


ARCH-12: QA considerations for applications following the OpenEdge® Reference Architecture



SMAT-Team Tobago

**We Are The Temporary Extension of
Your Development Department**

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Goals For This Session



Seeds of Thought:

- Layered architecture facilitates layered testing
- OpenEdge Reference Architecture and ProDataSet™ relevant for WebSpeed®
- Ideas about how to implement layered testing

Agenda



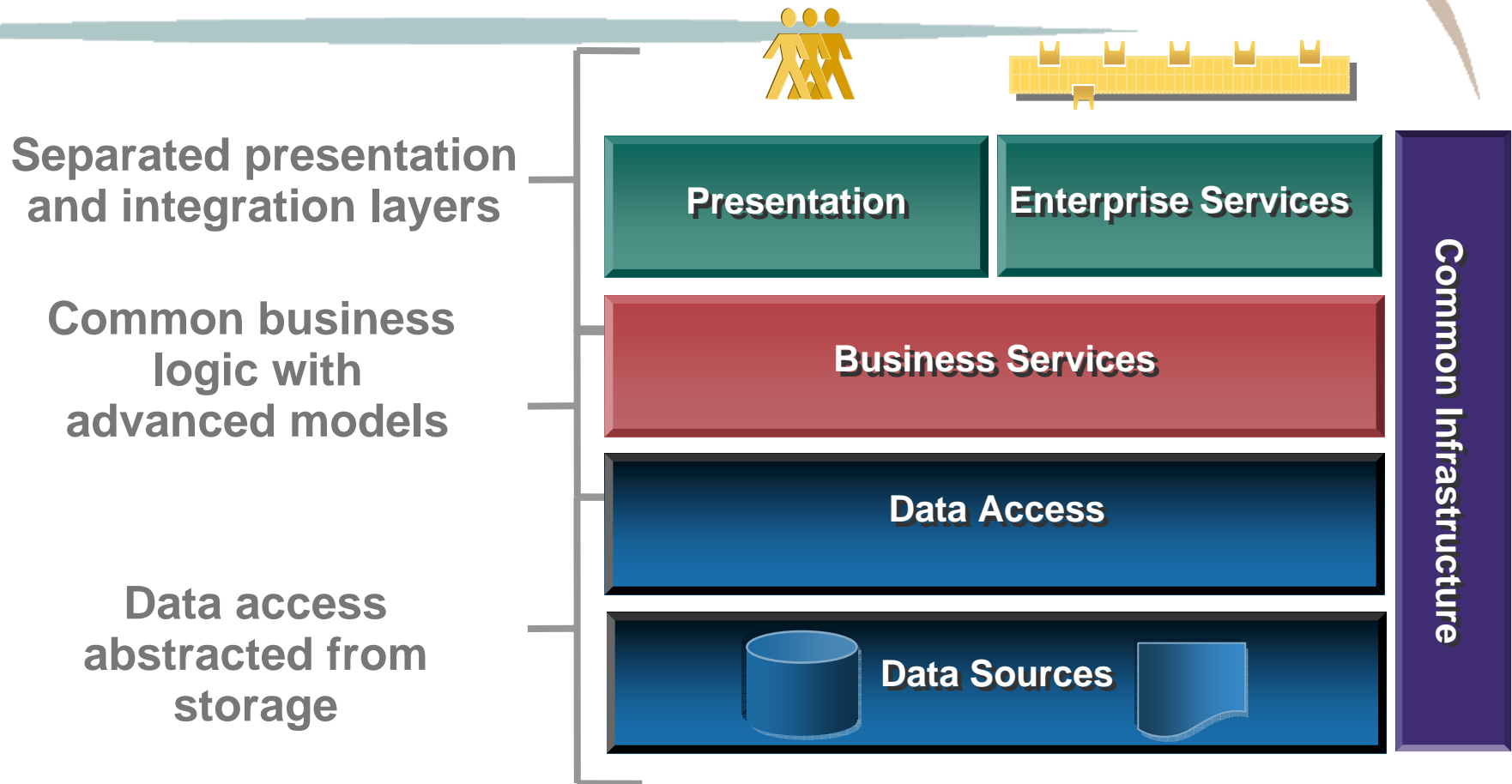
-
- **Overview of OpenEdge Reference Architecture**
 - Overview of WebSpeed Architecture
 - Using ProDataSets in WebSpeed
 - Examples of tests for various layers

OpenEdge Reference Architecture Check



-
- Who is using ProDataSets?
 - Who is using OpenEdge Reference Architecture?
 - Who is using ProDataSets and OpenEdge Reference Architecture?

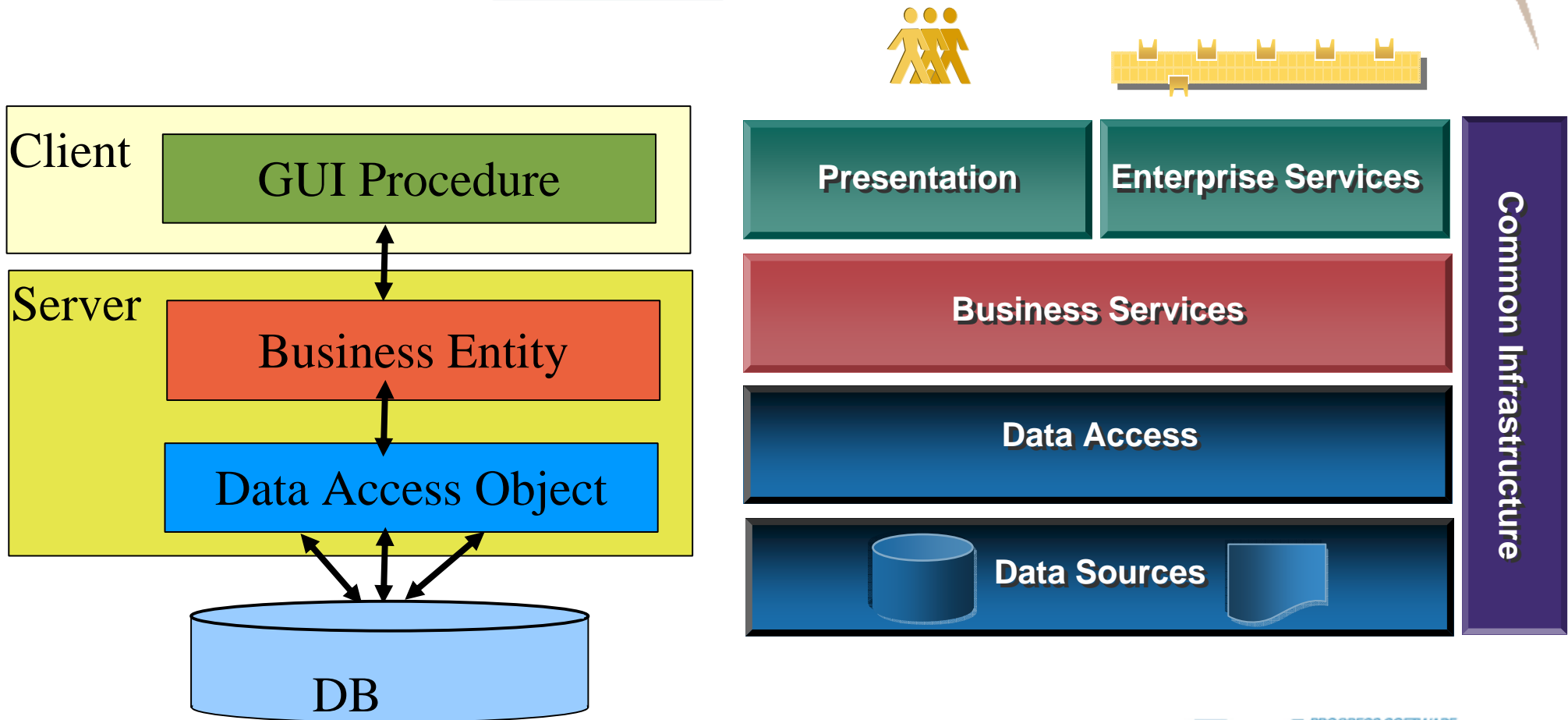
OpenEdge Reference Architecture



OERA

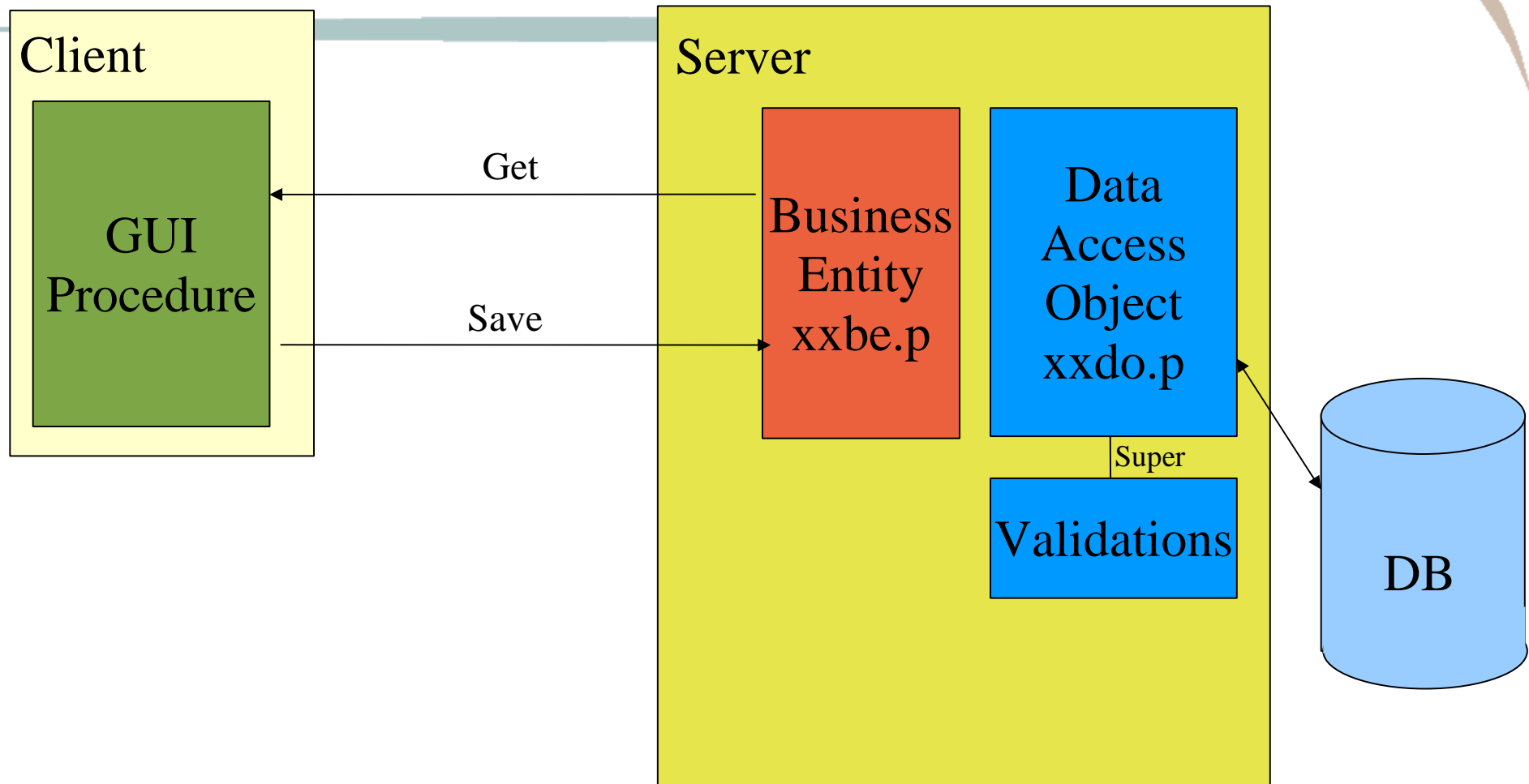
PROGRESS SOFTWARE
Exchange
2006

ProDataSets Implementing The OpenEdge Reference Architecture



OERA

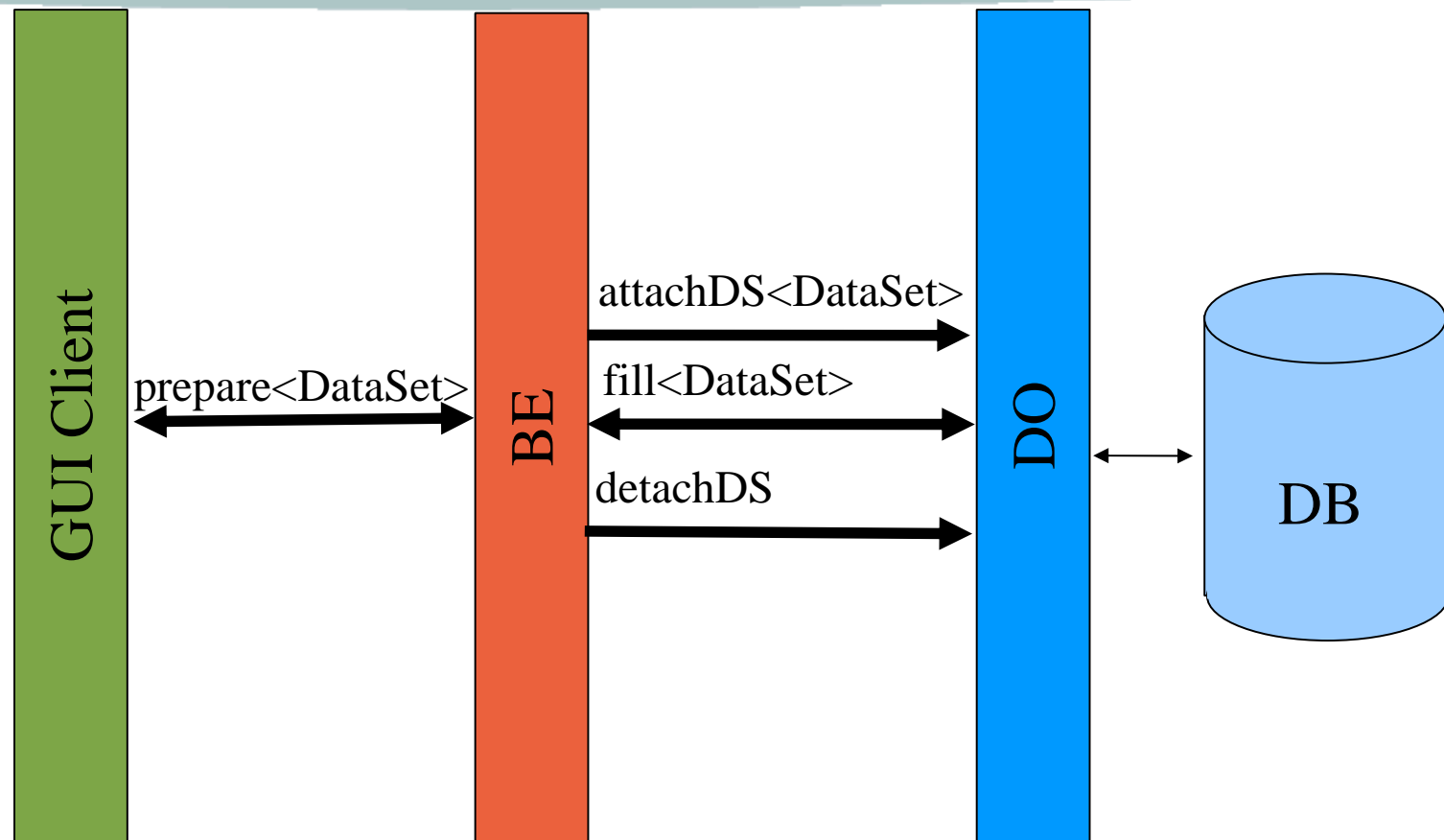
OpenEdge Reference Architecture



C/S

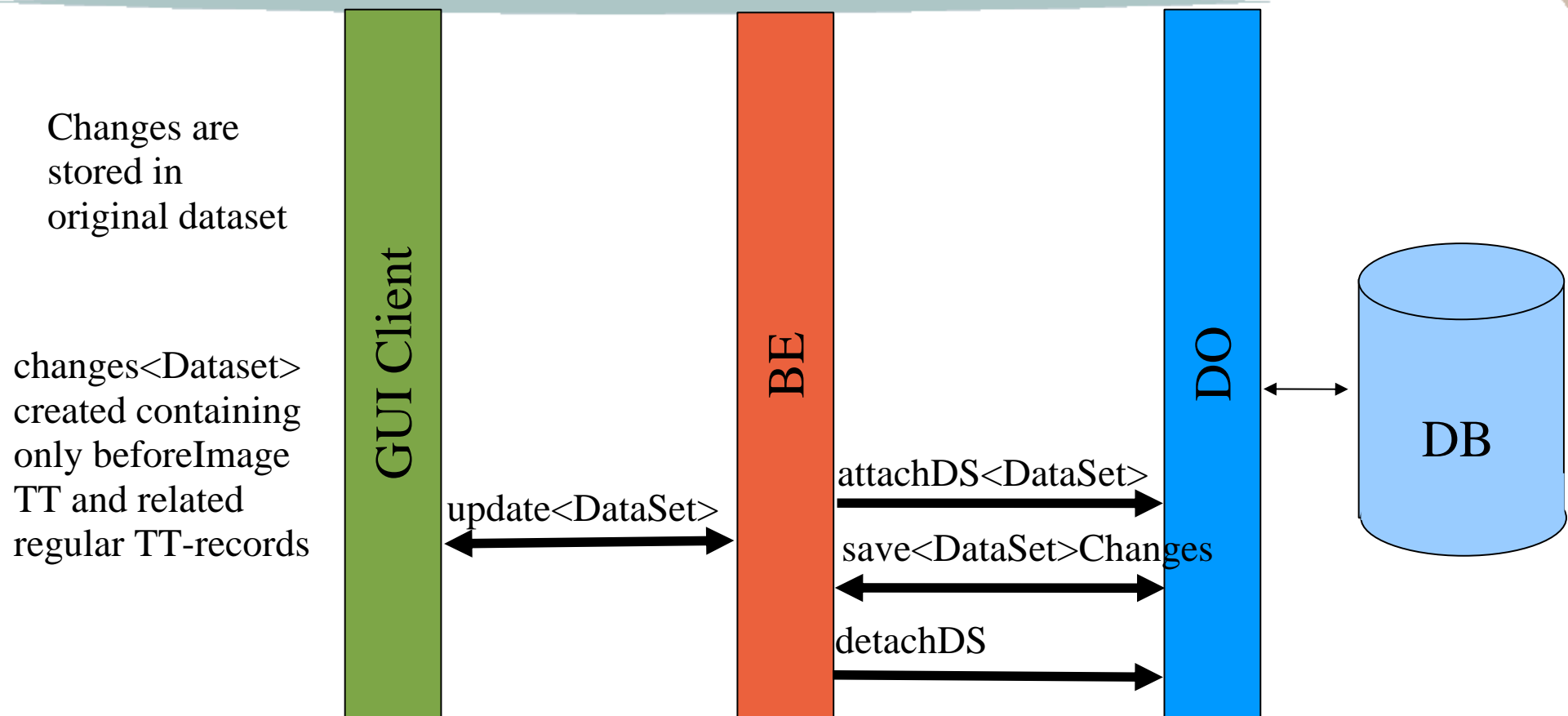
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Procedure Call Flow – Display Data



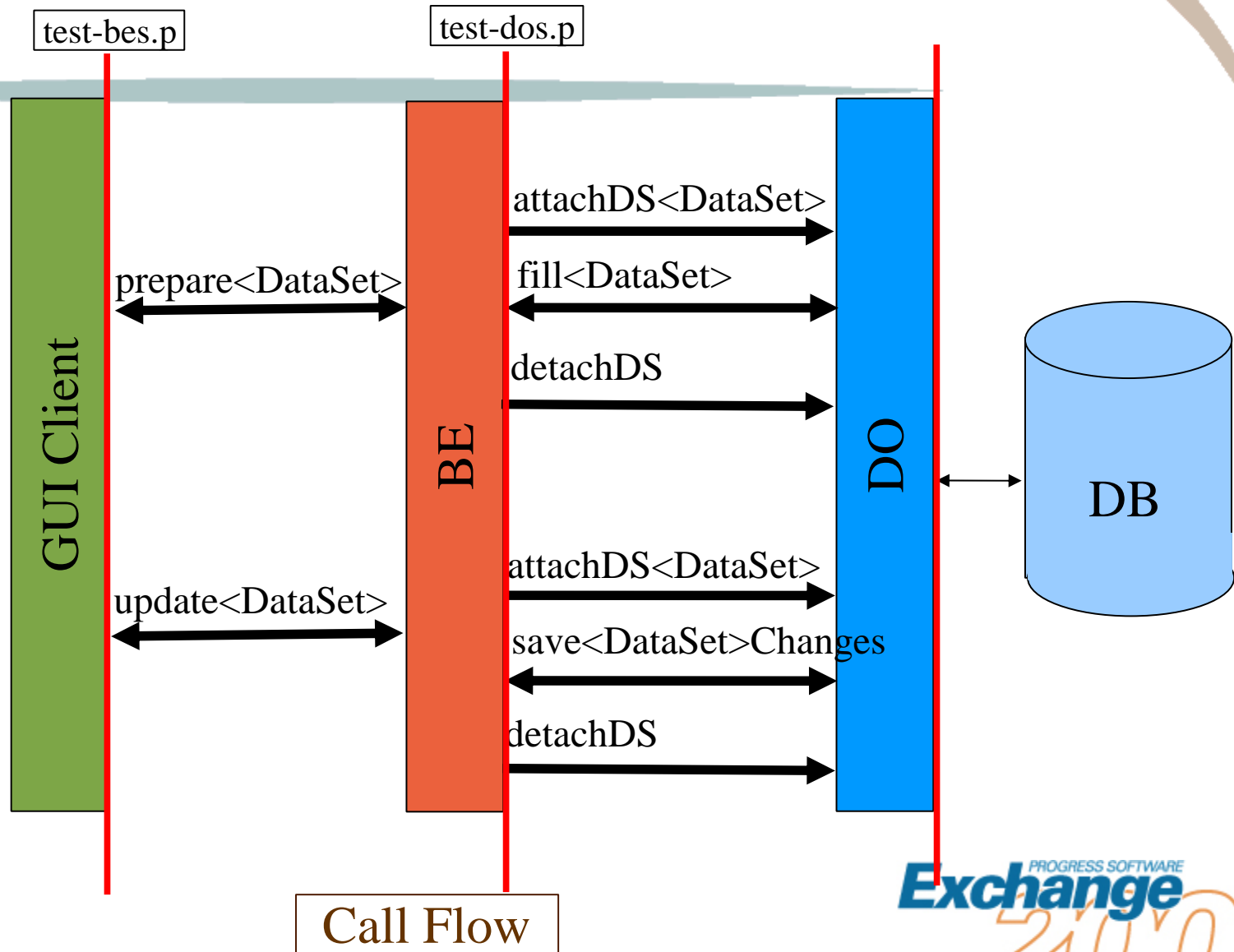
Call Flow

Procedure Call Flow – Update Data

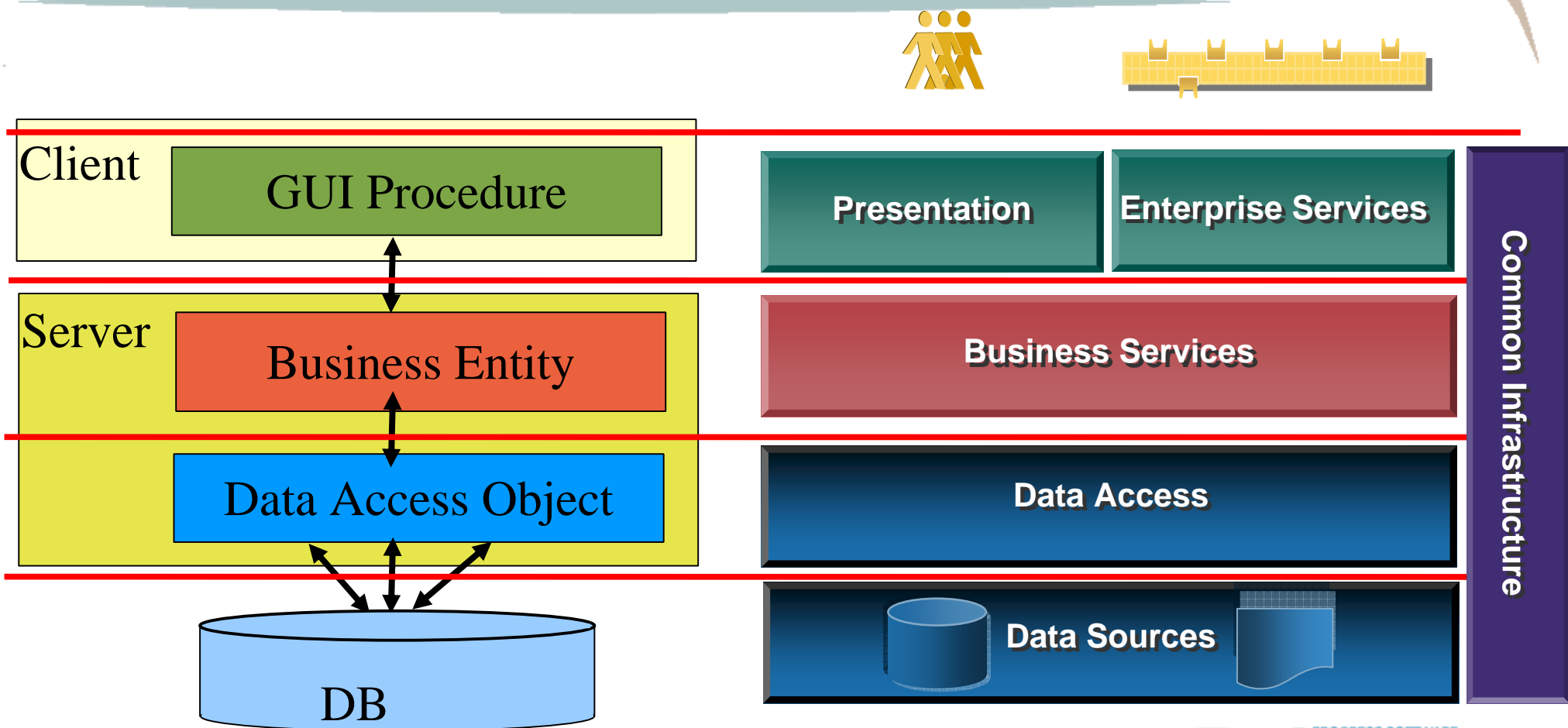


Call Flow

Testing ProDataSet Per Layer



Testing Layers



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Agenda



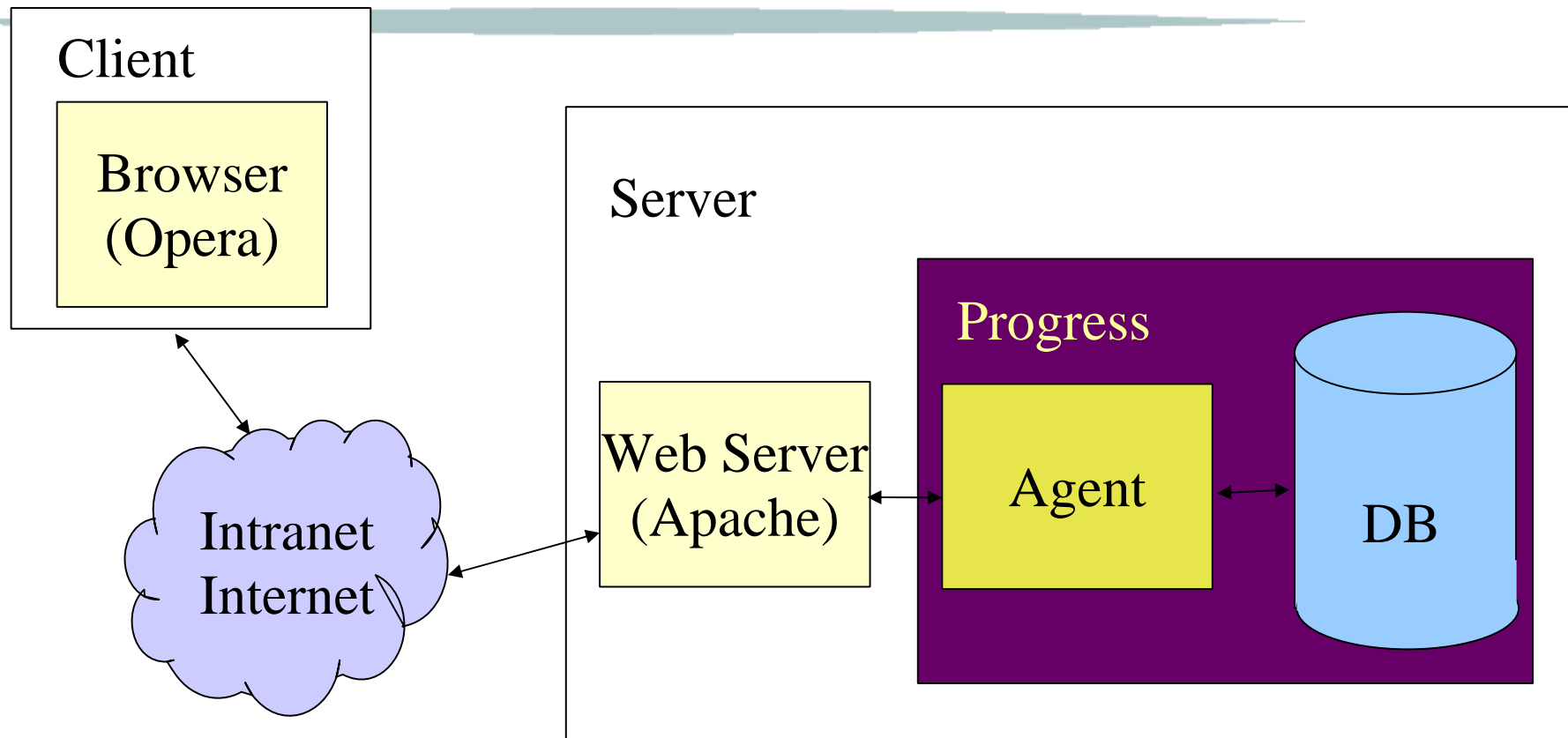
-
- ✓ Overview of OpenEdge Reference Architecture
 - **Overview of WebSpeed Architecture**
 - Using ProDataSets in WebSpeed
 - Examples of tests for various layers

WebSpeed Check

A decorative graphic of a sun with a thick brown arc and several brown triangular rays pointing upwards and to the right.

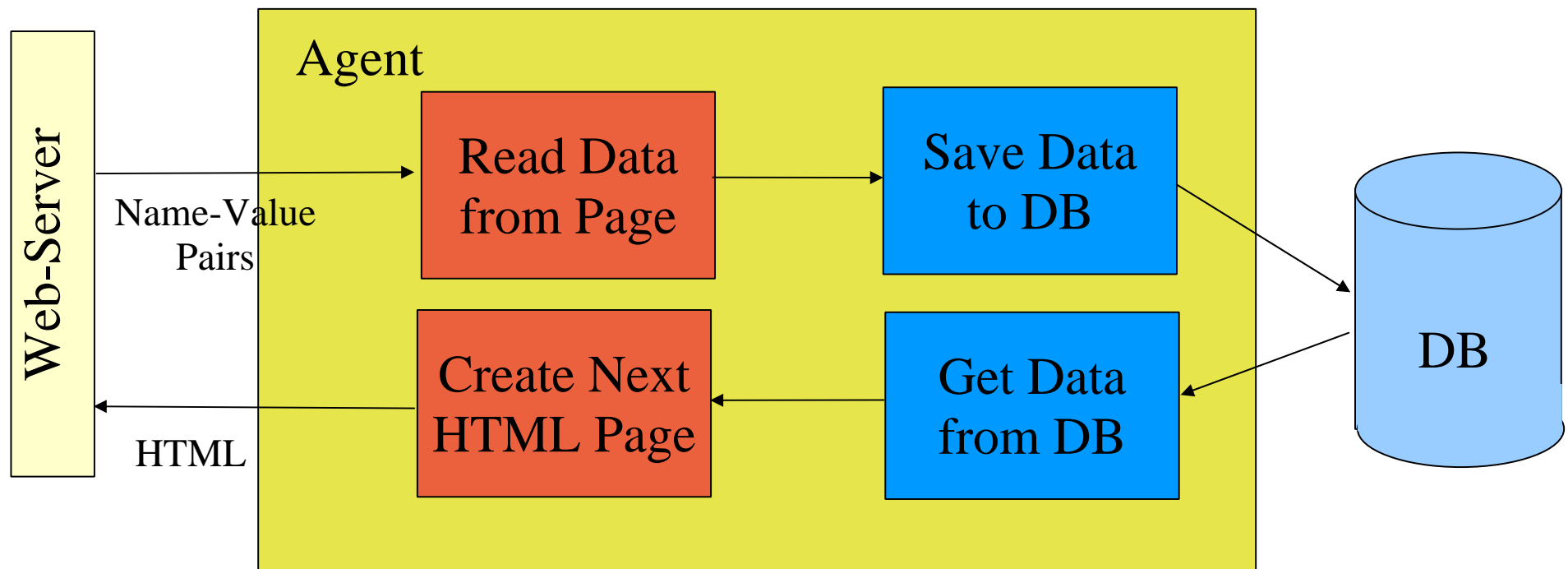
-
- Who is using WebSpeed?

WebSpeed Architecture



C/S

WebSpeed Round Trip



C/S

Complexities with WebSpeed



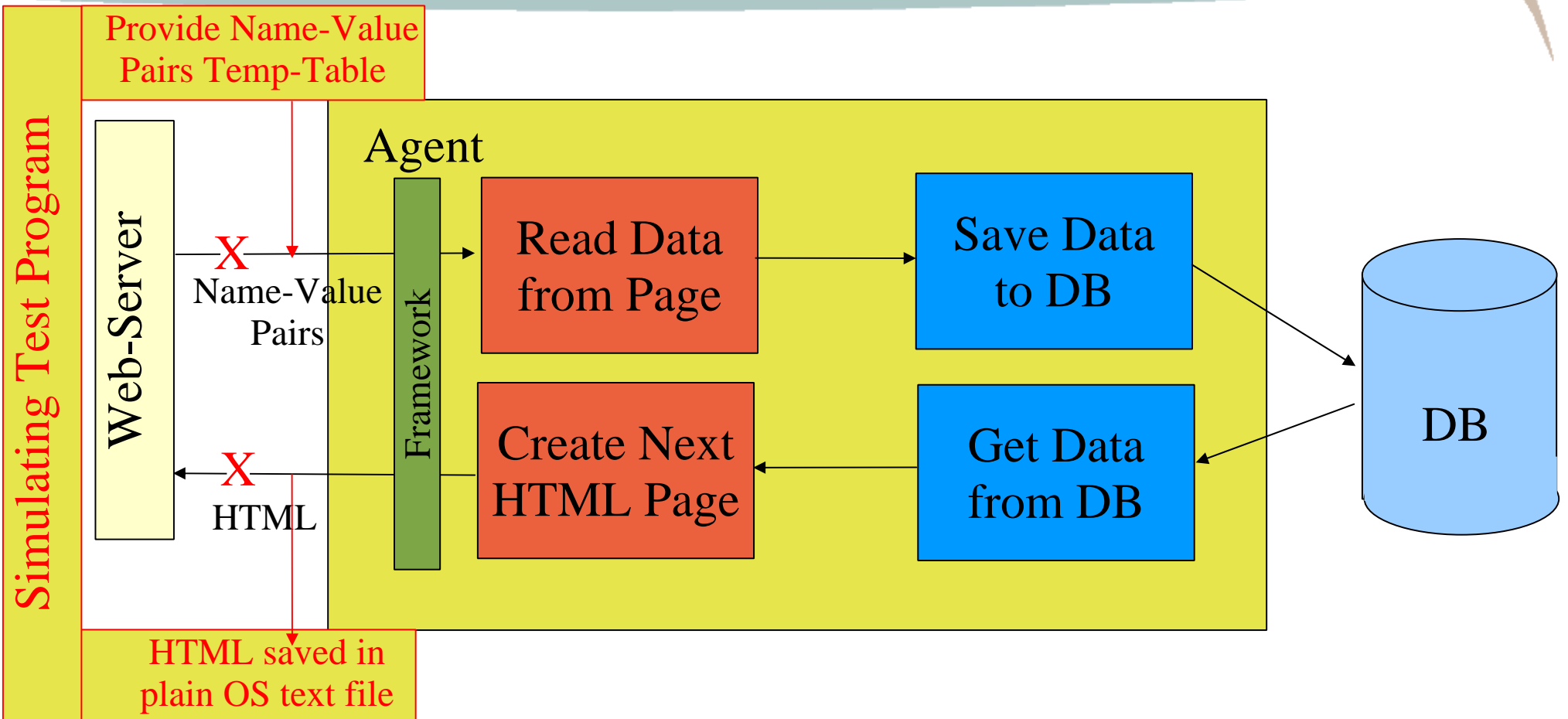
- Non-4GL expertise needed (HTML, JavaScript,...)
- “Stateless” client
 - Flat character-only data-structure (name-value pairs)
 - Context management
- Testing/Debugging
 - White screen (severe error, server-log)
 - Restart of Agents (to pick up changed programs)

Tasks of Framework

A decorative graphic of a sun with a curved arc and several triangular rays pointing upwards and to the right, located in the top right corner of the slide.

-
- Converts name-value pairs into temp-table
 - Requires data for HTML page in temp-tables
 - Merges data with HTML page template (plain text)
 - Sends merged page to web-stream (i.e. WebServer)
 - ... or to a file (for testing purposes)

Framework



C/S

Agenda



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- ✓ Overview of OpenEdge Reference Architecture Architecture
 - ✓ Overview of WebSpeed Architecture
 - **Using ProDataSets in WebSpeed**
 - Examples of tests for various layers

OpenEdge Reference Architecture with WebSpeed Check



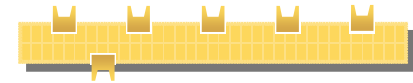
-
- Who is using ProDataSets with WebSpeed?
 - Who is using OpenEdge Reference Architecture with WebSpeed?
 - Who is using ProDataSets and OpenEdge Reference Architecture with WebSpeed?

OpenEdge Reference Architecture

Separated presentation
and integration layers

Common business
logic with
advanced models

Data access
abstracted from
storage



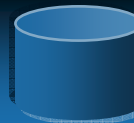
Presentation

Enterprise Services

Business Services

Data Access

Data Sources

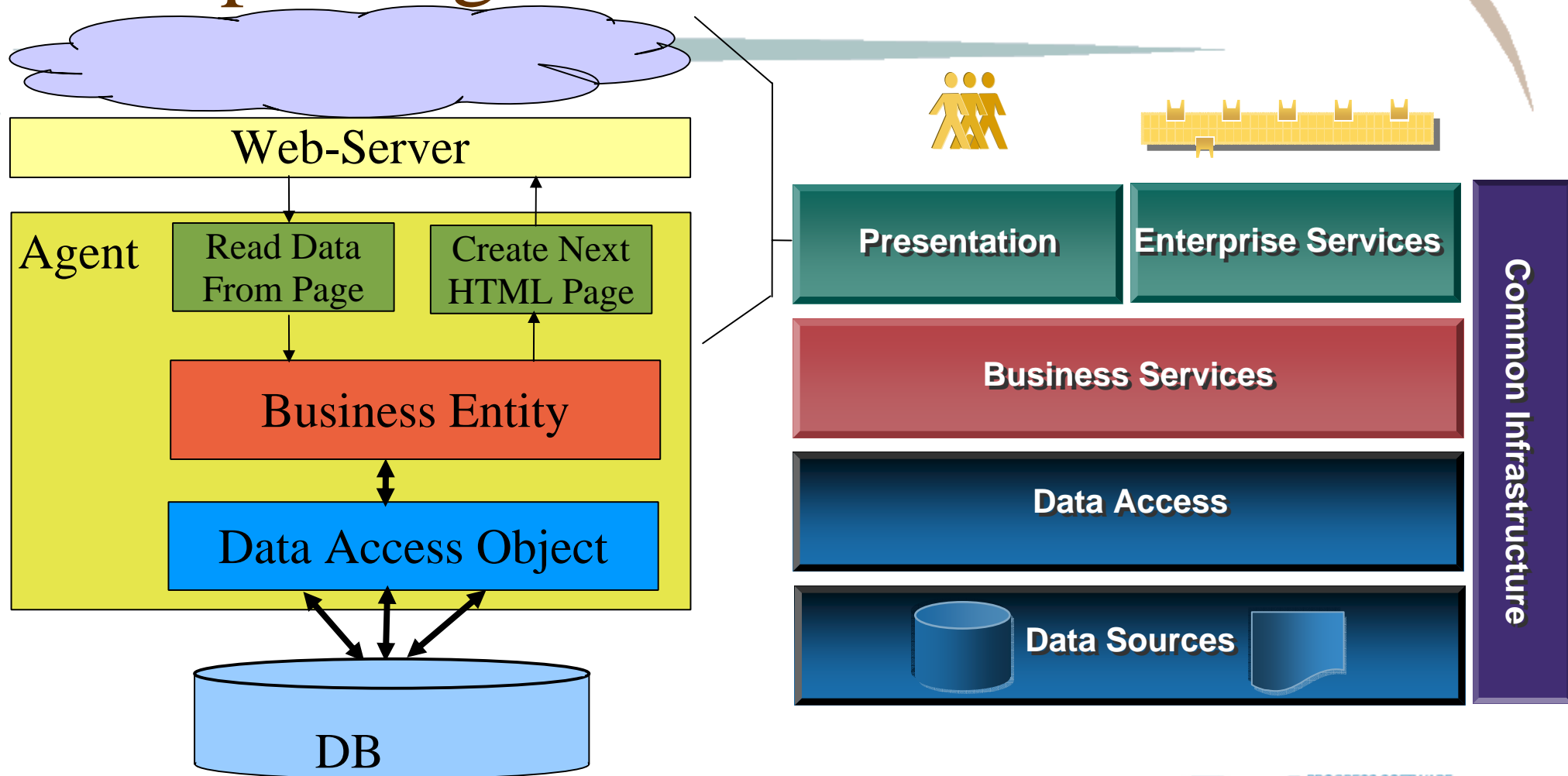


Common Infrastructure

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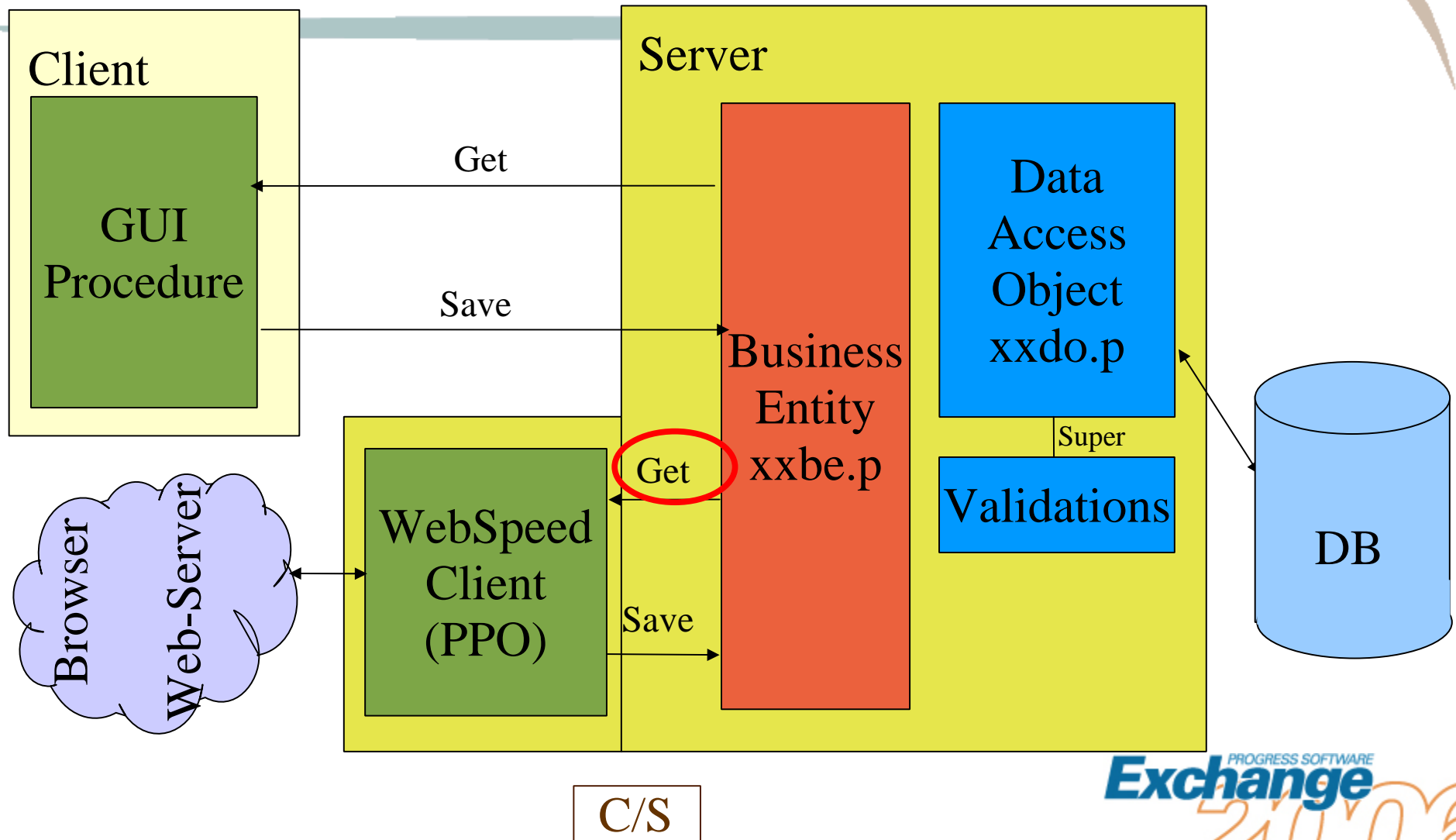
WebSpeed Implementing The OpenEdge Reference Architecture



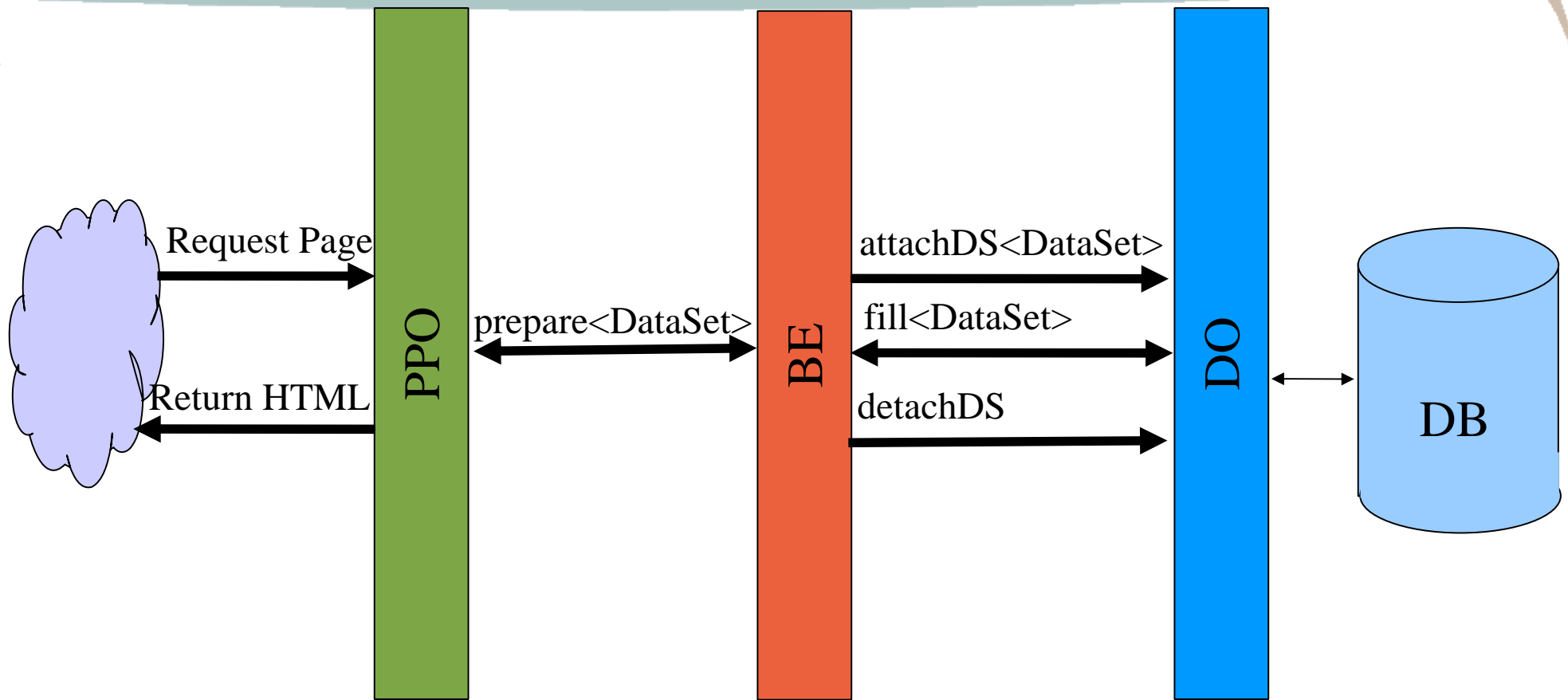
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OpenEdge Reference Architecture with WebSpeed



Procedure Call Flow – Prepare Page

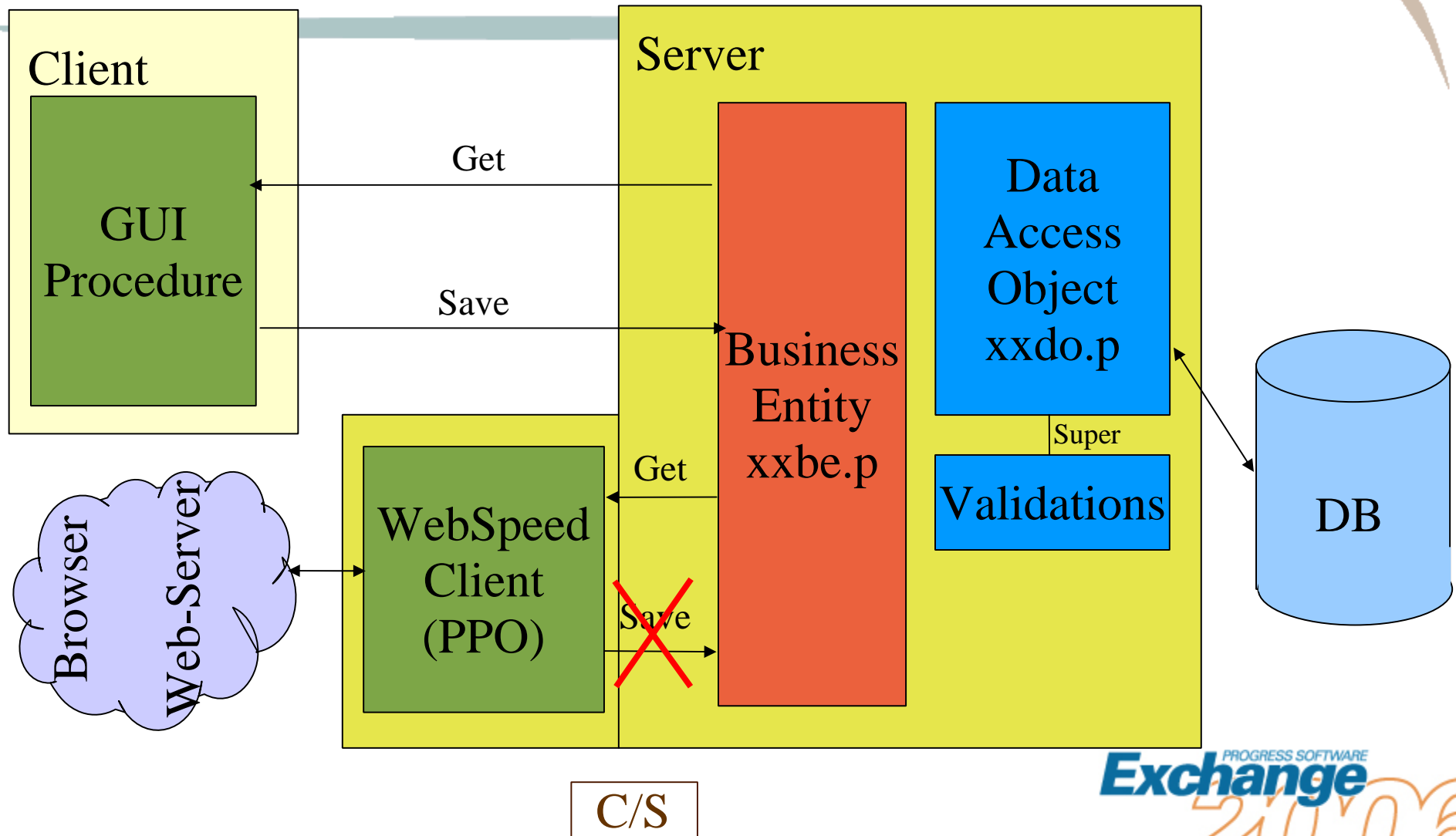


Call Flow

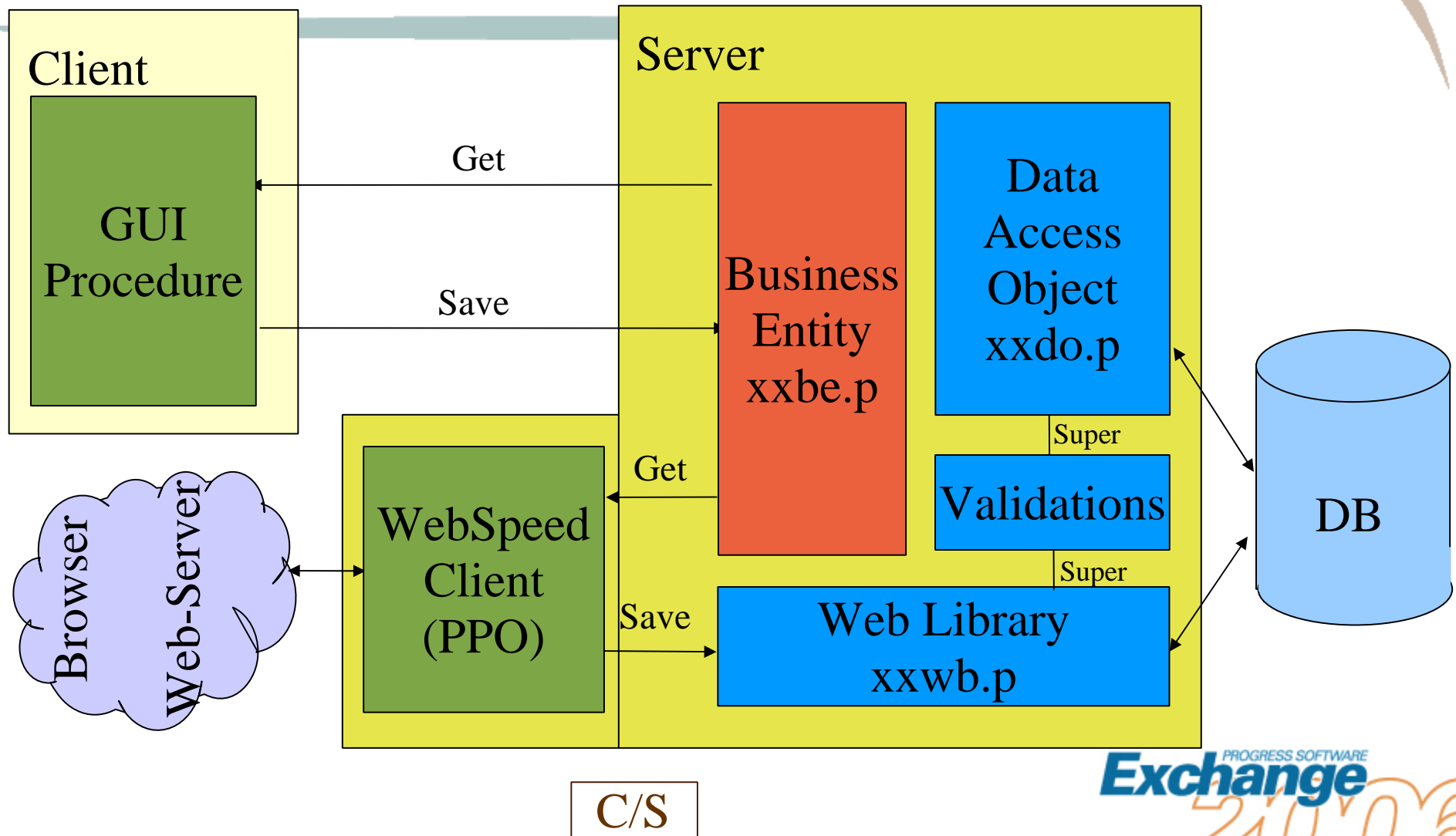
Issues With WebSpeed

- Did record change since page was prepared?
 - Additionally sending complete record to page
 - So it can be retrieved as “before image” record
 - Storing before-images in context DB
 - Using “version” field
- Total disconnect between preparing page and next post
 - ProDataSet content lost
 - Before-image temp-table only through fancy footwork
 - Standard ProDataSet update feature can't be used without before-image temp-table

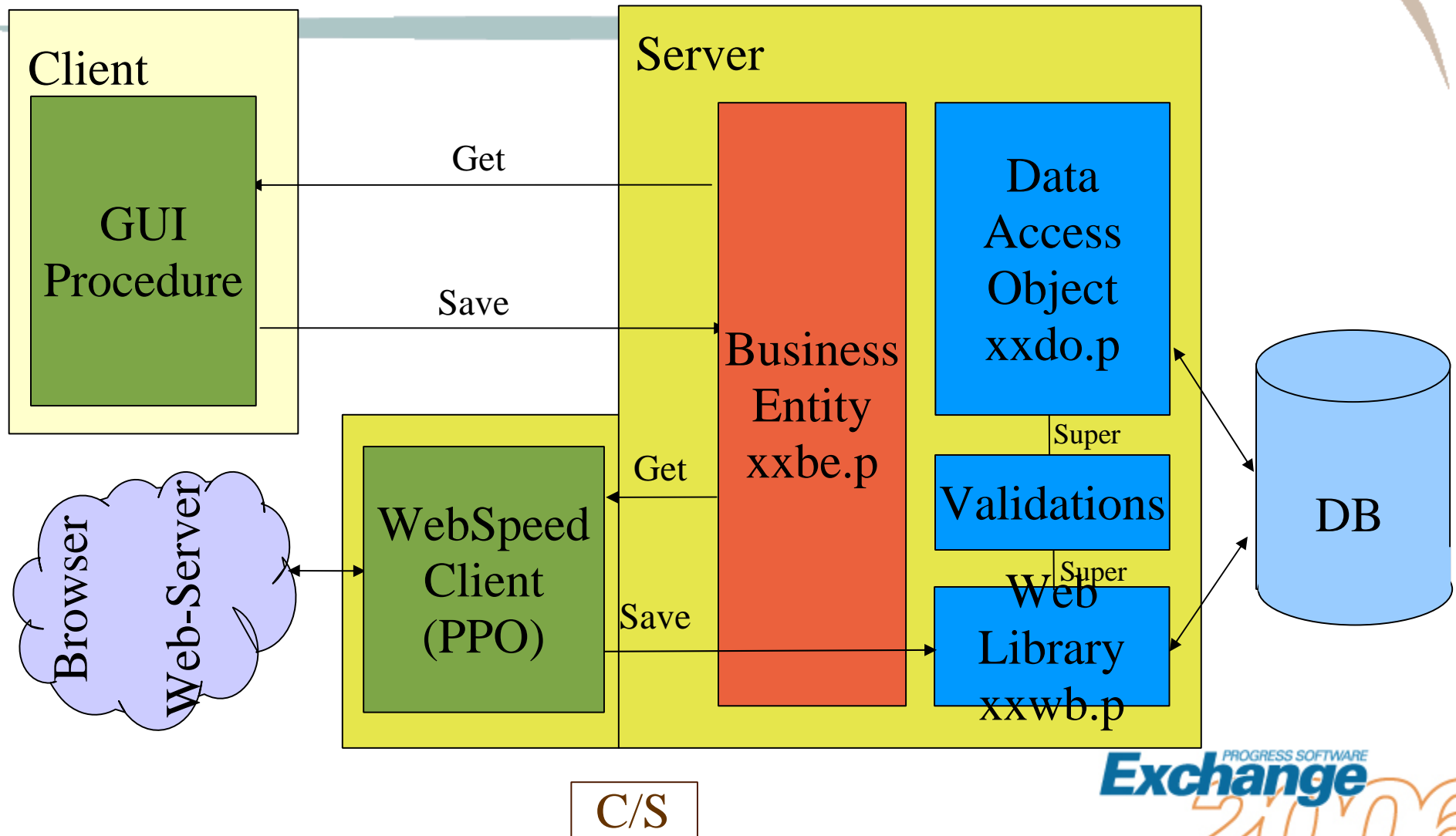
OpenEdge Reference Architecture and ProDataSets with WebSpeed



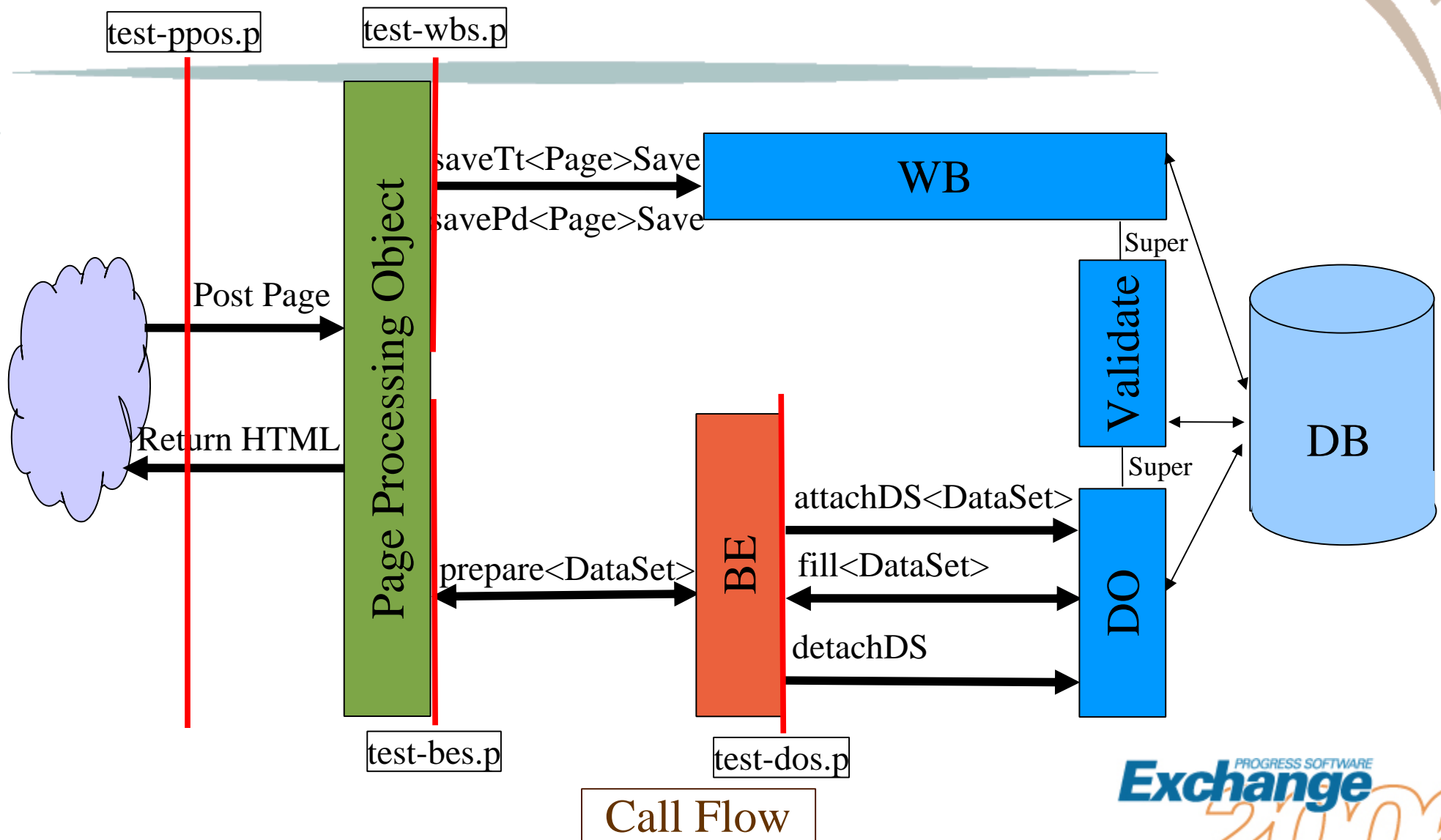
OpenEdge Reference Architecture and ProDataSets with WebSpeed



OpenEdge Reference Architecture and ProDataSets with WebSpeed



Call Flow – Save and Prepare Page

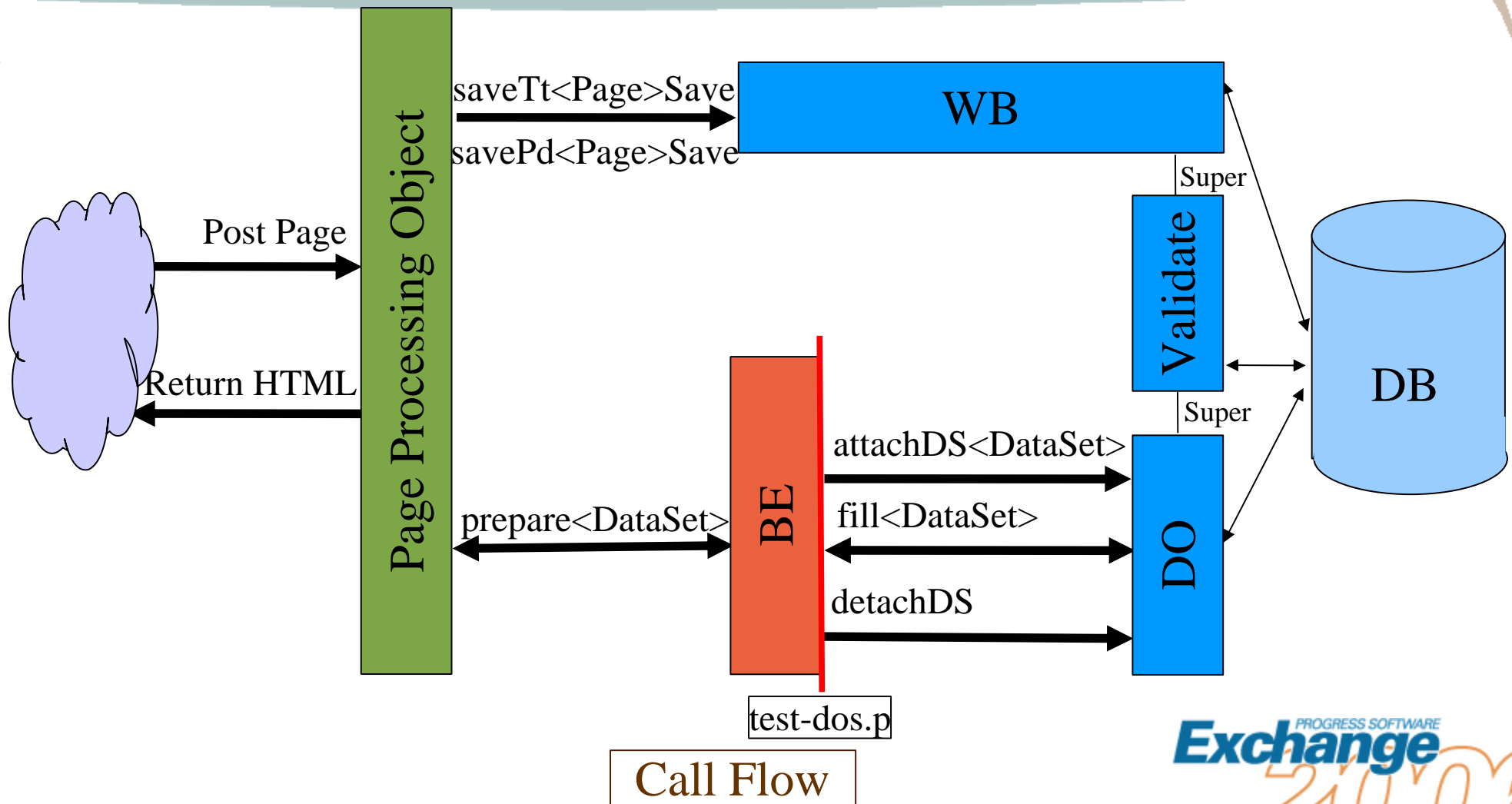


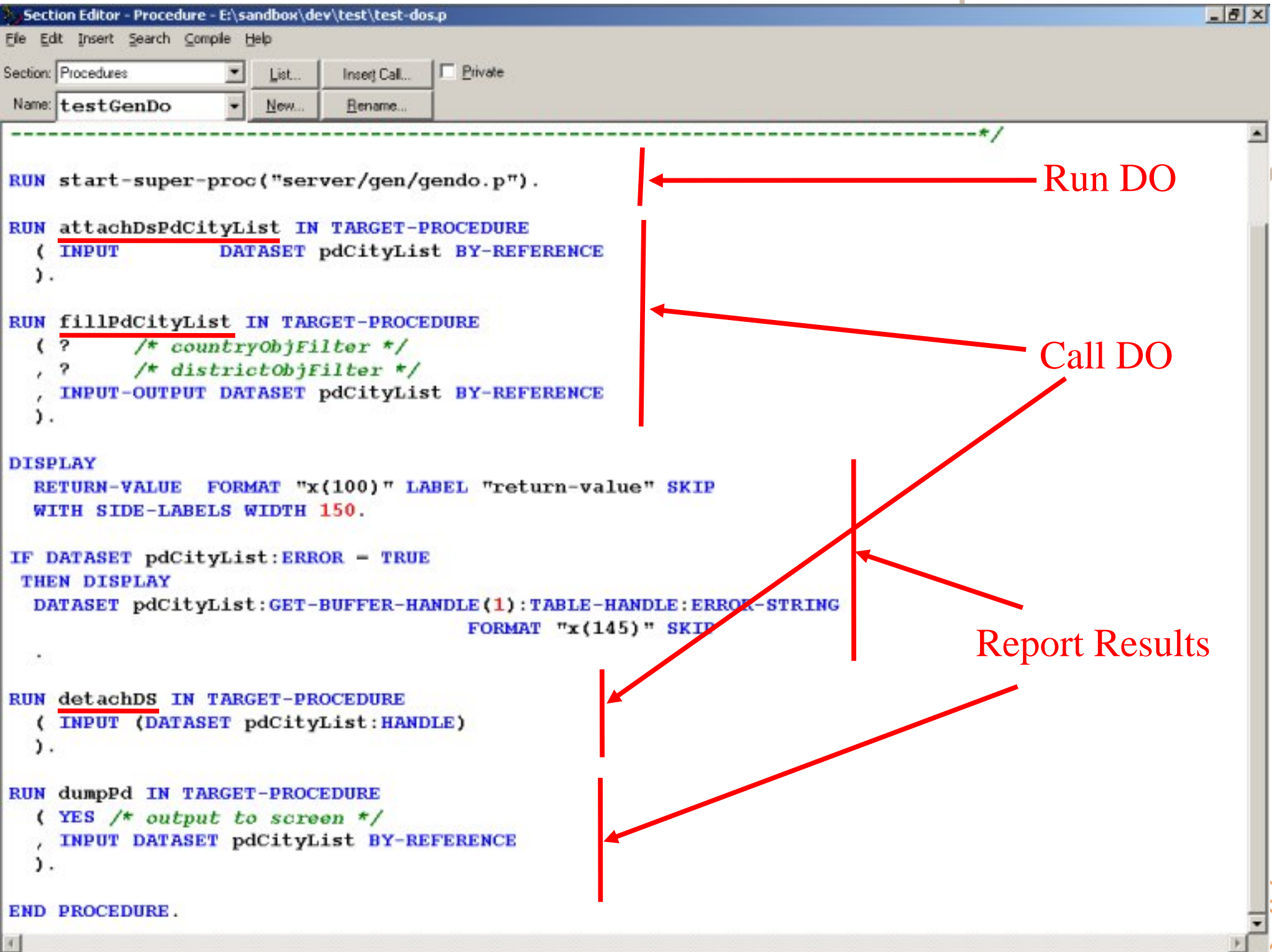
Agenda



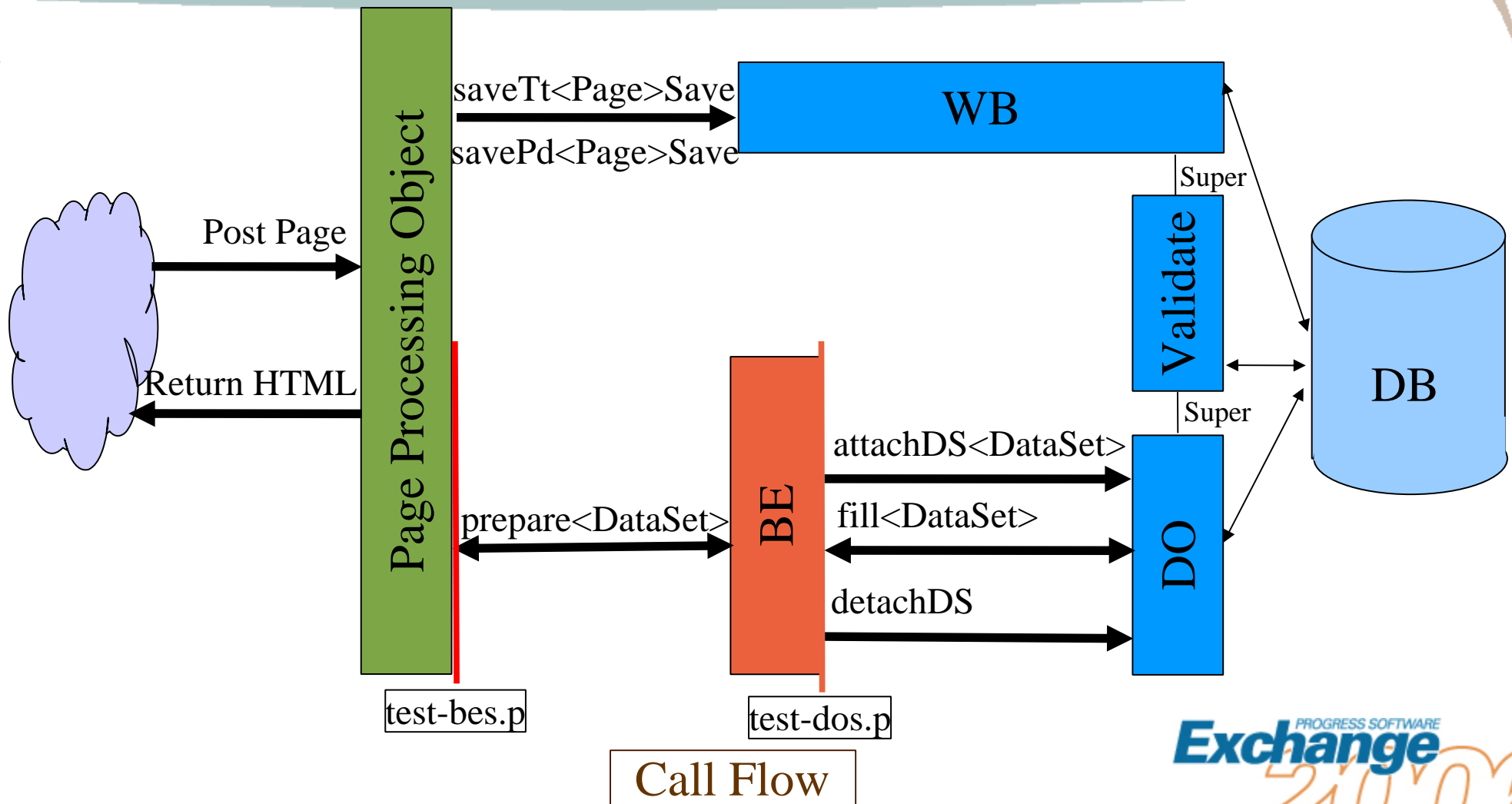
-
- ✓ Overview of OpenEdge Reference Architecture Architecture
 - ✓ Overview of WebSpeed Architecture
 - ✓ Using ProDataSets in WebSpeed
 - **Examples of tests for various layers**

Testing the Data Access Object





Testing the Business Entity Object



Section Editor - Procedure - E:\sandbox\dev\test\test-bes.p

File Edit Insert Search Compile Help

Section: Procedures List... Insert Call... Private

Name: testGenBe New... Rename...

```
/*-----*
Purpose:    tests all the genBe procedures and functions
Parameters: <none>
Notes:
-----*/

RUN preparePdCityList IN TARGET-PROCEDURE
( ? /* countryObjFilter */
, ? /* districtObjFilter */
, INPUT-OUTPUT DATASET pdCityList BY-REFERENCE
).

DISPLAY
RETURN-VALUE FORMAT "x(100)" LABEL "return-value" SKIP
WITH SIDE-LABELS WIDTH 150.

IF DATASET pdCityList:ERROR = TRUE
THEN DISPLAY
DATASET pdCityList:GET-BUFFER-HANDLE(1):TABLE-HANDLE:ERROR-STRING
FORMAT "x(145)" SKIP
.

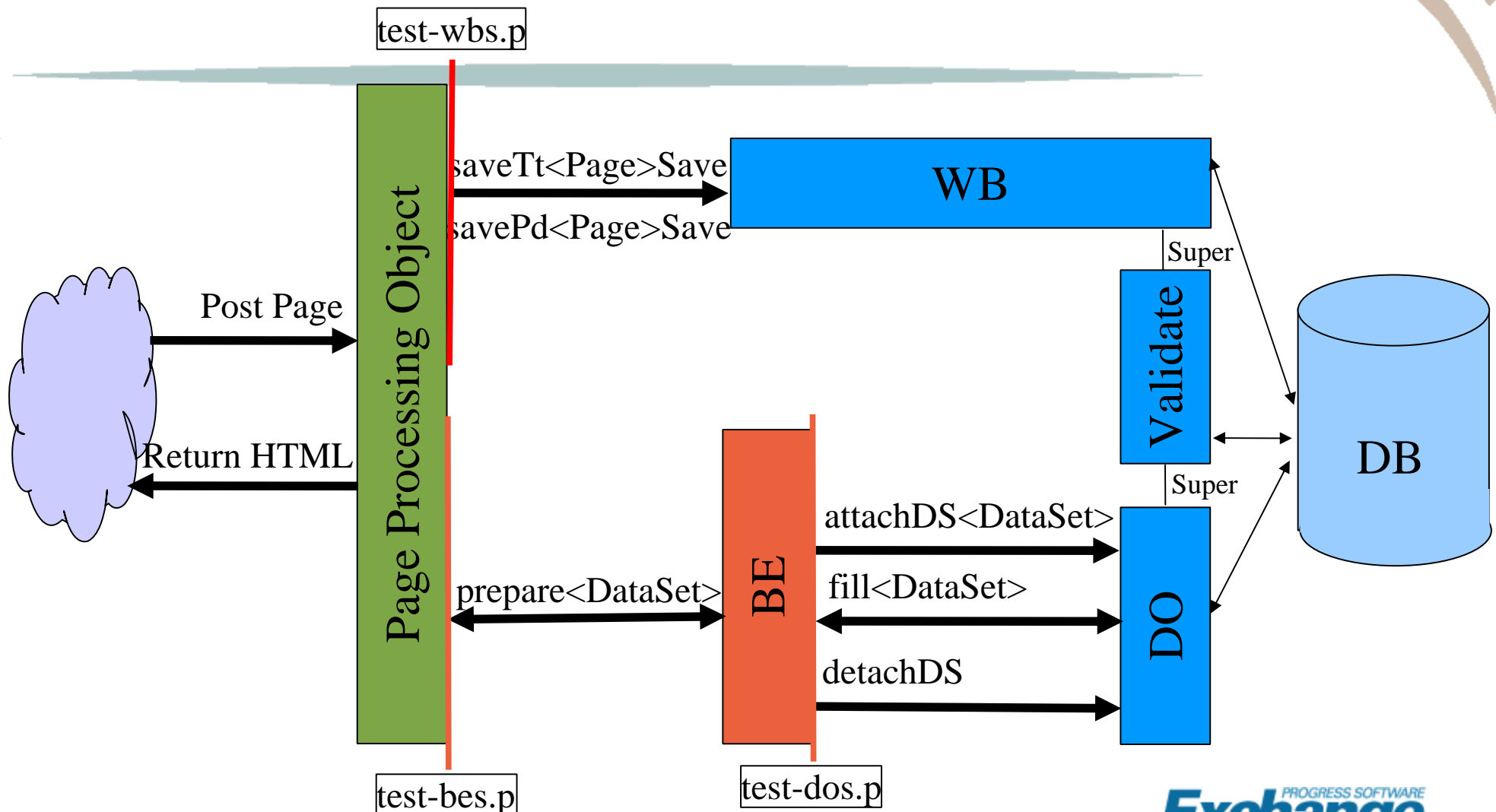
/* ttAEvent:TRACKING-CHANGES = TRUE. */
RUN dumpPd IN TARGET-PROCEDURE
( YES /* output to screen */
, INPUT DATASET pdCityList BY-REFERENCE
).

END PROCEDURE.
```

Call BE

Report Results

Testing Web Object



Call Flow

Section Editor - Procedure - E:\sandbox\dev\test\test-wbs.p

File Edit Insert Search Compile Help

Section: Procedures List... Insert Call... ☐ Private

Name: testSaveTtCity New... Rename...

```
DEFINE VARIABLE llok AS LOGICAL NO-UNDO.

RUN start-super-proc("server/gen/genwb.p").

/*----- add a new record -----*/

EMPTY TEMP-TABLE ttCitySave.

CREATE ttCitySave.
ASSIGN
  ttCitySave.rowState = {&rowStateNew}
  ttCitySave.cityObj = 1
  ttCitySave.countryObj = 274480 /* T&T */
  ttCitySave.districtObj = 278342 /* tobago */
  ttCitySave.cityName = "Scarborough " + STRING(TODAY) + "-" + STRING(TIME)
  ttCitySave.zip = "t100"
  ttCitySave.xxVersion = -1
.

RUN saveTtCitySave IN TARGET-PROCEDURE
( INPUT TABLE ttCitySave
, INPUT-OUTPUT TABLE ttMessage
, OUTPUT llok
).

DISPLAY llok LABEL "save went ok:" WITH SIDE-LABELS.

RUN displayTt IN TARGET-PROCEDURE
( "saveTtCitySave - Messages"
, TEMP-TABLE ttMessage:HANDLE
, YES /* output to screen too? */
) .

/*=====*/
FOR EACH ttCitySave NO LOCK
```

Run WB

Prepare Data

Call WB

Section Editor - Procedure - E:\sandbox\dev\test\test-wbs.p

File Edit Insert Search Compile Help

Section: Procedures List... Insert Call... Private

Name: testSaveTtCit New... Rename...

```
, INPUT-OUTPUT TABLE ttMessage
, OUTPUT llok
).

DISPLAY llok LABEL "save went ok:" WITH SIDE-LABELS.

RUN displayTt IN TARGET-PROCEDURE
( "saveTtCitySave - Messages"
, TEMP-TABLE ttMessage:HANDLE
, YES /* output to screen too? */
) .

/*=====
FOR EACH genCity NO-LOCK
:
  DISPLAY genCity WITH WIDTH 200 3 DOWN FRAME frmCity1.
END.
/*=====

PAUSE.

EMPTY TEMP-TABLE ttCitySave.

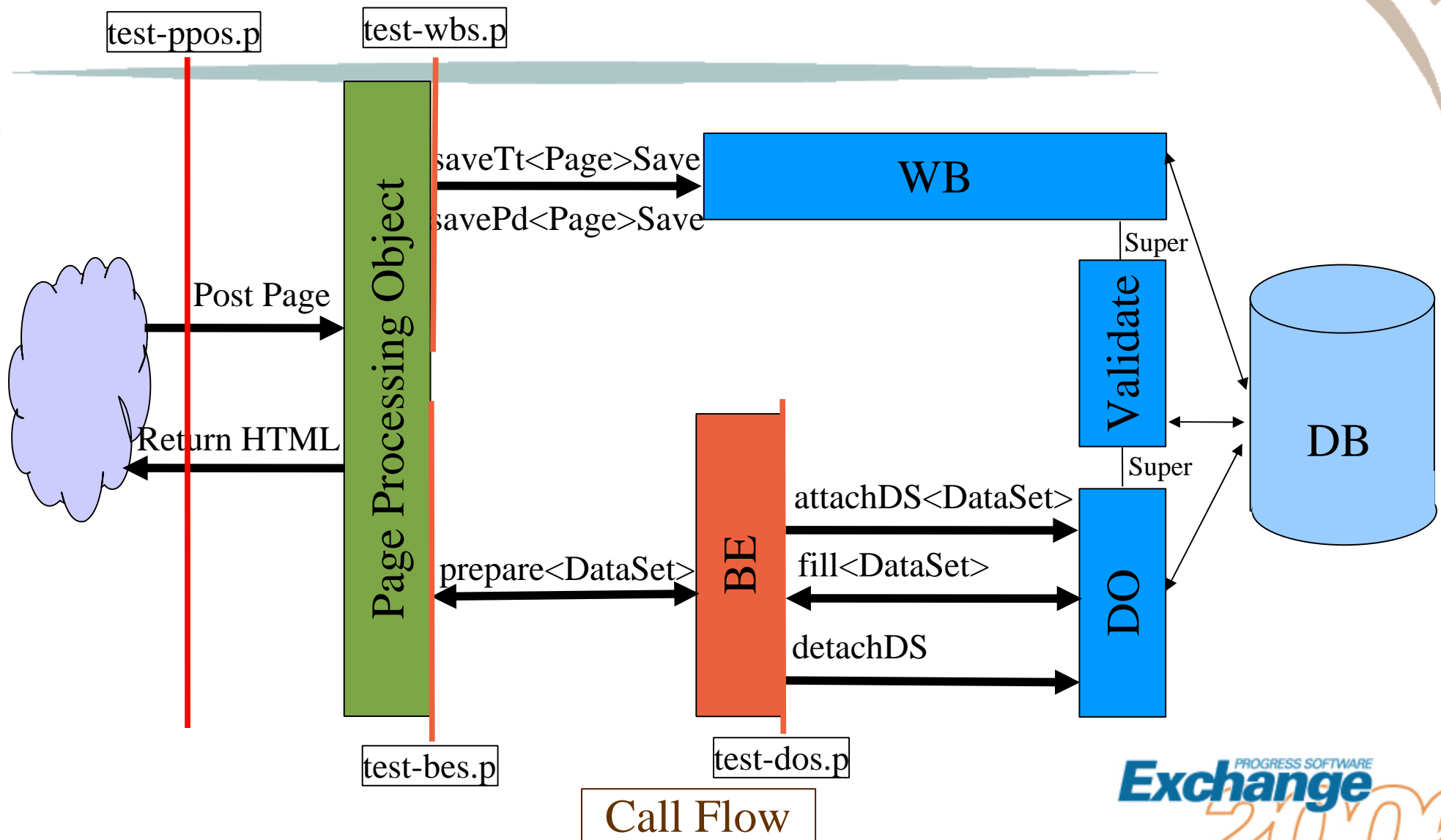
/*----- add the record to be deleted again later -----*/
/* <snip> */

/*----- update an existing record and delete a test record -----*/
/* <snip> */

END PROCEDURE.
```

Report Results

Testing Page Process Object



```
/* make sure we have a valid, active session */
RUN initSession.
```

```
/* start the framework as library */
RUN system/forms/wciat.p PERSISTENT SET ghTest.
```

← Start Framework

```
/* identify THIS-PROCEDURE as the data-provider (and not the web-page stream) */
DYNAMIC-FUNCTION("setDataProvider" IN ghTest, THIS-PROCEDURE).
```

```
/* display a message just to make the editor minimize, so alert-boxes can't
 * hide behind it and make the whole session unusable...
 */
```

```
MESSAGE "starting process"
    VIEW-AS ALERT-BOX INFO BUTTONS OK.
```

```
ETIME(YES).
```

```
REPEAT giX = 1 TO {&REPEAT}
:
```

```
/* run the actual process */
```

```
RUN performRoundTrip IN ghTest ( /*debugging on?:*/ {&DEBUGON} ).
```

← Simulate 1 Page

```
END.      /* REPEAT liX = 1 TO 5 */
```

```
ASSIGN
```

```
giTime = ETIME
```

```
gcTime = STRING(INTEGER(giTime / 1000), "HH:MM:SS")
          + "." + STRING(giTime MOD 1000)
```

```
MESSAGE "ending process" gcTime          SKIP
    VIEW-AS ALERT-BOX INFO BUTTONS OK.
```

Goals For This Session



Seeds of Thought:

- Layered architecture facilitates layered testing
- OpenEdge Reference Architecture and ProDataSet relevant for WebSpeed
- Ideas about how to implement layered testing



Questions?

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www.smat-consulting.com



Thank you



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