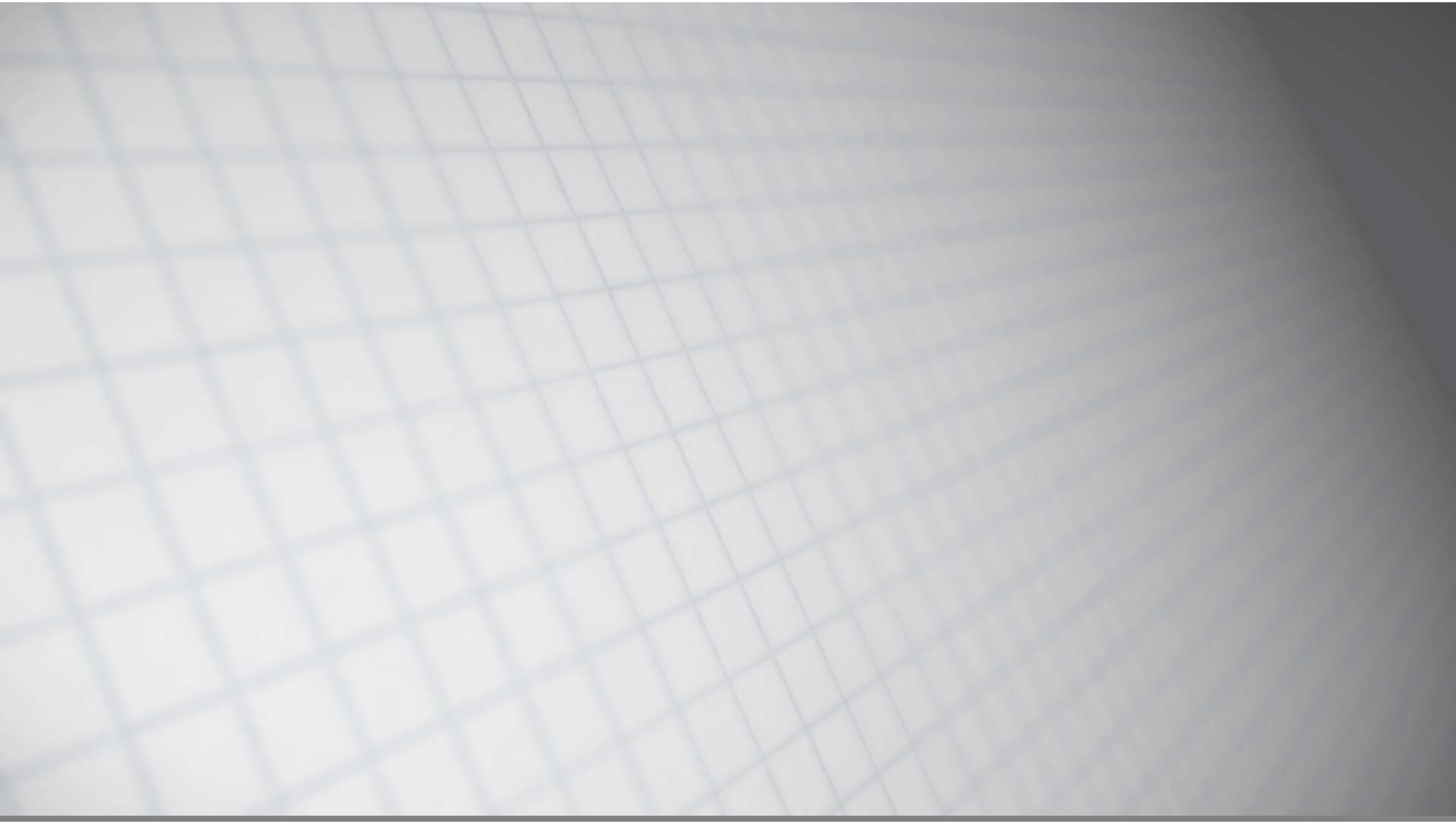
Consultingwerk
software architecture and development

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
- 25 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
- User-Interface Options (Telerik)
- Progress Rollbase Integration
- DataDirect Integration
- Migration and Modernization Options

SmartComponent Library

- Developer Framework aimed to increase Developer productivity and flexibility
- Reduce or avoid repeating tasks
  - Tools (code generation and round-trip dev.)
  - Functional Application Framework functions
  - Integration with existing OpenEdge tools
- 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

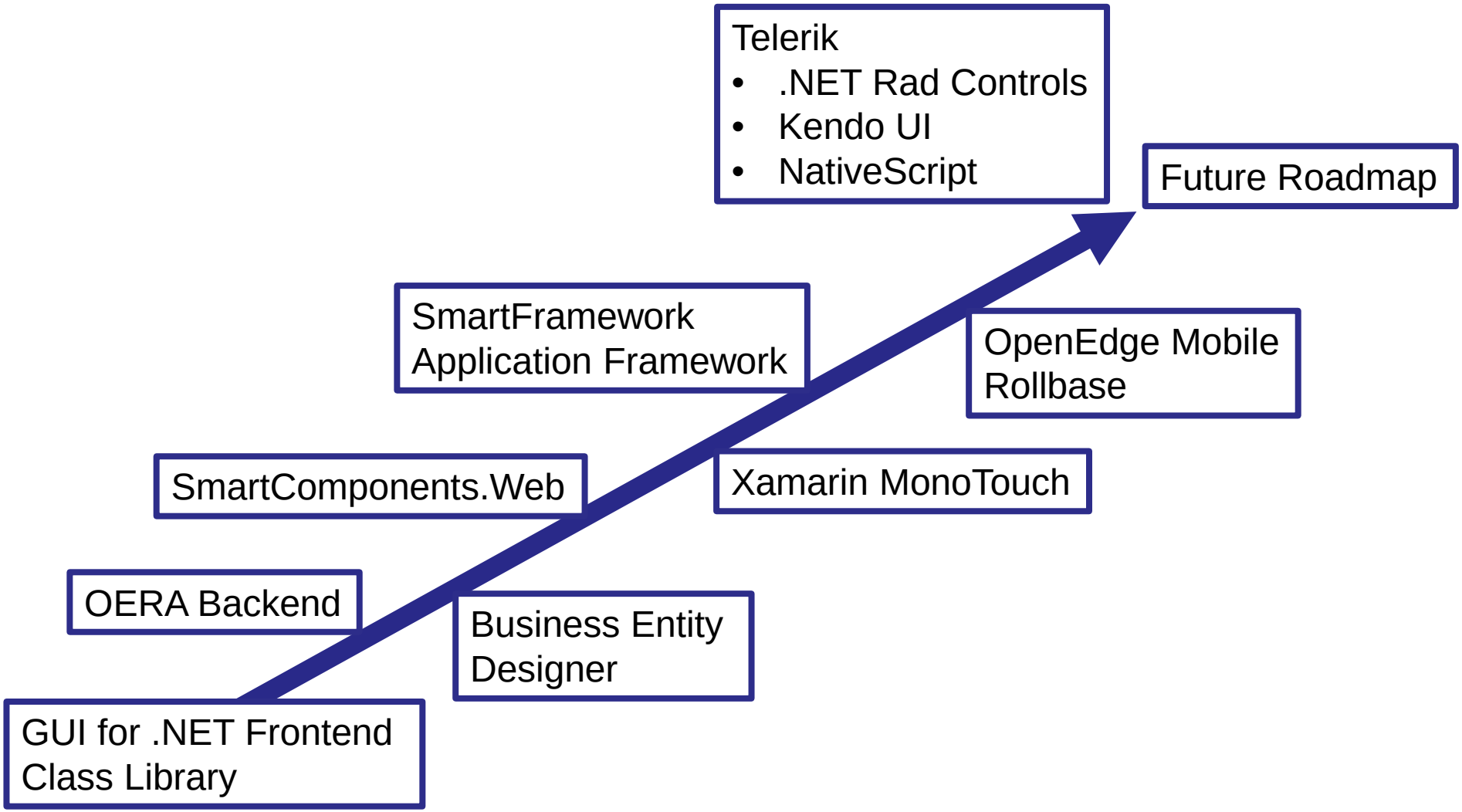
- Provide Best Practices (object-orientation, ABL, OERA = OpenEdge Reference Architecture)
- Don’t force developer in a certain direction, remain flexible for different requirements
- Backend business logic as the application “gold”
- Support for UI flexibility
  - Multiple UI’s for the same application
  - 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, 99.9% ABL code
- Full source code shipped to customers
- Weekly incremental releases (48 releases/year)

- Allow legacy code integration (call in/out)
- do not restrict the possibilities, allow customization
- don’t understand “best practices” as the “only right way”

Main Milestones and Building Blocks



Agenda

- Overview
- **Developing Business Logic**
- Developing GUI for .NET Frontends
- User-Interface Options (Telerik)
- Progress Rollbase Integration
- DataDirect Integration
- Migration and Modernization Options

Backend Overview

- The SmartComponent Library provides a flexible OERA Backend Architecture
- **O**pen**E**dge **R**eference **A**rchitecture
- Business Entities, Data Access Objects are a key component
- Tools to help developers to stay within the architecture
- Business Tasks, including ability for scheduled or async processing
- Common Infrastructure Components

Business Logic Design Process

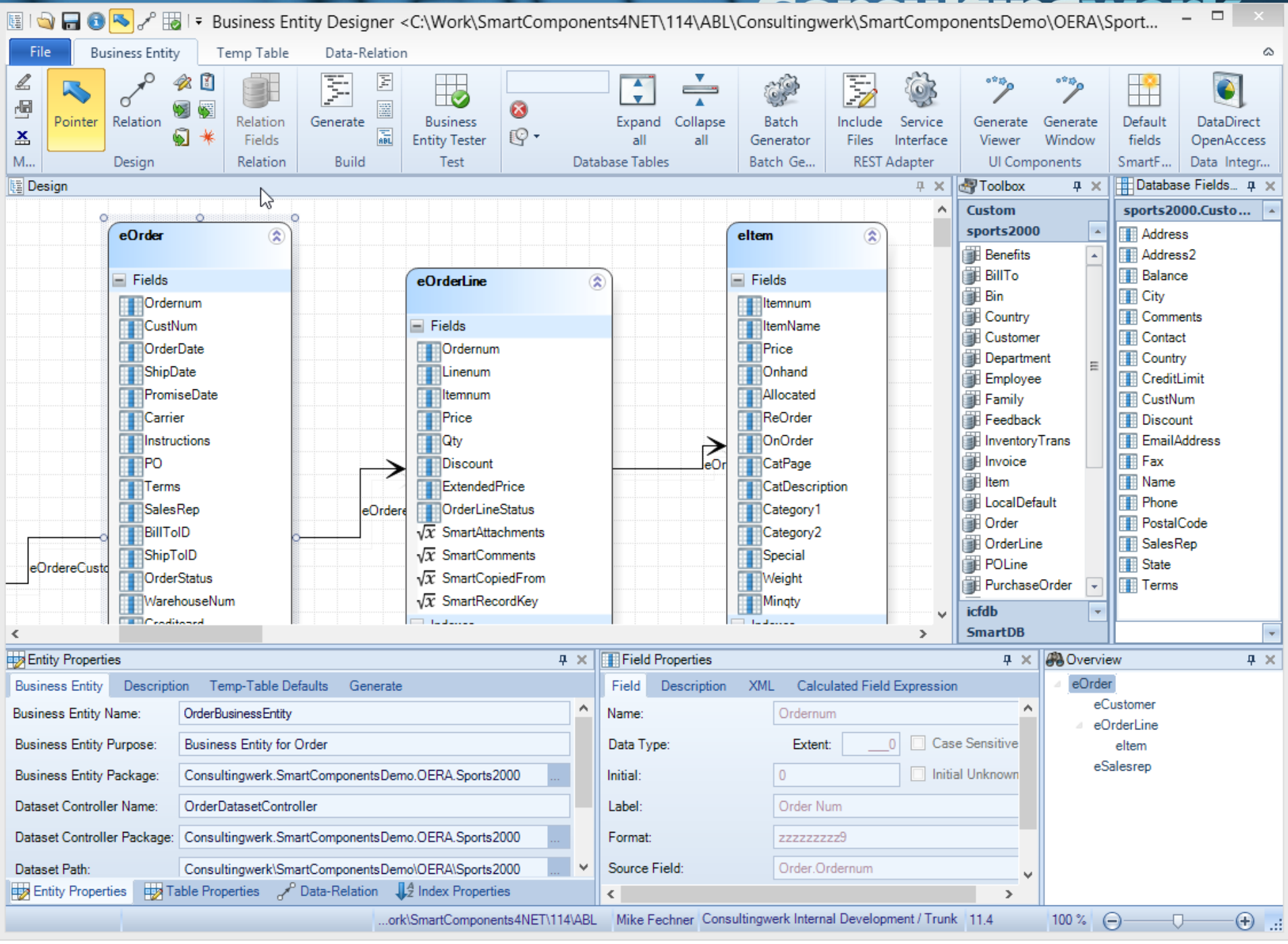
- Main Business Logic Components are
  - **Business Entities**: High level business rules
  - **Data Access Objects**: Data retrieval and update
  - **Business Task objects**
- Multiple programming paradigms
  - object-oriented
  - **ProDataset based or object-relational**
  - procedural

Business Logic Principles

- Built around ProDatasets or object relational
- Strong OO foundation, OOABL enhancements
- Use Data Source objects or your preferred way of populating the ProDataset
- Strict separation of layers:
  - UI design process separated from BL design process
- Business Entities are a foundation for Business Tasks
- ProDatasets: relational data container
- Alternative: Entity Classes or Model Classes

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


Business Entity Designer <C:\Work\SmartComponents4NET\114\ABL\Consultingwerk\SmartComponentsDemo\OERA\Sport...
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
Design
Relation
Build
Test
Database Tables
Batch Ge...
REST Adapter
UI Components
SmartF...
Data Integr...
Design
eOrder
Fields
Ordernum
CustNum
OrderDate
ShipDate
PromiseDate
Carrier
Instructions
PO
Terms
SalesRep
BillToID
ShipToID
OrderStatus
WarehouseNum
eOrderLine
Fields
Ordernum
Linenum
Itemnum
Price
Qty
Discount
ExtendedPrice
OrderLineStatus
SmartAttachments
SmartComments
SmartCopiedFrom
SmartRecordKey
eItem
Fields
Itemnum
ItemName
Price
Onhand
Allocated
ReOrder
OnOrder
CatPage
CatDescription
Category1
Category2
Special
Weight
Mingty
Toolbox
Custom
sports2000
Benefits
BillTo
Bin
Country
Customer
Department
Employee
Family
Feedback
InventoryTrans
Invoice
Item
LocalDefault
Order
OrderLine
POLine
PurchaseOrder
icfdb
SmartDB
Database Fields...
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:
Case Sensitive
Initial:
Initial Unknown
Label:
Order Num
Format:
zzzzzzzzz9
Source Field:
Order.Ordernum
Overview
eOrder
eCustomer
eOrderLine
eItem
eSalesrep
...ork\SmartComponents4NET\114\ABL
Mike Fechner
Consultingwerk Internal Development / Trunk
11.4
100 %

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

Demo 3

- Creation of a Customer-Order-OrderLine-Item Business Entity using the Designer
- Review generated source code
- Ad-hoc Query using Business Entity Tester

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

Agenda

- Overview
- Developing Business Logic
- **Developing GUI for .NET Frontends**
- User-Interface Options (Telerik)
- Progress Rollbase Integration
- DataDirect Integration
- Migration and Modernization Options

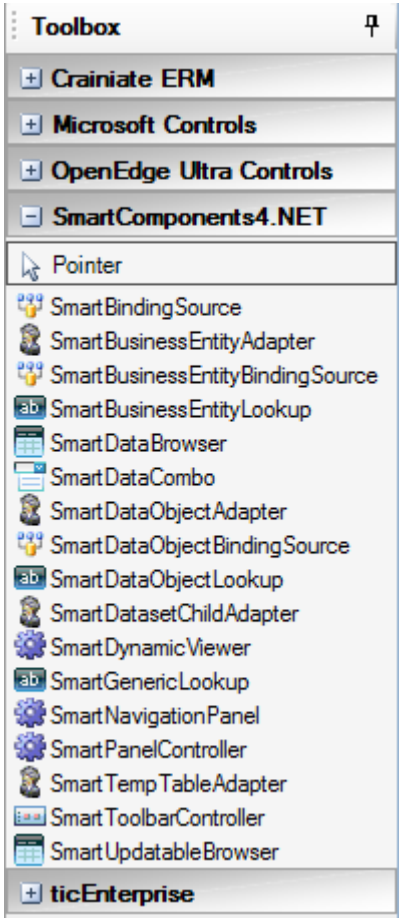
GUI for .NET Frontend overview

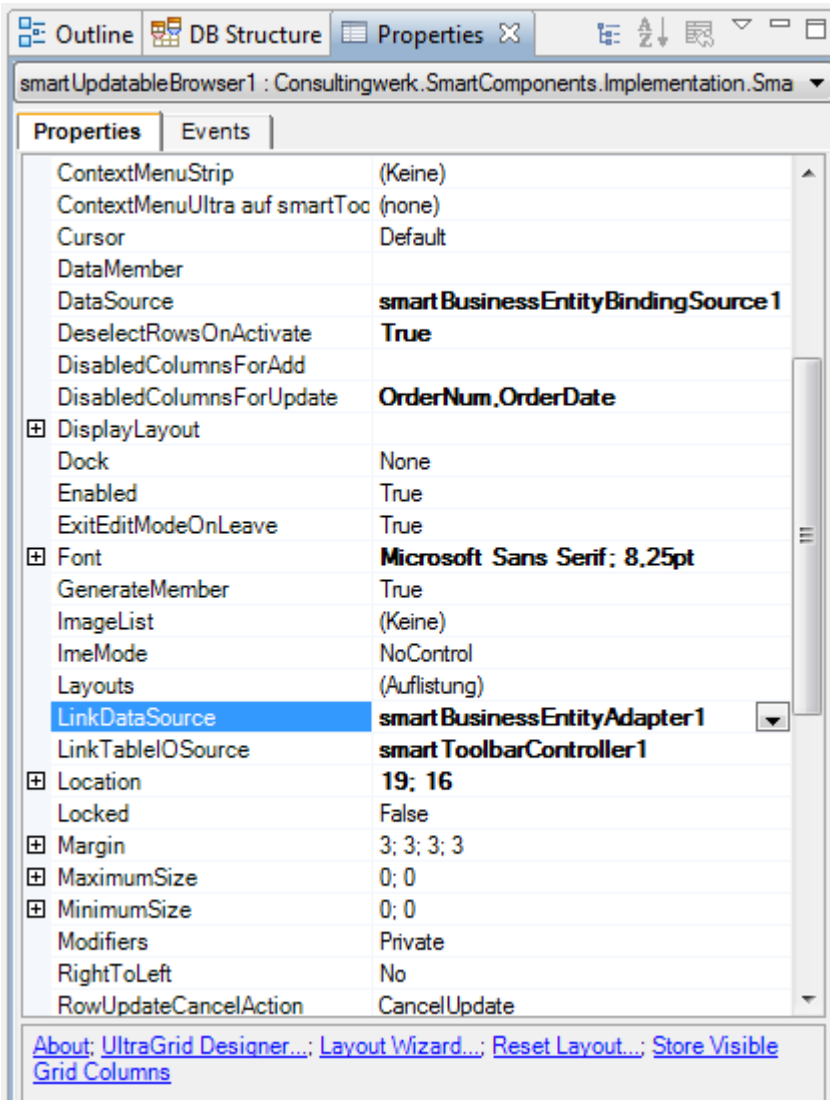
- GUI for .NET client infrastructure
- Extension to OpenEdge UltraControls / Infragistics NetAdvantage for .NET Controls
- Other Control sets may be used
- Tighly Integrated into the .NET Visual Designer
  - configuration of behavior and design in a single and intuitive place
  - no restrictions to the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

User Interface Design Process

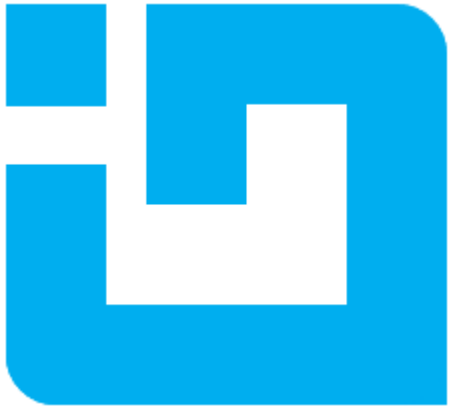
- Screen design based on rich foundation classes
- Compose Forms by adding rich SmartComponents and standard .NET Controls
- Connect and parameterize SmartComponents using property grid and Wizards
- Data centric design process: Achieving UI Design productivity similar to the AppBuilder

User Interface Design Process





Tight integration with Control libraries



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

- Following Progress‘ acquisition of Telerik we will provide optional support for Telerik RadControls (available fall 2015)

Demo

- Use Business Entity Designer to generate UI
- Open in Visual Designer
- Add Salesrep Lookup in Visual Designer
- Add to Menu Structure using Drag and Drop

- Build Viewer in .NET Visual Designer
- Build Form in .NET Visual Designer

Agenda

- Overview
- Developing Business Logic
- Developing GUI for .NET Frontends
- **User-Interface Options (Telerik)**
- Progress Rollbase Integration
- DataDirect Integration
- Migration and Modernization Options

Support for Progress/Telerik Mobile

- SmartComponent Library Backend and Progress/Telerik Mobile and Web Options = perfect matcn!
- Generation of fully functional Business Entity Service Interface from Business Entity Designer
- … just deploy to REST Adapter and start building OE Mobile screens

- Alternatively use Generic Service Interface for JSDO based client

Demo Telerik Mobile Platform

- Create a new hybrid mobile project in Telerik Mobile platform
- 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

Demo Kendo UI

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

Kendo UI

THE ART OF WEB DEVELOPMENT

Demo Kendo UI

- Code Review JSON Generation Classes

Agenda

- Overview
- Developing Business Logic
- Developing GUI for .NET Frontends
- User-Interface Options (Telerik)
- **Progress Rollbase Integration**
- DataDirect Integration
- Migration and Modernization Options

Progress Rollbase

- PaaS for rapid building of applications for the web (HTML and JavaScript)
- IDE in web browser
- Applications for known users
- Portals for anonymous users
- Hosted by Progress Software or on your own cloud
- Suited for building “satellite apps” around core business OpenEdge application

SmartComponent Library as backend

- Rollbase can access OpenEdge „services“ for CRUD operations
- Business Entities as data source
- **Wizard in Business Entity Designer** generates Interface class or generic REST service
- Complex filter support (batching, sorting)
- CRUD with support for validation
- Based on REST calls to AppServer

SmartRollbase Adapter

- Query Rollbase Data (into Temp-Tables)
- Modify (CRUD) Rollbase Data
- Query Rollbase meta data from OpenEdge for Interface generation
- Generate ABL Temp-Table from Rollbase objects
- Modify Rollbase Metadata from ABL code

Agenda

- Overview
- Developing Business Logic
- Developing GUI for .NET Frontends
- User-Interface Options (Telerik)
- Progress Rollbase Integration
- **DataDirect Integration**
- Migration and Modernization Options

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

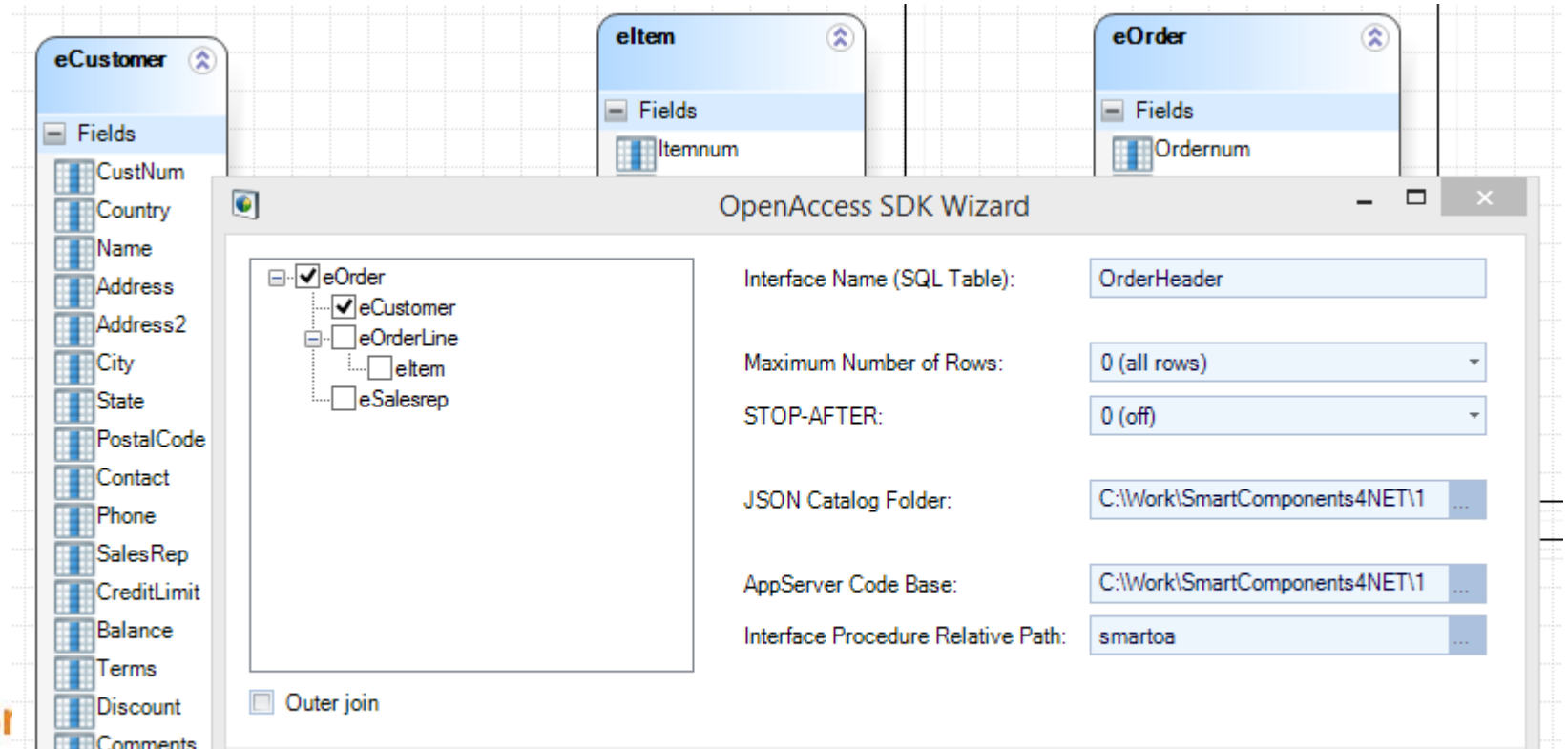
PROGRESS® DataDirect®

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 assetts



Demo

- Expose Order Business Entity as ODBC Data Source
- Add Calculated field with Order total
- Review interface procedure and JSON Catalog

Feature review

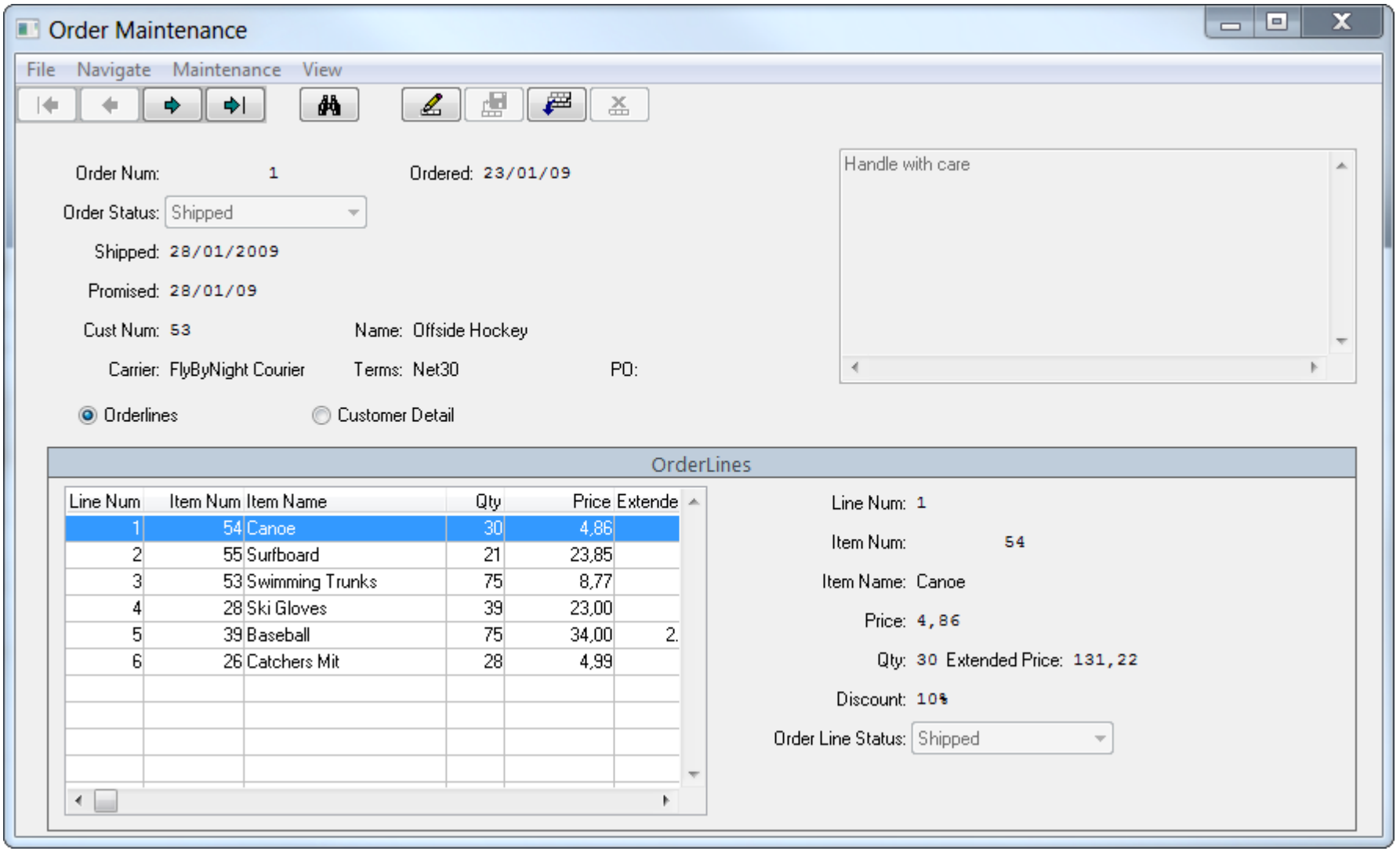
- One-click interface generation thourgh wizard
- Template based
- Join multiple Business Entity tables into a single result table
- Calculated field support
- Define execution limits (number of rows and number of seconds)
- Query manipulation support

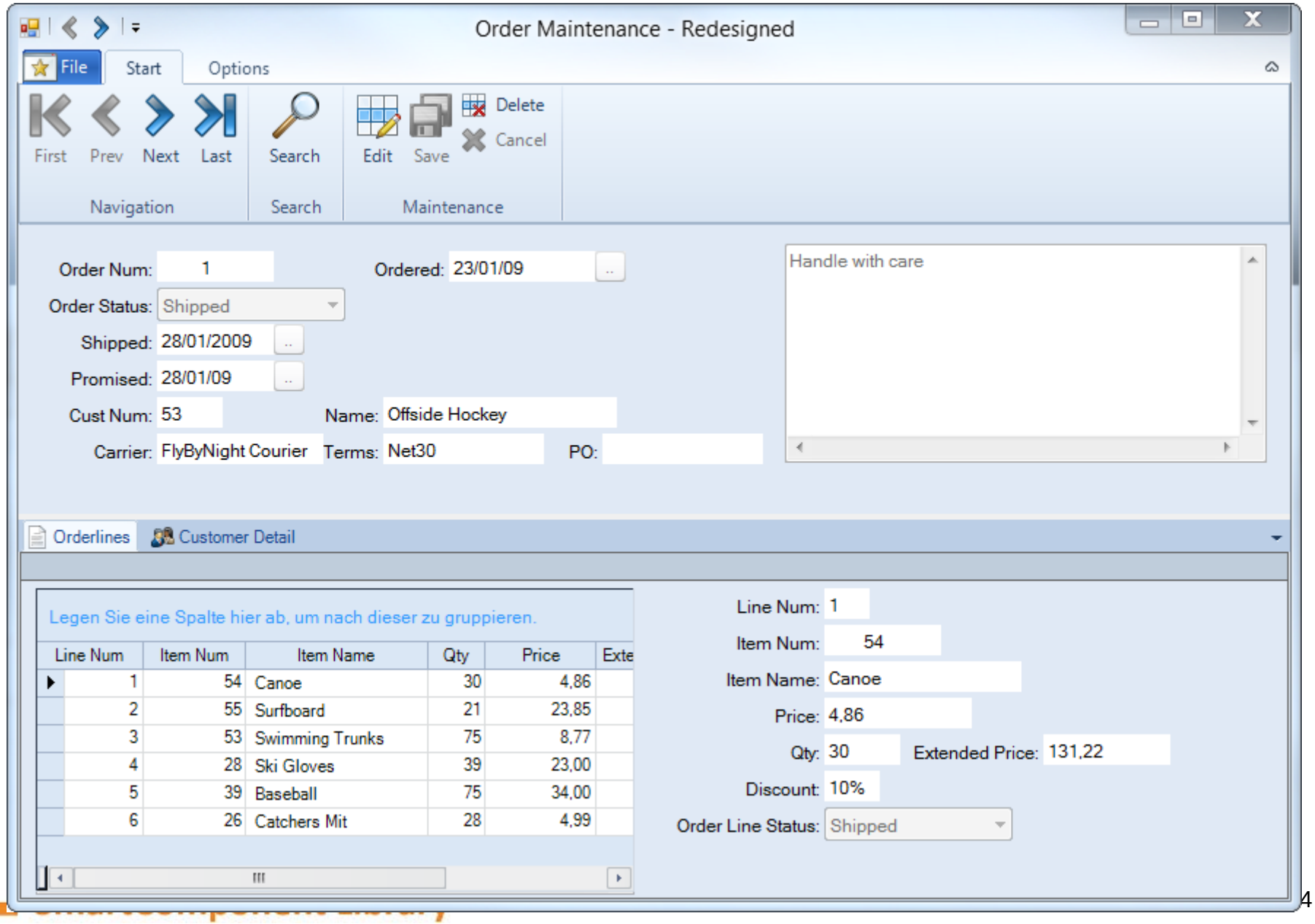
Agenda

- Overview
- Developing Business Logic
- Developing GUI for .NET Frontends
- User-Interface Options (Telerik)
- Progress Rollbase Integration
- DataDirect Integration
- **Migration and Modernization Options**

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
- 40 different WinKit implementations already
- WinKit included in SmartComponent Library


Order Maintenance
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:
Handle with care
Orderlines
Customer Detail
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
Navigation
Search
Maintenance
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:
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: 1
Item Num: 54
Item Name: Canoe
Price: 4,86
Qty: 30
Extended Price: 131,22
Discount: 10%
Order Line Status: Shipped

Alternative

- Migration of existing Applications

Migration and Modernization options

- **Enhance and extend existing applications**
- SmartComponent Library integrates with existing applications and frameworks
- SmartComponent Library functionality can be accessed by existing code
- SmartComponent Library may access existing code, depending on the kind of code
  - direct execution or through adapters
  - custom service or component implementations
  - Don’t worry about SHARED VARIABLES etc…

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 ADM2 or Dynamics applications
- Migration of custom applications possible
- Template based migration of UI components

Demo

- Import existing temp-table into Business Entity Designer
- Migration of ABL GUI into GUI for .NET

Questions

Don‘t miss my other presentations

- Monday 11.00: **Telerik .NET for Infragistics Users**
- Monday 16.45: DIY: **Lists, Enumerators, Enumerations, Serialization**
- Tuesday 11.00: **Modernization – the SmartComponent Library**
- Tuesday 14.15: **Structured Error Handling**
- Wednesday 11.00: **Telerik Kendo UI with WebSpeed**

PUG
CHALLENGE
EXCHANGE
AMERICAS