# TkRibbon: Windows Ribbons for Tk

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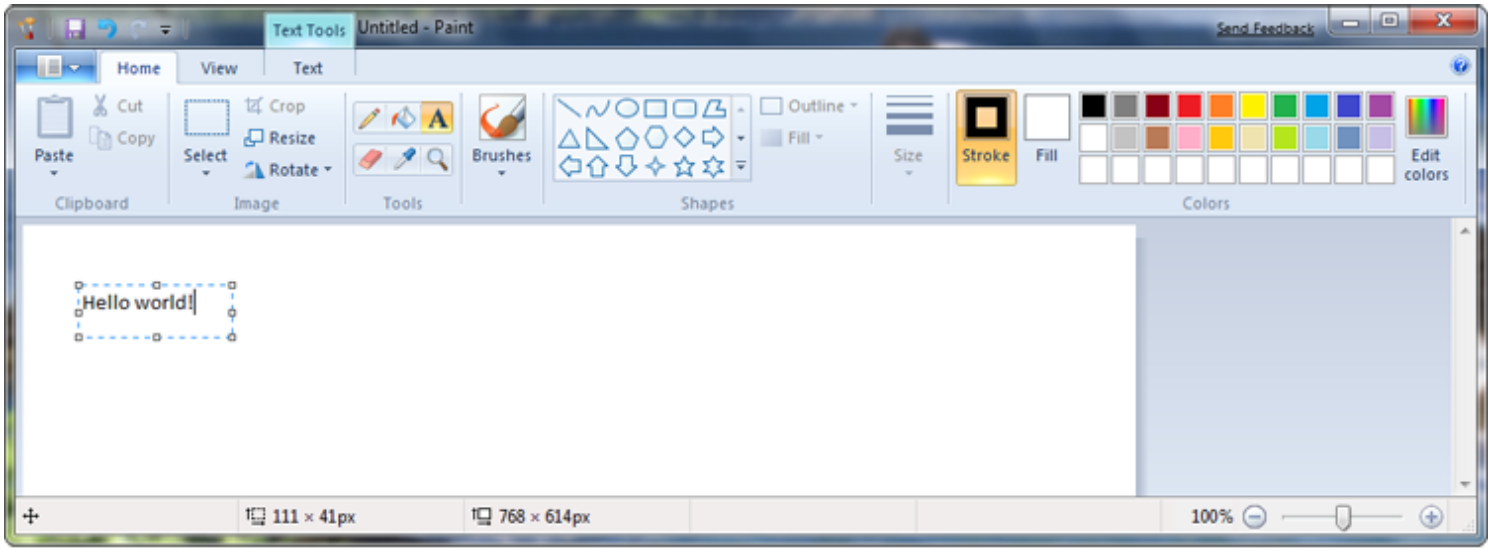
# Overview

- The Windows Ribbon framework
- Creating a Ribbon
  - Writing the XAML Markup
  - Compiling the Markup
- Creating the TkRibbon widget
- Interacting with the Ribbon
- Conclusions – Future work

# The Windows Ribbon Framework

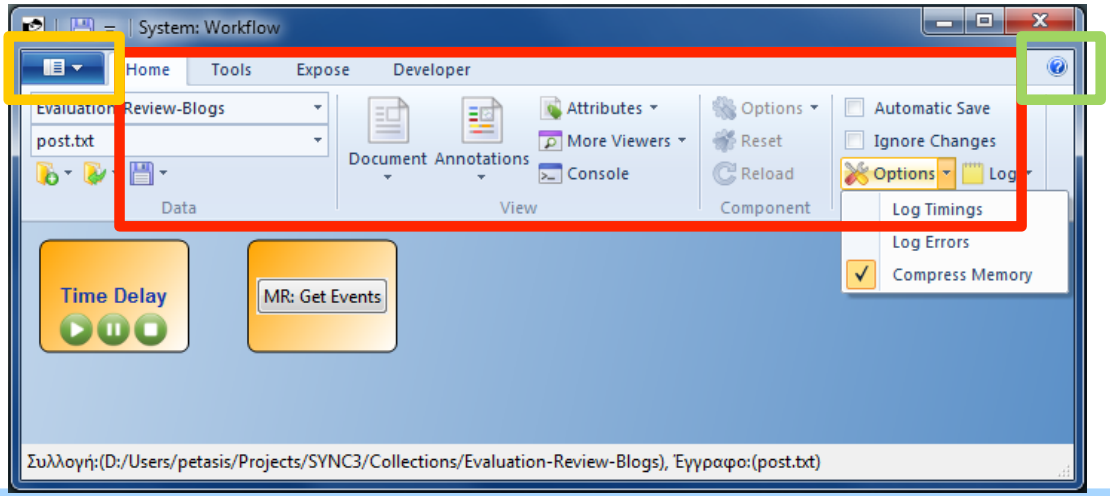
- A new UI paradigm, aiming to unify into a single UI element:
  - Multilayered menus
  - Toolbars
  - Task panes




Paint for Windows 7

# Ribbon UI components

- The Ribbon framework consists of two UI components:
  - The Ribbon command bar, which contains:
    - ✓The Application menu
    - ✓A set of standard tabs
    - ✓A Help button
  - A rich contextual menu



# Ribbons and Applications

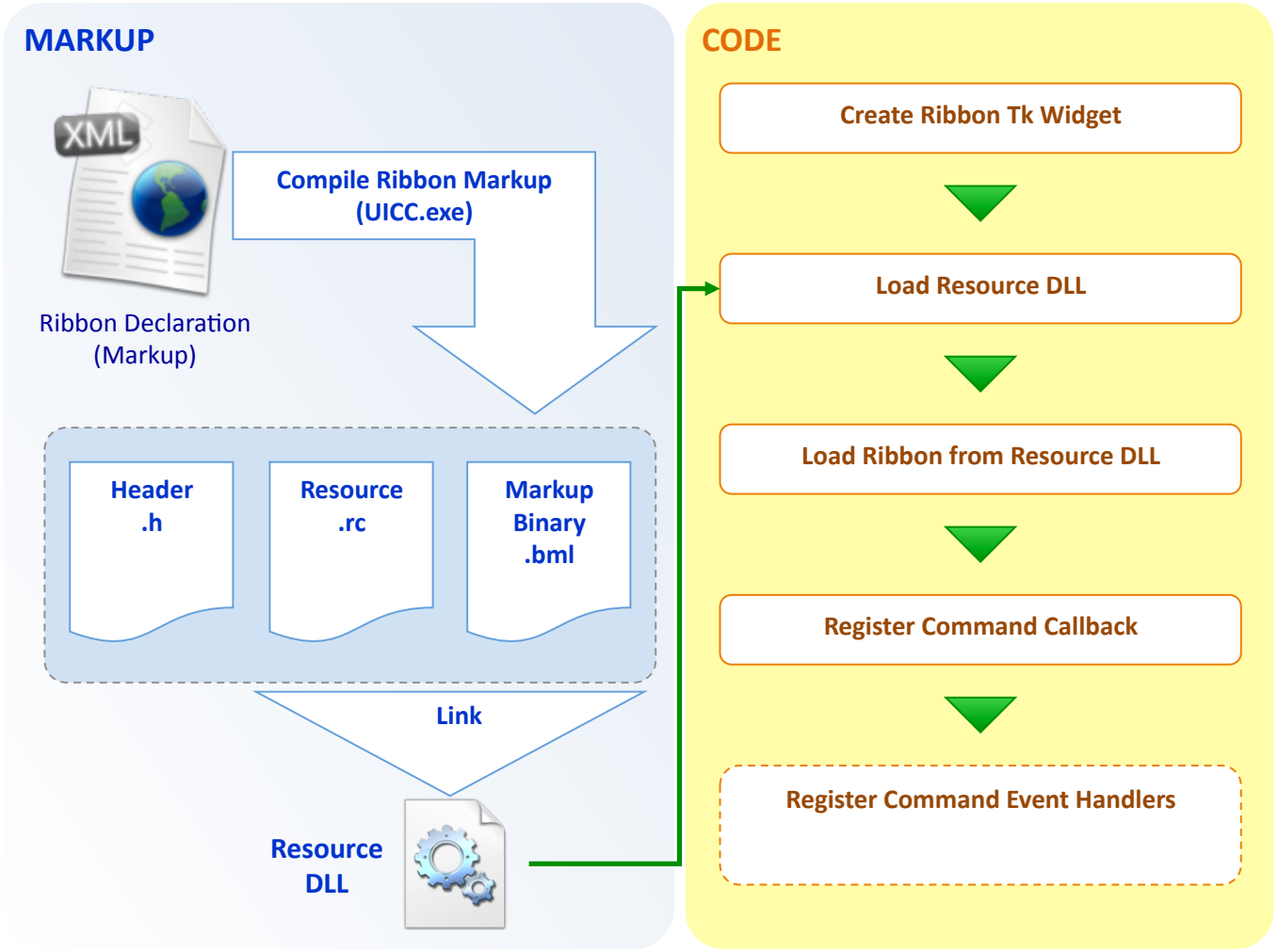
- Two distinct but dependent development platforms:
  - A XAML-based markup language, which describes the controls, their properties and their visual layout.
  - A set of COM C++ interfaces that ensure interoperability between the Ribbon framework and the application.

- A Ribbon is actually a COM object:
  - Attaches to the top part of a window
  - Redraws window and decoration as needed
  - Interacts with the user & application

# TkRibbon: Ribbons for Tk

- TkRibbon provides the needed middleware for:
  - Loading a resource DLL containing one (or more) Ribbons
  - Initialise the Ribbon framework
  - Create a "fake" Tk widget, for occupying the needed space for Tk widget managers
  - Attach a Ribbon to a Tk toplevel widget
  - Communicate user actions from the Ribbon to the application
    - ✓Through Tk virtual events
  - Send requests to the Ribbon
    - ✓By invoking widget subcommands

# Creating a Ribbon in Tk Ribbon



# Writing the XAML Markup (1)

- Two major parts:
  - Definition of commands
  - Layout of commands in tabs, groups inside a tab, and commands inside a group

- Everything is a command

- Commands have properties:
  - Label
  - Tooltip
  - Images
  - etc.

# Writing the XAML Markup (2)

```
<?xml version='1.0' encoding='utf-8'?>
<Application xmlns="http://schemas.microsoft.com/windows/2009/Ribbon">
  <Application.Commands>
    <Command Name="cmdExit" Symbol="cmdExit" LabelTitle="Exit"
        TooltipTitle="Exit" TooltipDescription="Exit Application..." />
  </Application.Commands>

  <Application.Views>
    <Ribbon>
      <Ribbon.Tabs>
        <Tab>
          <Group>
            <Button CommandName="cmdExit" />
          </Group>
        </Tab>
      </Ribbon.Tabs>
    </Ribbon>
  </Application.Views>
</Application>
```

# Compiling the XML into a DLL

- Ribbons are contained in DLLs
  - Thus, the XAML describing a Ribbon must be compiled

```
uicc.exe  ribbon1.xml  ribbon1.bml  /header:ribbon1.h \
                    /res:ribbon1.rc  /name:RIBBON1
rc.exe  ribbon1.rc
link.exe  /NOENTRY  /DLL  /MACHINE:X86  /OUT:ribbon1.dll \
                     ribbon1.res
```

```
// ****************************************************************************
// * This is an automatically generated header file for UI Element definition *
// * resource symbols and values. Please do not modify manually.              *
// ****************************************************************************
#pragma once
#define cmdExit 2
#define cmdExit_LabelTitle_RESID 60001
#define cmdExit_TooltipTitle_RESID 60002
#define cmdExit_TooltipDescription_RESID 60003
#define InternalCmd2_LabelTitle_RESID 60004
#define InternalCmd4_LabelTitle_RESID 60005
#define InternalCmd6_LabelTitle_RESID 60006
```

# Creating the widget (1)

```
package require Tk
package require tkribbon
set ScriptDir [file dirname [file normalize [info script]]]
## The resources DLL containing the Ribbon...
set RibbonDLL $ScriptDir/ribbon1.dll
## Create a Ribbon widget:
set toolbar [tkribbon::ribbon .ribbon -command \
                        onRibbonUpdatePropertyDispatch]
## Load the resources DLL: must be executed at least once
## for each DLL...
$toolbar load_resources [file nativename $RibbonDLL]
## Load the Ribbon UI from the DLL...
$toolbar load_ui [file tail $RibbonDLL] RIBBON1_RIBBON
## Pack the widget at Toplevel top: ensure expanding is false!
pack $toolbar -side top -fill x -expand false
## Important: The Ribbon will not be drawn,
## unless the window is large enough!
wm geometry . 300x250 ;# The minimum size for showing the Ribbon!
```

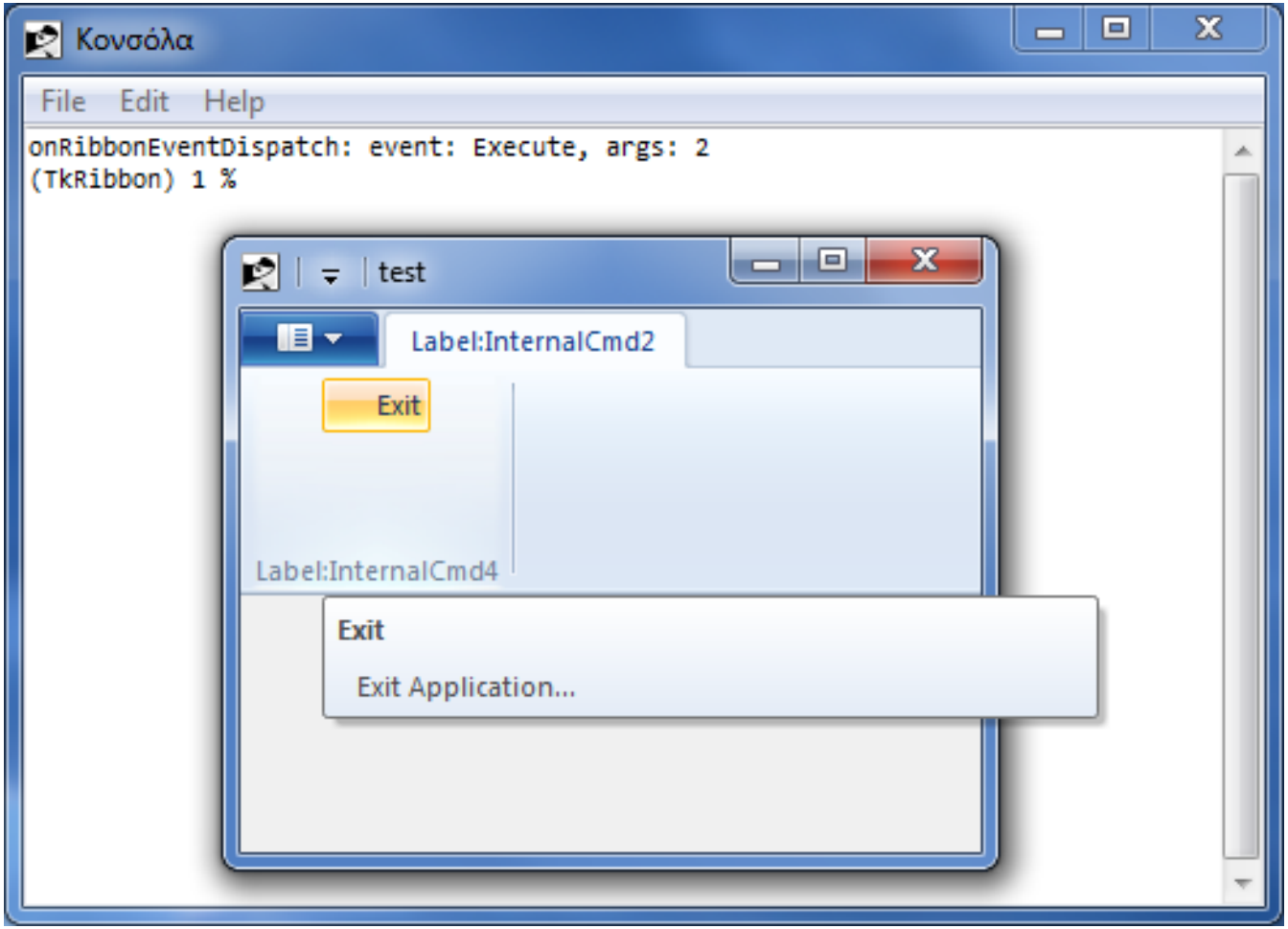
# Creating the widget (2)

```
## Events:
foreach event {Execute Preview CancelPreview CreateUICommand
               ViewChanged DestroyUICommand UpdateProperty} {
  bind $toolbar <<on$event>> \
       [list onRibbonEventDispatch $event %d]
}

proc onRibbonUpdatePropertyDispatch {args} {
  puts "onRibbonUpdatePropertyDispatch: args: $args"
};# onRibbonUpdatePropertyDispatch

proc onRibbonEventDispatch {event args} {
  puts "onRibbonEventDispatch: event: $event, args: $args"
};# onRibbonEventDispatch
```

# The result: A Ribbon inside Tk



# Interacting with a Ribbon

- Three means of interaction:
  - Through the widget callback
    - ✓When the Ribbon requests property values
  - Through virtual events
    - ✓When an event occurred in the Ribbon
  - Through widget subcommands invocation
    - ✓When the application performs a request to the Ribbon

# The widget callback (1)

- The callback is invoked when a property value is needed, because:
  - A property is not defined in the XML
  - A property has been invalidated
- Three parameters (at most):
  - The command id
    - ✓ An integer
  - The property type
    - ✓ One from: UI_PKEY_Enabled, UI_PKEY_RepresentativeString, UI_PKEY_ItemsSource, UI_PKEY_Categories, UI_PKEY_SelectedItem, UI_PKEY_BooleanValue
  - The current value (if available)

# The widget callback (2)

- The callback is expected to return a value
  - According to the property type
  - The most complex types relate to galleries
- UI_PKEY_Categories

```
[list  [list categoryName1 ... categoryNameN]  {} ]
[list  [list categoryName1 ... categoryNameN]  [list  imageResourceId] ]
[list  [list categoryName1 ... categoryNameN]  [list  imageResourceId1 ... imageResourceIdN]]
```

- UI_PKEY_ItemsSource

```
[list [list item1 ... itemN] images-list  categories-list ]
```

- Combo boxes are also galleries!

# Virtual events

- <<onExecute>>
  - Delivered when the user has executed a control
  - "%d" contains the command id
- <<onPreview>>
  - Delivered when mouse hovers over a command
- <<onCancelPreview>>
  - Cancels an <<onPreview>>

- <<onCreateUICommand>>, <<onViewChanged>>, <<onDestroyUICommand>>, <<onUpdateProperty>>
  - Reserved for future use

# Widget subcommand

- Many available subcommands
  - *pathname* **load_resources native-dll-path**
  - *pathname* **load_ui module ribbon-name**
    - ✓ Relate to loading a Ribbon
  - *pathname* **get_property property-type control-id**
    - ✓ Retrieve the value of a property
  - *pathname* **invalidate_state state-property control-id**
  - *pathname* **invalidate_value property control-id**
  - *pathname* **invalidate_property property control-id**
    - ✓ Invalidate property aspects, so as new values will be requested

# Conclusions – Future work

- TkRibbon allows usage of Ribbons from Tk
  - A large percentage of Ribbon functionality is supported
- Future work will concentrate on:
  - Supporting missing features
    - ✓Recent Files item list not available
    - ✓Saving and restoring state of the Quick toolbar
- Contextual tabs are supported
  - But not tested yet
- Support for contextual menus missing
  - Is it important?


Thank you!