

SmartDox

Automated ABL Class Reference Generation

An introduction

EMEAPUG[★]
challenge



Mike Fechner, Consultingwerk Ltd.

Mike Fechner, Consultingwerk Ltd.

- Independent IT consulting organization
- Focusing on OpenEdge and .NET
- Located in Cologne, Germany
- Customers in Germany, Europe, USA
- Vendor of tools and consulting programs (specialized on GUI for .NET, Modernization)
- 23 years of Progress experience (V5 ... V11.2)
- OpenEdge Architect and Progress OO user since 10.1A beta

Agenda

- Overview / Demonstration
- Overview
- Jenkins
- ANT / PCT
- Configuration
- HTML Documentation
- Writing comments
- Customization
- Class Browser Documentation
- Review

SmartDox Overview

- Good documentation is key to the usability of every collection of classes and API's
- Writing documentation manually is
 - a lot of work
 - even more work to keep up to date
- Goal: Provide automated class library documentation
- Rebuild nightly or after each code commit
- Integrated into build environment



SmartDox Overview

- Joint venture of Gilles Querret / Riverside Software and Consultingwerk
- Based on PCT: Progress Compiler Tools, Ant Tasks for OpenEdge
- Open source project, hosted on Google Code
- For Consultingwerk: Successor of AutoDox2
- SmartComponent Library and WinKit class reference as the initial use case
- Designed for extensions and customizations

Demonstration

- HTML Class Library Reference in Browser
- Integrated into IDE using Plugin
- Compare with actual source code
- Cross linking with 3rd party class libraries
 - MSDN
 - Infragistics
 - OpenEdge
- Generated class browser documentation

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Jenkins



pct

ANT tasks for OpenEdge



Overview

- Developer writes codes & comments
- Submitted to source code repository (SCM), SVN, Perforce, Git, RTB, ...
- Jenkins polls SCM for updates or scheduled
- Jenkins provides updated source code to build workspace
- PCT compiles to preprocessed source code
- PCT extracts class members and comments to XML file
- Documentation is generated
- Documentation is uploaded to website



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Jenkins

- Continuous Integration Server (CI)
- Open Source Project
- Plugin based tool that executes build jobs
 - Based on schedule (e.g. nightly builds)
 - Based on events (source code commit)
 - Manually
- Typical build jobs are ANT or Maven Scripts
- <http://jenkins-ci.org/>

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ANT/PCT

- ANT: Originally java build scripts
- Apache project, extensible in Java
- XML script language
- Tasks:
 - File system maintenance (mkdir, copy, delete, ...)
 - Java-Compiler
 - Execution of Junit tests
 - ZIP, JAR tasks
 - SCM Tasks
 - ...

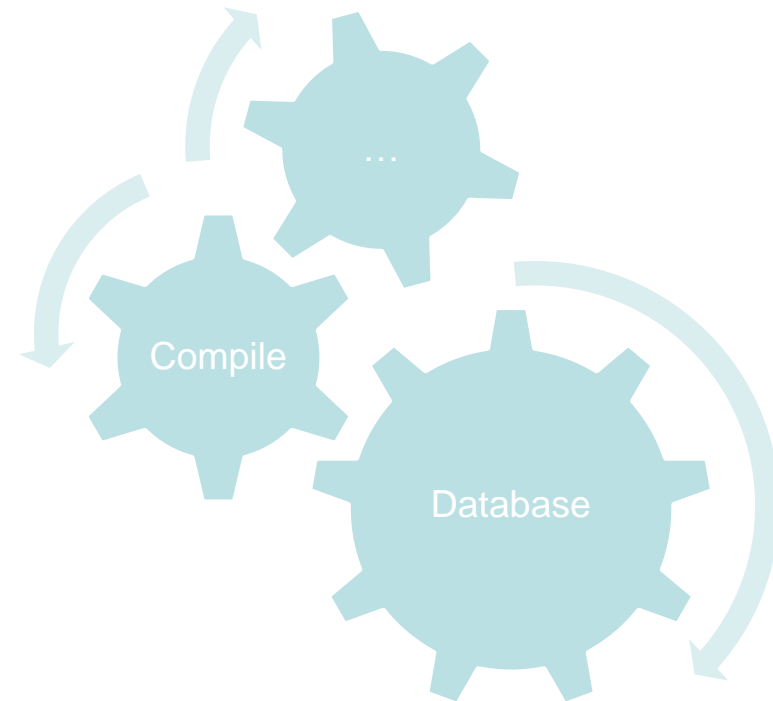
Celebrating 10 years of PCT!



<https://code.google.com/p/pct/>

ANT/PCT

- PCT provides ANT tasks for OpenEdge build automation
 - Create database
 - Load/dump schema/delta.df
 - Load/dump data
 - Compile source code
 - Execute ABL code
 - X-Code, prolib
 - ...



ANT/PCT

- Sample ANT script using PCT tasks

build.xml

```
1 <?xml version="1.0" encoding="utf-8"?>
2
3 <project name="SmartComponent Library" default="SmartComponentLibrary"
4     basedir=".">
5
6     <description>SmartComponent Library</description>
7
8     <property environment="env" />
9     <property file="build/build.props" />
10
11     <!-- Définition des tâches externes -->
12     <taskdef resource="PCT.properties" classpath="/Progress/PCT/ant/lib/PCT.jar" />
13     <taskdef resource="extras.properties" classpath="/Progress/PCT/ant/lib/PCT.jar" />
14
15     <taskdef resource="com/perforce/p4java/ant/tasks/P4Tasks.properties"
16         classpath="${env.PCT_HOME}/lib/p4ant-2010.1.293250.jar:
17             ${env.PCT_HOME}/lib/p4java-2010.1.269249.jar:/Progress/PCT/ant/
18
```

ANT/PCT

```
<PCTCreateBase dbName="ged" destDir="${db}"  
  codepage="utf" schemaFile="db/schema1.df,db/schema2.df"  
  structFile="db/struct.st" blockSize="4"  
  dlcHome="${DLC}" />  
  
<PCTRun procedure="src/initDb.p" paramFile="conf/param.pf"  
  dlcHome="${DLC}" cpstream="utf-8">  
  <DBConnection dbName="ged" dbDir="${db}" singleUser="yes" />  
  <DBConnection dbName="cust" dbDir="${db}" singleUser="yes" />  
</PCTRun>
```

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SmartDox Configuration

- Typically generated by a series of ANT/PCT tasks
 1. **PCTCompile** to create preprocessed source code
 2. **ClassDocumentation** task to extract methods, properties, events and comments from source code to XML documents
 3. **PCTRun** of *generate-class-reference.p* to generate actual HTML documentation

PCTCompile to preprocessed source

```
<PCTCompile destDir="." graphicalMode="true" dlcHome="{progress.DLC}"
  md5="true" minSize="false" cpinternal="iso8859-1" cpstream="iso8859-1"
  compileUnderscore="true" inputchars="16000" assemblies="Assemblies"
  iniFile="ini/progress.ini" token="4000" preprocessDir="preprocessed"
  forceCompile="true">
  <fileset dir="Consultingwerk" casesensitive="false">
    <include name="**/*.cls" />
  </fileset>
  <propath>
    <pathelement path="." />
    <pathelement path="OERA" />
    <pathelement path="src" />
  </propath>

  <DBConnection dbName="SmartDB" dbDir="../DB"
    singleUser="true">
    <PCTAlias name="dictdb" />
  </DBConnection>
  <DBConnection dbName="icfdb" dbDir="../DB" singleUser="true" />
</PCTCompile>
```

ClassDocumentation Task

- Uses the *OpenEdge Architect* AST parser

```
<ClassDocumentation destDir="classdoc" dlcHome="${progress.DLC}">  
  <fileset dir="preprocessed" includes="**/*.cls"/>  
  <propath>  
    <pathelement location="preprocessed"/>  
  </propath>  
</ClassDocumentation>
```

- Produces XML output in the *destDir*

Sample XML output

```

<?xml version="1.0" encoding="UTF-8" standalone="true"?>
<unit packageName="Consultingwerk.Forms" className="BaseForm" inherits="Progress.Windows.Form" isAbstract="false"
isFinal="false" isInterface="false">
  <interfaces>ICustomTypeDescriptor</interfaces>
  <interfaces>IHasDesignerVerbs</interfaces>
  <classComment>/*****
  2006-2013 by Consultingwerk Ltd. ("CW") - * * www.consultingwerk.de and other contributors as listed * * below. All
  Rights Reserved. * * * * Software is distributed on an "AS IS", WITHOUT WARRANTY OF ANY * * KIND, either express
  or implied. * * * * Contributors: * * *
  *****/</classComment>
  <classComment>/*****----- File : BaseForm Purpose : Base class
  for .NET Forms Syntax : Contains code to store window position in the Registry (and restore it when Form will be
  reopened) Also implements DependentForms collection which is similar to the .NET default OwnedForms collection but
  does not result in the child Form to always stay on top of the parent Description : Author(s) : Mike Fechner /
  Consultingwerk Ltd. Created : Thu May 07 09:40:39 CEST 2009 Notes : Base class for MdiContainer,
  SmartWindowsForm and EmbeddedWindowForm. Use this class as the base class for any .NET Form
  *****/</classComment>
  <constructor signature="BaseForm()" modifier="PUBLIC">
    <constrComment>/*****----- Purpose: Constructor for the
    BaseForm class Notes: -----*/</constrComment>
  </constructor>
  <method signature="GetAttributes():AttributeCollection" modifier="PUBLIC" methodName="GetAttributes"
  returnType="AttributeCollection" isStatic="false">
    <comment>/*****----- Purpose: Returns a collection of
    custom attributes for this instance of a component. Notes: @return The
    System.ComponentModel.AttributeCollection describing the types attributes
  *****/

```


generate-class-reference.p

```
<PCTRun procedure="Consultingwerk/Studio/ClassDocumentation/generate-class-reference.p"
  graphicalMode="true" dlcHome="{progress.DLC}" cpinternal="iso8859-1" cpstream="iso8859-1"
  compileUnderscore="true" inputchars="16000" assemblies="Assemblies"
  iniFile="ini/progress.ini" token="4000">


  <propath>
    <pathelement path="." />
    <pathelement path="OERA" />
    <pathelement path="src" />
  </propath>




















  <DBConnection dbName="SmartDB" dbDir="../DB"
    singleUser="true">
    <PCTAlias name="dictdb" />
  </DBConnection>
  <DBConnection dbName="icfdb" dbDir="../DB" singleUser="true" />

  <Parameter name="TargetDir" value="Documentation"/>
  <Parameter name="SourceDir" value="classdoc"/>
  <Parameter name="TemplateSourceDir" value="Consultingwerk/Templates/ClassReference"/>
  <Parameter name="ResourceDir" value="Consultingwerk/Templates/ClassReference/Resources"/>
  <Parameter name="Services" value="Consultingwerk/Studio/SmartDox/class-doc-services.xml"/>
  <Parameter name="OpenEdgeDocFileName" value="Consultingwerk/Studio/OpenEdgeDocs/111.xml"/>
  <Parameter name="OpenEdgeBaseLink" value="http://help.consultingwerkcloud.com/openedge/111/" />
  <Parameter name="PreloadClasses" value="true"/>
  <Parameter name="GenerateTreeViewOverview" value="true"/>
</PCTRun>
```

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Search: 

- ↑ Consultingwerk
 - ↑  Assertion
 - ↑  BPM
 - ↑  WindowIntegrationKit
 - ↑  BusinessEntityDesigner
 - ↑  Utilities
 - ↑  Util
 - ↑  Studio
 - ↑  SmartUnit
 - ↑  SmartFramework
 - ↑  SmartComponents
 - ↑  OERA
 - ↑  Framework
 - ↑  Forms
 - ↳  **BaseForm**
 - ↳  MDIContainer
 - ↑  Exceptions
 - ↑  Design
 - ↑  Web
 - ↑  Windows

Namespace: Consultingwerk.Forms

Class BaseForm

Parent classes: [Progress.Windows.Form](#)
↳ [Consultingwerk.Forms.BaseForm](#)

Inherits: [Progress.Windows.Form](#)

Implements: [System.ComponentModel.ICustomTypeDescriptor](#),
[Consultingwerk.SmartComponents.IHasDesignerVerbs](#)

File: BaseForm

Purpose: Base class for .NET Forms

Syntax: Contains code to store window position in the Registry (and restore it when Form will be reopened)
Also implements `DependentForms` collection which is similar to the .NET default `OwnedForms` collection but does not result in the child Form to always stay on top of the parent

Author(s): Mike Fechner / Consultingwerk Ltd.

Created: Thu May 07 09:40:39 CEST 2009

Notes: Base class for `MdiContainer`, `SmartWindowsForm` and `EmbeddedWindowForm`.
Use this class as the base class for any .NET Form

Consultingwerk
software architecture & development

Consultingwerk Class Library

[Create your own Custom Search](#)



Gadgets

Method Summary

Options	Name	Purpose
#	CreateVerbs ()	Creates Design...

HTML Documentation

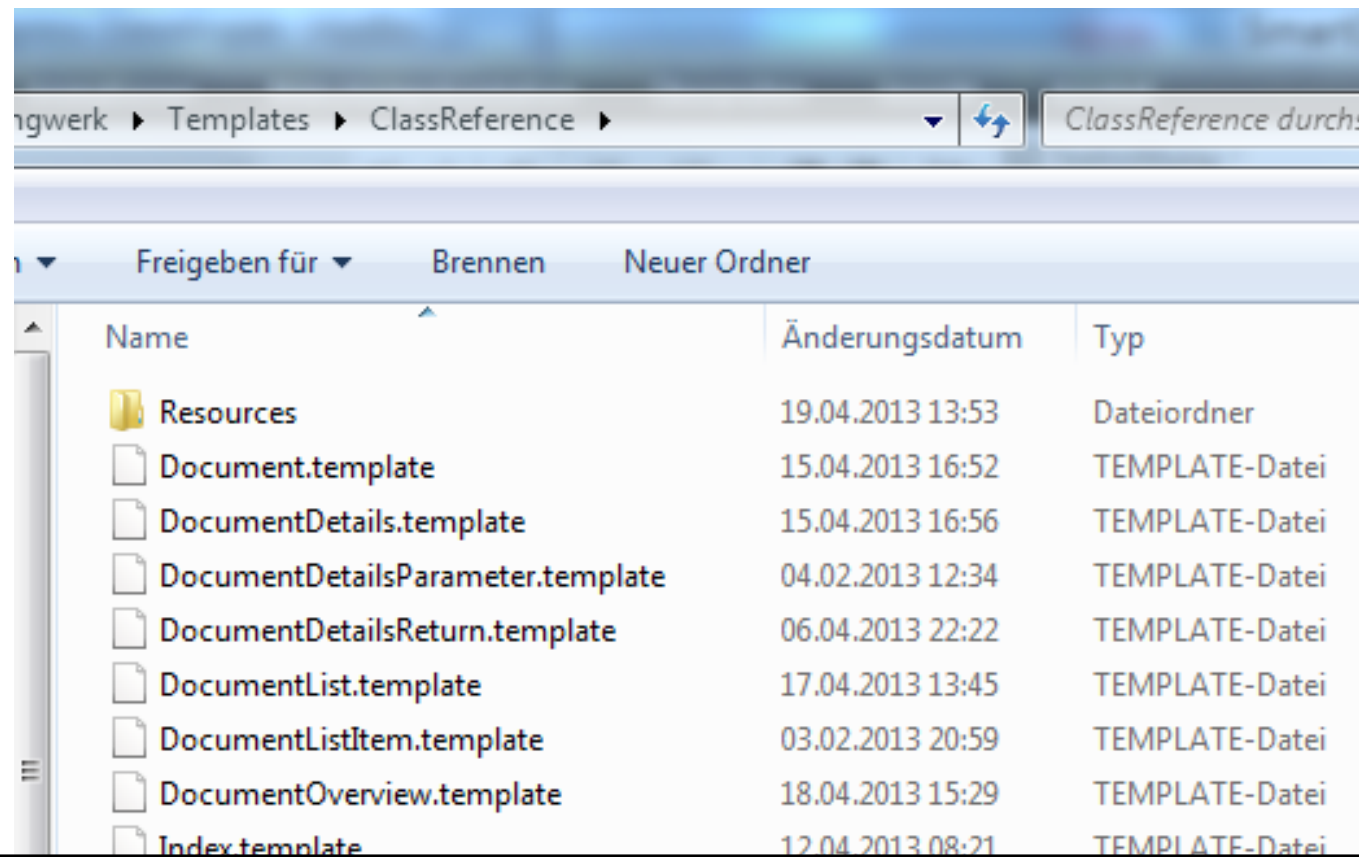
- Based on customizable HTML templates
- Template names are fixed
- Template folder is variable to point to custom variants of the html fragments
- Templates for html pages
 - Document
 - Frameset
 - Index/Tree
- Templates for page fragments
 - Method description
 - Method list

```
<tbody style="vertical-align: top">
  <tr>
    <td>
      <span class="span_namespace">Namespace:</span>
    </td>
    <td>
      <span class="span_packagename">@PACKAGENAME@</span>
    </td>
  </tr>
  <tr>
    <td>
      <span class="span_pagetype">@PAGETYPE@&nbsp;</span>
    </td>
    <td>
      <span class="span_classname">@CLASSNAME@</span>
    </td>
  </tr>
  <tr>
    <td>
      <span class="span_parentclass">Parent classes:</span>
    </td>
    <td class="span_parentclass">
      @PARENTCLASSES@
    </td>
  </tr>

```

HTML Templates

- Template folder is specified on PCTRun task
- <https://code.google.com/p/pct/wiki/TemplatesDescription>



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Writing comments

- Default is a combination of **JavaDoc** standards and default PDSOE **ABL Comment templates**
- Comment sections (one word label followed by a colon), like
 - **Purpose:**
 - **Notes:**
- Parameter comments:
@param parameterName Comments in one line
- Return parameter description:
@return Comments in one line

```
/*-----  
Purpose: Loads stored window settings from the registry  
Notes: This method is intended to be overridden to store the settings to  
a users profile (i.e. in the database).  
@param pcSettingsKey The key under which the settings for this Form are stored  
@return The string containing the stored window settings  
-----*/  
METHOD PROTECTED CHARACTER LoadSettings (pcSettingsKey AS CHARACTER):
```

PROTECTED CHARACTER LoadSettings (CHARACTER)

Purpose: Loads stored window settings from the registry

Notes: This method is intended to be overridden to store the settings to a users profile (i.e. in the database).

Parameters:

pcSettingsKey CHARACTER
The key under which the settings for this Form are stored (e.g. Position)

Returns CHARACTER
The string containing the stored window settings

PUBLIC Infragistics.Win.UltraWinToolbars.RibbonGroup BuildRibbonGroupFromFrame (HANDLE, UltraToolbarsManager, RibbonTab, CHARACTER, CHARACTER, LOGICAL, LOGICAL, DECIMAL)

Purpose: Builds a RibbonGroup for BUTTON widgets in an ABL FRAME

Notes:

Parameters:

<i>phFrame</i>	HANDLE	The HANDLE of the ABL FRAME WIDGET containing the BUTTON widgets
<i>poToolbarsManager</i>	Infragistics.Win.UltraWinToolbars.UltraToolbarsManager	The reference to the UltraToolbarsManager that contains the Ribbon
<i>poRibbonTab</i>	Infragistics.Win.UltraWinToolbars.RibbonTab	The reference to the RibbonTab that should contain the new RibbonGroup
<i>pcRibbonGroupKey</i>	CHARACTER	The key for the new RibbonTab object
<i>pcRibbonGroupCaption</i>	CHARACTER	The caption of the new RibbonTab object
<i>plSkipExisting</i>	LOGICAL	Flag indicating if Tools already available in the ToolbarsManager should be skipped
<i>plHideButtons</i>	LOGICAL	Flag indicating if the BUTTON widgets should be hidden
<i>pdeLimitRow</i>	DECIMAL	The topmost Row (in ABL character units) for BUTTON widgets that should be renders in the RibbonGroup
Returns	Infragistics.Win.UltraWinToolbars.RibbonGroup	The RibbonGroup that was created for the Buttons in the FRAME

Expanded parameter type name (USING)

Hyperlink to 3rd party class reference

Writing comments

- Hint: Add the parameter comments to your editor templates ...
- Consider customizing Progress Developer Studio templates
- See:
<http://communities.progress.com/pcom/docs/DOC-16387>

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Customization options

- HTML Templates
- Service Implementations
 - **ICommentParser** Interfaces
 - **IClassReferenceLinkProvider**
- Provide a custom class that implements one of the interfaces above
- Register custom classes in services.xml file

```
<ttServiceLoader xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">  
  <ttServiceLoaderRow>  
    <Order>1</Order>  
    <ServiceTypeName>Consultingwerk.Studio.ClassDocumentation.IClassReferenceLinkProvider</ServiceTypeName>  
    <ServiceClassName>Consultingwerk.Studio.SmartDox.ExtendedClassReferenceLinkProvider</ServiceClassName>  
  </ttServiceLoaderRow>  
</ttServiceLoader>
```

Comment Parser Interface

- Responsible for parsing method/property/interface comments
- Allows customizing the documentation utility for other comment styles
 - True JavaDoc style
 - AutoEdge style
 - Custom style

IClassReferenceLinkProvider

- Link provider allows mapping of class names from 3rd party libraries to URLs to the class reference
- Standard implementation translates links with **.NET System.*** classes and **Infragistics UltraControls** to MSDN und help.infragistics.com

Providing links to ABL class reference

- ABL class reference is not „linkable“ from the outside
- Online help from Progress Developer Studio is in HTML format, provided as a ZIP in %DLC%\oeide\...
- Consultingwerk/Studio/OpenEdgeDocs/parse-openedge-documentation.p can parse HTML documentation and provide class index
- Extended link provider implementation may create links to ABL documentation

Further 3rd party libraries

- Add yourself as needed...
- Usually refactoring links to class libraries is not that difficult...

Demo

- Review class link provider
- Review OpenEdge HTML documentation

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Class Browser documentation

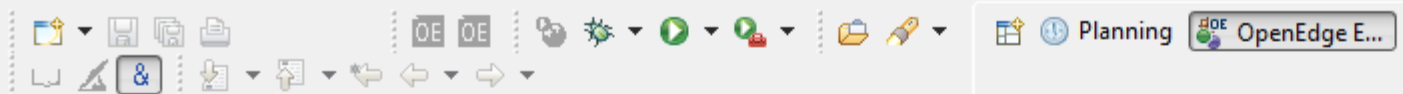
- View in Progress Developer Studio for OpenEdge
- OO programmers best friend
- „Initialize OpenEdge Tooling“ provides list of classes and members (methods/properties/events)
- Comments or further documentation only provided for ABL build-in objects and .NET classes

Class Browser documentation

- This is **undocumented...** and **may change at anytime** (but it hasn't changed in the last 8 OpenEdge releases!)
- You can provide an XML file in a specific format
- XML file must reside in the project root folder that contains classes
- XML file must be named after the physical root folder this project resides in – NOT the project name, e.g. **ABL**.xml when source is in c:\Work\SmartComponents4NET\Trunk**ABL**

Class Browser documentation

- `<documentation>.xml` can be generated from the same class documentation output as the HTML documentation
- Makes first time opening of the Class Browser a bit slower
- Limitation: XML file does not support providing separate documentation entries for overloaded methods (polymorphic methods)



Class Browser

- Search
- Consultingwerk.BPM
 - Consultingwerk.BPM.FormDesigner
 - Consultingwerk.BPM.OERA
 - Consultingwerk.BPM.Resources
 - Consultingwerk.BPM.Windows
 - Consultingwerk.BusinessEntityDesigner
 - Consultingwerk.BusinessEntityDesigner.Batch
 - Consultingwerk.BusinessEntityDesigner.Genera
 - Consultingwerk.BusinessEntityDesigner.Genera
 - Consultingwerk.BusinessEntityDesigner.Genera
 - Consultingwerk.BusinessEntityDesigner.Plugin
 - Consultingwerk.BusinessEntityDesigner.Plugin
 - Consultingwerk.BusinessEntityDesigner.Plugin
 - Consultingwerk.BusinessEntityDesigner.Service
 - Consultingwerk.BusinessEntityDesigner.UI
 - Consultingwerk.BusinessEntityDesigner.UI.Sha
 - Consultingwerk.Design
 - Consultingwerk.Design.SmartComponents
 - Consultingwerk.Design.SmartComponents.Vie
 - Consultingwerk.Design.WinKit
 - Consultingwerk.Design.WinKit.Toolbar
 - Consultingwerk.Exceptions
 - Consultingwerk.Forms
 - BaseForm
 - MDIContainer

- LoadRibbonQuickAccessToolBar ()
- LoadSettings ()
- LoadSettings (character)
- MemberwiseClone (logical)
- NotifyInvalidate (System.Drawing.Rectangle)
- OnActivated (System.EventArgs)
- OnAutoSizeChanged (System.EventArgs)
- OnAutoValidateChanged (System.EventArgs)
- OnBackColorChanged (System.EventArgs)
- OnBackgroundImageChanged (System.EventArgs)
- OnBackgroundImageLayoutChanged (System.EventArgs)
- OnBindingContextChanged (System.EventArgs)
- OnCausesValidationChanaed (Svsystem.EventArgs)

METHOD PROTECTED character LoadSettings (pcSettingsKey AS character)

Member of Consultingwerk.Forms.BaseForm

Summary:

Purpose: Loads stored window settings from the registry
 Notes: This method is intended to be overridden to store the set
 a users profile (i.e. in the database).

pcSettingsKey: The string containing the stored window settings

RETURN: The string containing the stored window settings

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Review

- SmartDox allows every ABL developer to generate feature rich class library documentation
- free to use
- based on free open source tools
- entry point to continuous integration
- object oriented ABL code including GUI for .NET
- no support for procedural code
- <https://code.google.com/p/pct/>

Questions



Thank you!