

USER INTERFACE DESIGN RECOMMENDATIONS

UPDATED OCTOBER 2013



www.xmpro.com



TABLE OF CONTENTS

Introduction	
Design Objectives	4
Put the End User in Control	4
Reduce the User's Memory Load	
Make the Interface Consistent	6
Design for Errors	7
Other Key Considerations	
Use of Color	8
Use of Text	9
Iterative Screen Design	9
Activity Objects	9
Designing for Mobile Devices	
Summary OF XMPro Design Principles	10
Examples of Well Designed XMPro Screens	
Conclusion	
References	14
Contact XMPro	



INTRODUCTION

The objective of this document is to provide Configuration Consultants or Citizen Developers with User Interface Design Principles that will support them in delivering effective solutions.

As with all types of Design work, User Interface Design reflects a "personal touch". If you have more than one Citizen Developer or Configuration Consultant working on the solution design, consistency is imperative. We recommend that you agree on a style guide with your end users and make that available to all Citizen Developers. Interface inconsistency and ineffective design can potential result in a significant cost due to lost in productivity and increased support cost. Even worse – the solution can be terminated, which from a software and solution supplier's point of view needs to be prevented at all cost.

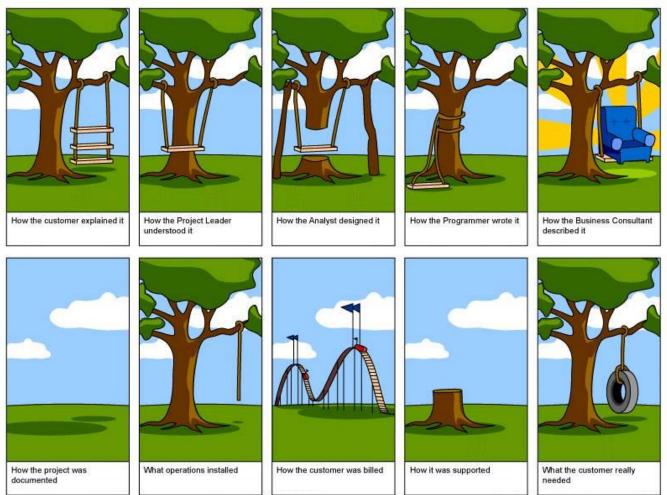
It is important to understand that end users often have different abilities and expectations than IT and configuration consultants. The UI design must always be approached from the end user's perspective. You can be the best Designer in the world – if you're client or the end user cannot associate with the interface or if it doesn't work for them you could potentially end up with a very disgruntled end user. Prior to starting your configuration (building) process you need to understand your end users and what is important to them. This will help when you need to make design trade-offs, which does happen in most UI design interfaces.

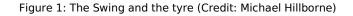
This document addresses the key components of the "Look and Feel" of an XMPro solution including:

- Presentation.
- Interaction.
- Object Relationships.

The four main design objectives of any Activity / Screen or Form are:

- Consistency (don't change the way you do things from screen to screen).
- Reduce the users' memory load (make it easy for them).
- Place the users in control of the interface.
- Design for errors.







The End User Interface Design is probably one of the most important components of designing a solution (Refer to Figure 1 – System Design). The End User Interface is what the end user sees. You want to empower your users to do their jobs. If the screens are too busy, too colorful, too many screens to get the job done and "distract" rather than "inform" you have lost the effectiveness of your solution.

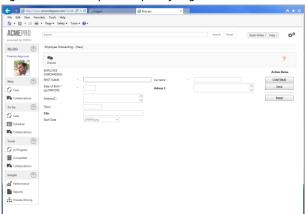


Figure 2: An example of a poorly organized screen.

	www.xmworkspace.com/Sand ,P + C 🧔 Process	×		
	invorites Tools Help 📾 🔻 Page ¥ Safety ¥ Tools ¥ 📦 *			
MEPRO red by XMPro	Search		Search Reset	Keith Miller * Help *
to ①	Capture Insurance Claim - (New)			
e Approver	Co Discuss			Save ?
ر الم	Load Demonstration Scenario Customer Profile Caimant Name			Action Items Send to Assessor
iane .	Colimant Name	Customer Level Current Balance		Information Incomplete
olaborations	Renewal Date	Renewed Cycles		Fraudulent Claim
	Incident Details			Reset
ane	- Details of Incident			
chedule	Type of Date Time Incident Date Time	Location	Details	
ollaborations		^		^
n Progress		~		\checkmark
ompleted	Assesor Details			
ollaborations	First Name	Last Name		
M (Ť	Telephone	Email		
erformance	Notes			
leports				~
rocess Mining				

Figure 3: An example of a better organized screen

There are various reasons why Figure 1 above has an ineffective User Interface and why Figure 2 has a better designed interface.

Note the differences:

- Grouping of information.
- Headers.
- Alignment.
- Tooltips.
- Command buttons.
- Mandatory fields.
- Use of Text (bold, capital letters).

The next section will focus on the areas that will improve your user interfaces.

DESIGN OBJECTIVES

PUT THE END USER IN CONTROL

There is this story about a wise architect that needed to design walkways between buildings. He did not assume that he knew how the users would really use walkways between buildings so he planted grass with posted signs "Please walk on the grass". Worn paths appeared where people actually walked so he knew where to put the walkways.

Keyword:	How to achieve this in XMPro:				
Accessible	Accommodate different skill levels. Design for the lowest level of skill not for the highest. Provide fast paths for experienced users. Use "tooltips" and input masks. The experienced user does not have to be "exposed" to all the detail the "unexperienced" user might need.				
Forgiving	Prevent re-work or re-input of information by effective use of error messages and error handling. Provide reversible actions and detailed, sensible feedback / error messages. Use a command button to "undo" and clear a screen and an Update functions to rectify incorrect information previously saved.				



Keyword:	How to achieve this in XMPro:						
	Provide "acknowledgement" when an action has been performed. E.g. Record has been saved successfully.						
	Ensure the flow between objects is logic and doesn't jump around (achieved by index no of objects).						
	Show the user where he / she is in the process (widget).						
Clear Navigation	Use sensible headers where possible (label objects are used).						
	Group relevant fields (objects) together. Horizontal Lines (inline HTML – available as part of the FastFields functionality) may help to make the grouping of information more visual.						
	Provide the user with the information they need to perform that specific step of their work. This can be achieved by using Widgets, Best Next Action, Discussions, and Process Goals.						
Transparency	Do not display fields that are not required. Rather "hide" fields in the beginning and give users an option to display more information if required. In this way you do not clutter screens and annoy more experienced users but you do provide additional info to support new or less experienced users. The "Visible" property of the object can be set to True or False.						
Preferences	Allow the user to customize their interface. This can be achieved during the design phase as well as chancing of themes in the Workspace and User Self- Management.						
Different ModesUsers can access their XMPro solution via Web, Mobile, MS SharePoint, MS SalesForce, and Custom UI. XMPro supports a "develop once, surface in mu environments" approach. Remember to consider "real estate" constraints design phase if you are going to use the mobile interface.							
Flexible	Consider "Mouse", "Keyboard", "Swipe and Tap" actions during design. The user should not be limited.						
Interactive	Make sure the descriptions on label objects and command buttons are sensible. The use of Discussions, Crowd Questions and Ad-hoc tasks improve interactivity between users and users and the solution.						
	Provide feedback. Users should be informed about what is going on.						
	Descriptive messages, text, tooltips, input masks and error messages.						
Helpful	Do not use developer terms. Use a proper tone in messages – don't blame users for errors.						
	Allow the users to change focus, that is to Save and Continue where they have left off. XMPro is not different from most other solutions – the user has to press a Save button prior to exiting the solution.						
Interruptible	Review Session Time-out defaults in the configuration file and make sure users are aware of this setting. Agree with users on a time which is acceptable to them but also won't make their solution vulnerable to unauthorized access.						
	Try not to force users to complete work in a predefined sequence. XMPro's dynamic process architecture supports unstructured and structured work.						
	Wizards is a good way of guiding a user and not forcing them through the steps in a task.						



REDUCE THE USER'S MEMORY LOAD

Keywords:	How to achieve this in XMPro: Don't force the user to remember or repeat what the solution can do for them. Drop down boxes, browse pages etc. gives the user the option to "select" a value and contribute to the accuracy of the input. Retrieve existing information at all times and don't duplicate input effort.					
Relieve short term memory						
Rely on recognition and not re- call	The use of radio buttons, check boxes, drop downs, browse pages, best next actions, widgets and process goals support recognition. Default values can also help.					
	Organize relevant information together in groups on your screen.					
	Another way of grouping information is by using object groups.					
Organize (Visual Clarity)	Aligning rows and columns reduces the complexity of a screen. Divide them with headers and lines.					
	Make sure your tabs work - within the group and then to next group of information. Refer to figure 2 and 3 in the Introduction.					
Progressive Disclosure	Show only what the user needs to see at that point in time. If required "hide"					
	information and give the user the option to "display" as required.					
Visual Cues	Tooltips, display masks, dropdowns, browse pages, widgets etc. Use icons in the widget bar. Flow diagrams or procedural documents or help files can be linked in the widget bar,					
Real-world metaphors	Do things in ways that are "familiar" to users. As soon as you use new things e.g. a different button for file attachments (e.g. not the frequently used paperclip) users need training and Change Management requirements come in to play. Consistency is yet again imperative.					
Defaults, undo and redo	Provide default values for input fields where possible. The command buttons should provide the "Clear", "Undo" functions. Tick boxes to "copy" existing information to another field or group.					
Shortcuts (frequency)	Copy existing information to a next group of fields e.g. physical to postal address. Instead of re-typing information provide drop downs or browse objects – the use of these objects will contribute to accuracy of input.					
Object-action syntax (intuitive)	Allow the users to learn the relationship between objects and actions. Consistent implementation of objects and related actions is imperative. E.g. Use consistent descriptions for your "command buttons". If you use "Submit" vs. "Continue" – it doesn't matter what you use as long as the action is clear and you are consistent.					

MAKE THE INTERFACE CONSISTENT

Keywords:	How to achieve this in XMPro:
Predictability	Encourage exploration and ensure that the solution behavior is predictable. Even though it is a business solution the interface should be "enticing" and fun-to-use. The use of widgets could be very enticing and visually pleasing while providing relevant information that makes the end user's work easier.



Keywords:	How to achieve this in XMPro:						
Expectations	Keep interaction results the same. Consistency in interface behavior is very important.						
	One of the most important aspects of an interface design is to maintain consistency throughout your solution. Users should be enabled to "learn" about a concept and "apply" it in a new part of the solution. There are three levels where consistency should be applied:						
	 Presentation (same logical, visual or physical presentation). Behavior (the object should "work" the same way throughout the solution). Interaction techniques (e.g. same Shortcut keys). 						
Experience	Try to make the length of input fields the same (right align where possible).						
Experience	Size Browse Pages properly (to prevent scrolling where it is not necessary).						
	Do not use an AutoPostBack if it is not necessary. (This will refresh your screen and could potentially update other fields based on the line selected in the drop down object. If nothing needs to happen based on the selection set AutoPostBack to False.						
	Sort information (e.g. alphabetically or favorite options) where possible. If you have a drop down of 30 meeting rooms and the user must find the correct one – it will help to sort them. This can be achieved by the "Items Attribute". Alternatively for a lookup (where you are querying a database) use an order by in your select statement.						
	Sustain the context of users' tasks. Provide point of reference as they navigate through the solution. E.g. provide "breadcrumbs", window titles, dynamic descriptions etc. can be of help.						
Continuity	The user should not have to leave the window to find additional information to complete the activity.						
	Tooltips, lookups, browse pages, drop down boxes, widgets and flow diagrams can provide information needed to complete a task.						
	Provide aesthetic appeal and integrity.						
	Be consistent in the use of :						
Attitude	 Colors. Fonts. Icons. Window / form / screen layout. 						
	The process design must allow the user "to get their job done". A pretty interface doesn't help if the solution lacks the required functionality.						

DESIGN FOR ERRORS

Keywords:	How to achieve this in XMPro:					
Input errors	 Prevent input errors that can have an impact on the following aspects of the information captured: Accuracy. Completeness. 					



Keywords:	How to achieve this in XMPro:					
	Validity.Financial periods.					
	To contribute to the above mentioned bullet points use pre-captured master data "du downs" or database tables where possible. We recommend a Master Data Maintenar process (assigned to the appropriate role) with authorization procedures if required.					
	The user "selects" the correct information rather than having to "type" in information which could potentially result in errors.					
	E.g. of objects include dropdown boxes, radio buttons, browse pages and date pickers.					
	Don't allow users to update fields where they are not supposed to (validity and accuracy). E.g. you can use the Label object to display information. Users will not be able to edit information displayed in a Label Object.					
	Ensure that each potential error has a clear error message that make sense. Be specific.					
	Don't blame the user or imply that it was a user error. Try to substitute as follows:					
Chan Frank Managara	 Error or failure with problem. Failed to with unable to. 					
Clear Error Messages	 Failed to with unable to. Illegal, invalid or bad with incorrect or not valid. 					
	 Abort or terminate with stop. 					
	Fatal or catastrophic with serious.					
	If possible, propose a solution to fix the problem.					
Error Prevention	Test for ALL potential errors a user might encounter. Even better than a good error message is error prevention.					

OTHER KEY CONSIDERATIONS

USE OF COLOR

You don't need to be the provider of the rainbow after the storm. Minimize the use of color. Colors should be natural and not distracting.

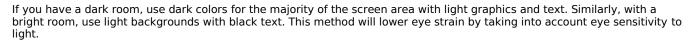
Use color where it potentially highlights information and supports clarity. A good approach is to start with a greyscale and to add color as required. Many extreme colors will cause eye fatigue. A good principle is to use subdued colors close to each other on a color wheel.

XMPro's skins provide different options so that the Citizen Developer can start with a few "canvas options". Custom skins can be used and are defined on Activity level (Properties Tab, Behaviour, Stylesheet). CSS styles can be set on object level (field level) – in the Properties tab, Options, Style).

If you are associating colors to meaning no more than 7 to 9 colors should be used. Keep the following commonly associations of color in mind:

- Green go, on, safe, clear.
- Red stop, hot, fire, danger, on, emergency.
- Yellow caution, slow, warning, warm.
- Blue cold, off, calm.
- White empty, closed.
- Black full, open.

Blue is not a good color to use for text since blue is a hard color for the eye to focus on. Users also often associate blue with a link.



USE OF TEXT

Select only two or max 3 font families throughout the solution. Use standard point sizes to display different types of information. Use a large point size for headers and a smaller size for labels.

Interestingly enough, users tend to identify words by their shapes; therefore words made up entirely of capitals do not vary in shape from word to word and thus take longer to identify.

Use ordinary, conversational terms focussed on user goals and not technology.

Be polite, supportive and encouraging.

Remember to check your spelling and grammar.

Be consistent in capitalization.

Don't put periods at the end of labels or main instructions.

Keep an eye open for mandatory field indications "*". The system automatically adds the "*" at the end of the label description.

ITERATIVE SCREEN DESIGN

Design the screen and use the Preview function to show users what they will see. These iterations help teach the users what is possible with XMPro. When you show users what is possible, they can better communicate their requirements to you. Several iterative designs should be done even during the initial demonstration of the preliminary screens in order to show the users that changing screens is easy.

ACTIVITY OBJECTS

Ensure that you use the correct object. E.g. you will not use a Simple Text Box to input a Date.

Label every object or group of objects. Reconsider "disabled" or "invisible" objects.

The following list explains the use of the objects available (please refer to your training material or the Designer Help for more detail):

- Reference Label is displayed as a dynamic value on the activity screen. The user can't change this value.
- Simple Text Box is displayed as a standard Windows text box.
- Large Text Box is displayed as a comments box or multi-line text box on the activity screen.
- Drop Down allows the user to choose a value from a predefined list. It is displayed as a combo-box. The values for a drop down are static in the XMPro Designer. This is a good control to use if you want to display "stagnant" information that is not sensitive. If the options are going to change frequently or if you are working with sensitive information this is not a good control to use.
- Browse Page allows you to display more than one field from a database in a separate browser window.
- Date Picker allows the user to choose a date from a Calendar drop down. It displays a drop down that displays a calendar when the user clicks on it. It is more flexible in terms of date formats than the ordinary date picker.
- Lookup allows the user to choose a value from a list. It is displayed as a combo-box. The values for a lookup are dynamically retrieved from a database.
- Chart displays as a chart in the XMPro Workspace. You have a lot of control over the chart type, chart colors, the chart's axis, and other chart elements.
- Checkbox displays a standard Windows check box on the activity screen.
- Radio Button is displayed as a standard Windows radio or option button. It allows the user to choose one of more than one option.
- File Attachment allows the user to attach documents to the process. It is displayed as a text box with a Browse button next to it. If the user clicks on Browse, it allows the user to navigate his/her hard drive.
- Hyperlink provides a hyperlink on the activity screen. It is typically used as links to open reports, or links to related documents such as policy and procedure documents.
- Team Select allows the user to choose the role group to which a later activity must be routed. It is displayed as a combo box. For the object to work, you need to make sure that the items in the team select are exactly the same as existing role groups. Then you can use this object as the Creation Value when choosing Dynamic Group as the Creation Type.
- Command option object type is responsible for calling the next activity. All activities must have at least one command option.

Gartner 2012 CoolVendor



Command buttons should be specific and consistent. The following recommendations may help:

- "Cancel" or "Return" should return the solution to its previous state without making changes.
- "Submit" to save and continue to the next step.
- "Save" to save information and continue the process (work) later.
- "Clear" to clear all input fields.

An explicit "Cancel" button is very important. The user needs a way out of the solutions without changing the current state.

DESIGNING FOR MOBILE DEVICES

XMPro's principle of "Design once and surface in multiple end user interfaces" requires the Citizen Developer to consider Mobile device constraints (e.g. limited real estate) at the start of the design process. The constraints might influence the process design.

Simple principles include:

- Display limited content.
- Limit end user input required.
- Progressive or staged disclosure.

Users want power with simplicity. Progressive disclosure is one of the best ways to satisfy both of these conflicting requirements. Another approach often used in XMPro is Staged Disclosure (one step at a time).

Keep in mind that progressive disclosure and a staged approach could potentially be frustrating to users because they feel there are too many steps required to complete a task.

If mobile devices are going to be the primary interface it is a good idea to do the design from a mobile device point of view rather than from a Web interface point of view.

SUMMARY OF XMPRO DESIGN PRINCIPLES

- Inform don't distract.
- Minimize color and tone down (games apps are different).
- Layout objects in the expected place, align, group, separate and balance whilst considering different interfaces.
- Simplicity focus on what is likely (what users will do) and remove redundancy (reduce and hide where unlikely and eliminate what is impossible).
- Use safe, secure and probable default values.
- Make it work automatically.
- Effective communication.
- Use the cool features.
- Use the right objects.
- Design with controls in mind (data input controls need to ensure accuracy, completeness and validity).
- Display information graphically instead of textually (or both).
- Mobile devices need to be considered during design time.

XMPRO Gartner 2012 CoolVendor

EXAMPLES OF WELL DESIGNED XMPRO SCREENS

EPRO by XMPro	Search						Sean	th Rese	et	Tim Clark	⁺ Help ⁺
	Invoice approval and matching	for supplier: ACME Inc. for invoice: 5365	524 - (#181)								
nager	Ad Hoc Task Discuss Files	History									?
	Captured Details										Action Item
(\uparrow)	Supplier	ACME Inc.		Invoice D	ate	Ju	ıly 18, 2013				Submit
	Purchase Order Number *	1892727		Invoice N	umbe	r		536524			Reset
aborations	Cost Allocation	Inventory -									
\bigcirc	Total	\$46,124.00									
	Tax	\$4,612.40									
edule	Total (including Tax)	\$50,736.40		Approve	Invoid	e *		Ŧ			
aborations	Invoice Line	5								Х.	
(\uparrow)	Drag a column header here	to group by that column									
rogress	Description		9 Qty		Unit	* 9	Total *	9		Inclusive 🕈	
npleted			9	9		9		9			
aborations	Frame Clips - S300SN23 Frame Bezel - S345SN95			120		\$10.00		\$1,200.00 \$2,124.00	10	N	
\bigcirc	Frame Stand and Hinge			50		\$856.00		42,800.00	10	N	
<u> </u>	Count=3		Sun	n=290			Sum=46124	,			
ormance n Insight											_
orts	Purchase Or	der Lines								X+	
ess Mining	Drag a column header here	to group by that column							-		
cas withing	Description		ମି Qty	9	Unit	* 9 9	Total *	9	Tax * 9	Inclusive 🕈	
	Frame Clips - S300SN23			120		\$10.00		\$1,200.00	10	N	
	Frame Bezel - S345SN95			120		\$17.70		\$2,124.00	10	N	
	Frame Stand and Hinge	- H564SN87		50		\$856.00	\$	42,800.00	10	N	
	150000 100000 50000 0 Current Month	get Performance		5 Sale	IS, TX I1 NED TO:	seasy (555) th Central Expressway		\$ 1	BER 536534 ATE July 18, 20 NO. 125278 NO. 1832727 NAI Net 30 REP Jamie Gree VAA Air O.B. N/A	01CE 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	
	0 Current Month	Month - 2 Month - 4 n - 1 Month - 3	Month -	5							

Figure 4: Example 1 – Note graphs, alignment (specifically numeric fields), grouping, headers and widgets.



Figure 5: Example 2 – Note graphs, widget bar and tabs.

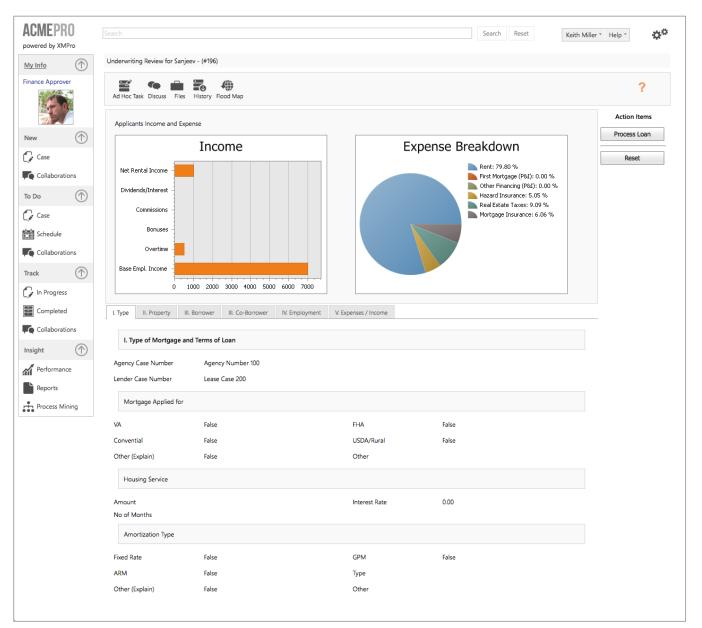
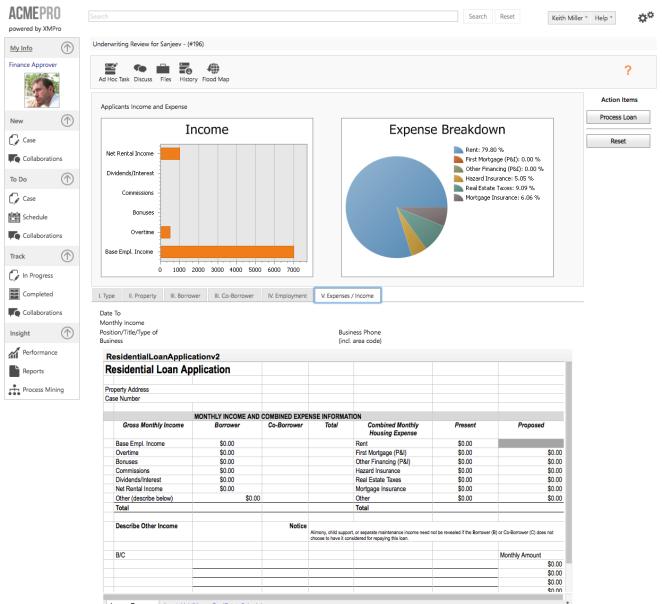




Figure 6: Example 3 – Note Tabs and Excel integrated as part of the UI.



IncomeExpense AssetsLiabilities RealEstateSchedule



CONCLUSION

It is important to remember that the solution and therefor XMPro will be judged on the effectiveness and positive adoption of the User Interface. The significance of the Citizen Developer's role cannot be underestimated or underemphasized in the successful design of the End User Interface.

In our experience XMPro End Users expect familiarity, consistency, immediate productivity and an enjoyable experience that performs targeted tasks well.

"Perfection is achieved, not when there is nothing more to add, but when there is nothing left to take away." —Antoine de Saint-Exupery

REFERENCES

The following are excellent references for additional guidelines:

- 1. http://msdn.microsoft.com/en-us/library/windows/desktop/ff728831(v=vs.85).aspx
- 2. http://en.wikipedia.org/wiki/Principles_of_user_interface_design
- 3. http://bokardo.com/principles-of-user-interface-design/
- 4. www.nngroup.com/articles/ten-usability-heuristics/



CONTACT XMPRO

XMPro Offices	North America (Head Quarter)	10000 North Central Expressway, Suite 400 Dallas, TX, 75231 United States P: +1 214 890 4093				
X	Asia Pacific Region	16/124 Walker Street, North Sydney, NSW, 2060 Australia P: + 61 2 8412 1000				
	UK & Europe Region	5/201 Great Portland Street, London, W1W5AB United Kingdom P: +44 207 268 9810				
	Africa Region	Block A, Wedgefield Office park 17 Muswell Road South, Bryanston, 2021 South Africa P: +27 11 540 0250				
XMPro Website	www.xmpro.com					
Blogs	www.bpmjournal.co	<u>m</u>				
Community Forum	www.community.xn	npro.com				
Online Technical Support	www.xmworkspace	.com/support				
XMPro Partner Portal	www.partner.xmprc	pro.com				
Social Media	f *	ww.facebook.com/xmpro				
	in h	http://www.linkedin.com/company/xmpro-inc				
	t 👻	ww.twitter.com/#!/xmpro				
	You Tube	ww.youtube.com/user/Xmprobpm				
	8+ <u>ht</u>	ttp://gplus.to/xmpro				

* Gartner does not endorse any vendor; product or service depicted in its research publications, and does not advise technology users to select only those vendors with the highest ratings. Gartner research publications consist of the opinions of Gartner's research organization and should not be construed as statements of fact. Gartner disclaims all warranties, expressed or implied, with respect to this research, including any warranties of merchantability or fitness for a particular purpose.