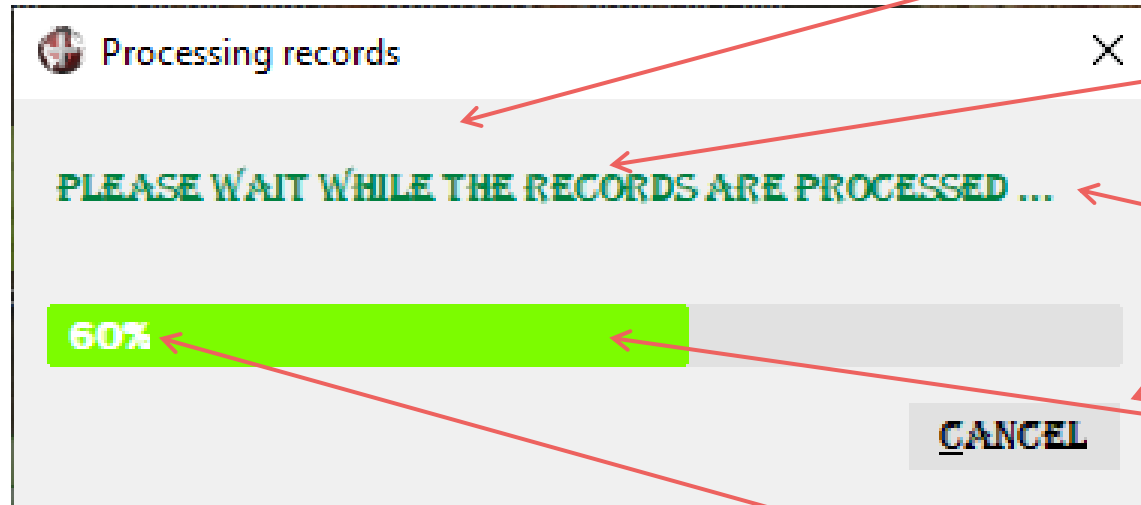
# Customize the Progress Bar

## Five New Global Variables

Global Variable	Description	Example
%_PROGBAR_BAR_CLR\$	Color of the progress bar meter	"#7CFC00"
%_PROGBAR_BACK_CLR\$	Background color of the dialog	"Light Gray"
%_PROGBAR_FONT\$	Font used for text and Cancel button	"Algerian"
%_PROGBAR_PERCENT_CLR\$	Color of the Percentage indicator	"White"
%_PROGBAR_TEXT_CLR\$	Color of the text (does not affect the Cancel button)	"RGB:0 128 64"

- Can be set at any time before initializing a progress bar
- Colors can be set as one of the 16 standard colors, custom RGB colors, a User-Defined color or Hex color code

# Customized Progress Bar Example



- %\_progbar\_back\_clr\$="Light Gray"
- %\_progbar\_text\_clr\$="RGB:0 128 64"  
(Dark Green)
- %\_progbar\_font\$="Algerian" (Green)
- %\_progbar\_bar\_clr\$="#7CFC00"  
(Lawn Green)
- %\_progbar\_percent\_clr\$="White"

# Progress Bar

## Useful Links

[Using the Progress Bar](#)

[How To Customize the PxPlus Progress Bar](#)

## Video

[PxPlus Progress Bar Video](#)



What's New in PxPlus 2025

# **Create Base Webster+ Page(s)**

Pathways to Progress



# Create Base Webster+ Page(s)

## Overview

- The **Create Base Webster+ Page(s)** utility is the first step in converting existing NOMADS panels into Webster+ HTML pages in situations where an existing application is being moved to a Web environment using Webster+
- Where possible, information from the panel is converted to Webster+ [Short Codes](#)
  - However, not everything that is supported in NOMADS has an existing short code or option in Webster+

# Create Base Webster+ Page(s)

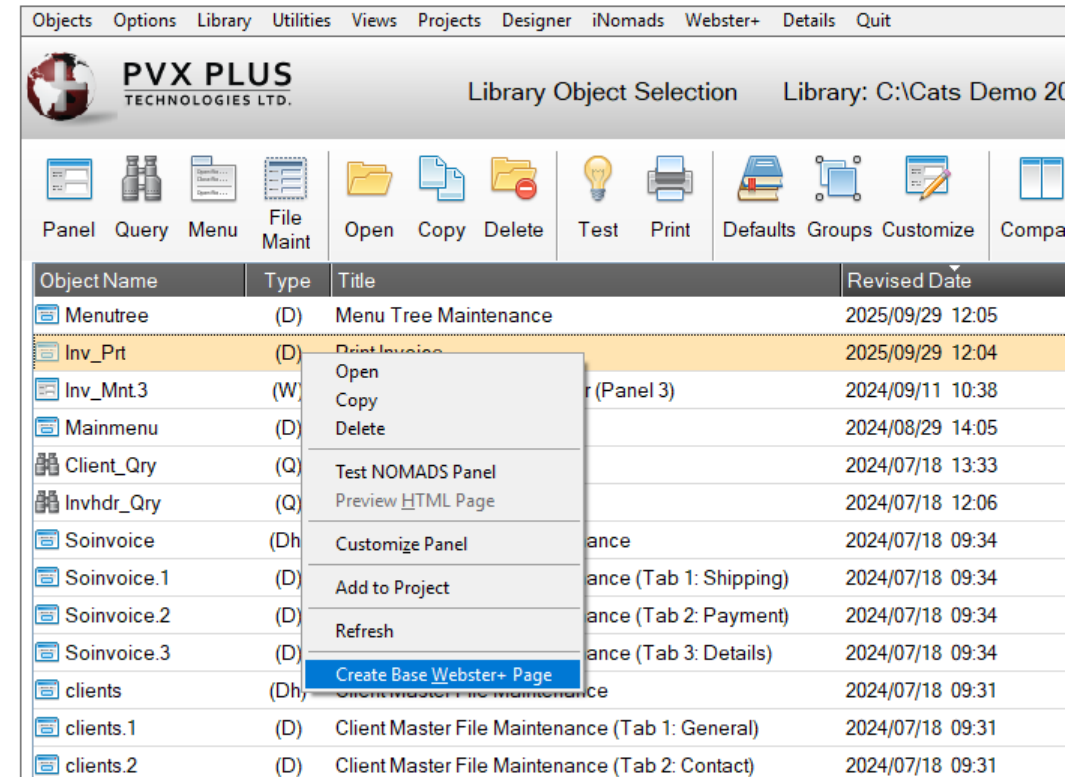
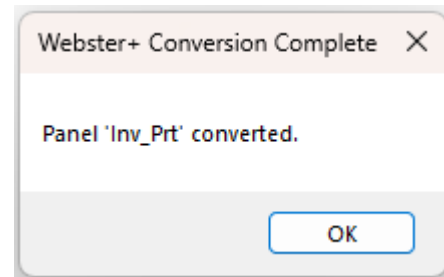
## Two Ways to Convert

- Individual Panels
- Multiple Panels

Note: The Webster+ pages directory must be defined in the screen library before you can convert

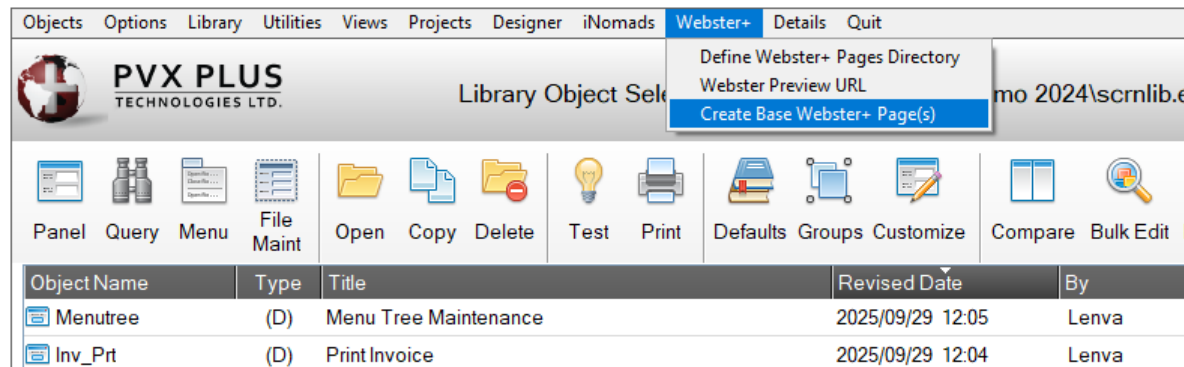
# Convert Individual Panel in Library

- Open Library Object Selection in NOMADS
- Select a single panel to convert
- Right-click to display the popup menu and select the Create Base Webster+ Page option
  - A message box appears when the conversion is completed



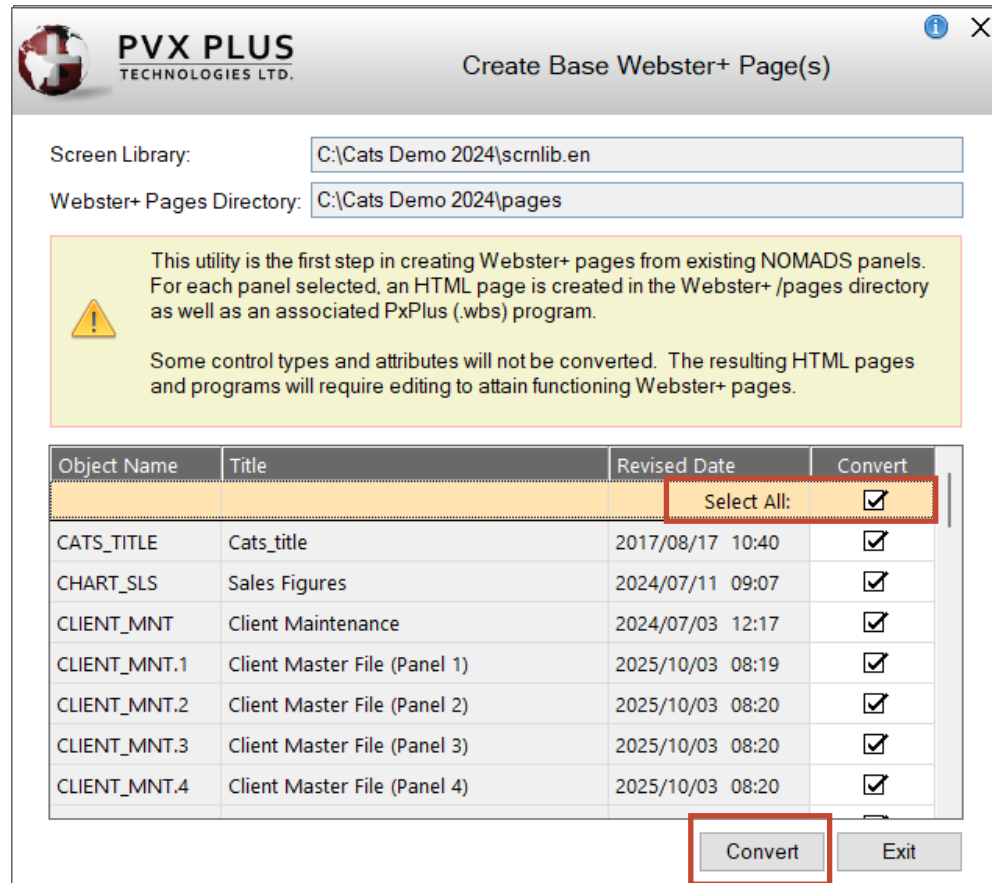
# Convert Multiple Panels in Library

- From Library Object Selection
- Click Webster+ in the top menu bar and select Create Base Webster+ Page(s) from the menu



- The Create Base Webster+ Page(s) utility displays

# Create Base Webster+ Page(s) Dialog



## Converting Multiple Panels

- All Dialog and Window objects from the screen library, except for those last generated as File Maintenance panels, are loaded into the grid
- Select the panels to convert by clicking individual checkboxes
- Alternatively, to convert all panels, click the Select All checkbox
- Click the Convert button at the bottom of the dialog

# Files Generated

The utility creates *both* an HTML file *and* a PxPlus program for every panel converted

## HTML FILES

- Are updated to the **Webster+ Pages Directory** defined for the current screen library
- A HTML page for each panel is created and named in the format - **panelname.html**
- Converted panels containing folders will result in one HTML file containing short codes for all folder tabs

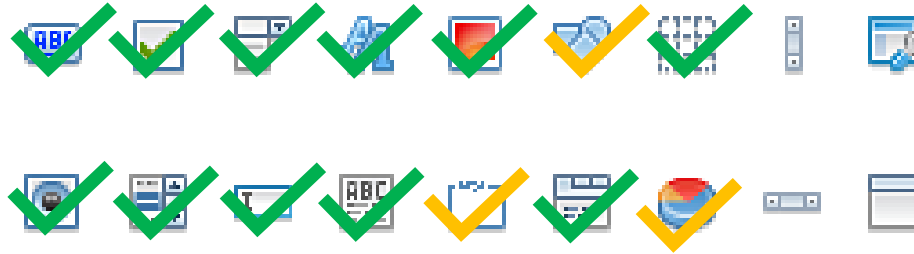
## PXPLUS PROGRAMS

- Also creates an associated program - **panelname.wbs**
- Location is determined according to the PREFIX rules currently in effect
- Empty methods required for handling events (NOMADS logic) defined in the NOMADS controls, such as “When Button Pressed” for Buttons and “On Change” for Multi-line events are created and added to the program



# NOMADS Controls to HTML Page

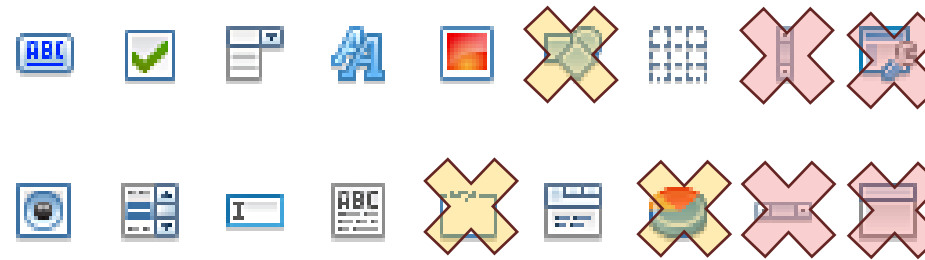
## What is converted?



- Buttons
- Charts
  - Smart Charts only
- Check Boxes
- Drop Boxes
- Fixed/Fonted Text
- Folders
- Frames (Boxes)
  - $\leq 1$  line high only
- Grids
- Shapes - Horizontal Line
- Images
- List Boxes
- Multi-Lines
- Radio Buttons

# NOMADS Controls to HTML Page

## What is NOT converted?



- Shapes
  - Other than Horizontal lines
- Frames (Boxes)
  - With Heights of more than 1 line
- Horizontal Scrollbars
- Vertical Scrollbars
- Charts
  - Not loaded via SmartLoad
- External Controls
- Embedded Panels

# HTML Page – also NOT Converted

## Panel

- Pre-Display, Post-Display and On Exit Logic
- Foreground and Background Colors
- Precise Layout
- Theme
- Dependencies

## Controls

- Post Create and When Receiving Focus Logic
- Background Colors for Check Boxes and Radio Buttons
- Visual Classes
- Italics Font Attribute

- Most appearance related attributes are controlled by CSS

# .WBS Program Contents

## Comment elements added to all programs

- A Webster+ bind line with the path to the bound HTML page  
`%webster'BindFile$="C:\webster1\pages/customer.html"`
- A Handle event section with logic to intercept the events triggered by changes to the Web page and send program control to the proper methods defined for the events

! Handle events

goto lno("EVENT\_" + \_event\$, err = \*next)

%webster'msgbox("Invalid event: " + \_event\$, "Internal Error - " + pgm(-3), "!")

!

exit

# .WBS Program Contents (continued)

## Methods for Controls with Event logic are added

- Any Button control with '**When Button Pressed**' event logic will result in a method called `EVENT_CONTROL_NAME_PRESSED` (where CONTROL\_NAME is the name of the Button control)
  - i.e. `EVENT_CLOSE_BTN_PRESSED` – where `CLOSE_BTN` is the name of the button
- Any other control type with "**On Change**" event logic will result in a method called `EVENT_CONTROL_NAME_CHANGED` (where CONTROL\_NAME is the name of the control)
  - i.e. `EVENT_VENDOR_NO_CHANGED` where `VENDOR_NO` is the control name
- The above event methods are created with:
  - Method label
  - Remark line indicating what the logic is (i.e. Perform..., Call..., etc)
  - Exit Statement

NOTE

Developer to review the NOMADS code indicated and translate it appropriately to work in Webster+



What's New in PxPlus 2025

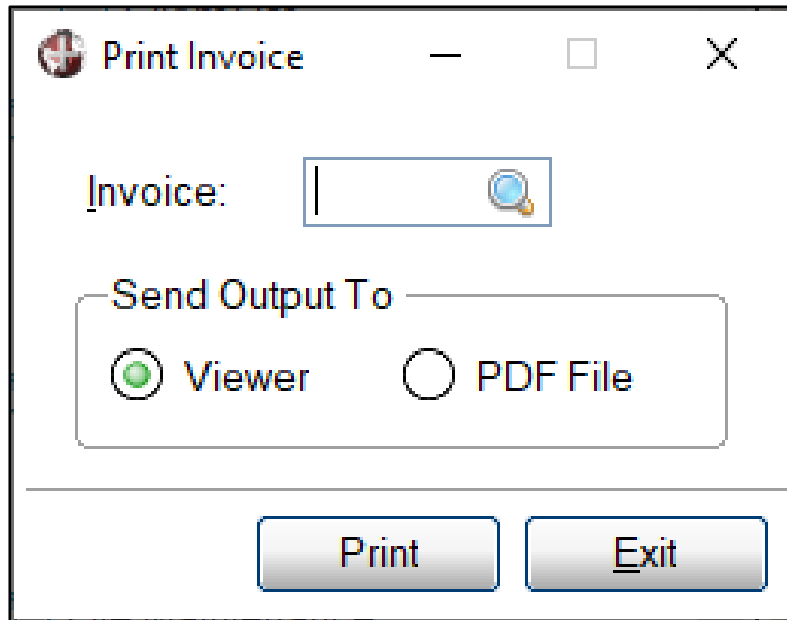
**Create Base  
Webster+ Page(s)**

**Sample Panel  
Conversion**

Pathways to Progress



# Sample Panel Conversion



## NOMADS Panel (Print Invoice – inv\_prt)

- A HTML file and a PxPlus program will be created
  - inv\_prt.html - html file
  - inv\_prt.wbs - program file

# .html file running in Webster+

« Webster Plus

Print Invoice

Invoice:

Box/Frame  
BOXES\_1\$ not  
converted

☐ Viewer ☐ PDF File

Print Exit

input INVOICENUMBER\$ size=13 len=6 event=INVOICENUMBER\_CHANGED query="scrnlib.EN;INVHDR\_QRY"

## Cleanup needed

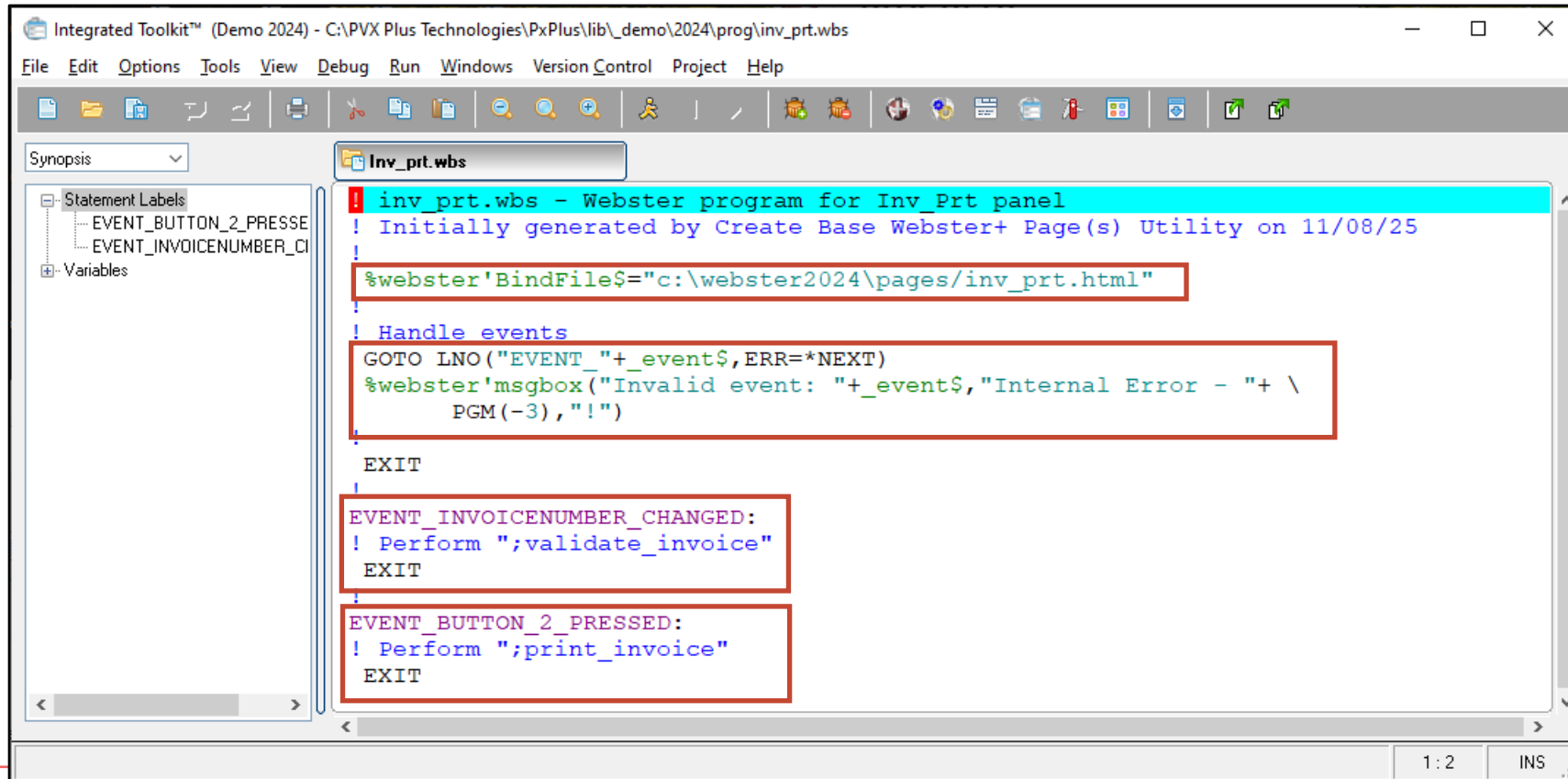
- Remove the short codes created for any controls not converted
- Remove any unsupported controls
- Correct alignment by removing &nbsp; codes (non-breaking spaces)
- Assign [section] short codes for whole, half, third, quarter or flex sections as desired
- Fine-tune the converted file as needed

# Converted inv\_prt.html file in Notepad

## Pathways to Progress

# .wbs PxPlus program created

## Converted inv\_prt.wbs program



```
Integrated Toolkit™ (Demo 2024) - C:\PVX Plus Technologies\PxPlus\lib\_demo\2024\prog\inv_prt.wbs
File Edit Options Tools View Debug Run Windows Version Control Project Help

Synopsis
- Statement Labels
  - EVENT_BUTTON_2_PRESSED
  - EVENT_INVOICENUMBER_CHANGED
- Variables

Inv_prt.wbs
! inv_prt.wbs - Webster program for Inv_Prt panel
! Initially generated by Create Base Webster+ Page(s) Utility on 11/08/25
%webster'BindFile$="c:\webster2024\pages\inv_prt.html"
! Handle events
GOTO LNO("EVENT_"+_event$,ERR=*NEXT)
%webster'msgbox("Invalid event: "+_event$,"Internal Error - "+ \
PGM(-3),"!")
EXIT
EVENT_INVOICENUMBER_CHANGED:
! Perform ";validate_invoice"
EXIT
EVENT_BUTTON_2_PRESSED:
! Perform ";print_invoice"
EXIT

1:2 INS
```

# Edited inv\_prt.html file

## Changes

- Removed frame and replaced with `<hr>`
- Corrected query path
- Removed unnecessary `&nbsp's`
- Adjusted [section] short codes
- Added some `<br>'s` And `<hr>'s` for spacing
- Radio Button default corrected

[illegible]

# Edited inv\_prt.wbs program

## Changes

- Removed remarks referencing NOMADS code
- Replaced with methods based on existing NOMADS code
- Added methods as needed
  - %webster'msgbox()
- Radio Button values

```
Integrated Toolkit™ (Demo 2024) - C:\PVX Plus Technologies\PxPlus\lib\demo\2024\prog\inv_prt.wbs
File Edit Options Tools View Debug Run Windows Version Control Project Help

Synopsis
Statement Labels
  EVENT_BUTTON_2_PRESSED
  EVENT_INVOICENUMBER_CHANGED
  REPORT_ERR
  VALIDATE_INVOICE
Variables

Inv_prt.wbs
Invprt.one
Fm_webmaint

EVENT_INVOICENUMBER_CHANGED:
GOSUB VALIDATE_INVOICE
EXIT

VALIDATE_INVOICE:
_info_err$="Unable to open the Invoice Header File"
OPEN (HFN,IOL=*,ERR=REPORT_ERR) "demo/2024/data/invhdr" FOR PROGRAM
IF invoicenumber$="" \
  THEN _info_err$="Please select an invoice." \
  ELSE _info_err$="Invoice number not on file."
invoicenumber$=STR(NUM(invoicenumber$):"000000",ERR=REPORT_ERR);
READ (LFO,KEY=invoicenumber$,DOM=REPORT_ERR);
CLOSE (LFO)
RETURN
!
REPORT_ERR:
%webster'msgbox(_info_err$,"FYI")
CLOSE (LFO,ERR=*NEXT)
EXIT

EVENT_BUTTON_2_PRESSED:
GOSUB VALIDATE_INVOICE
IF output$="1" \
  THEN PERFORM "invprt;output_to_viewer" \
  ELSE PERFORM "invprt;output_to_pdf"
EXIT

13:9 INS
```



# Completed Webster+ Page

## Running page in Webster+ with final edits

- Query now functioning correctly
- Invoice entry being validated
- Radio Buttons working
- Print Button working

The screenshot displays the 'Webster Plus' web application interface. The main page is titled 'Print Invoice' and features a sidebar with navigation links: 'Inspector', 'Setup', 'Logoff', 'Admin', 'Privacy Policy', and 'Statistics'. The main content area shows an 'Invoice:' field with the value '100002' and a magnifying glass icon. Below this, there are radio buttons for 'Viewer' (selected) and 'PDF File'. An 'Invoice Query' modal is open, displaying a table of invoice data. The table has columns for Invoice #, Client ID, Invoice Date, Due Date, Date Paid, Taxable Am..., Tax, and Rep. The modal also includes 'Print' and 'Download' buttons at the bottom left, and 'Select' and 'Cancel' buttons at the bottom right. The browser's address bar shows the URL 'http://127.0.0.1:8088/webster.pxp?pg\$=inv\_prt'.

Invoice #	Client ID	Invoice Date	Due Date	Date Paid	Taxable Am...	Tax	Rep
100000	505879	13 Oct 2023	10 Nov 2023	14 Nov 2023	752.50	37.63	CM
100001	783846	28 Feb 2023	28 Mar 2023	22 Mar 2023	300.00	39.00	BM
100002	890036	22 Dec 2023	19 Jan 2024	27 Jan 2024	913.75	137.06	AN
100003	919602	16 Mar 2023	13 Apr 2023	12 Apr 2023	983.75	127.89	BT
100004	677445	24 Feb 2024	23 Mar 2024	25 Mar 2024	1,192.50	155.03	HK
100005	560419	10 Oct 2022	07 Nov 2022	29 Oct 2022	522.50	62.70	OB
100006	429878	04 Jul 2023	01 Aug 2023	06 Aug 2023	1,128.50	146.71	HK
100007	961242	24 Dec 2022	21 Jan 2023	11 Jan 2023	205.00	26.65	DK
100008	935462	27 Feb 2024	26 Mar 2024	20 Mar 2024	546.25	76.48	AN
100009	089154	27 Jun 2023	25 Jul 2023	25 Jul 2023	1,471.75	220.76	AN
100010	861397	23 Jul 2022	20 Aug 2022	21 Aug 2022	61.25	3.06	OB
100011	826016	16 Dec 2023	13 Jan 2024	11 Jan 2024	697.50	90.68	HK
100012	895258	21 Sep 2022	19 Oct 2022	21 Oct 2022	393.50	59.03	GT
100013	891809	18 Jan 2023	15 Feb 2023	16 Feb 2023	243.75	31.69	BT

# Create Base Webster+ Page(s)

## Useful Links

Help

[Create Base Webster Page\(s\)](#)

[Webster+ Web Development Toolkit](#)

Videos (Webster+)

[Web Development Setup & Configuration](#)

[Web Application Development Series](#)

Take Webster+ demo application for a test drive

<https://testdrive.pvxplus.com>

Test drive page also contains a ZIP and TAZ file with all sample HTML pages, programs and data used for the demo

# Help and Other Resources

- Help Improvements
  - Enhanced user interface
  - Updated navigation bar
  - Updated Main page with links to additional resources
- Added 11 “How to Tutorials”
  - 5 .NET
  - 3 JSON
  - 3 Miscellaneous
- Videos
  - 11 new videos
  - Reorganized PVX Plus YouTube channel

## Useful Links

[How to Tutorials Main Page](#)

[PVX Plus YouTube Channel](#)

[PVX Plus Knowledge Center](#)

[How to Speed up Grid Loading and Processing](#)

# PxPlus 2025 Update 1 (v22.10)

## Scheduled for early November 2025

- AI Assistant Chat box
- AI Assistant added to Help
- AI Assistant added to IDE
- AI Assistant (ai) added to Command Line
- JSON Object – New / Enhanced Methods
- Dependency Logic option added to the Search/Replace Library utility to search for dependency definitions
- Support for defining a Calendar query type for Multi-Line data classes
- Various Fixes

# Thank you

Got an idea for a new feature?  
Found a bug?  
Let us know!  
Contact us at [info@pvxplus.com](mailto:info@pvxplus.com)

Len Vassos

