

SmartComponent Library by **Consultingwerk**

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software architecture and development

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Consultingwerk Software Services Ltd.

- Independent IT consulting organization
- Focusing on OpenEdge and related technology
- Located in Cologne, Germany, subsidiaries in UK and Romania
- Customers in Europe, North America, Australia and South Africa
- Vendor of developer tools and consulting services
- Specialized in GUI for .NET, Angular, OO, Software Architecture, Application Integration
- Experts in OpenEdge Application Modernization



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Mike Fechner

- Director, Lead Modernization Architect and Product Manager of the SmartComponent Library and WinKit
- Specialized on object oriented design, software architecture, desktop user interfaces and web technologies
- 29 years of Progress experience (V5 ... OE11)
- Active member of the OpenEdge community
- Frequent speaker at OpenEdge related conferences around the world





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Agenda

Overview

- Framework Backend Architecture
- OpenEdge GUI for .NET Frontends
- Kendo UI and Angular Frontends
- NativeScript Clients
- Repository based cross platform UI
- Application Modernization



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 Progress tools (OpenEdge, Telerik, KUIB, BPM, Corticon, DataDirect ...)
 - 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)

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SmartComponent Library

- "Eat your own dog food"
- Most of our tools are written using our own libraries and tools
- Nearly 100% ABL, 100% OpenEdge
- Full source code shipped to customers
- Typically weekly releases (40-45 releases/year)
- Technical support and maintenance offerings
- Support for new OpenEdge releases in no longer than 30 days

Application Framework Features

- Authentication, including client-principal support, Authentication Gateway and multi-tenancy
- Flexible authorization (menu, toolbar, business logic, custom tokens, ...), can be used for data-related authorization (e.g. Regions)
- Localization (full UI translation), messages, application data
- Definition based referential integrity
- Batch scheduler (repeating, just once, run now)
- Enhanced Unit testing framework

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Backend Overview

- The SmartComponent Library is based on a flexible OERA Backend Architecture
- <u>OpenEdge</u> <u>Reference</u> <u>Architecture</u>
- Complies with the Common Component Specification (CCS)
- Business Entities, Data Access Objects are a key components
- Business Tasks, including support for scheduled and asynchronous processing
- Common Infrastructure Components, Services

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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

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SmartComponent Library

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Demo

- Build Customer Business Entity
 - Validation
 - Calculated Field
- Business Entity Tester
- Use DatasetModel to access Business Entity

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Early Sneak Preview: Business Entity Designer on Web

- Re-implement Business Entity Designer UI as Angular Web application
- Leveraging our Angular web components
- Leveraging code generator and validation framework within PASE
- Docker support
- Uploading generated source code to
 - Git
 - Eclipse Che
- Getting ourselves ready for Progress DevOps Hub Developer workspace on the web

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RESTful

- Standard RESTful interfaces build into framework
- No custom code required
- Web Developer friendly
- Foundation for API based economy
- Support smart devices like Google Home and Amazon Echo
- Swagger based API documentation



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Demo

- Enable RESTful access to Customer Business Entity
- http://localhost:8820/web/Entities/DemoCustomers
- Swagger Integration: <u>http://localhost:8820/web/SwaggerEntities/html</u>
- Implement RESTful Business Task method
- http://localhost:8820/web/Entities/Orders/1/calculateOrderTotal

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SmartFramework ERD Designer

- Based on Zamloxis ERD
- Integration with SmartFramework backend through customized version of Zamloxis ERD
- Simplifies Schema Design and Documentation
- Foundation for definition based referential Integrity
 - Delete restrict / cascade / nullify / set default
 - Validation of foreign key values

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Unit Testing

- Framework supports test-driven development in multiple ways
- Business Logic can be tested against "Mock" of the Database or individual data-source components
- Perform unit tests that perform independent from altered data in the database
- Support mocking of dependent code through service manager or configurable object instance factory
- Scenario driven unit tests for business entity read and update operations
 - Eliminate need to write similar unit tests for all your components

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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
- Screen design either in Progress Developer Studio Visual Designer or our repository based tooling

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User Interface Design Process

Toolbox 7
Crainiate ERM
Microsoft Controls
OpenEdge Ultra Controls
SmartComponents4.NET
Rointer
🙄 Smart Binding Source
Smart Business Entity Adapter
Smart Business Entity Binding Source
Smart Business EntityLookup
The Smart Data Browser
E Smart DataCombo
SmartDataObjectAdapter
SmartDataObjectBindingSource
SmartDataObjectLookup
SmartDatasetChildAdapter
Smart Dynamic Viewer
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Smart Navigation Panel
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Smart ToolbarController
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Demo

Use Business Entity Designer to generate UI

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- Open in Visual Designer
- Add Salesrep Lookup in Visual Designer

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Support for JSDO Based Clients

SmartComponent Library Backend and

JSDO based consumers: Telerik Mobile, Kendo UI, Kendo UI Builder, ... = perfect match!

Full support for complete JSDO functionality
 JSDO Consultingwerk likes this.

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Support for Progress/Telerik Mobile

- Generic REST Service Interface for JSDO based clients
 - Full CRUD support
 - Invoke Business Entity Methods and Business Tasks
- 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
- Integrated Localization, translation of field labels etc.
- Simplified deployment (small and large teams)
- PASOE (Progress AppServer) or Classic AppServer



Recorded 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: <u>https://www.youtube.com/watch?v=m-63Wzpjs9c</u>

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Support for Kendo UI Builder

- SmartComponent Library can be used as the backend for KUIB
- SmartComponent Library can be used as the backend for every JSDO based application (e.g. Kendo UI)

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SmartComponents.Web2

Our own Angular Client







SmartComponents.Web2

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

Multiple screen design options

- HTML based Angular templates, referencing our components
- JSON based layout, abstracted, supports re-use in NativeScript
- Annotations, simple layouts rendered on the fly
- User Interface Repository, supporting reuse of UI designs (e.g. Viewers, Grids) on Desktop, Web and Mobile

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Screen Definition based on functional components

```
<smart-data-source
            smart-object-name='salesrepDataSource'
            smart-business-entity-name="Consultingwerk.SmartComponentsDemo.OERA.Sports2000.SalesRepBusinessEntity"
            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/salesrep'></smart-grid>
    </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/salesrep'></smart-viewer>
    </div>
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Demo

- SmartComponents.NG2 sample application
- Screen definition in Repostory Tooling



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Agenda

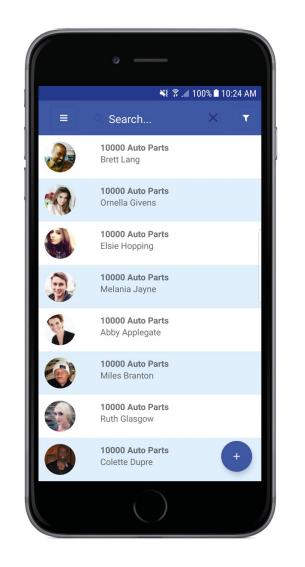
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NativeScript

- Native mobile applications for iOS and Android
- JavaScript or TypeScript based
- Standard for Angular based mobile applications
- Allows us to reuse components of SmartComponents.NG2 on mobile
- Allows developers to reuse client side code
- Similar developer experience for customers
- Similar component architecture
 - Data sources, grids, viewer, lookups, …



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Kinvey mBaaS Adapter

- SmartComponents for NativeScript include a Kinvey Adapter
- Leverage cloud based hosted backend services
- Support caching, asynchronous updates and conflict resolution
- Based on JSDO support in the NativeScript and Kinvey

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Repository based UI

- SmartFramework supports user interface repository
- Leveraging the same user interface layout on multiple devices (desktop, web and mobile)
- UI versioning with code (using Git, Perforce, Roundtable, ...)
- Mixed applications supported
 - repository based UI for standard screens
 - static screen layout for specialized screens
- Bridge responsive and pixel-perfect UI design
 - Desktop typically pixel perfect
 - Web, mobile typically responsive

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Demo

- Repository based UI Designer
- Desktop and Web (early Sneak Preview)

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Application Modernization



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 45 different WinKit implementations already
- WinKit included in SmartComponent Library

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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...

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Alternative

Migration of existing Applications



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Migration and Modernization options

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

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Demo

- Migration of ABL Browse Widget
 - Rewrite of Calculated Field
 - Creation of matching Business Entity
- Migration of ABL GUI for .NET Frame
 - Implement ABL Widget abstraction

Questions

Email us at info@consultingwerk.com

