

SmartComponent Library

The OpenEdge Application Modernization Framework



Mike Fechner, Director, Consultingwerk Ltd.

mike.fechner@consultingwerk.de

Consultingwerk Ltd.



- Independent IT consulting organization
- Focusing on **OpenEdge** and **related technology**
- Located in Cologne, Germany
- Customers in Europe, North America, Australia and South Africa
- Vendor of tools and consulting programs
- 26 years of Progress experience (V5 ... OE11)
- Specialized in GUI for .NET, OO, Software Architecture, Application Integration

OpenEdge® application modernization solutions

- WinKit
- **SmartComponent Library**
- Dynamics4.NET
- Tools can be used together or separately
- Share common code base

Agenda

- **Overview**
- Developing Business Logic
- Developing GUI for .NET Frontends
- Telerik Mobile Integration
- Kendo UI/Angular JS
- Migration and Modernization Options
- DataDirect Integration



Key Application Modernization drivers



Data Visualization

**Optimization of
operational cost**



Key Application Modernization drivers

- **UI and UX**
 - Attractive to users and competitive
 - Available on those devices used by users
 - Desktop, Web, Mobile
- **Data Visualization**
 - Support business decisions
- **Optimization of operational cost**
 - Maintainability of applications
 - Availability of skilled professionals
 - Availability and scalability

SmartComponent Library

- Developer Framework aimed to increase Developer productivity and flexibility
- Reduce or avoid repeating tasks
 - Tools (code generation and round-trip dev.)
 - Integration with existing Progress tools (OpenEdge, Telerik, BPM, Corticon, ...)
 - Application Framework
- Allow integration with existing Applications and Frameworks (3rd party or home grown)
- Allow usage of individual framework components as needed (not all or nothing)

SmartComponent Library

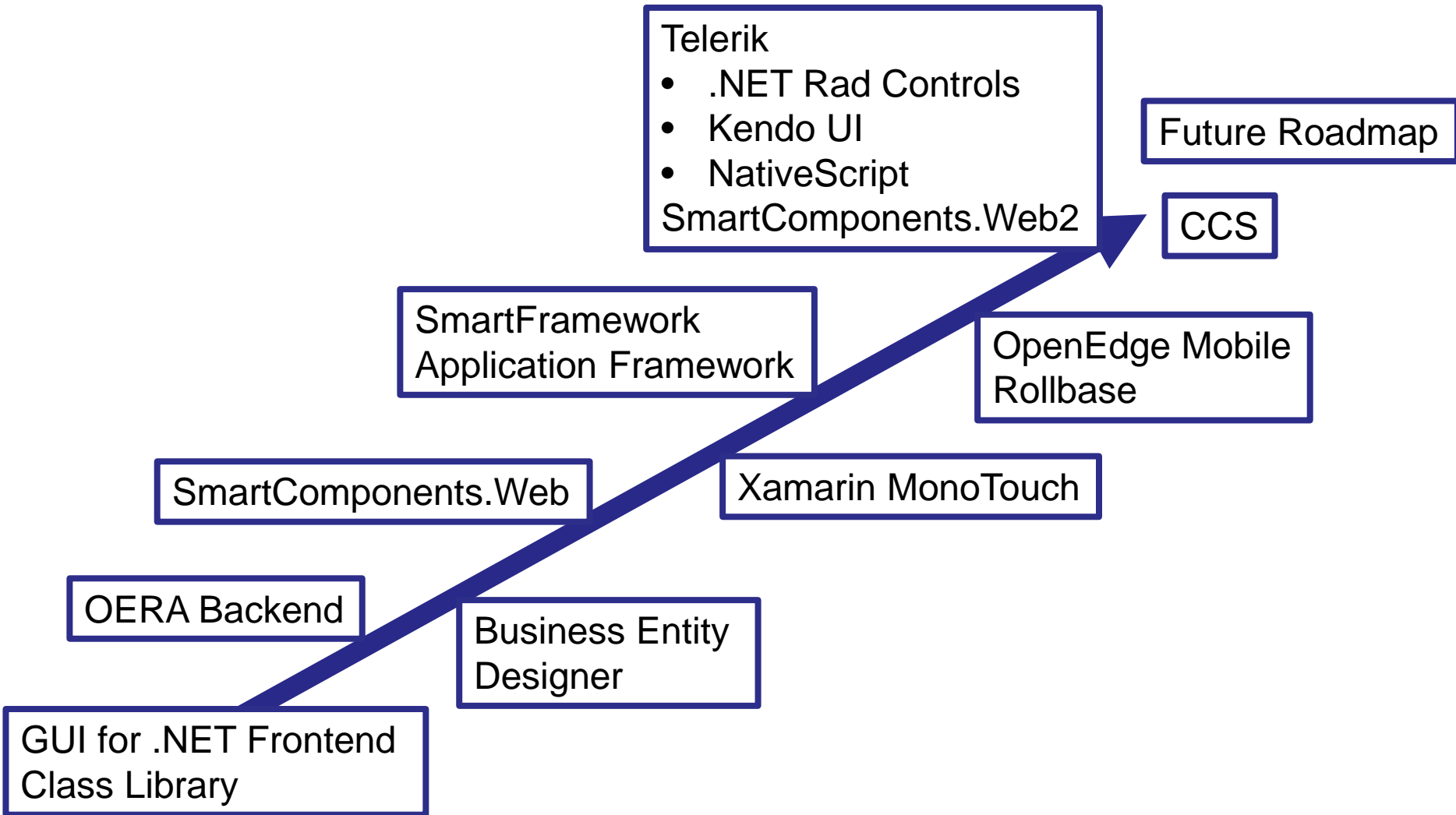
- Provide Best Practices (object-orientation, ABL, OERA = OpenEdge Reference Architecture)
- Don't force developer in a certain direction, remain flexible for different requirements
- Backend business logic as the application “gold”
- Support for UI flexibility
 - Multiple UI's for the same application
 - UI of the month...
- Optional use of Application Framework (Security, Menu, Localization, ...) or existing



SmartComponent Library

- „eat your own dog food“
- Most of our tools are written using our own libraries and tools, 99.9% ABL code
- Full source code shipped to customers
- Weekly incremental releases (48 releases/year)
- Allow legacy code integration (call in/out)
- Designed with customization in mind
- don't understand “best practices” as the “only right way”

Main Milestones and Building Blocks



OpenEdge Version support

- 10.2B07, 10.2B08
- 11.3.2, 11.3.3 – 11.6
- First day support for 11.6
- 32 bit/64 bit
- Classic AppServer/WebSpeed
- PASOE
- ...

Application Framework Features

- Authentication, including client-principal support and multi-tenancy
- Flexible authorization (menu, toolbar, business logic, custom tokens, ...)
- Localization (full UI translation)
- Definition based referential integrity
- Batch scheduler
- Enhanced Unit testing framework
- ...

Common Component Specification

- Initiative by Progress Software, Partners and Customers
- Goal is to define **common understanding** and **architectural patterns** to allow **interoperability** of **framework components** from different vendors
- Reduce risk of vendor lock in
- Ensure future compatibility with Progress Software roadmap
- Ensure interoperability with Progress new UI toolkit

Common Component Specification

- Consultingwerk founding member of CCS
- Team leader of Business Entity spec-team
- Containing the term „Component“ in the product name since 9 years – since product launch
- Framework was designed to allow interoperability with 3rd party components
- Framework fully compatible with CCS-ARCH1, CCS-SSS and CCS-BE specs

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Backend Overview

- The SmartComponent Library provides a flexible OERA Backend Architecture
- OpenEdge Reference Architecture
- Business Entities, Data Access Objects are a key component
- Tools to help developers to stay in line with the architecture
- Business Tasks, including ability for scheduled or async processing
- Common Infrastructure Components

Business Logic Design Process

- Main Business Logic Components are
 - **Business Entities:** High level business rules
 - **Data Access Objects:** Data retrieval and update
 - **Business Task objects**
- Multiple programming paradigms
 - object-oriented
 - **ProDataset based or object-relational**
 - procedural

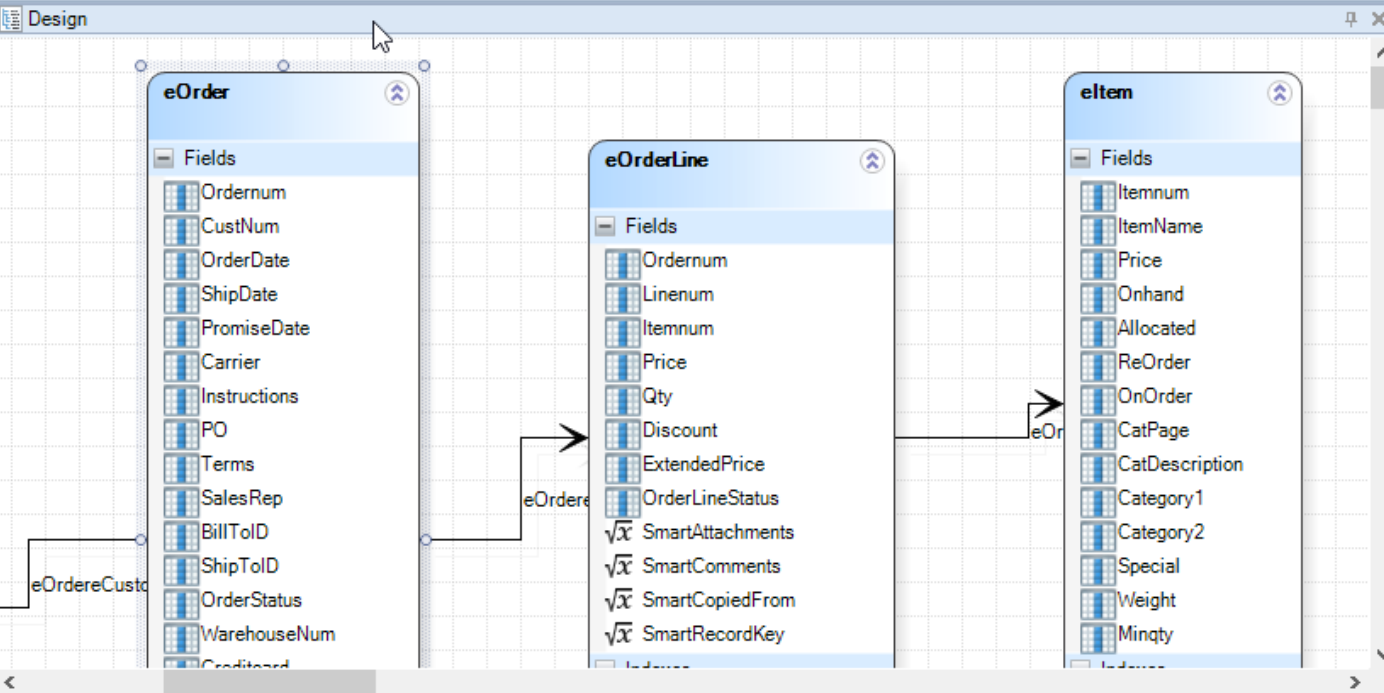
Business Logic Design Process

- Template based, Visual Design using Diagrams
- Flexible source code generator
 - Customizable templates
 - Customizable code generator (ABL class)
- Plugin Infrastructure (integrate your own ABL code)
 - Influence automatic naming and design process
 - Add and enhance code generation
- Query custom repositories during design phase
- Ad-hoc based Business Entity Test utility

File Business Entity Temp Table Data-Relation

Pointer Relation Relation Fields Generate Business Entity Tester Expand all Collapse all Batch Generator Include Files Service Interface Generate Viewer Generate Window Default fields DataDirect OpenAccess

M... Design Relation Relation Build Test Database Tables REST Adapter UI Components SmartF... Data Integr...



Toolbox Database Fields...

Custom sports2000

- Benefits
- BillTo
- Bin
- Country
- Customer
- Department
- Employee
- Family
- Feedback
- InventoryTrans
- Invoice
- Item
- LocalDefault
- Order
- OrderLine
- POLine
- PurchaseOrder

icfdb SmartDB

sports2000.Custo...

- Address
- Address2
- Balance
- City
- Comments
- Contact
- Country
- CreditLimit
- CustNum
- Discount
- EmailAddress
- Fax
- Name
- Phone
- PostalCode
- SalesRep
- State
- Terms

Entity Properties

Business Entity Description Temp-Table Defaults Generate

Business Entity Name: OrderBusinessEntity

Business Entity Purpose: Business Entity for Order

Business Entity Package: Consultingwerk.SmartComponentsDemo.OERA.Sports2000

Dataset Controller Name: OrderDatasetController

Dataset Controller Package: Consultingwerk.SmartComponentsDemo.OERA.Sports2000

Dataset Path: Consultingwerk\SmartComponentsDemo\OERA\Sports2000

Entity Properties Table Properties Data-Relation Index Properties

Field Properties

Field	Description	XML	Calculated Field Expression
Name:	Ordernum		
Data Type:	Extent: 0	<input type="checkbox"/> Case Sensitive	
Initial:	0	<input type="checkbox"/> Initial Unknown	
Label:	Order Num		
Format:	zzzzzzzzz9		
Source Field:	Order.Ordernum		

Overview

- eOrder
 - eCustomer
 - eOrderLine
 - eltem
 - eSalesrep

Demo 1

- Create SalesRep Business Entity
- Review in Progress Developer Studio
- Add „CustomDescription“ and „AverageQuota“
Calculated Fields

Demo 2

- Create Customer Business Entity
- Query Customer using DatasetModel
- Add Validation on Name
- Update using DatasetModel
- Add custom method to Business Entity
 - Put Customer On Hold
- Invoke custom method using Model Method

Business Logic reuse – write once use in:

- **OpenEdge GUI for .NET**
- OpenEdge GUI/TTY/Batch
- **Telerik Kendo UI**
- **Telerik Mobile** and NativeScript
- WebSpeed
- OpenEdge BPM
- Native Mobile Applications (Xamarin Studio)
- Progress Rollbase
- Web Services and REST Services
- Sonic ESB
- DataDirect ODBC
- Unit Testing frameworks



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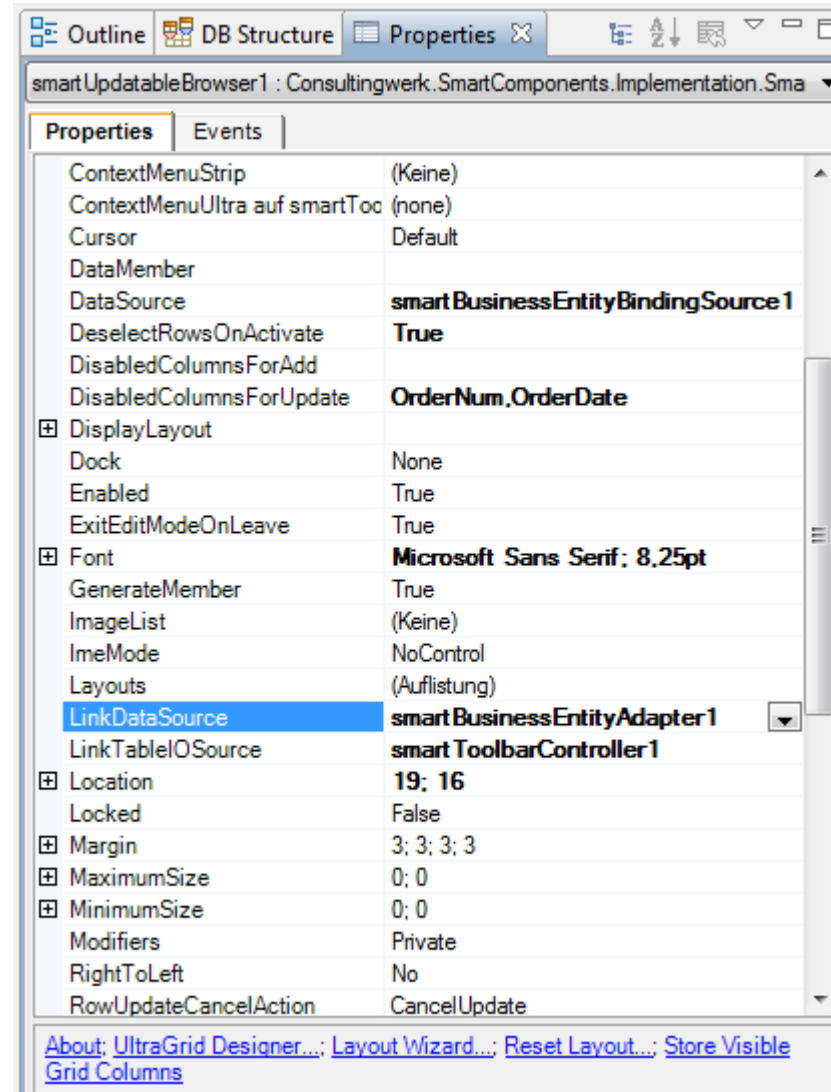
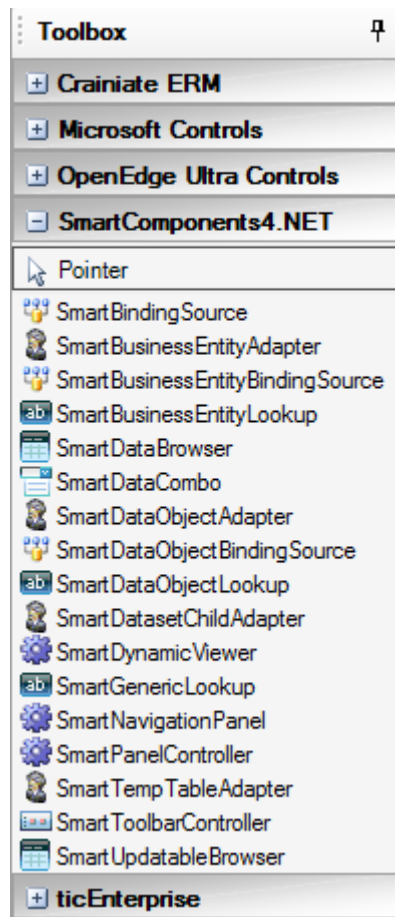
GUI for .NET Frontend overview

- GUI for .NET client infrastructure
- Extension to OpenEdge UltraControls / Infragistics
NetAdvantage for .NET Controls
- Other Control sets may be used
- Tightly Integrated into the .NET Visual Designer
 - configuration of behavior and design in a single and intuitive place
 - no restrictions to the way .NET Controls are used
 - wizards and property sheets for repetitive tasks

User Interface Design Process

- Screen design based on rich foundation classes
- Compose Forms by adding rich SmartComponents and standard .NET Controls
- Connect and parameterize SmartComponents using property grid and Wizards
- Data centric design process: Achieving UI Design productivity similar to the AppBuilder

User Interface Design Process



Tight integration with Control libraries



- Infragistics NetAdvantage .NET Controls / Infragistics WinForms
- OpenEdge UltraControls

- Following Progress' acquisition of Telerik we are implementing optional support for Telerik RadControls (available late 2016)



Demo

- Use Business Entity Designer to generate UI
- Open in Visual Designer
- Add Salesrep Lookup in Visual Designer

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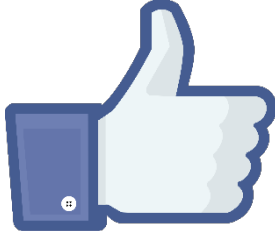


Support for Progress/Telerik Mobile

- SmartComponent Library Backend and

**Progress/Telerik Mobile and
Web Options = perfect match!**

- Full support for complete JSDO functionality

JSDO  **Consultingwerk
likes this.**

Support for Progress/Telerik Mobile

- Generic REST Service Interface for JSDO based clients
 - Full CRUD support
 - Invoke-Methods
- No need to redeploy new REST application for every single application
- Direct access to any Business Entity or Business Task that the current user is authorized for

Demo Telerik Mobile Platform

- Create a new hybrid mobile project in Telerik Mobile platform using Wizard
- Add access to SalesRep Business Entity
- Leverage same Business Entity in Web and Desktop

- Recorded version of the demo:
<https://www.youtube.com/watch?v=m-63Wzpjs9c>

Business Entity Designer <C:\Work\SmartComponents4NET\115_64\ABL\Demo\TelenikPlatform\SalesrepBusinessEntity.bedm>

File Data
Demo.TelenikPlatform.SalesrepBusinessEntity

Stop Business Entities Custom Context: Custom Parameter Object (Serializable) Data Source Query Info

Monthquota_1	Monthquota_2	Monthquota_3	Monthquota_4	Monthquota_5	Monthquota_6	Monthquota_7	Monthquota_8	Monthquota_9	Monthquota_10	Smallimage	Largeimage	Email	Phoneoffice	Phoneprivate	Phonemobile	CustomDesign
0	0	0	0	0	0	0	0	0	0	(NULL)	(NULL)					
1697	1748	1800	1854	1910	1967	2026	2087	2150	2215	Byte[-]Array	Byte[-]Array	bbb@sports2	+49 221 2760		+49 171 4357	Gogsch, Andr
0	1967	2026	2087	2150	2215	2281	2349	2419	2492	Byte[-]Array	Byte[-]Array	dkp@sports2	+49 221 2760		+160 700 822	Pitt, Dirk K /
4300	4152	4277	4405	4537	4673	4813	4957	5106	5259	Byte[-]Array	Byte[-]Array	dos@sports2	qwq			Donna / DOS
1697	1748	2000	1854	1910	1967	2026	2087	2150	2215	Byte[-]Array	Byte[-]Array	gpe@sports2	+49 221 2760			Gilles Ehrer /
4031	4152	4277	4405	4537	4673	4813	4957	5106	5259	Byte[-]Array	Byte[-]Array	hxm@sports2	+49 221 2760			Harry Munvig
1312	2404	2476	2560	2627	2706	2787	2871	2957	3046	Byte[-]Array	Byte[-]Array	jel@sports20	qwq			Jan Loopsnel
1910	1967	2026	2087	2150	2215	2281	2349	2419	2492	Byte[-]Array	Byte[-]Array	kik@sports20				Kari Iso-Kaup
44	45	0	0	0	0	0	0	0	0	(NULL)	(NULL)					
4456	4590	4728	4870	5016	5166	5321	5481	5645	5814	Byte[-]Array	Byte[-]Array	rdr@sports20				Robert Roller
3183	3278	3376	3477	3581	3688	3799	3913	4030	4151	Byte[-]Array	Byte[-]Array	sls@sports20				

Runtime: 50 msec; DB Records Reads: sports2000: 54, ictb: 23, SmartDB: 23

eSalesrep.Region)

Business Entity Name: Demo.TelenikPlatform.SalesrepBusinessEntity

Business Entity Purpose: Business Entity for Salesrep

Business Entity Package: Demo.TelenikPlatform

Dataset Controller Name: SalesrepDatasetController

Dataset Controller Package: Demo.TelenikPlatform

Dataset Path: Demo.TelenikPlatform

Dataset Name: dsSalesrep

Use Distinct Include Files for Temp-Table Definition

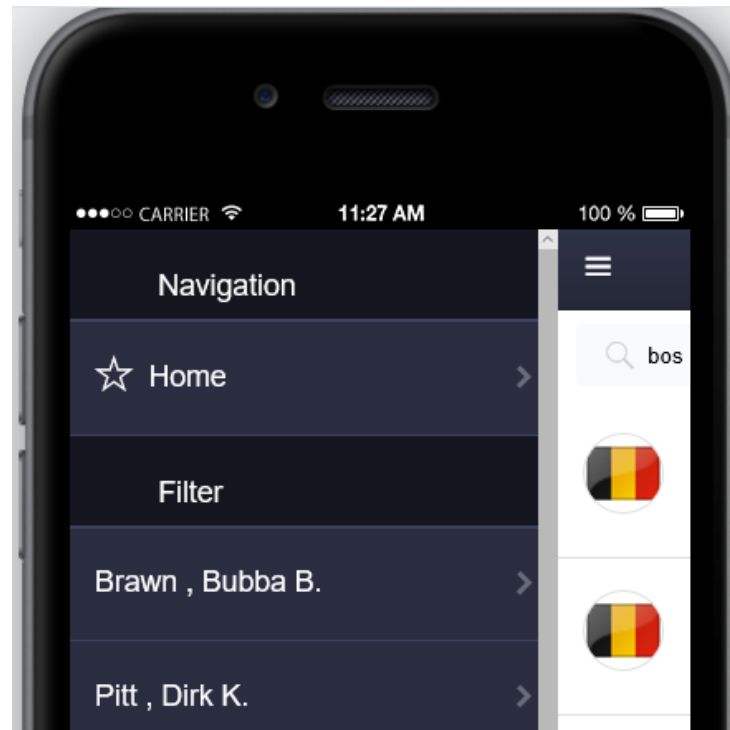
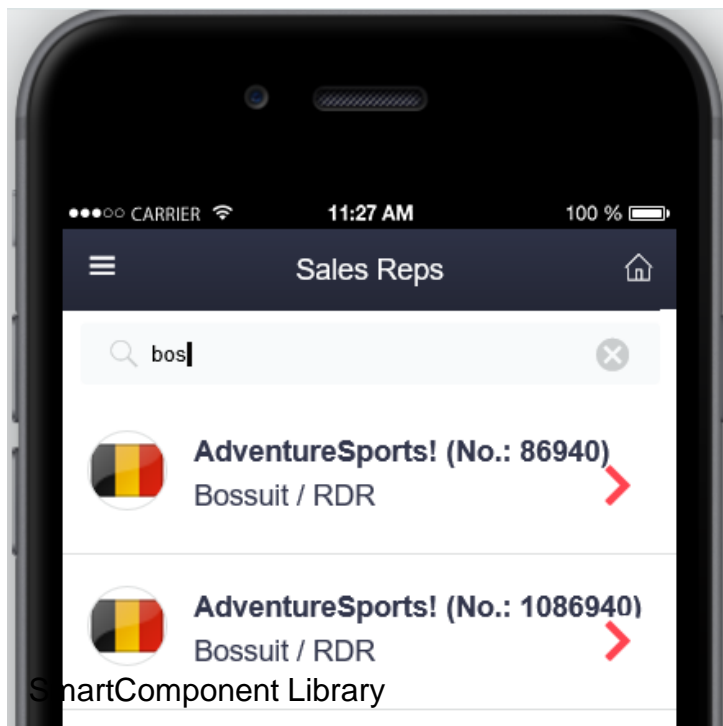
Data Access Name: SalesrepDataAccess

Table Properties Index Properties Data-Relation Entity Properties

SmartComponent Library

Demo Telerik Mobile Platform

- Business Entity Designer plugin to generate UI Views



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SmartComponents.Web2



Kendo UI
THE ART OF WEB DEVELOPMENT



ANGULARJS
by Google

SmartComponents.Web2

- Angular JS is a MVVM framework for browser based applications
- Binding Data to UI Elements
- Separate Data, View and Code
- Kendo UI provides Angular JS integration
- SmartComponents2.Web2 implements similar programming model as in GUI for .NET
- Configurable data sources and communication between UI components

Demo Kendo UI

- AppServer Backend
- Generate Kendo UI Grid Screen
- Server-side filtering, sorting



Kendo UI

THE ART OF WEB DEVELOPMENT

Demo

```

<div ng-controller="simpleCtrl" style="background-color: white;">
  <h1>Salesreps</h1>

  <div class="row">
    <div class="col-md-28">

      <smart-data-source
        smart-object-name='salesrepDataSource'
        smart-business-entity-name="Consultingwerk.SmartComponentsDemo.OERA.Sports2000.SalesRepBusinessEnt
        smart-entity-table="eSalesrep"></smart-data-source>

      <smart-grid
        smart-object-name='salesrepGrid'
        smart-data-source='salesrepDataSource'
        smart-grid-layout='Consultingwerk.SmartComponentsDemo.OERA.Sports2000.SalesRepBusinessEntity/sales

    </div>

    <div class="col-md-20">

      <smart-toolbar
        smart-object-name='salesrepToolbar'></smart-toolbar>

      <smart-viewer
        smart-object-name='salesrepViewer'
        smart-data-source='salesrepDataSource'
        smart-tableio-source='salesrepToolbar'
        smart-viewer-layout='Consultingwerk.SmartComponentsDemo.OERA.Sports2000.SalesRepBusinessEntity,

    </div>
  </div>
</div>

```



Progress UI flexibility strategy

- SmartComponents.Web2 built to fit with Progress UI strategy
- Built around UI meta data
 - Annotations in code
 - Repository Database
 - Generated code
- Common Component Specification compliant
- Progress Kendo UI Builder designer will fit greatly into our Web strategy

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SmartComponent Library and WinKit

- ***SmartComponent Library*** and ***WinKit*** are part of our GUI for .NET adoption and migration strategy
 - WinKit: Enhancement of existing screens
 - SmartComponent Library: New functionality
- Shared framework foundation classes
- Compatible directory and project structure
- Used side by side in customer projects
- Over 40 different WinKit implementations already
- WinKit included in SmartComponent Library

Order Maintenance
_ □ X

File Navigate Maintenance View

← ← → → 👤 ✎ 🏠 ⌨ ✖

Order Num: 1 Ordered: 23/01/09

Order Status: Shipped

Shipped: 28/01/2009

Promised: 28/01/09

Cust Num: 53 Name: Offside Hockey

Carrier: FlyByNight Courier Terms: Net30 PO:

Orderlines Customer Detail

Handle with care

OrderLines

Line Num	Item Num	Item Name	Qty	Price	Extende
1	54	Canoe	30	4,86	
2	55	Surfboard	21	23,85	
3	53	Swimming Trunks	75	8,77	
4	28	Ski Gloves	39	23,00	
5	39	Baseball	75	34,00	2.
6	26	Catchers Mit	28	4,99	

Line Num: 1

Item Num: 54

Item Name: Canoe

Price: 4,86

Qty: 30 Extended Price: 131,22

Discount: 10%

Order Line Status: Shipped

Order Maintenance - Redesigned

File
Start
Options

First Prev Next Last

Search

Edit Save Delete Cancel

Order Num: Ordered:

Order Status:

Shipped: ..

Promised: ..

Cust Num: Name:

Carrier: Terms: PO:

Handle with care

Orderlines
Customer Detail

Legen Sie eine Spalte hier ab, um nach dieser zu gruppieren.

Line Num	Item Num	Item Name	Qty	Price	Exte
▶ 1	54	Canoe	30	4,86	
2	55	Surfboard	21	23,85	
3	53	Swimming Trunks	75	8,77	
4	28	Ski Gloves	39	23,00	
5	39	Baseball	75	34,00	
6	26	Catchers Mit	28	4,99	

Line Num:

Item Num:

Item Name:

Price:

Qty: Extended Price:

Discount:

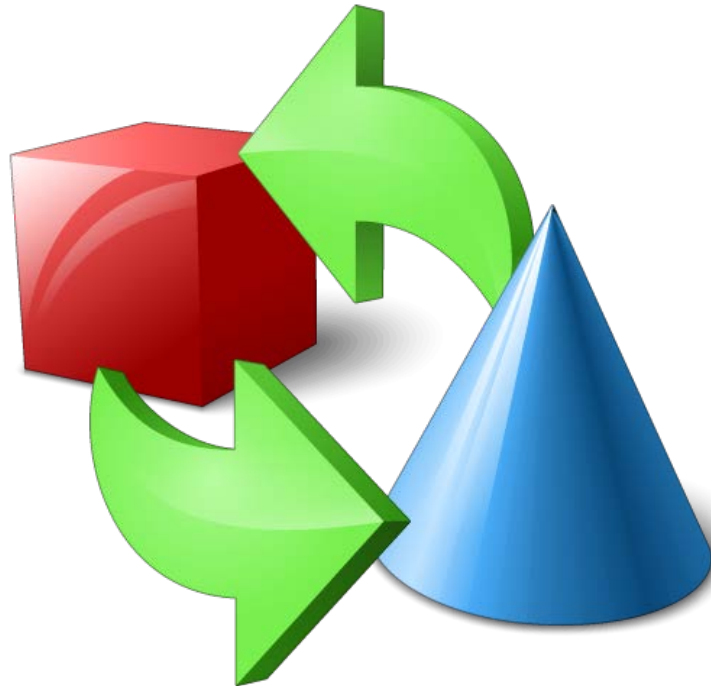
Order Line Status:

Migration and Modernization options

- **Enhance and extend existing applications**
- SmartComponent Library integrates with existing applications and frameworks
- SmartComponent Library functionality can be accessed from existing code
- SmartComponent Library can access existing code, typically of any kind
 - direct execution or through adapters
 - custom service or component implementations
 - Don't worry about SHARED VARIABLES etc...

Alternative

- Migration of existing Applications



Migration and Modernization options

- Source code migration
- Options vary based on current code
- Strong usage of Proparse for analyzing source code, importing into Business Entity Designer
- Migration of any kind of applications
 - custom
 - ADM1, ADM2 or Dynamics
- Template based migration of UI components
- API for ABL Widget abstraction

Demo

- Migration of ABL Browse Widget
 - Rewrite of Calculated Field
 - Creation of matching Business Entity
 - Test from MS-Excel
- Migration of ABL GUI for .NET Frame
 - Implement ABL Widget abstraction
- Migration to Angular JS View

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DataDirect OpenAccess for OpenEdge

- Access your OpenEdge business logic from standard desktop applications such as Crystal Reports, Qlik View, MS Office
- Turn ABL business logic into standard ODBC data sources
- Provide BI access to application data and business logic not just the SQL database
- Use ABL code to create reporting views



 **PROGRESS**® DataDirect®

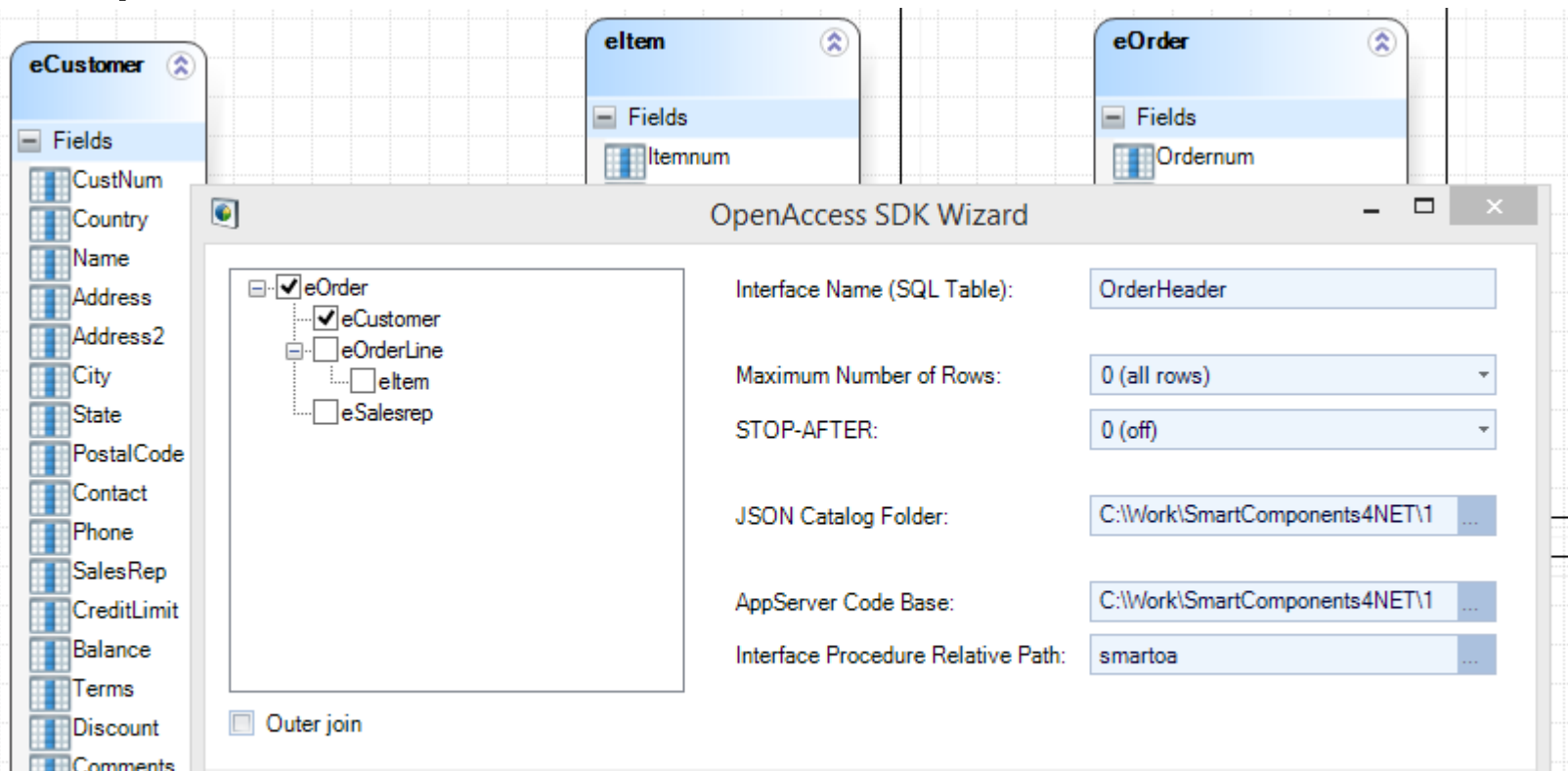
DataDirect OpenAccess for OpenEdge

- Use ABL data access and data utilization
- Reuse of existing ABL code possible
- Manipulate query string from the ABL
- Leverage existing application security when accessing data
- Leverage existing validation logic when processing data updates, including support for database trigger!
- Access your data in LAN and via Internet



One-click integration with OpenAccess

- Expose Business Entities as ODBC data source
- Define result set properties and generate all required assets



Demo

- Access SalesRep Business Entity with migrated Quota Field from Excel
- Review interface procedure and JSON Catalog

Feature review

- One-click interface generation through wizard
- Template based
- Join multiple Business Entity tables into a single result table
- Calculated field support
- Define execution limits (number of rows and number of seconds)
- Query manipulation support

Don't miss our other presentations

- Monday 11:00: **CCS Deep Dive** (Mike)
- Tuesday 11:00: **OO-Oh** (Mike)
- Tuesday 13:00: **Application Modernization using the SmartComponent Library** (Mike and Marko)
- Tuesday 16:45: **REST in Peace** (Mike)
- Wednesday 11:00: **CCS BoF** (all CCS)
- Wednesday 11:00: **Angular JS for OpenEdge programmers** (Marko)



Questions

