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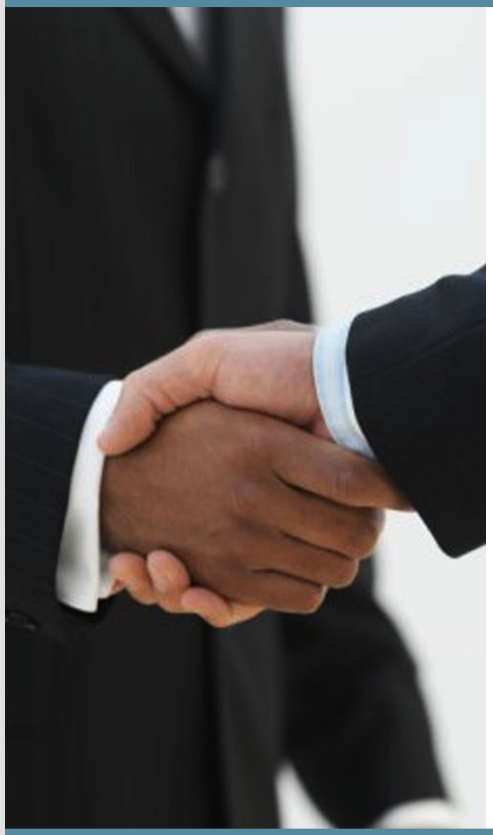


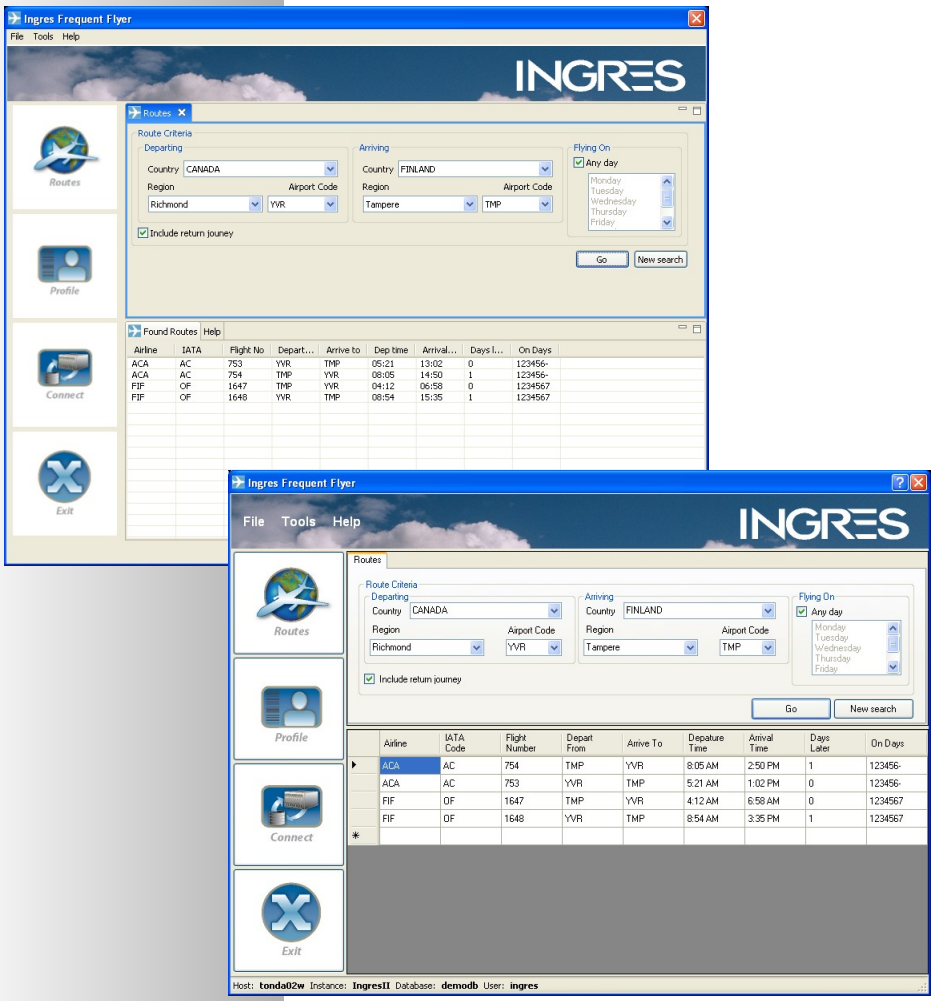
Starting down the Open ROAD with the Frequent Flyer Demo

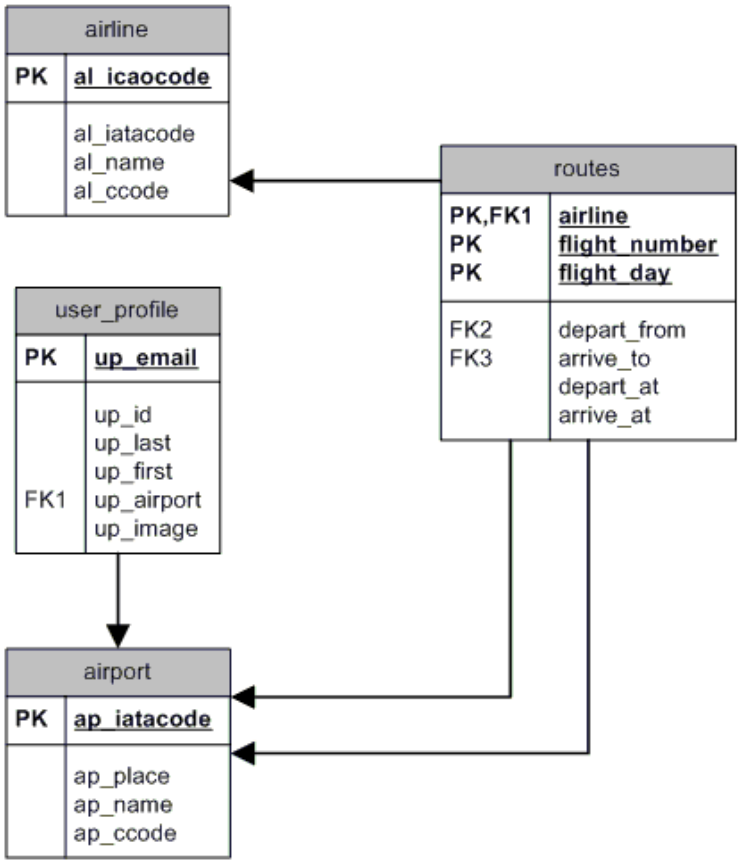
David Tondreau
Architect

Agenda

- Overview of the Frequent Flyer demo
- Installing and running the client/server demo
- Configuring the middle tier for thin clients
- Application architecture and design
- OpenROAD open source opportunities

Ingres Frequent Flyer Java & C# Demos





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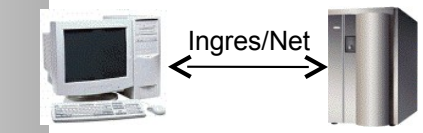
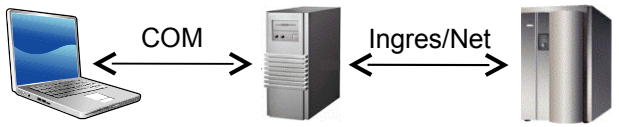
Additional Client Requirements

1. Thick

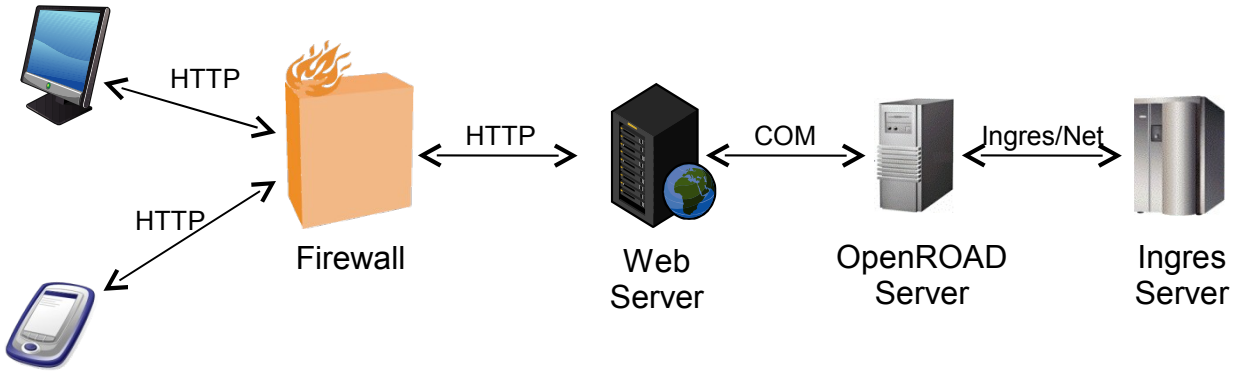


+ 2. Thin



+ 3. Browser

+ 4. Mobile



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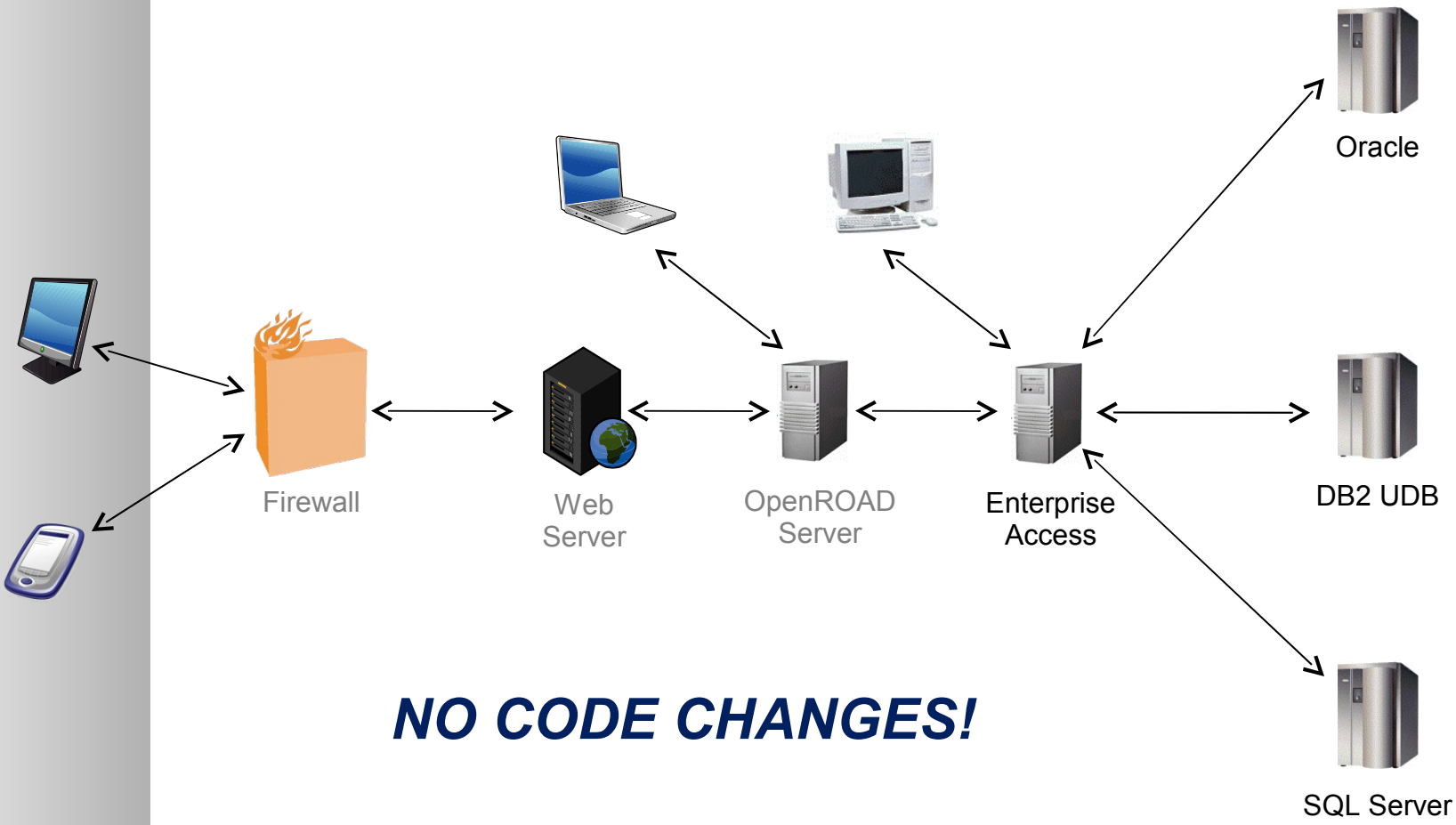
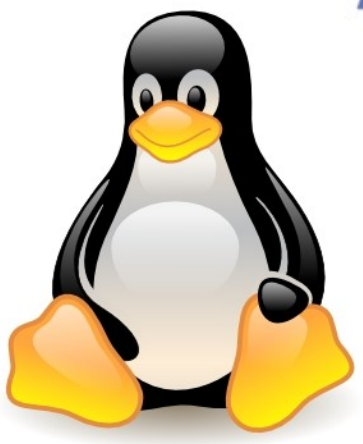
Additional Backend Requirements



NO CODE CHANGES!

INGRES

Additional Platform Requirements



AIX

solaris™

hp

TM

NO CODE CHANGES!

Additional Design Requirements

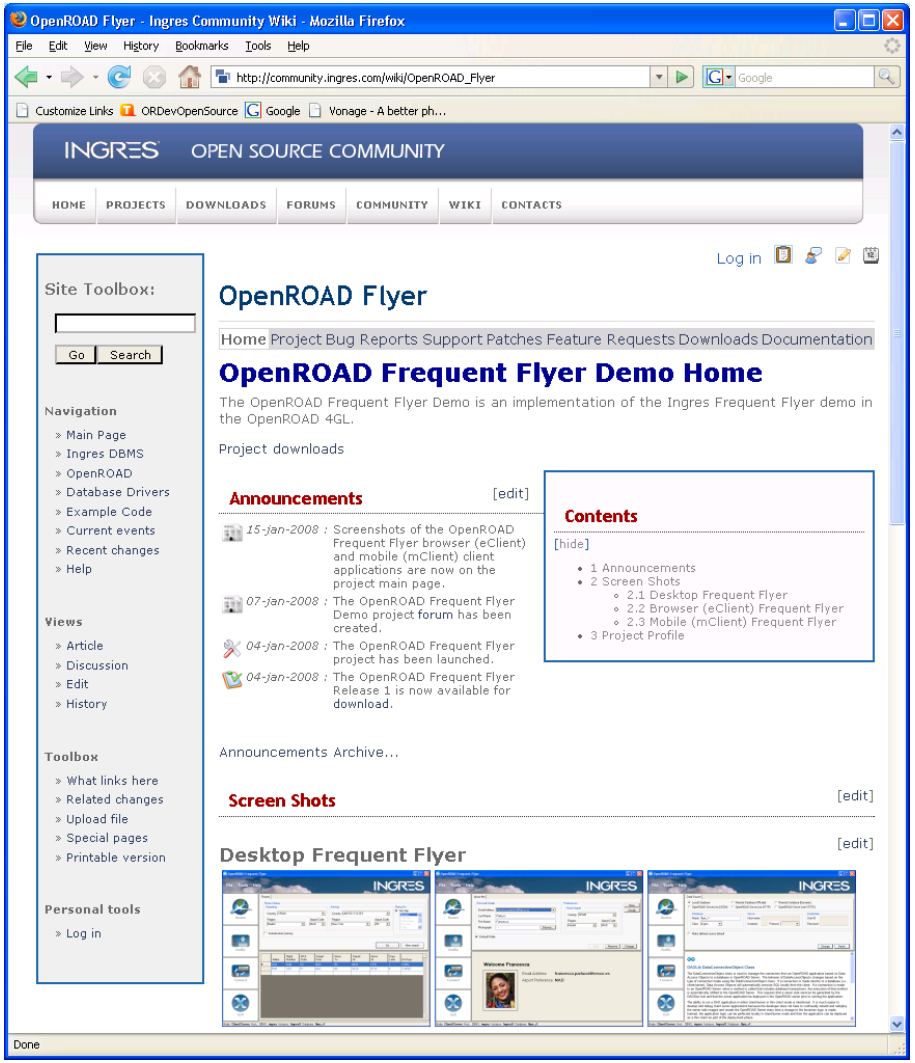
- **Reusable data services**
  - Implement data access logic in a single set of classes
  - Incorporated in any client or tier (thick, thin, browser, mobile, server)
  - Develop and test using client/server connection
  - Build and deploy as pure thin client (no SQL) or “hybrid client” (client/server or thin client)
- **Reusable user interface services**
  - Implement user interface logic once
  - Apply to any form factor (desktop, browser or mobile)

Prerequisites

- **Any Linux/UNIX/Windows platform supported by OpenROAD 2006**
- **An existing installation of OpenROAD 2006**
- **One of the following:**
  - Local Ingres DBMS server installation
  - Ingres/Net client installation with access to a remote Ingres DBMS server
  - Enterprise Access installation with access to a local or remote data source

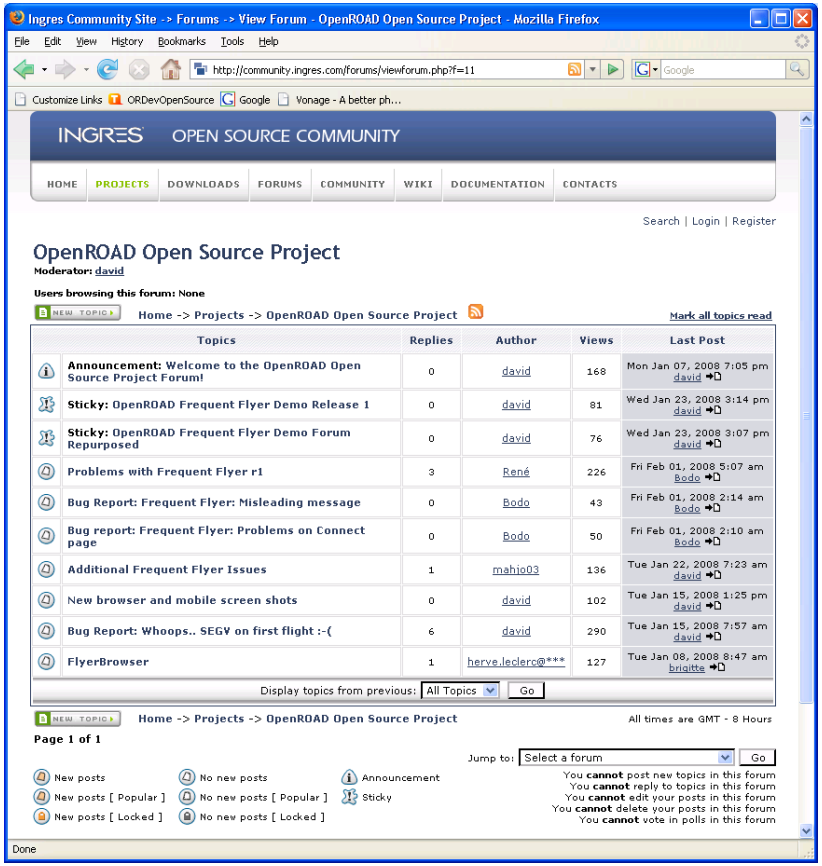
OpenROAD Flyer Project Pages

- community.ingres.com
- Click on “Wiki”
- Click on “OpenROAD”
- Scroll to the “Projects” section
- Click on the “OpenROAD Frequent Flyer Demo” link



OpenROAD Frequent Flyer Support

- **Community support is provided in the forums**
  - Projects > OpenROAD Open Source Project
- **Bugs Reports:**
  - Logged in internal system
  - Itemized on project pages
- **Fixes and Contributions**
  - Committed to source mgmt
  - Itemized on project pages



Community vs. Enterprise Packages

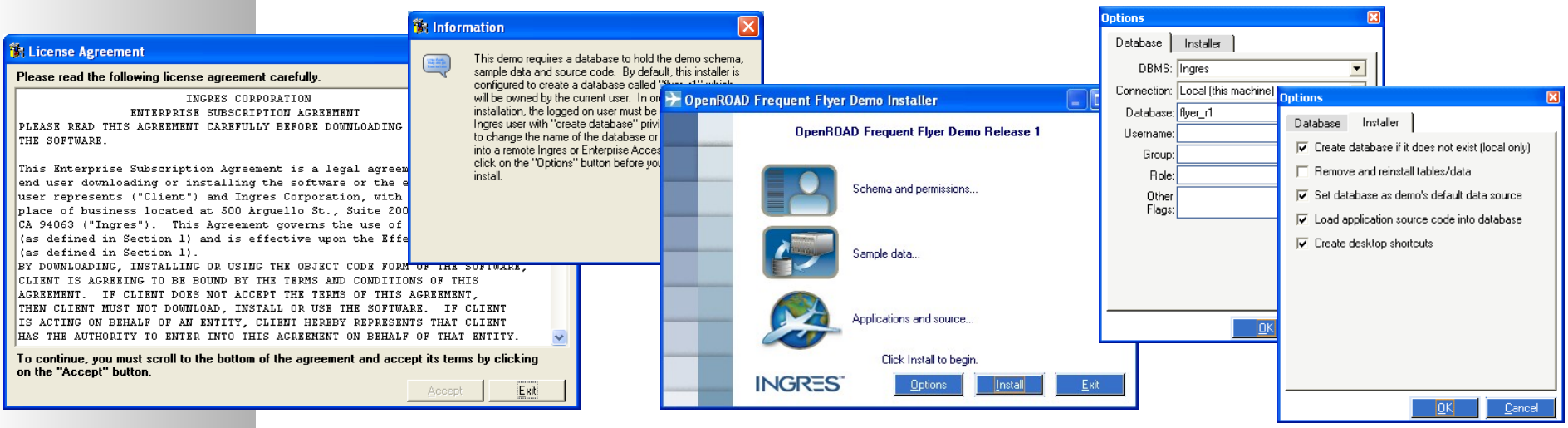
- **Licensing mirrors that available for Ingres Corporation's open source products**
- **Enterprise Edition (Commercial)**
  - Available to customers with OpenROAD support contracts
  - Enables you to use any of the source code in your apps
- **Community Edition (GPL)**
  - Freely available to community members (trial edition)
  - Usage is in accordance to the GPL
- **Available on the “Downloads” project page**

What the Frequent Flyer Installer Does

- **Creates a database to host the demo ("flyer_r1").**
  - Installs the demo schema and issues permissions.
  - Imports the sample data into the database.
  - Loads the source applications into the database.
- **Copies the demo files to the workstation**
  - %II_SYSTEM%/ingres/w4glapps/flyer_r1/...
- **Creates shortcuts**
  - Desktop shortcut to run the demo (Windows only).
  - Adds a connection profile to OpenROAD Workbench.

Running the Installer on Windows

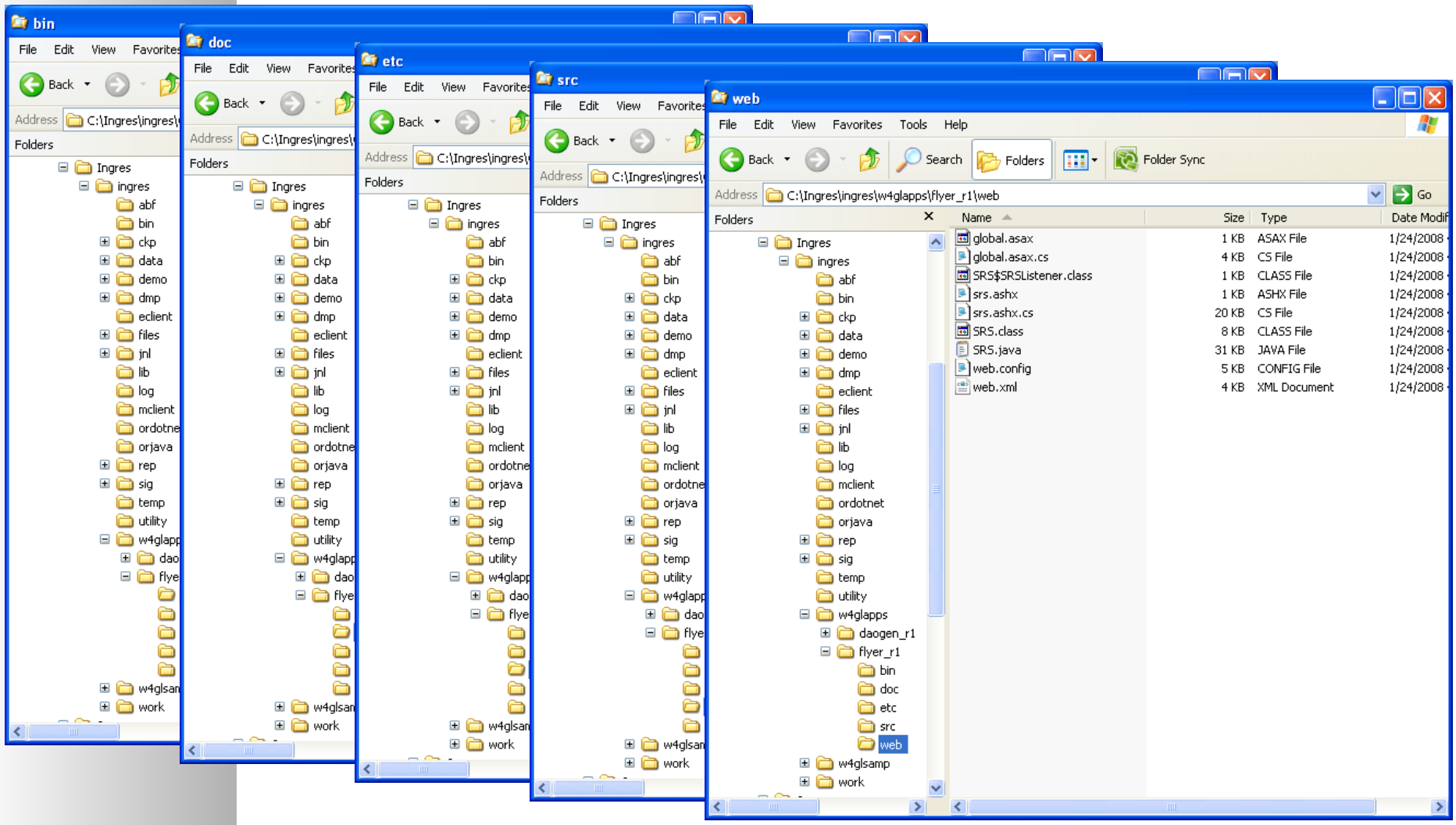
- **Download, unzip and run the installer**
  - Accept the click through license
  - For installation into a remote database or Enterprise Access data source, click on the “Options” button
  - Click “Install” to start the installation



Running the installer on Linux or UNIX

- **Download the compressed tarball, extract the installation files and run the 4GL installer**
  - tar -xzvf com_ingres_demo_flyer_r1.tar.gz
  - cd com_ingres_demo_flyer_r1
  - w4glrun comingresinstallflyer.img
- **Use “gpl” instead of “com” if you have downloaded the community edition.**
- **The remainder of the installation process is identical to Windows**

The Demo Application Folders



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Running the Desktop Client in Client/Server Mode

- **Demo will be started when the installer finishes**
- **To start on Windows:**
  - Click on the desktop shortcut
  - `w4glrun %II_SYSTEM%\ingres\w4glapps\flyer_r1\bin\comingresdemoflyerdesktop.img`
- **To Start on Linux/UNIX:**
  - `w4glrun $II_SYSTEM/ingres/w4glapps/flyer_r1/bin/comingresdemoflyerdesktop.img`

Running the Desktop Client in Client/Server Mode

Demo

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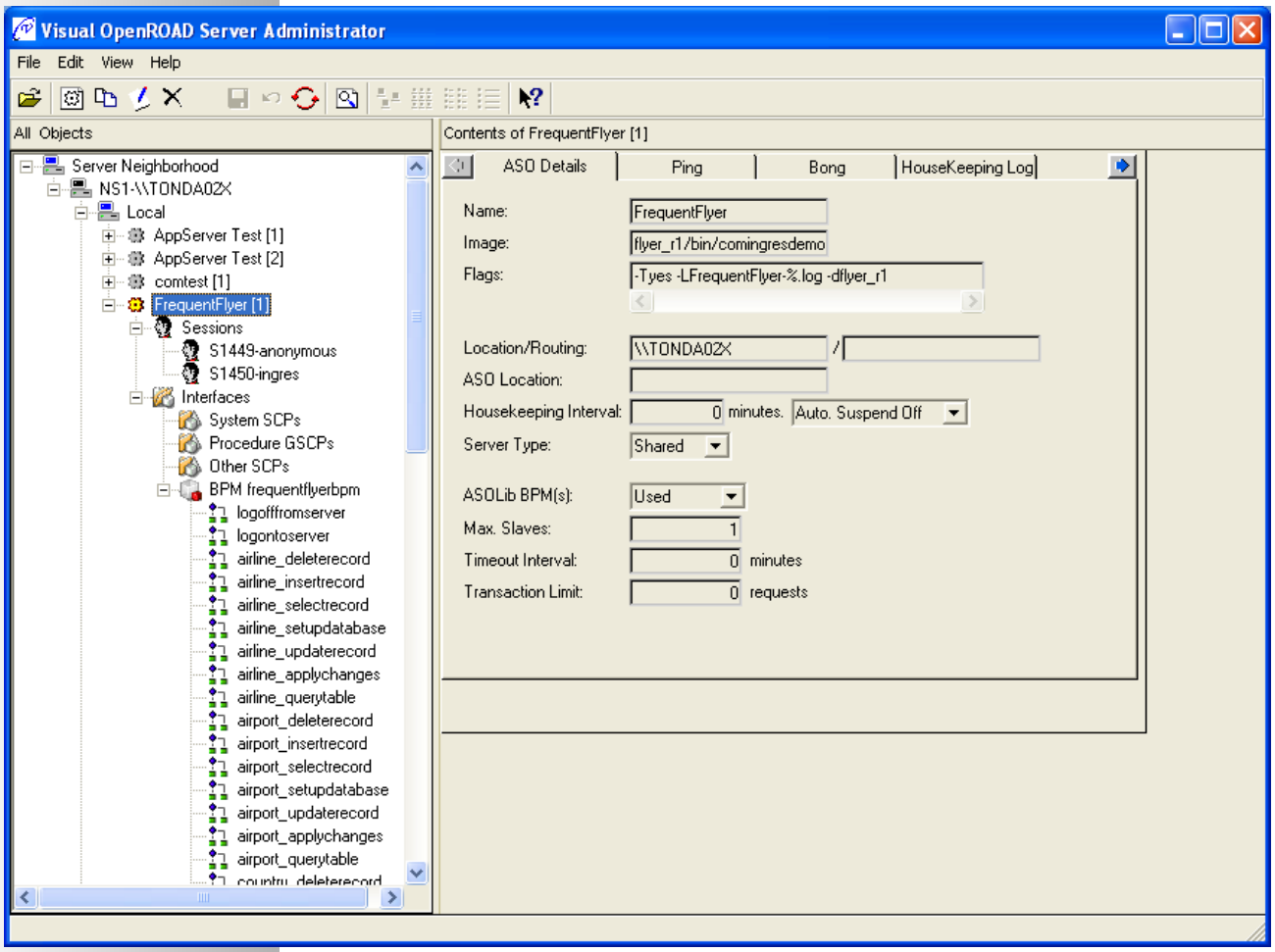
Configuring the OpenROAD Server

- **Start the OpenROAD Server Administrator or the OpenROAD Workbench "Manage" tab**
- **Open the current server node, select the "Local" subnode, right click, Select "Register"**
  - AKA Name: FrequentFlyer
  - Image: flyer_r1/bin/comingresdemoflyerserver.img
  - Flags: -Tyes -LFrequentFlyer-%.log -dflyer_r1
  - Server Type: Shared
  - ASOLib BPMs: Used
- **Click the "Save" toolbar icon**
  - To test: Right click on the new node, select "Connect"

Configuring the OpenROAD Server (cont.)



Demo

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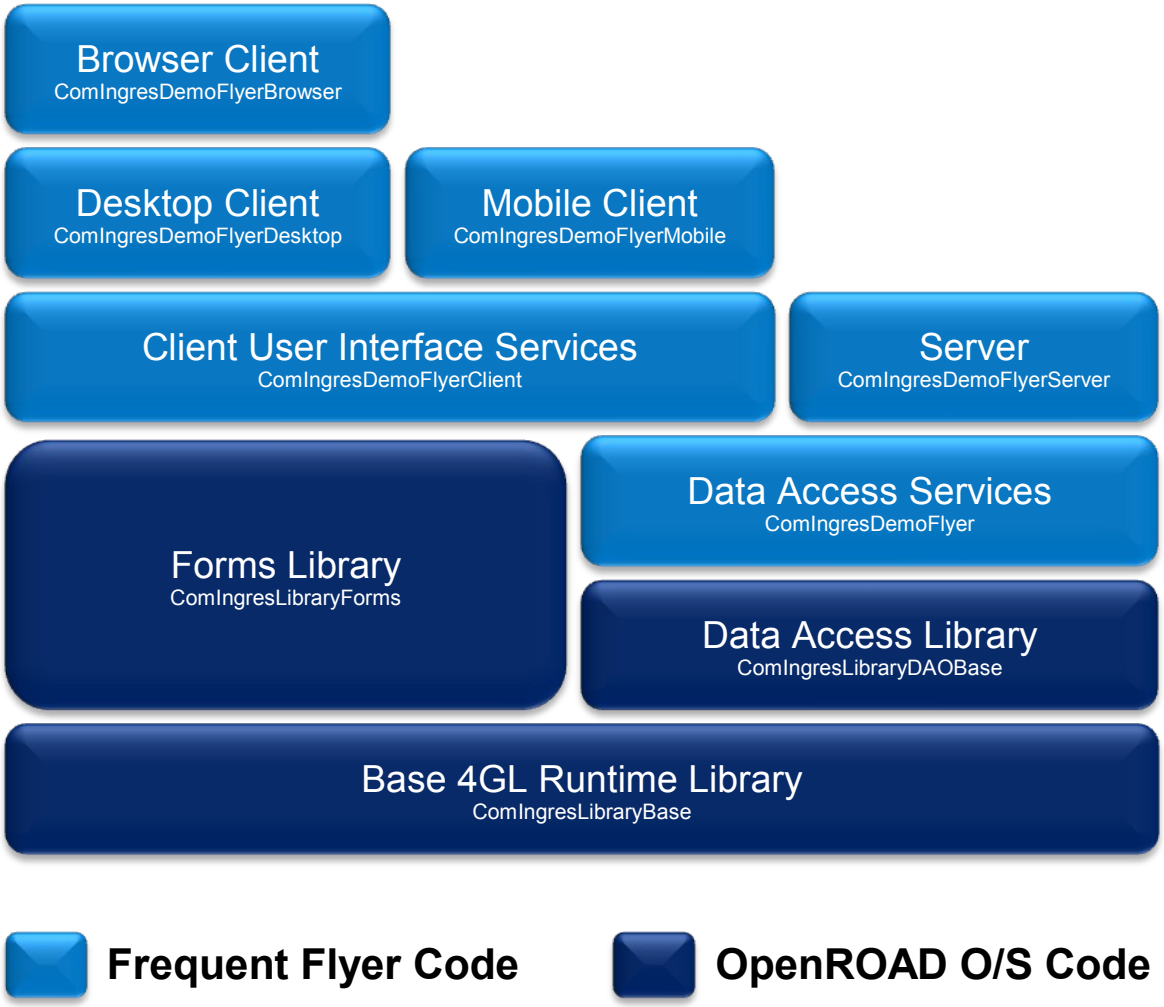
Application Architecture and Design

- Application Structure and Namespace
- Generated Data Access Services
- Reusable User Interface Logic
- The Top Window and Portlets
- The Browser Client
- The Mobile Client

Application Structure / Namespace



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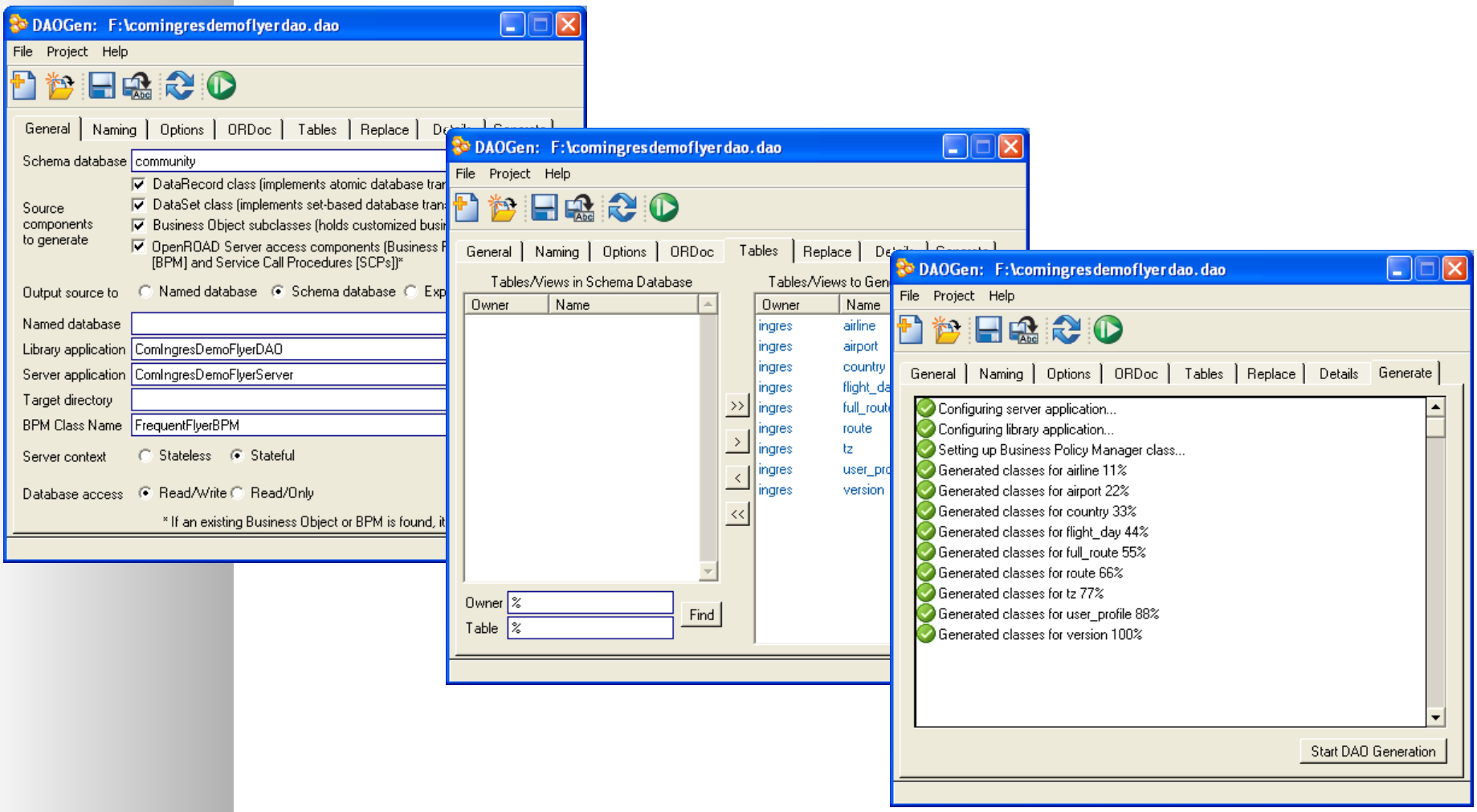
Data Access Services

- Provide simple object-relational mapping
- Allow a developer to deal with the database in programmatic terms
- Embed SQL to move data to/from the database
- Must encapsulate all error detection and handling
- Need to support both client/server and remote access to object methods

Data Access Object Generator (DAOGen)



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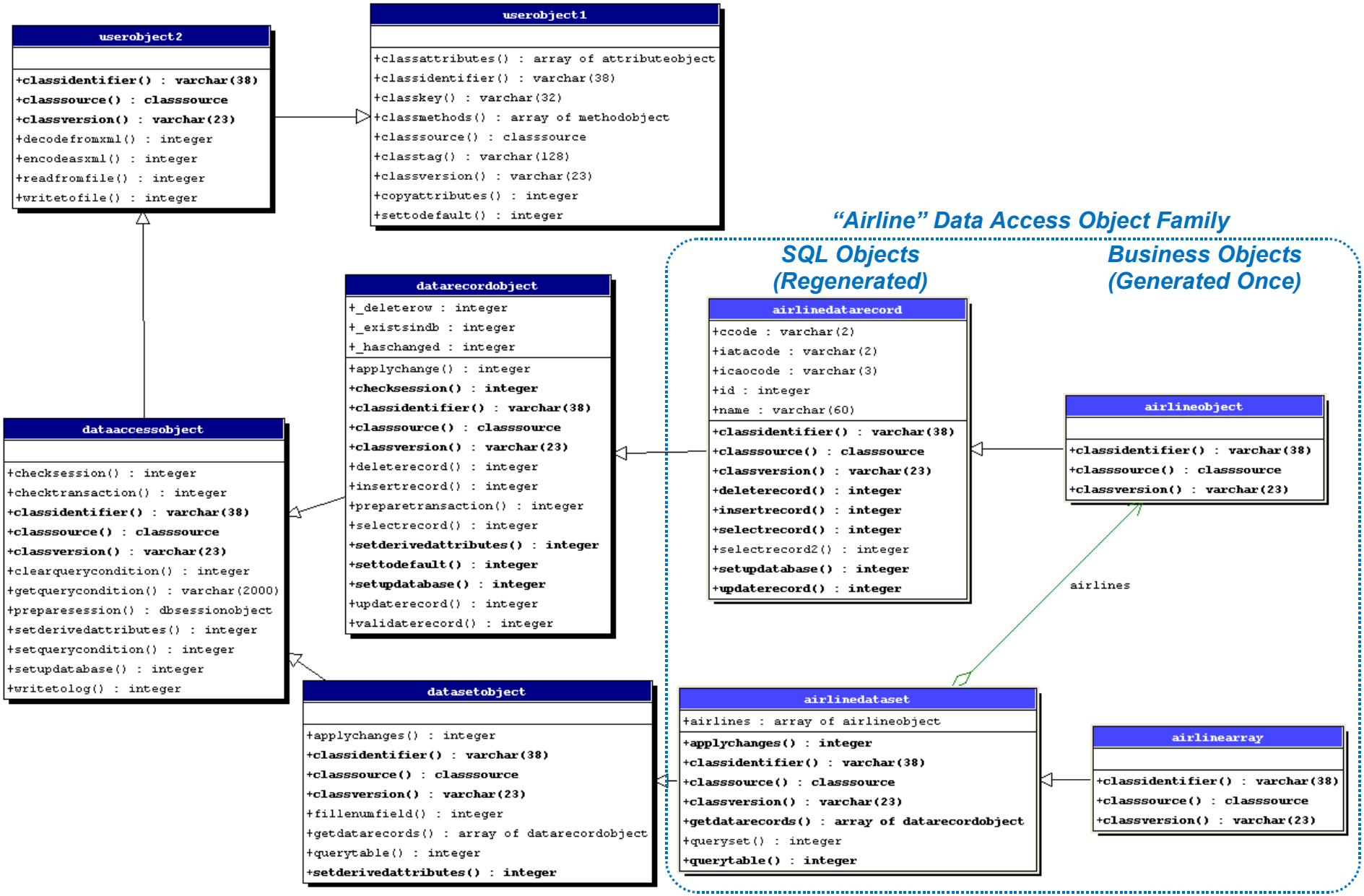
userobject2
+classidentifier() : varchar(38)
+classsource() : classsource
+classversion() : varchar(23)
+decodefromxml() : integer
+encodeasxml() : integer
+readfromfile() : integer
+writetofile() : integer
userobject1
+classattributes() : array of attributeobject
+classidentifier() : varchar(38)
+classkey() : varchar(32)
+classmethods() : array of methodobject
+classsource() : classsource
+classtag() : varchar(128)
+classversion() : varchar(23)
+copyattributes() : integer
+settodefault() : integer
"Airline" Data Access Object Family
SQL Objects (Regenerated)
Business Objects (Generated Once)
dataaccessobject
+checksession() : integer
+checktransaction() : integer
+classidentifier() : varchar(38)
+classsource() : classsource
+classversion() : varchar(23)
+clearquerycondition() : integer
+getquerycondition() : varchar(2000)
+preparesession() : dbsessionobject
+setderivedattributes() : integer
+setquerycondition() : integer
+setupdatabase() : integer
+writetolog() : integer
datarecordobject
+_deleterow : integer
+_existsindb : integer
+_haschanged : integer
+applychange() : integer
+checksession() : integer
+classidentifier() : varchar(38)
+classsource() : classsource
+classversion() : varchar(23)
+deleterecord() : integer
+insertrecord() : integer
+preparetransaction() : integer
+selectrecord() : integer
+setderivedattributes() : integer
+settodefault() : integer
+setupdatabase() : integer
+updaterecord() : integer
+validaterecord() : integer
airlinedatarecord
+ccode : varchar(2)
+iatacode : varchar(2)
+icaocode : varchar(3)
+id : integer
+name : varchar(60)
+classidentifier() : varchar(38)
+classsource() : classsource
+classversion() : varchar(23)
+deleterecord() : integer
+insertrecord() : integer
+selectrecord() : integer
+selectrecord2() : integer
+setupdatabase() : integer
+updaterecord() : integer
airlineobject
+classidentifier() : varchar(38)
+classsource() : classsource
+classversion() : varchar(23)
airlines
datasetobject
+applychanges() : integer
+classidentifier() : varchar(38)
+classsource() : classsource
+classversion() : varchar(23)
+fillenumfield() : integer
+getdatarecords() : array of datarecordobject
+querytable() : integer
+setderivedattributes() : integer
airlinedataset
+airlines : array of airlineobject
+applychanges() : integer
+classidentifier() : varchar(38)
+classsource() : classsource
+classversion() : varchar(23)
+getdatarecords() : array of datarecordobject
+queryset() : integer
+querytable() : integer
airlinearray
+classidentifier() : varchar(38)
+classsource() : classsource
+classversion() : varchar(23)

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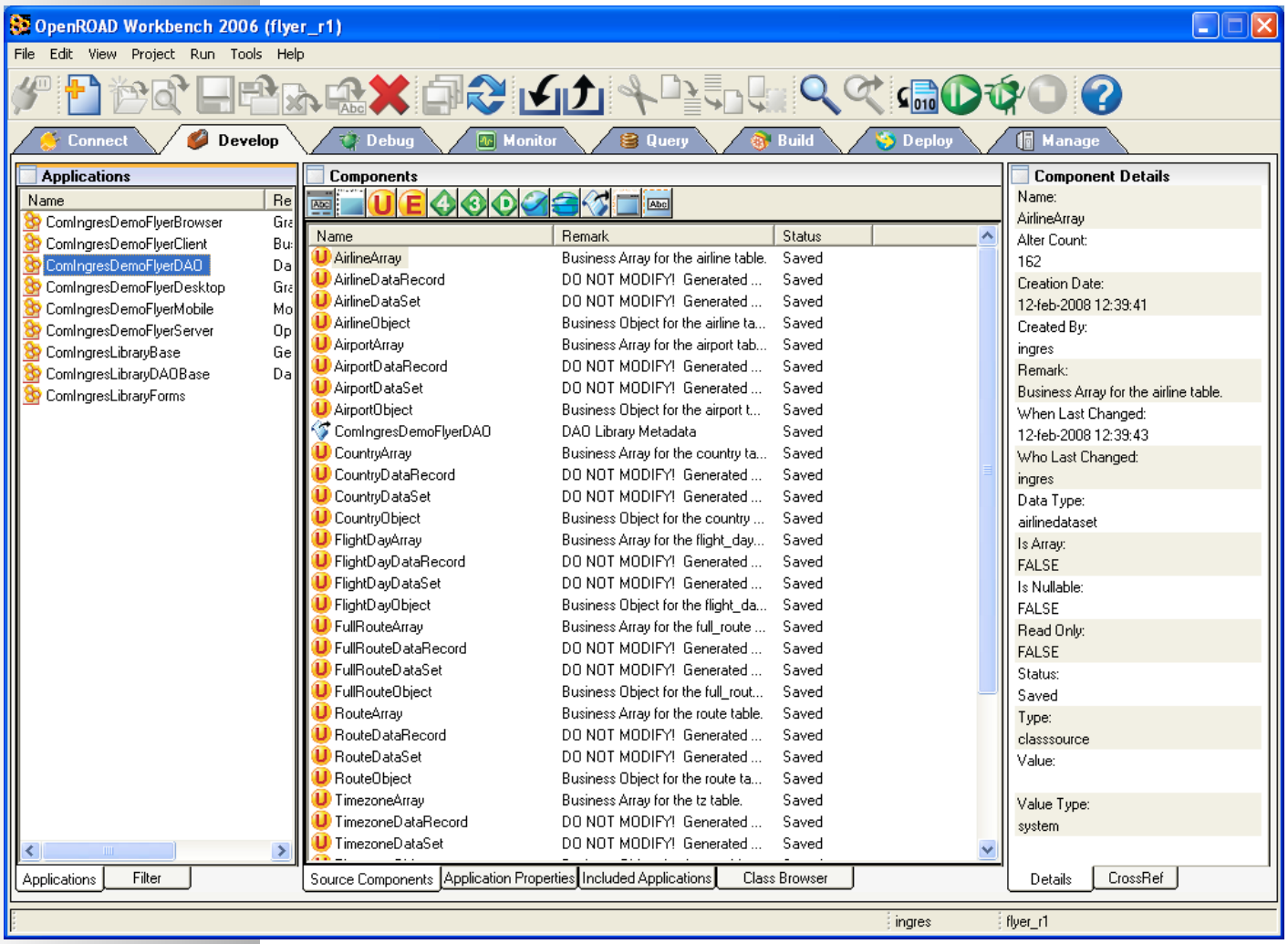
Flyer Data Access Library and Server



Demo

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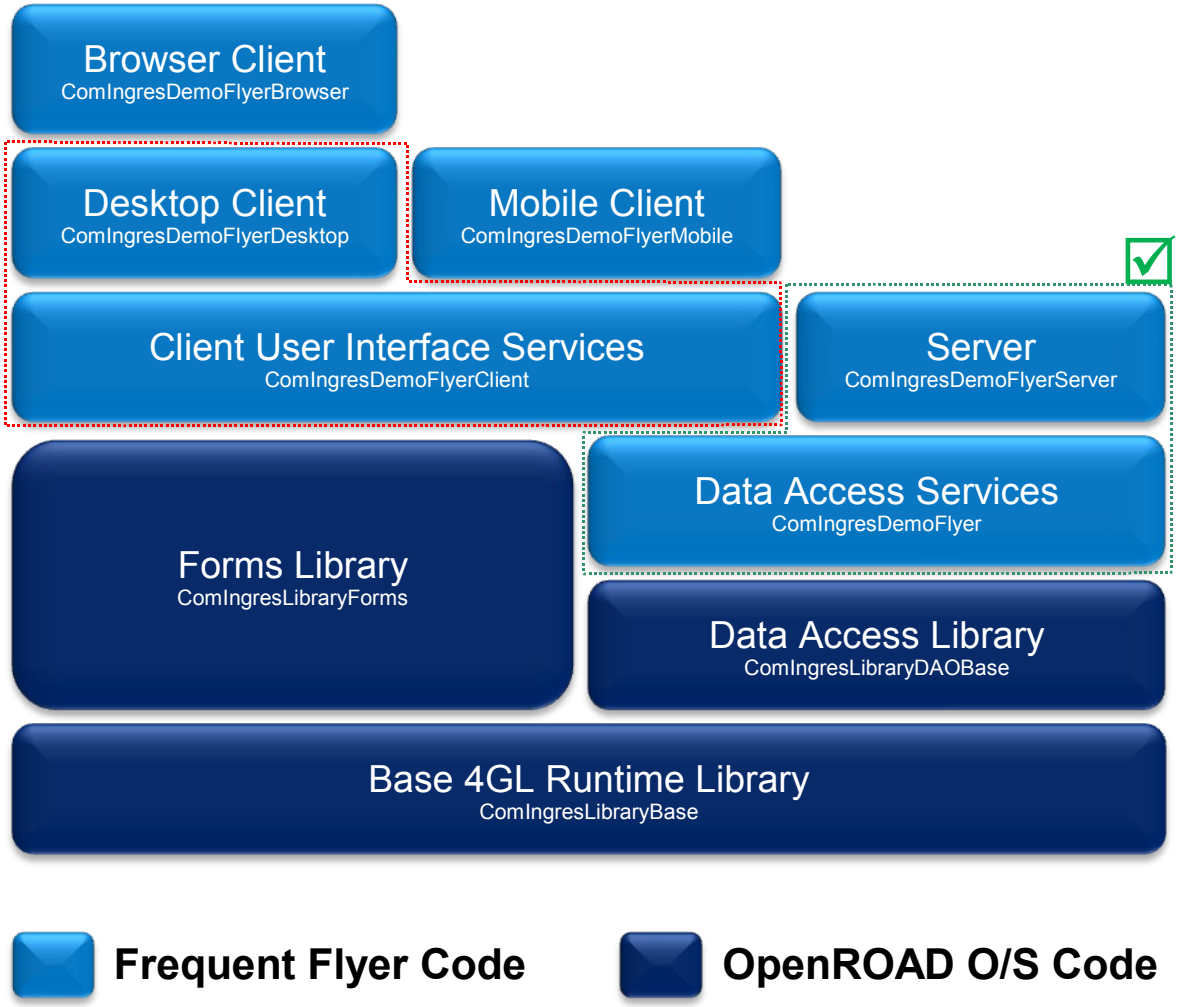
Application Structure / Namespace



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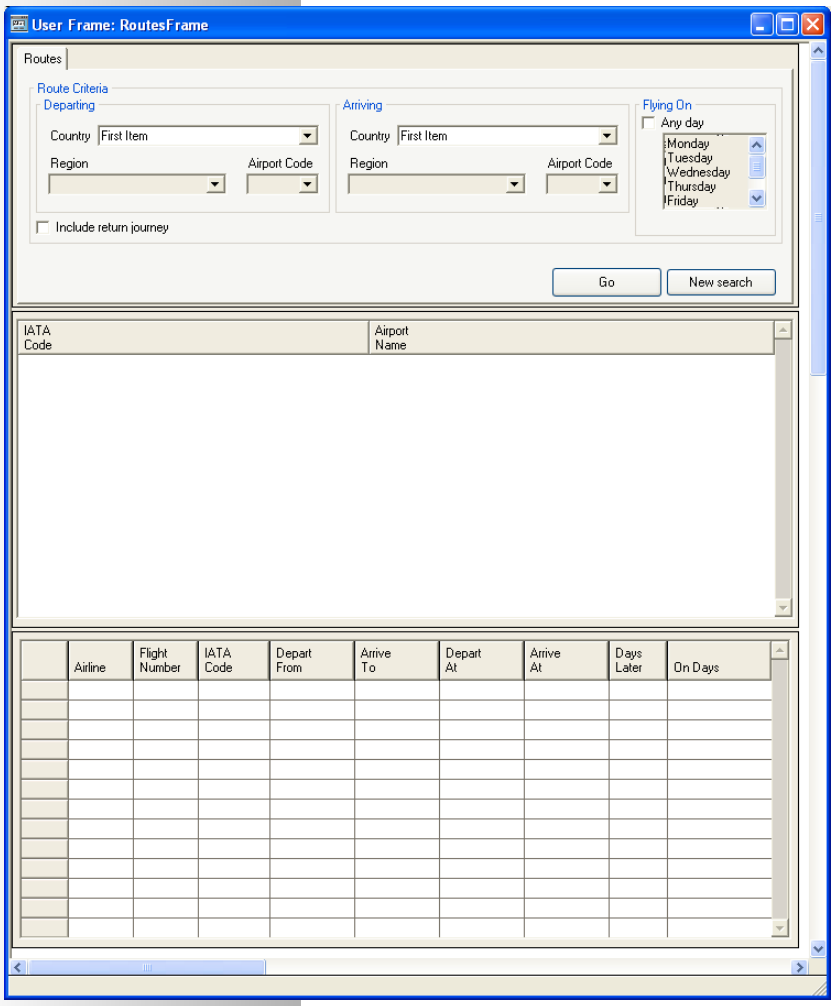
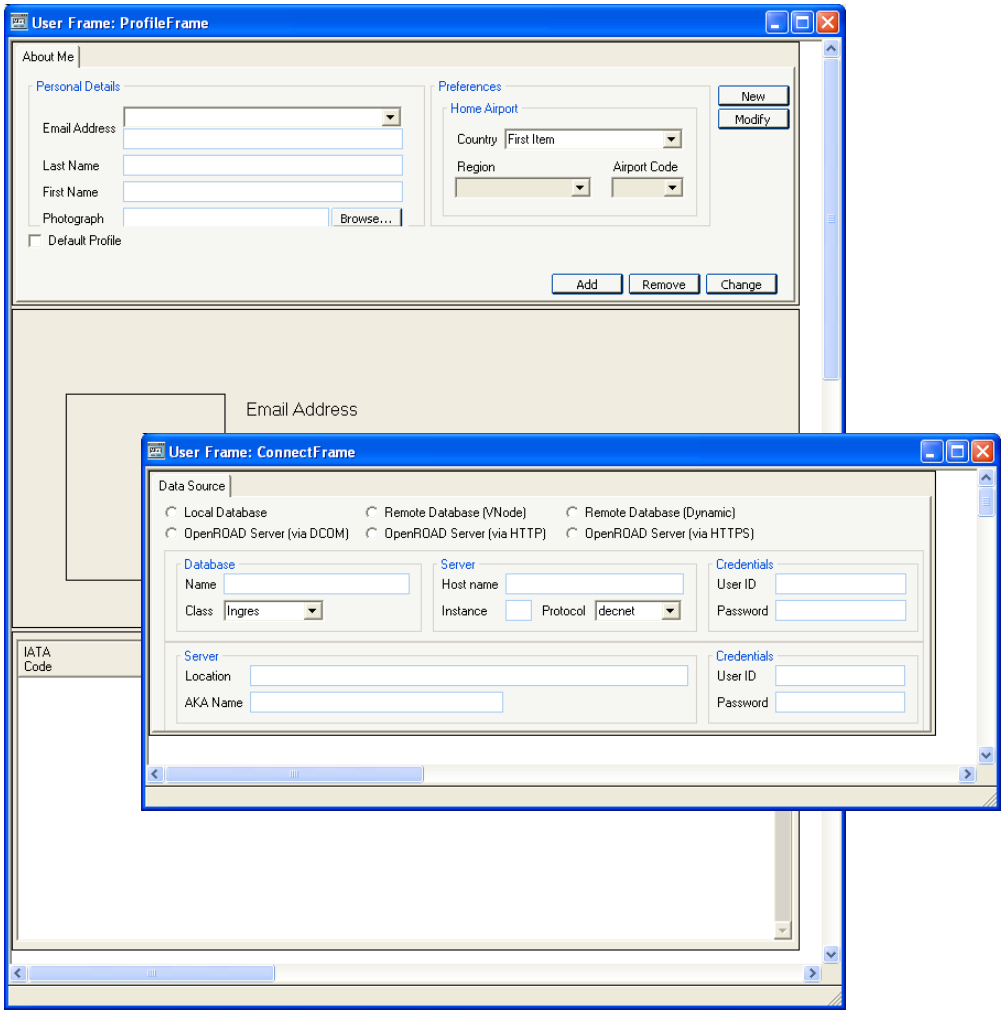
Forms Design





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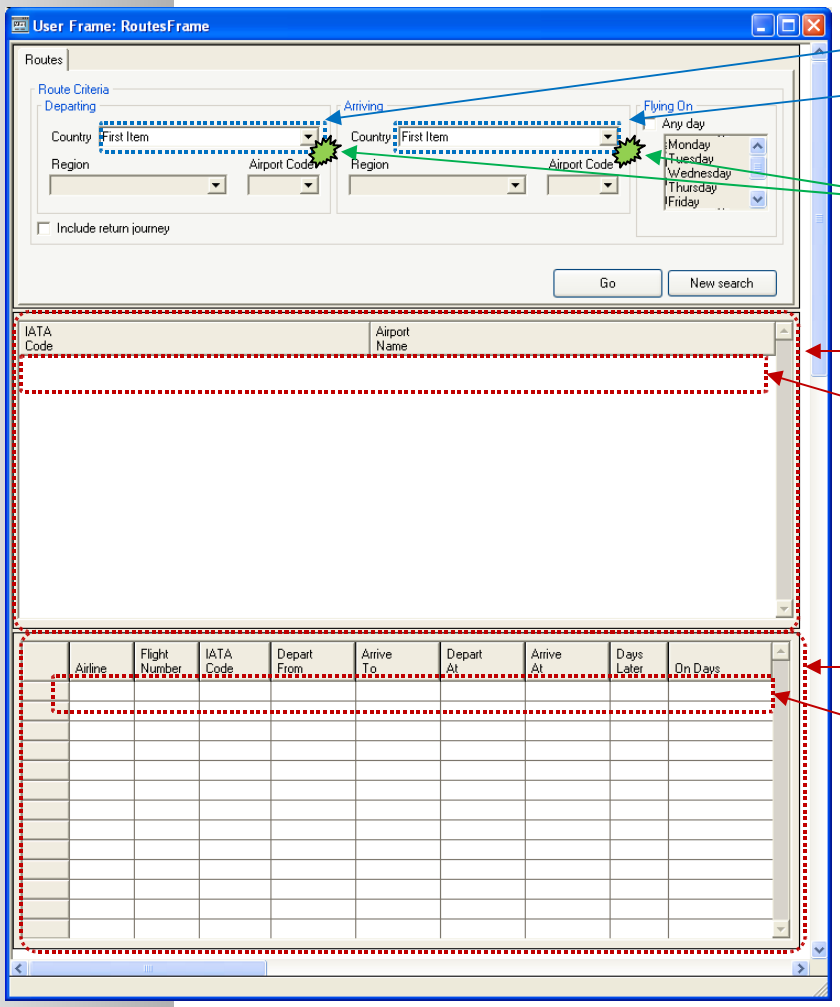
Field / Action / Data Mapping



DepartingCountry : OptionField

ArrivingCountry : OptionField

OnSetValueCountry ( )

AirportList : AirportArray

AirportList.Airport[] : AirportObject

FullRouteList : FullRouteArray

FullRouteList.FullRoute[] : FullRouteObject

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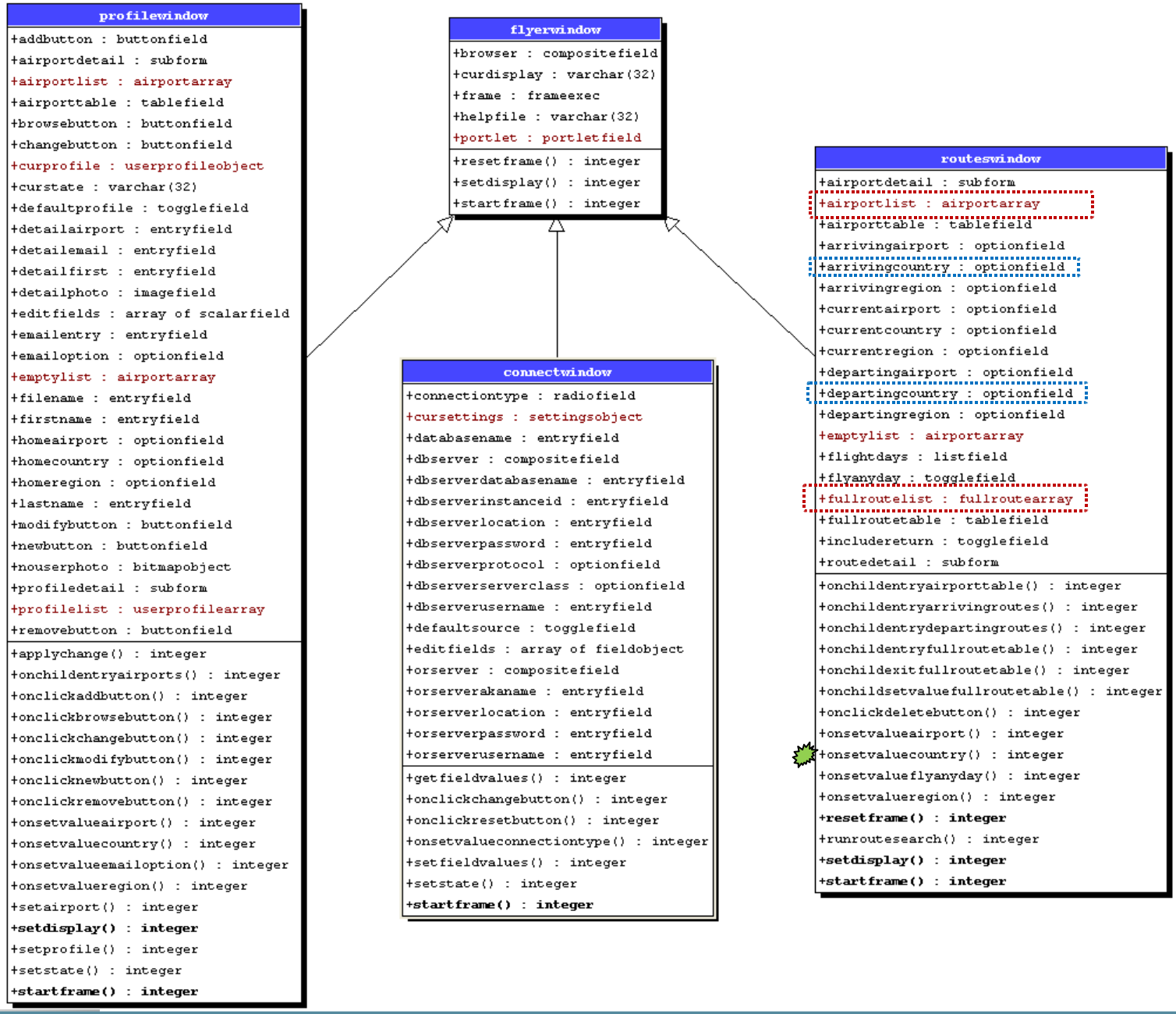
profilewindow
+addbutton : buttonfield
+airportdetail : subform
+airportlist : airportarray
+airporttable : tablefield
+browsebutton : buttonfield
+changebutton : buttonfield
+curprofile : userprofileobject
+curstate : varchar(32)
+defaultprofile : togglefield
+detailairport : entryfield
+detailemail : entryfield
+detailfirst : entryfield
+detailphoto : imagefield
+editfields : array of scalarfield
+emailentry : entryfield
+emailoption : optionfield
+emptylist : airportarray
+filename : entryfield
+firstname : entryfield
+homeairport : optionfield
+homecountry : optionfield
+homeregion : optionfield
+lastname : entryfield
+modifybutton : buttonfield
+newbutton : buttonfield
+nouserphoto : bitmapobject
+profiledetail : subform
+profilelist : userprofilearray
+removebutton : buttonfield
+applychange() : integer
+onchildentryairports() : integer
+onclickaddbutton() : integer
+onclickbrowsebutton() : integer
+onclickchangebutton() : integer
+onclickmodifybutton() : integer
+onclicknewbutton() : integer
+onclickremovebutton() : integer
+onsetvalueairport() : integer
+onsetvaluecountry() : integer
+onsetvalueemailoption() : integer
+onsetvalueregion() : integer
+setairport() : integer
+setdisplay() : integer
+setprofile() : integer
+setstate() : integer
+startframe() : integer
flyerwindow
+browser : compositefield
+curdisplay : varchar(32)
+frame : frameexec
+helpfile : varchar(32)
+portlet : portletfield
+resetframe() : integer
+setdisplay() : integer
+startframe() : integer
connectwindow
+connectiontype : radiofield
+cursettings : settingsobject
+databasename : entryfield
+dbserver : compositefield
+dbserverdatabasename : entryfield
+dbserverinstanceid : entryfield
+dbserverlocation : entryfield
+dbserverpassword : entryfield
+dbserverprotocol : optionfield
+dbserverserverclass : optionfield
+dbserverusername : entryfield
+defaultsource : togglefield
+editfields : array of fieldobject
+orserver : compositefield
+orserverakaname : entryfield
+orserverlocation : entryfield
+orserverpassword : entryfield
+orserverusername : entryfield
+getfieldvalues() : integer
+onclickchangebutton() : integer
+onclickresetbutton() : integer
+onsetvalueconnectiontype() : integer
+setfieldvalues() : integer
+setstate() : integer
+startframe() : integer
routeswindow
+airportdetail : subform
+airportlist : airportarray
+airporttable : tablefield
+arrivingairport : optionfield
+arrivingcountry : optionfield
+arrivingregion : optionfield
+currentairport : optionfield
+currentcountry : optionfield
+currentregion : optionfield
+departingairport : optionfield
+departingcountry : optionfield
+departingregion : optionfield
+emptylist : airportarray
+flightdays : listfield
+flyanyday : togglefield
+fullroutelist : fullroutearray
+fullroutetable : tablefield
+includereturn : togglefield
+routedetail : subform
+onchildentryairporttable() : integer
+onchildentryarrivingroutes() : integer
+onchildentrydepartingroutes() : integer
+onchildentryfullroutetable() : integer
+onchildexitfullroutetable() : integer
+onchildsetvaluefullroutetable() : integer
+onclickdeletebutton() : integer
+onsetvalueairport() : integer
+onsetvaluecountry() : integer
+onsetvalueflyanyday() : integer
+onsetvalueregion() : integer
+resetframe() : integer
+runroutesearch() : integer
+setdisplay() : integer
+startframe() : integer

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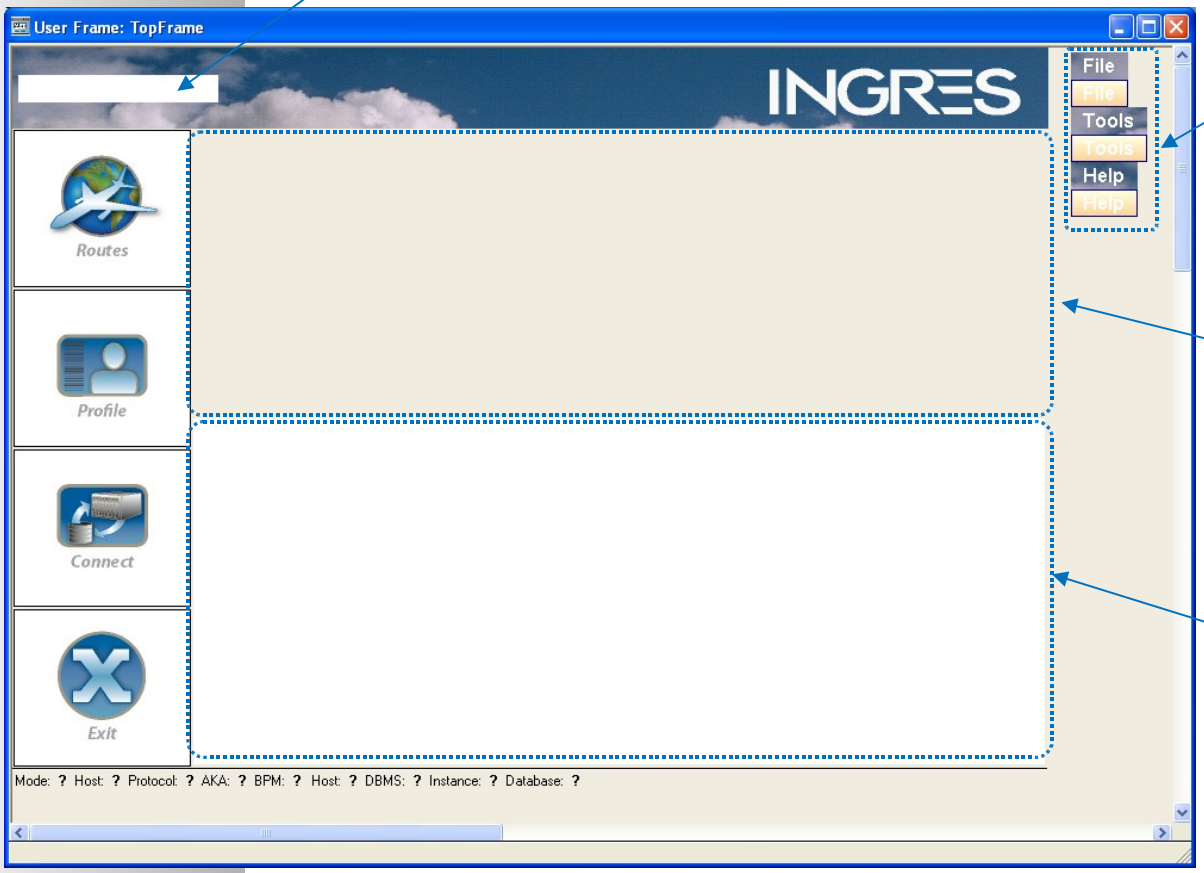
OpenROAD Flyer Top Window



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Top Level Window and Portlets

- The Routes, Profiles and Connect functions were all implemented as separate frames.
- The OpenROAD Flyer demo exposes all of these functions in a single window.
- How? OpenROAD 2006 “portlet” support

OpenROAD 2006 Portlet Support

- **Adds a "Multi-Document Interface" (MDI)**
  - Fields on one frame (the "guest") can be moved ("docked") at runtime into a composite field on another frame (the "host")
  - The guest receives all events that arise on the host because of user interaction with docked fields
  - Works in conjunction with the OPENFRAME statement
  - Add a new attribute to FormField called "ParentExec" which must be set before fields are moved to another frame
- **4GL "wrapper" classes in the Forms Library**
  - Supports a higher level portlet interface providing container trim and common actions (dock, undock, resizing, messaging, etc.)

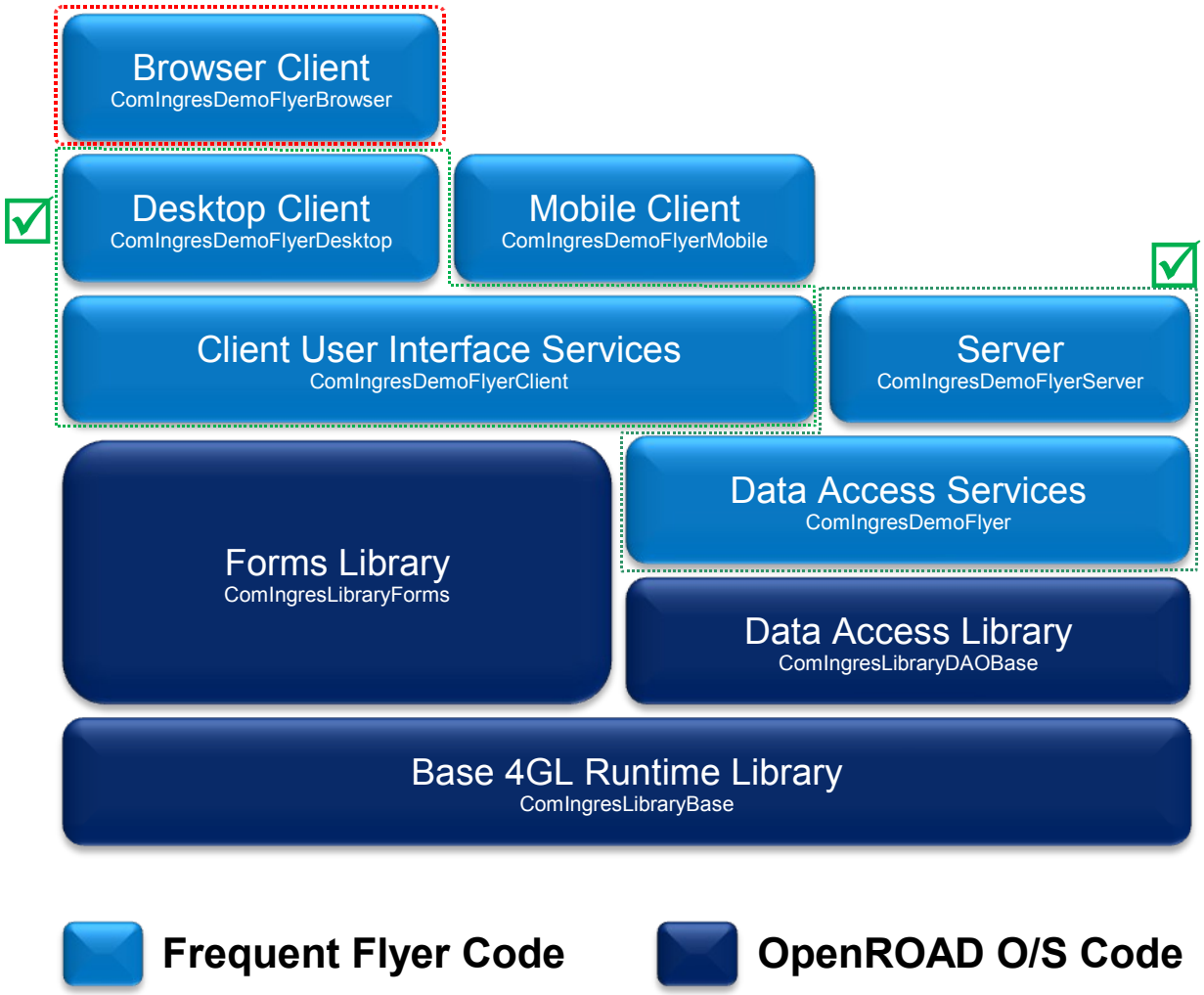
The Portlet Process on the Top Frame

- **The top level frame is run:**
  - If the DB connection fails, the “Connect” frame is opened
  - Otherwise, the “Routes” frame is started with OpenFrame
- **When one of the detail frames is run, it:**
  - Is passed its U/I object which contains a reference to the subform on the top frame where the fields are to be hosted
  - Moves the appropriate fields on its form to the host field
  - Make itself invisible to hide the rest of the window
  - NOTE: Much of this is performed with Forms Library objects

The Portlet Process (cont.)

- **When interaction with fields of a detail frame that are on the top form generate events (SetValue…):**
  - The event is *automatically* forwarded to the detail frame
  - The detail frame receives the event and acts on it as though the fields were still local on it's form
- **When a user requests a different function (via the menu or button bars):**
  - The current portlet is undocked
  - The new detail function opened (or docked if already open)

Application Structure / Namespace



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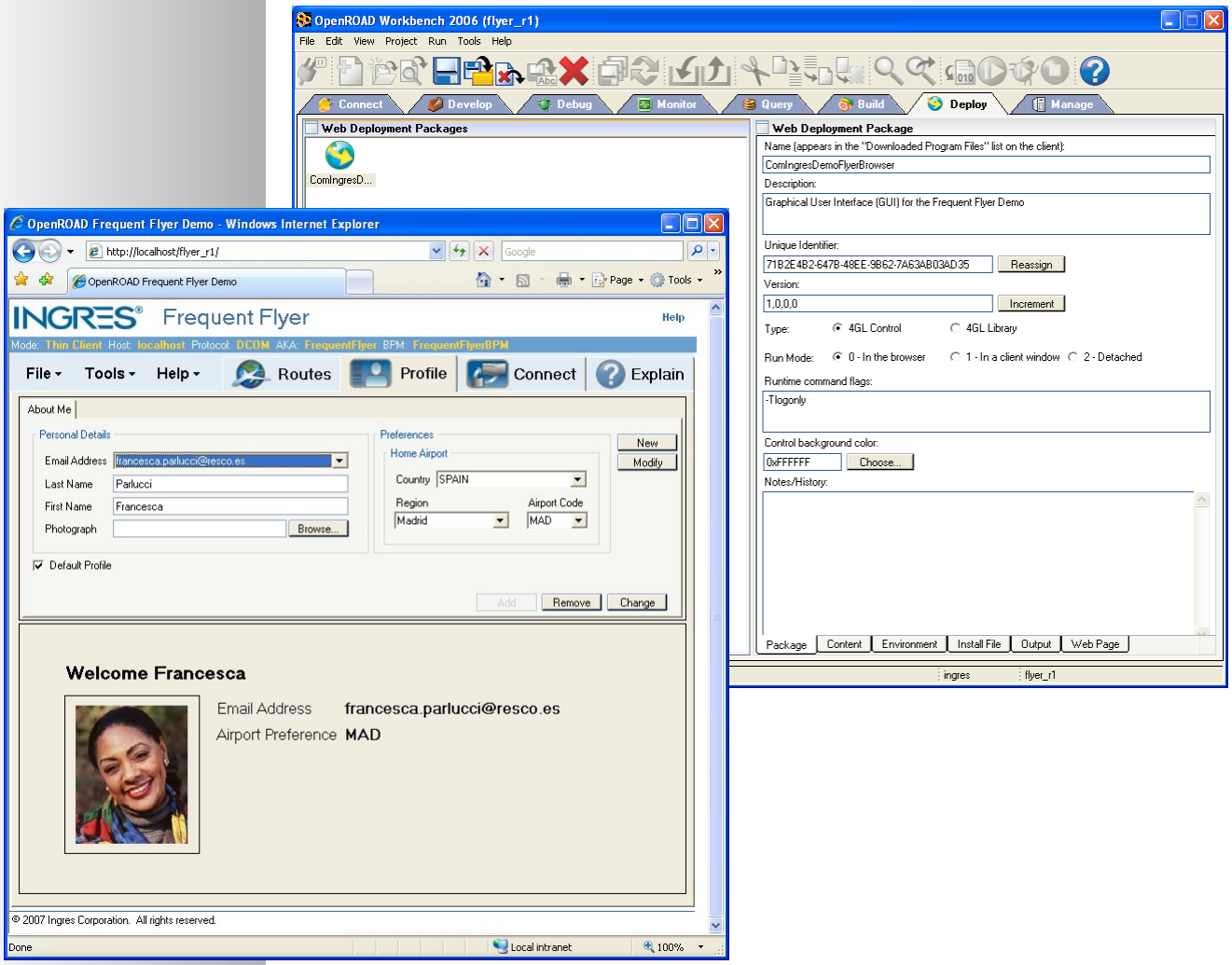
The Browser Client

- The Browser client was quite easy to build
- Top level frame was redesigned to provide and appropriate look and feel for a browser
- The Routes, Profile and Connect frame from the Desktop client were used in tact
- The Browser application can be packaged and deployed using the Workbench 2006 Deploy tab (Windows only)

Packaging and Deploying the Browser Client



Demo

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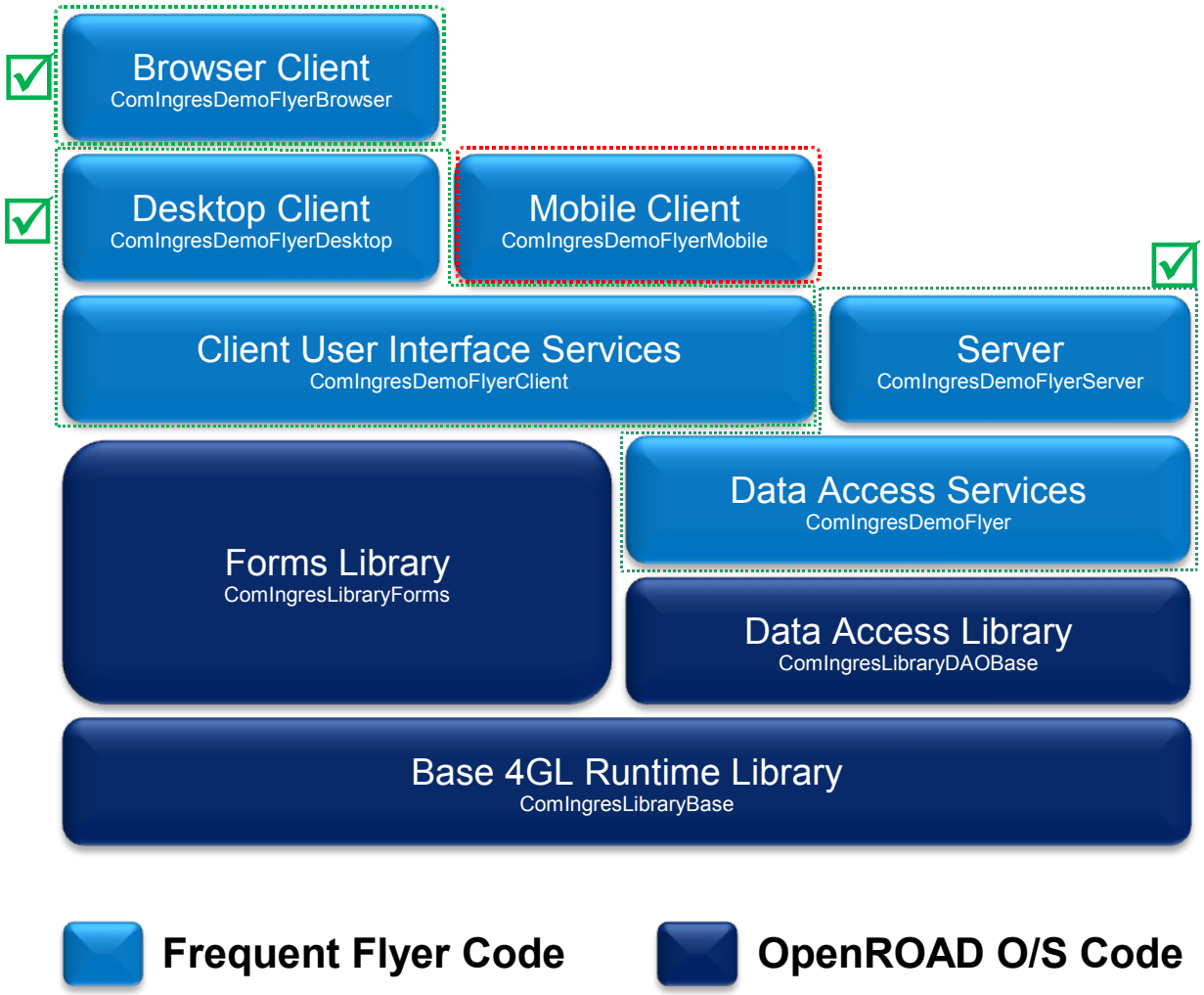
Application Structure / Namespace



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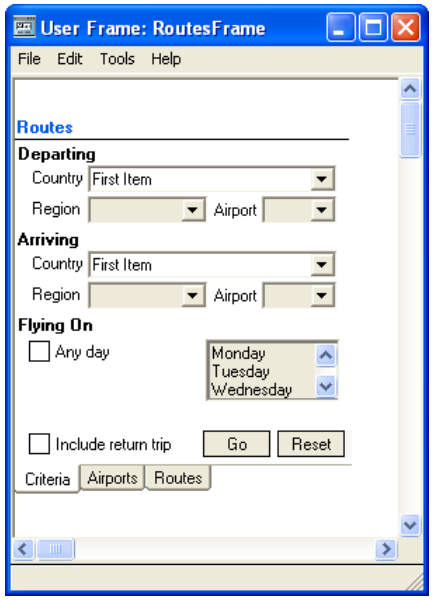
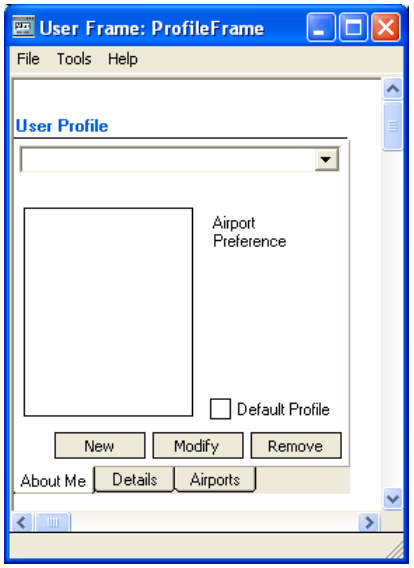
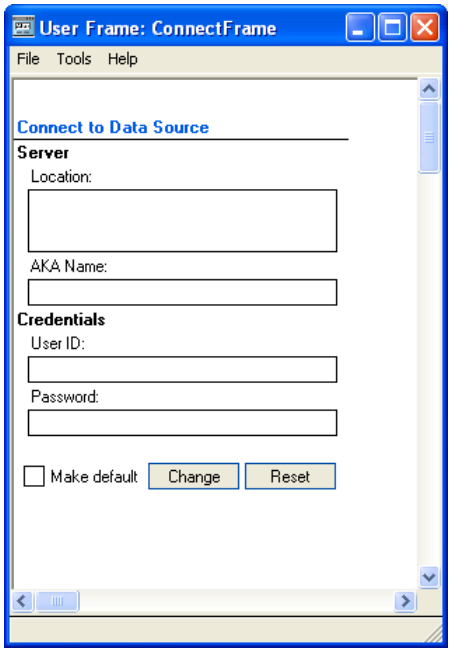
Mobile Client

- The Mobile client was cloned from the Desktop client
- Frames were redesigned to fit into a mobile form factor
- Portlet infrastructure removed
- Support for client/server and DCOM based thin client connections removed
- The top frame was simplified (buttons only)

Mobile Client (cont).







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Topics for the Next Webcast

- OpenROAD Server via HTTP
- Configuring IIS and TomCat for HTTP access
- Configuring HTTPS via SSL
- Connecting the clients via HTTP
- Deploying and running the mobile client
- Documentation (in code and in line)
- The OpenROAD web browser

OpenROAD Open Source Opportunities

- Frequent Flyer Demo
- Data Access Object Generator (DAOGen)
- Proxy Generator (ProxyGen)
- OpenROAD In-line Documentation Generator (ORDoc)
- OpenROAD Open Source Release

Become A Member!

- **It's valuable:**
  - Leverage the knowledge and work of others
  - Accelerate your own development
  - Directly influence the future of OpenROAD
- **It's easy:**
  - Many opportunities to fit any skill
  - Design, develop, test, document, share, evangelize, etc…
  - See http://community.ingres.com/wiki/Membership

Your Questions and Feedback