

CA Plex - Migrating from C++ to C# WPF client

Lorenz Alder

Plex II track



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About the speaker

Lorenz Alder

- Works at CM First AG, Switzerland since 2008
 - Former employers (Antares Informatik AG, Opus Informatik AG)
- Consulting services, CA Partner delivered support
- Sales support, development
- KT, Obsydian, COOL, All Fusion, CA Plex experience since 1993
- Started using Synon/2E in 1989
- lorenz.alder@cmfirstgroup.com

Abstract

The session covers three topics. First we have a look at a real life migration project at AMARI METAL FRANCE, Marseille and the lessons learned from that particular project. Second we give an overview of the WPF features supported in the current CA Plex 7.0 versus the C++ generator and demonstrate some customization and integration examples . At last we want to propose some changes to the CA Plex Tool and WPF generator in order to further exploit the power of WPF.

Agenda

- Experiences from AMF C# client project
- Unsupported Features in Plex 7.0
- Proposed Enhancements
- Q&A

AMARI METAL FRANCE



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- Located at Marseille, France
- Metal Trading
- 300+ end users in 7 companies
- Application delivered via Terminal Server
- Application is not multi-lingual
- IBM i backend

AMF Project Goals

- Migrate Client from C++ to C#
- No changes to UI functionality
- Parallel development C++ and C#
- Keep Terminal Server deployment
- Pure .NET application 32 or 64 bit

AMF Project Resources

- Chief developer (part time)
- Student (part time)
- On site and remote support CM First AG
- 300 Days spent until Oct 2013
- Another 300 days estimated to complete
- More resources will be assigned

AMF Project – Needed Skills

- Expert knowledge of CA Plex
- C# Knowledge
 - Integrating third party software
 - Converting VB and C++ to C#
 - Overcome limitations of Plex 7.0 Generator
 - Debugging
- WPF Knowledge can be helpful



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AMF Project – Steps 1

- Analyze Model
- Package the functions into Packages and Code libraries
- Set up Development Workflow
- Replace VB script and C++ Code
- Work around limitations of Plex 7.0

AMF Project – Steps 2

- Check all panels, test
- Replace necessary Reports with Reporting Tool
- Replace Help with HTML system
- Document UI changes for end users

AMF Project – Plex Model

- 360 Entities
- 2446 C# Functions total
- 1464 C# Panel functions
- 180 VB scripts
- 40 C++ Source code objects
- 134 Plex Reports

AMF Project – UI Example 1

V2.2 - Société 010 - Vignon Choquit - Session 192535 - Utilisateur PV2 BEVACQUA [PCAMF001-123-BEVACQUA]/(010-086-01)

Fichier Action Structure Edition Paramètres Filtrer Articles Stock Clients Fournisseurs Ventes Achats Parachèvement Statistiques Fenêtre ?

Gestion des articles

Afficher uniquement : Code nuance ☒ Tri par nuance ☐ Articles mouvementés

Pièce Famille S-Famille Code produit

Aide à la gestion des approvisionnements / Sélection

Code dépôt 01 ☐ Articles tenus par LMC No de BL Dépôt (>=) 0 ☒ Affichage dispo LMC (grille)

☐ Ventes Exceptionnelles : 10000 du Consommé en 1 seule fois dans les derniers 0 Jours 0 Sem 0 Mois

☐ Couverture de stock : ☐ Prendre les attendus à la vente.

☐ Sur-stock : No de mois de couverture 0,00 ☐ Prendre les attendus à l'achat Consommation mensuelle de référence

Pré-calcul quantités à approvisionner

(Nb de mois * Consommation) - Stock

(0,00 * ---) - Stock à Termi

Unité de gestion

Unité d'achat

Unité de vente

Paramètres

Sauvegarde Paramètres Sélection

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AMF Project – UI Example 2

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Fichier Structure Action Edition Paramètres Filtrer Articles Stock Clients Fournisseurs Ventes Achats Parachèvement Statistiques Fenêtre ?

Gestion DE1 Document Entête

Afficher uniquement : Découpe Etablissement 01 Agent Etat

Afficher à partir de : Du Select a Date au Select a Date

Commencer par : Recherche

Visualisation d'un document de découpe.

3082719 PA 130103572 Dépot 01 Etablissement 01

Code article 080 03 310 100 Rond laminé LAC 100 mm

UG KG Poids théorique 66,181 Epaisseur de lame 3

PMP 0,00 PMM 0,00 PTB 0,000 PTU 0,000 EA 0,00

Stock 408,335 Entrée 0,000 Dispo -89,807 Plancher 0,000 MU 0,00

Matière Première Produit Fini Chutes Déchets

Poids (Kg) 81,667 8,140 0,000 73,527

Quantité (UG) 81,667 8,140 0,000 73,527

PR (€) 0,00 0,00 0,00 0,00

% déchets / PF 90328,00% % déchets / MP 9003,00%

Ventes: Val. OP 1 025,64 € Val. PR 0,00 € Marge 1 025,64 € MU 10000,00%

Mot de recherche Réaliser Parachèvement

MP - Matière Première

N°	Qté	Longueur	Coulée	Pièce ID	Bk.D	Poids MP	Poids Théorique	Poids Réel	Poids Keel en stock	PR	Qte UG	UG
20	1	1 234	BLOBO8BLC	080-BLOBO8BLC	Modèle réutilisable	81,667	81,667	81,667	408,335	0,00	81,667	KG

Multi-Coulée

PF - Produit Fini

Coulée	N°	Qté	Longueur	Poids	CDV Déchets €	PRU Total	PRU PMP	PRU déchets	PV Val. total	PR Val. total	PR Déchets Est.	MU	Eto	Dep Exp	Dep PA	Expédition	
BLOBO8BLC	10	1	123	8,140	0,00	0,00	0,00	0,0000	1025,64	0,00	0,00	10 000,00	CC	01	02	01	Mé dépôt Expéditeu

CR - Chutes Réutilisables

N°	Qté	Longueur	Coulée	Poids	PR Val. total	Pièce ID
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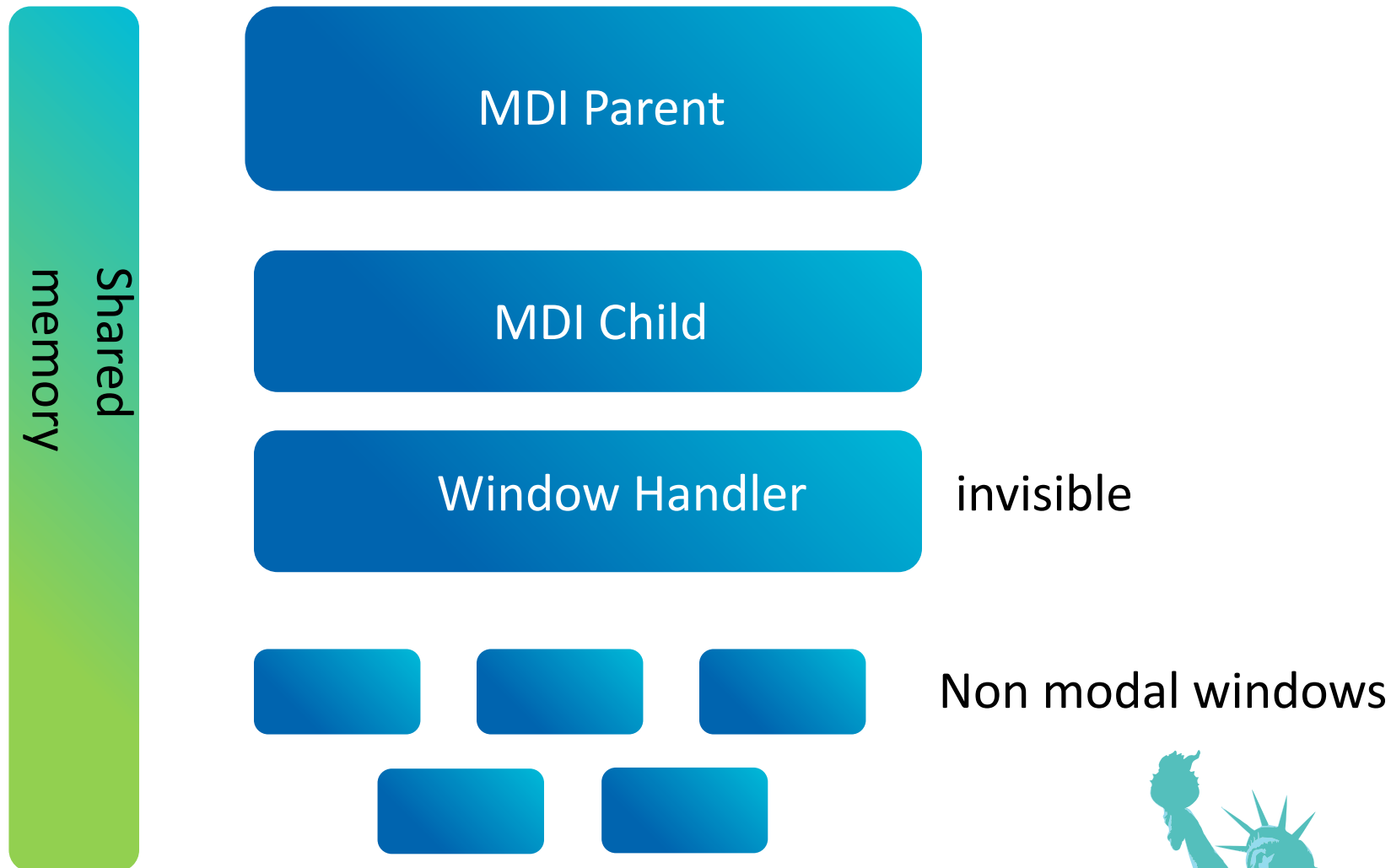
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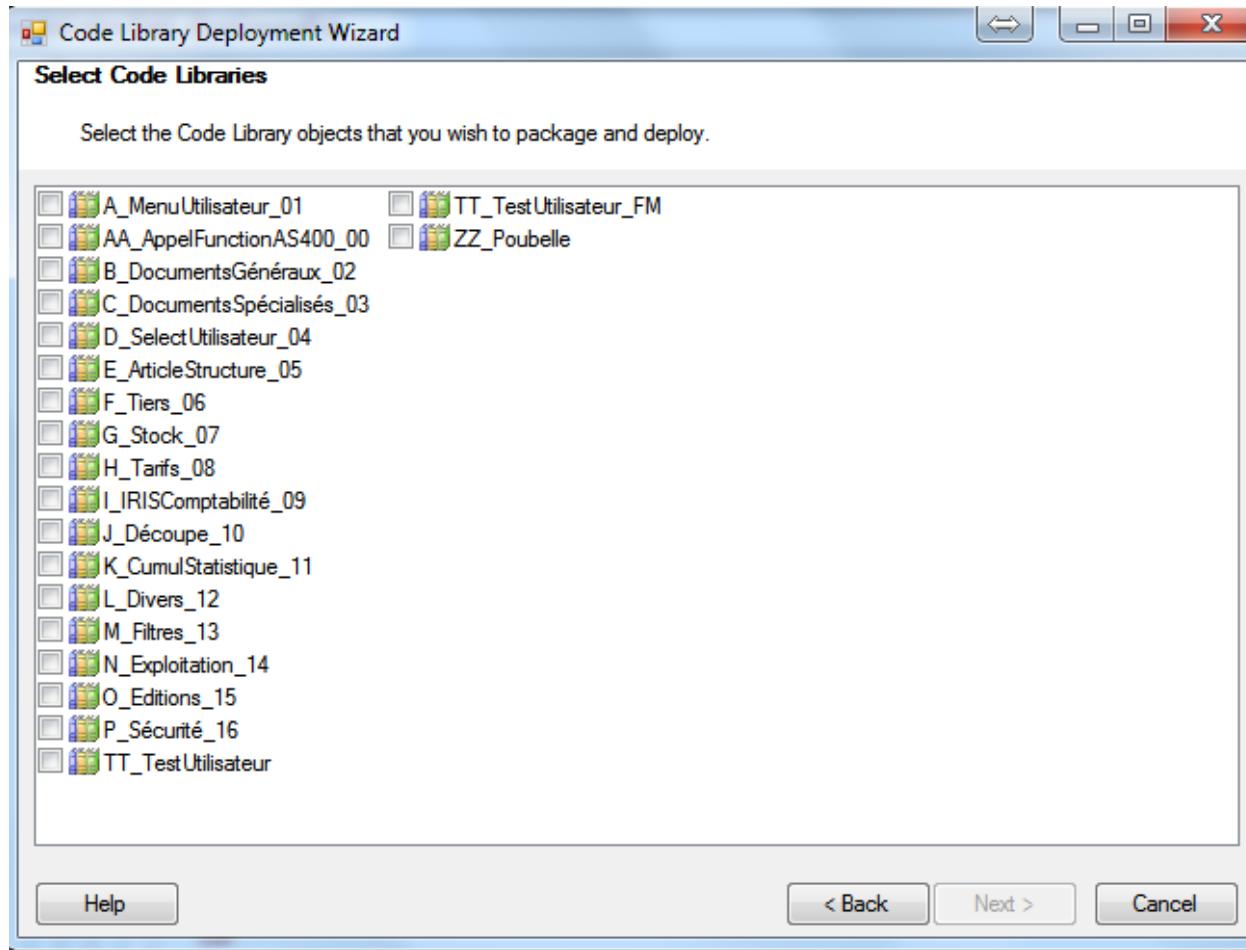
AMF Project – Application Architecture

- MDI Parent
- MDI Children
- Non Modal Dialogs
- Communication via SharedData and Triggers

AMF Project – Application Architecture



AMF Experience – Packages, Code Libraries 1



- Packages and Code libraries created manually
- Tried to minimize assembly loading
 - Loading all Code Libraries consumes 554 MB

- Code libraries change development workflow
- Build management needed
 - Move Source to Integration Server
 - Run Code Library builds
 - Use local assembly for development as first assembly in Assembly List configuration

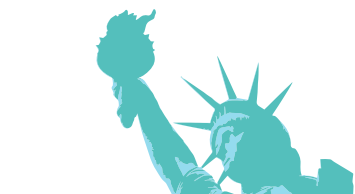
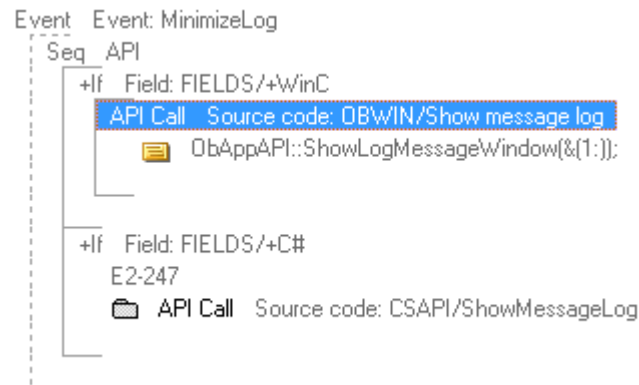


- Automated Build management
 - Now using simple approach (2 developers)
 - Considering automation when more people join the project
- Tools
 - Rational RTC, CruiseControl, TeamCity etc.
 - Use Code library wizard plugin mechanism



AMF Experience – Replace VB and C++ code

- Condition api calls with +If Field: FIELDS/+C#
- Condition previously unconditionned API calls



AMF Experience – Workaround Example 1

- Progress Bar
 - Manually changed generated XAML
 - Manually changed generated C#
 - Added Source Code object to show progress

AMF Experience – Workaround Progressbar Example 3

Changes to XAML:

```
<ProgressBar x:Name="ProgressBarWPF1"  
HorizontalAlignment="Left" Height="24"  
Margin="4,28,0,0" VerticalAlignment="Top"  
Width="384" Maximum="6" Value="1"  
Minimum="1"/>
```



AMF Experience – Workaround Progressbar Example 2

Changes to CS:

```
private delegate void  
UpdateProgressBarDelegate(System.Windows.  
DependencyProperty dp, Object value);
```



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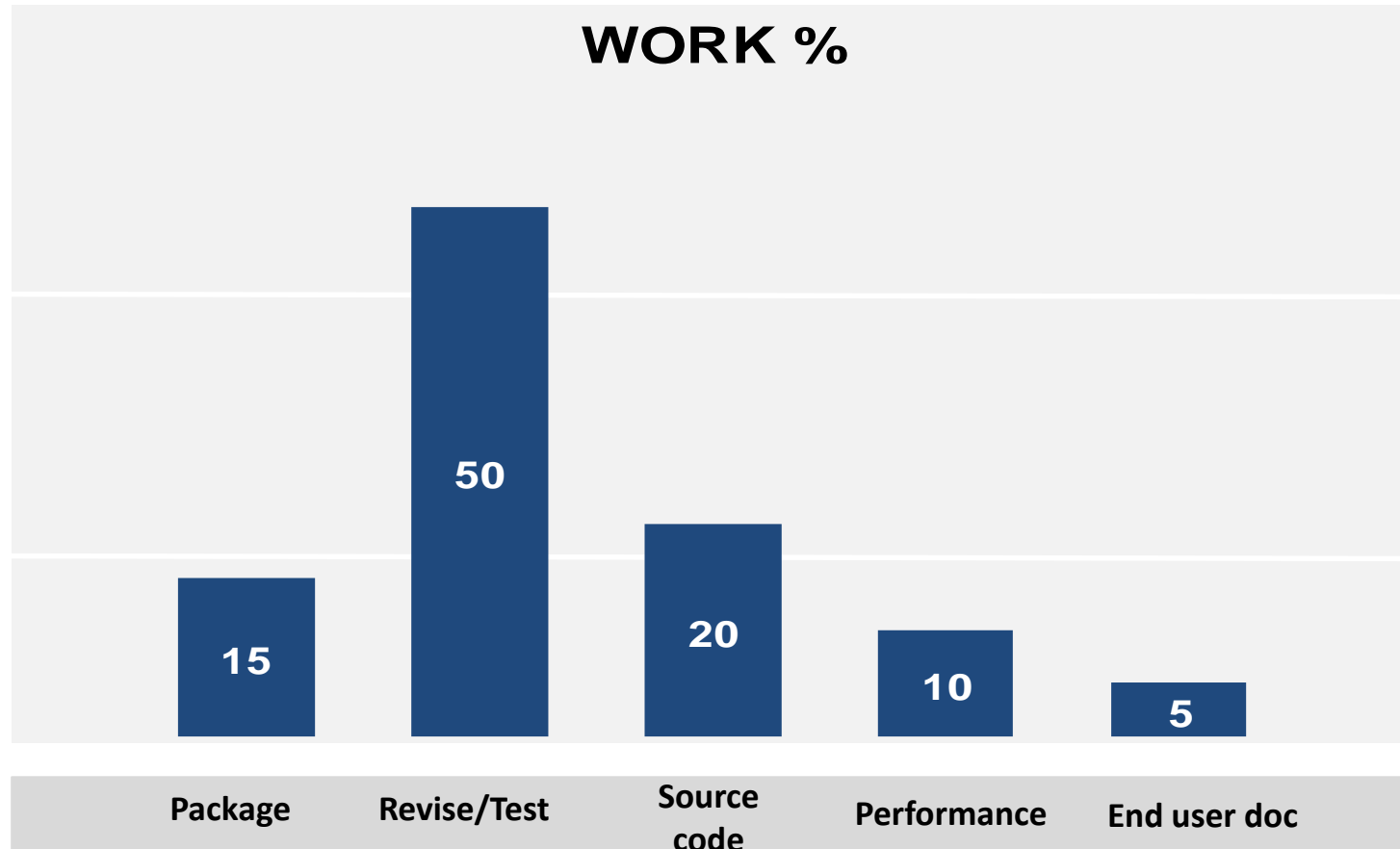
AMF Experience – Workaround Progressbar Example 3

Source Code API:

```
{  
...snip  
Dispatcher.Invoke(updatePbDelegate,  
  
System.Windows.Threading.DispatcherPriority.Background,  
    new object[] { ProgressBar.ValueProperty, value2 });  
...snip  
}
```

- Packaging
- Memory consumption
- C# performance
- User settings – replace ini file
 - Use database or OBUserConfigAPI
- Generator bug's (Grid, Localization etc)

Estimates AMF in % of project



Analyzing Models

Unsupported Features in CA Plex 7.0 .NET client

- What to look for when analyzing a model for migration ?
- Keep the CA Plex Road Map in mind when making decisions ... 7.1 Features
- C# Generator has improved in 2013

Unsupported Features in CA Plex 7.0 .NET client

- Active/X
- COM Import
- Function Location via .INI file
- Failover switching
- OLE Automation
- Manage IBM i password

Unsupported Features in CA Plex 7.0 .NET client contd.

- Dynamic Combo loading from DB
- Dynamic Context Menus
- XML processing
- Multi language applications
- Help Generation (Topic Objects)

Unsupported Features in CA Plex 7.0 .NET client contd.

- Printing/Reporting
- BLOB's



Unsupported Objects in CA Plex 7.0 .NET client

- OBASE/Entity With SQL Data
- OBASE/Entity With User Filter
- FOUNDATION/Filter
- OBWIN class library
- ACTIVE/.. only TreeView, TabStrip, ImageList supported

- ATOL Framework
- Websydian Libraries
- YouEye Framework
- Triangle Connectors
- There might be others ...

- UI customization
- Autosizing Grids
- Easy access to Windows 7 features
- Control display of runtime messages
- Object references FLD type SYS Object
- ObApplication.setToUserStorage()



- Generator using templates
 - C:\Program Files (x86)\CA\Plex\7.0\lib
 - Document any changes

- Autosizing grids
- Show Progress in Taskbar

Helpful tools when digging deeper

- VS Studio 2010 for debugging
- .NET Reflector
- MS Expression Blend
- Kaxaml

CA Plex C# client generator enhancements

- Containers and Autolayout
- Allow integration of WPF controls (similar to Beans in Java)

Q&A



Feedback Form

- Please fill out evaluation form Session No: 18
- Thank you !