

# SCO Forum 2006

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**Presentation Title: IDE Development Environments for SCO Unix**  
**Presenter's Name: Kirk Farquhar**  
**Session ID: 123**

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# Agenda



- What is an IDE
- Advantages of IDE Development
- Categories of IDE tools
- The Eclipse Environment
- Example IDE's for SCO
- Other Resources
- Installation Issues
- Q & A

# What is an IDE?



- IDE or Integrated Development Environment
- An IDE is a set of tools that aids application development.
- Most IDEs have tools that allow you to:
  - Write and edit source code
  - See errors as you type
  - See highlighted code syntax
  - Automate repetitive tasks
  - Compile code
  - View documentation, online help, code syntax samples etc.
  - Use drag-and-drop utilities for easy building of features, such as graphic objects or creating database connections
- In addition, some IDEs do the following:
  - Provide templates for quick creation of components
  - Provide code-completion as you type
  - Automatically generate code, screens, reports, data connections etc.
  - Integrate with source code repositories, such as CVS
  - Integrate with web application servers, such as Apache Tomcat
  - Integrate with build utilities, such as Apache Ant

# Advantages of using an IDE



- **Productivity**
  - Faster development
  - IDE development tools often have very rapid payback
  - Fewer code syntax and structure errors
  - Better code
  - Quicker debug cycles
  - Rein in inexperienced programmers
- **Consistency**
  - Consistent code structure
  - Consistent look & feel
- **Accelerated learning curve**
  - Templates & macros generate code so new developers can see the results immediately
  - Immediate access to context sensitive help, code snippets etc.

# Disadvantages of an IDE



- Cost
  - Buying the tools
  - Runtime costs
- Proprietary
  - Tied to a database, platform or runtime module
  - May be an issue finding staff & resources
- Application oriented
  - Not all IDE's provide all language capabilities
  - Deters "building the better mousetrap"

## When to use an IDE



- Use of an IDE isn't always appropriate
- An IDE is most useful when:
  - Speed of development is a factor
  - Development & lifecycle costs are a factor
  - Large teams of developers are working on a project
  - The application lends itself to any proprietary constraints
  - Demands of the application do not exceed the limits of the IDE deployment environment
  - "Elegance" is not an issue

# The Eclipse Environment



- The Eclipse environment is an open source, vendor neutral platform to support development in many languages
- Full GUI development tool with support for language specific plugins
- Supports cross platform and cross database development
- Provides for integration of applications built on different platforms/languages
- Evolving as a single framework for all development needs
- Support for Java, Python, Cobol, PHP, HTML, Javascript, CSS, JSP, SQL, XML, DTD, XSD, and WSDL .....



# Categories of IDE Tools



- Proprietary Database tools
  - Progress, FilePro, Recital, FoxPro
- Language specific IDE's
  - Basis Pro5, BBj, JBuilder
- GUI Frameworks
  - Eclipse, KDevelop, Sun Workshop, Visual Studio
- Cross Platform Tools
  - Progress, Microfocus Studio, Delphi



Proprietary Tools      Progress  
Recital  
FoxPro

# Progress 4GL Development System



- Progress includes a 4GL language designed around the needs of business processes and data management
- Language extended to allow the developer to create APIs for .NET clients, Java™ clients, Java messaging, even map database schema to XML formats
- Progress includes a data dictionary and tools to fully manage your databases
- Deploy applications to Unix, Windows, Linux
- X-database support for Oracle, Microsoft SQL Server, Sybase, Informix, and DB2 as well as ODBC



- Key Features:
  - Data Dictionary
    - Create and maintain database definitions, application defaults, and business rules.
    - A central storage mechanism for all database information insulates you from the specific details of each database type and location.
    - The Progress 4GL uses Data Dictionary defaults automatically when you build new application components .
    - Make a single change to a definition stored in the Data Dictionary and have that change automatically inherited by every application component that refers to the original definition.

# Progress 4GL Development System



- Data Management
  - Build an application database.
  - Dump and load data and definitions, in binary or text format.
  - Define application security and permissions.
  - Import and exporting data to and from a variety of sources.
- Procedure Editor
  - Build, modify, and test all OpenEdge application components .
  - Use a full range of editing features, including file drag-and-drop, cut-and-paste, and a search-and-replace feature, that allow you to make large-scale changes to several different programs quickly.
  - – Create hooks to interface with third-party tools .
- Application Compiler
  - Compile source procedures individually or in groups.
  - Create one set of executable code that runs on all supported platforms .



- Debugger
  - Locate and correct errors in application logic or data handling in any OpenEdge application component.
  - Track the flow of control in an application, even a highly-distributed one.
  - Examine the contents of buffers and variables .
  - Access state information.
  - Trace processing events .
- Open Client Toolkit
  - Generate Java, .NET, and Web services proxies for accessing Progress 4GL business logic on the AppServer™ from J2EE, .NET and other platforms .
  - Create components for deployment in a client/server, n-tier, or Web environment.



- Advantages of Progress
  - Extremely fast development of business applications
  - Streamlined application maintenance
  - Tight integration with the database(s)
  - X-platform deployment from one source code set
- Disadvantages
  - Lacks lowlevel programming access
  - No GUI on Unix for screen & report design
  - Runtime costs

# Recital 9 Terminal Developer



- Server-based, business application development environment providing language & data compatibility with Visual FoxPro, FoxPro, FoxBASE and Clipper
- Cross platform support for Windows, Linux, Unix and OpenVMS servers with complete cross-server connectivity for accessing data across diverse platforms
- Access to Recital, Visual FoxPro, FoxPro, dBase, Clipper, Informix C-ISAM and RMS data is handled natively
- databases can be encrypted using DES3 encryption
- ANSI SQL Compliant data access
- Full internet access to Recital 9 Terminal Developer data concurrently using ODBC, JDBC, or .NET Data provider
- Build applications for dumb terminals, telnet clients, web browser clients, Java clients, .NET clients, and ODBC clients



# Recital 9 Terminal Developer



- Key Features
  - Supports stored procedures, triggers and user-defined functions
  - supports Very Large Databases (tables larger than 2GB) up to  $2^{63}$  bytes
  - Recital 9 Visual Developer adds the ability to build x-platform client server applications
  - Mirage Application Server adds support for thin-client and web based applications
  - Local cursor engine, tight coupling between language and data, and active data dictionary
  - Navigational and SQL data access
  - Extensible with C OBJECT API for building dynamically loadable class libraries in C/C++
  - Supports both optimistic and pessimistic row level locking
  - Active Data Dictionary supporting triggers, protection and business rules
  - supports MySQL extensions



- **Advantages**
  - Leverage existing skills in Dbase languages
  - Migrate existing applications
  - Extend to applications to be x-platform, client agnostic
  - Interoperate with MS Foxpro applications
- **Disadvantages**
  - Character mode only on Unix
  - No GUI on Unix for screen & report design
  - Runtimes



- Last iteration of the Character mode FoxPro application
- Tight integration to the database
- Dbase language compliant
- Built in compiler
- Works with third party tools for screen and report generation



- Advantages
  - Leverage Dbase knowledge and applications
  - Low cost runtimes
  - Low system requirements
  - Interoperate with MS Foxpro
- Disadvantages
  - No GUI
  - No screen & report generation templates
  - Limited lifetime ??



- Cross Platform 4GL Database Development and Management System
- Windows 98 or later, SCO OpenServer  
Unix/Unixware, Linux, Sun, HP-UX, IBM AIX,  
IBM eServer iSeries Linux, FreeBSD
- Menu Driven Application Generator
- Integrated database definition & mangement
- ODBC access to other databases



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## filePro Plus Main Menu - DEMO

### Creation Operations

- 1 - Define Files**
- 2 - Define Screens
- 3 - Define Output
- 4 - Define Edits
- 5 - Define Processing
- 6 - Define User Menus
- 7 - Printer Maintenance

### Runtime Operations

- ? - filePro Directory
- A - Expand Files
- B - Inquire, Update, Add
- C - Index Maintenance
- D - Request Output
- E - Set/Change File Name
- F - filePro Utilities Menu
- G - Run A User Menu

X - Exit

**F10** - Help

Enter Selection > 1

Create/modify filePro file layout.



- Advantages
  - Very fast application development
  - Inexpensive
  - Very good performance, especially on limited hardware resources
  - Fast learning curve
- Disadvantages
  - Scalability of database
  - Character mode only
  - No low level programming
  - No support for future technologies (yet)



Language Specific IDEs

Basis Pro5

BBj

JBuilder





- Basis Pro5 is the 5<sup>th</sup> generation of Basis' Business Basic interpreter, IDE and Database
- Includes Desktop IDE for PRO/5
- Data Viewer views file structure and data for any file Data Dictionary Builder creates and maintains BASIS Data Dictionary



- Advantages
  - Integration to Database
  - Leverage a large pool of Business Basic skills and applications
  - High performance CUI applications
- Disadvantages
  - CUI only
  - Runtime costs



- BBJ is compatible with legacy BBx products.
- X-platform, Unix, Windows, OS-X, Linux
- BBJ's base in Java allows for the use of object-oriented programming extensions.
- Support Java as well as Business Basic
- Extended Structured Query Language (SQL) support
- Native form design capability
- Build both GUI and CUI applications
- AES 128-bit security
- Supports native database access to Basis DBMS as well as ODBC and JDBC



- Components
  - Editor
    - Syntax highlighting- PRO/5 & BBJ ; Java ; HTML ; XML
    - Search and replace, Object code completion, Cut and paste, Multiple undo/redo, Find in files
  - Debugger
    - Dot step, Persistent breakpoints, Watch variables, Syntax checker
  - Compilers
    - BBJ; PRO/5 ; BBxPROGRESSION/4; Java;C
  - Data File Viewer
  - Data Dictionary
  - FormBuilder
    - GUI form creation, WYSIWYG, Set like-properties across disparate controls
  - AppBuilder
    - Associate code with GUI events
    - Complete integration with FormBuilder
- Database Management System
  - Triggers
  - Stored Procedures
  - New File Type
  - SQL enhancements

# Basis BBJ



**NetBeans IDE 3.6 - Project Default**

File Edit View Project Build Debug Versioning Tools Window Help

**Filesystems**

- C:\Documents and S...
- C:\dev\bin
- C:\dev\src
- C:\prototypes\quasiF...
- C:\junk\test
  - Complete\_Child
  - ControlValidation
  - MenuTest\_2
  - MenuTest\_3
  - WhindyChild
  - test2

**(IRIS) Control Validation Demo**

Grid Snap 10

Customer Information | Current Order

Title: First: Middle: Last:  
Title: Robert . Smith

Cust. Status: New (selected) Current

Email: rsmith@hotmail.com  
 Share Email address with partners

Customer since: Heard about us via: Magazine

Credit card: MC Account number: 1234 1234 1234 1234 CVT:

**Control Inspector**

- ControlValidation
  - ChildWindow[101]
  - ChildWindow[102]
  - [Control Validation Demo]
    - TabCtrl [100]
      - ChildWindowRefPtr [101]
      - ChildWindowRefPtr [102]
      - Button [104]
      - Button [106]
      - CE dit [107]
      - StaticText [108]

**Properties**

Property	Value
ID	0
_Enabled	<input checked="" type="checkbox"/>
backColor	[236,233,21 ...]
causesControl...	<input checked="" type="checkbox"/>
font	Microsoft Sans Serif 8
foreColor	[92,92,92] ...
height	354
longCue	...
modal	<input type="checkbox"/>
opaque	<input checked="" type="checkbox"/>
resizable	<input checked="" type="checkbox"/>

**[Control Validation Demo]**  
No description available.

**Palette**



- Advantages
  - All Pro5 advantages plus:
  - Java and multiple database support
  - Full GUI development environment on SCO
  - Rapid GUI development
  - Multi-tier application development
  - Rapid application prototyping
  - CUI and GUI project management tool
  - Support for legacy code
  - Version control facilitates revision and change management
- Disadvantages
  - Runtime costs
  - No native access to high-end databases



- Full GUI Java IDE
- Support for all Java standards and technologies
- Peer to peer development tools
- Built-in test and performance tools
- UML support
- CORBA Support
- Web services development tools
- Integration to other Borland tools and common user experience



- Features – you name it, this is Java development on steroids
- Advantages
  - You can do anything in the Java world
  - Full set of tools for ALM
  - Peer development tools
  - Written in Java and completely standards compliant
- Disadvantages
  - Cost – you must buy Enterprise version for SCO
  - Heavy hardware resource demands





## GUI Frameworks

Eclipse

KDevelop

Visual Studio



- A vendor-neutral open development platform and application frameworks for building software – [eclipse.org](http://eclipse.org)
- Built on Java and requires a JRE
- Supports other languages besides Java
- Full GUI interface on SCO
- Standards compliant, except built on SWT
- X-platform and X-language
- Many plugins coming for other languages



- Advantages
  - One user interface for many languages
  - Low-cost (\$0)
  - Platform independent IDE and applications
  - Support for all Java technologies & standards
  - Evolving rapidly
- Disadvantages
  - Open-source
  - Heavy hardware demands



- Eclipse Plugins

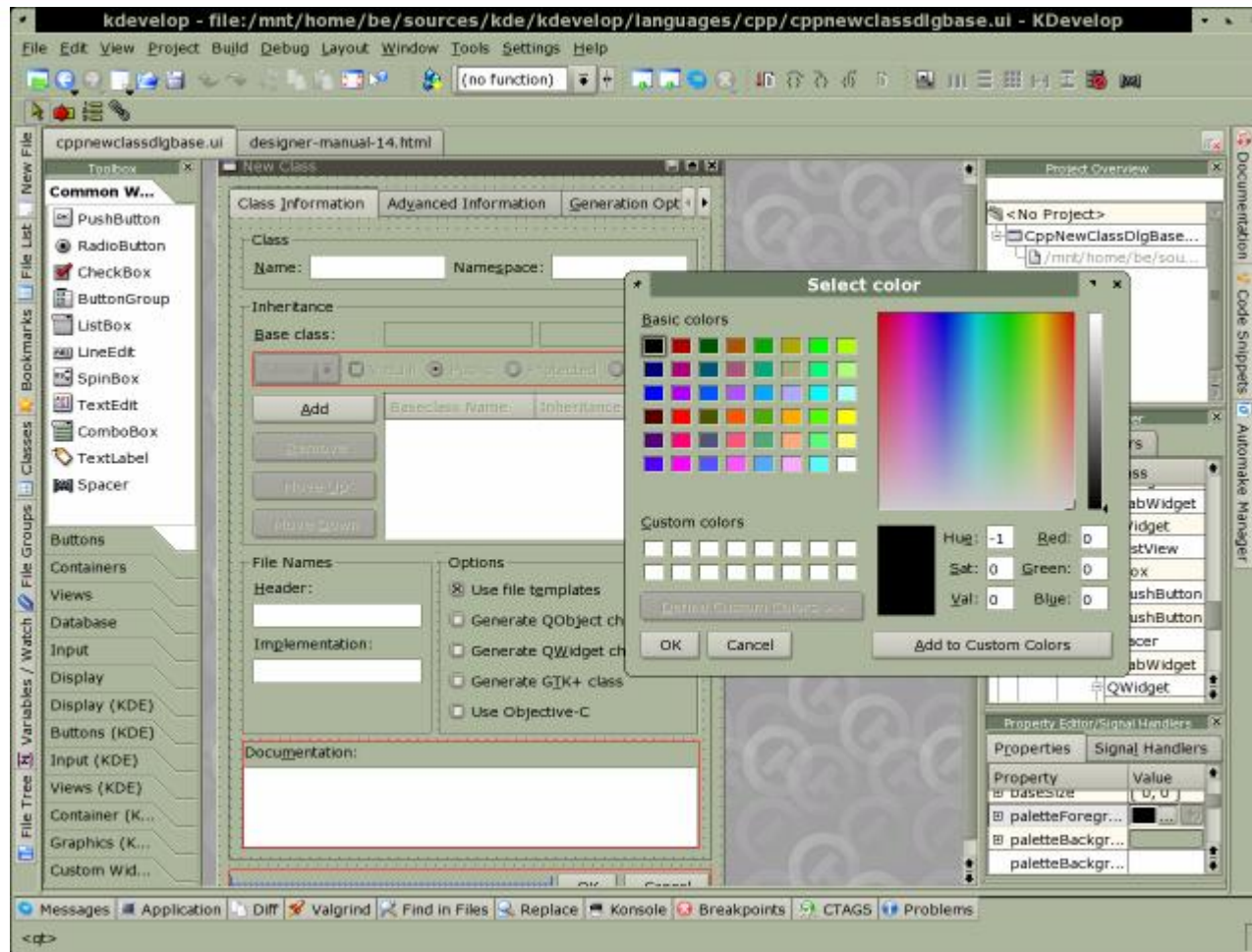
- Eclipse plugins are add-on libraries to support development in other languages and provide developer tools
- Plugins are available or coming for:
  - C/C++
  - Cobol
  - PHP & Python
  - XML
  - HTML
  - Javascript
  - CORBA
- See [www.eclipseplugincentral.com](http://www.eclipseplugincentral.com)



- Like Eclipse, KDevelop is an open source framework supporting many languages
- Current language support is:
  - C,C++,BASH, Perl, PHP, Java, Fortran, Python, Ruby, Haskell
  - Currently only C/C++ have all features supported
- Full GUI development environment based on KDE, GNU libraries, QT
- Supports application templates
- Built-in Project Manager utility



- Features
  - Plugin based architecture
  - Project Manager
  - Supports 15 languages
  - Application wizard
  - Code editor
  - Integrated debugger
  - Documentation viewer
  - Version control system
  - Configurable UI





- Advantages
  - A single UI for GUI development in several languages
  - Excellent low-level programming support
  - Free
  - RAD with application templates and wizards
  - Best tool for KDE development and integration to Konqueror and KOffice
- Disadvantages
  - Tied to KDE
  - Not compiled for OSR6 yet
  - Open Source application





- Microsoft Visual Studio
  - Not actually a Unix Development environment, but:
    - Support for developing WebService clients to integrate with SCO backend servers
    - Support for developing apps for EdgeClick
    - All tools can be used to develop .net applications
    - Support for FoxPro database and compatible with most code generated for FoxPro/Recital



X-Platform Tools

Progress OpenEdge Studio  
MicroFocus Studio  
Borland Delphi/Kylix/JBuilder

# Progress Open Edge Studio



- Presents a single environment for quickly and efficiently creating today's hybrid applications
- Utilizes a repository that enables applications to change dynamically by storing object attributes, templates, and business components.
- Automates much of the work in creating user interfaces and business components with visual tools included in the AppBuilder
- AppBuilder is a central workbench providing visual tools for defining objects, laying out interfaces, and linking data.
- Allows the re-use of business logic and eliminates many coding tasks.
  - SmartBusinessObjects and SmartDataObjects allow developers to quickly assemble modules of complex business rules.
- With business expertise captured in the form of logic-defining rules and processes,
  - OpenEdge Studio tools makes it easy to deploy that logic so that it can be accessed as a Web service or by OpenEdge, .NET, and Java clients



- Key benefits are exposing existing Cobol interfaces as web services, integration to J2EE and .NET
- Development platform is Windows and leverages Visual Studio for .NET development
- Integration with Server Express running on OSR6 or UW7.1.3+



- All of these products will build .NET client side applications to integrate with SCO WebServices and EdgeClick applications
- Borland products also support integration to CORBA and J2EE application servers
- Consider these tools when developing multi-tier applications, or client-server where the database and/or business logic servers reside on SCO

## Other Resources



- [www.eclipse.org](http://www.eclipse.org)
- [www.kdevelop.org](http://www.kdevelop.org)
- [www.fptech.com](http://www.fptech.com)
- [www.borland.com](http://www.borland.com)
- [www.basis.com](http://www.basis.com)
- [www.accountixinc.com](http://www.accountixinc.com)
- [www.recital.com](http://www.recital.com)
- [www.microfocus.com](http://www.microfocus.com)
- [www.progress.com](http://www.progress.com)
- [www.sco.com/skunkware](http://www.sco.com/skunkware)



- Minimum configuration that I used for testing these applications was:
  - P4 with 1 Gb RAM
  - OSR6 with MP2 and OSS706
  - Java 1.4.2
- I also installed
  - Open Source tools for OpenServer 6
  - Tomcat server from the CD 2
- For Eclipse and Java apps to work added `/usr/java/jre/bin` to my path
- For KDevelop to work changed desktop to KDE and installed QT libraries and GLIB libraries from Skunkware

# Summary



- IDE's often represent a significant initial cost but usually provide a high ROI
- IDE's help ensure consistent, well-structured, well-documented code with a lower life-cycle cost
- IDE's can help accelerate the productivity and learning curve of new staff





# Questions