

CRYSTAL REPORTS: WHAT'S NEW FOR DEVELOPERS

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AGENDA

1. New Crystal Reports Features Overview
2. Interactive Sorting and Interactive Parameter APIs
3. Demo #1: Interactive Sorting
4. Multilingual Reporting
5. Demo #2: Multilingual report and Web application
6. Flash Integration
7. Demo #3: Xcelsius Flash Widgets in Crystal Reports
8. Demo #4: ESRI Flash mapping and data binding in Crystal Reports
9. Q&A
10. Appendix

NEW FEATURES

New Crystal Reports Features - Overview

MARQUEE FEATURES

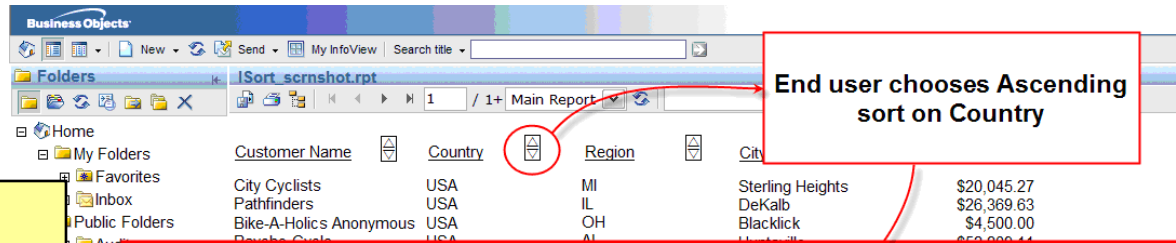
- ▶ Interactive Sorting
- ▶ Interactive Parameters
- ▶ Web Pagination
- ▶ Flash Integration
- ▶ Better Crosstabs
- ▶ New XML Exporting

OTHER INNOVATIONS

- ▶ Single Crystal Reports Edition
- ▶ Better Hyperlinking
- ▶ Built-in Barcode support
- ▶ Add-in Wizards
- ▶ Windows Vista Support
- ▶ Reduced Install Footprint
- ▶ Data Sources for Developers
- ▶ Web Viewer Enhancements
- ▶ Web Service Access to XML Data

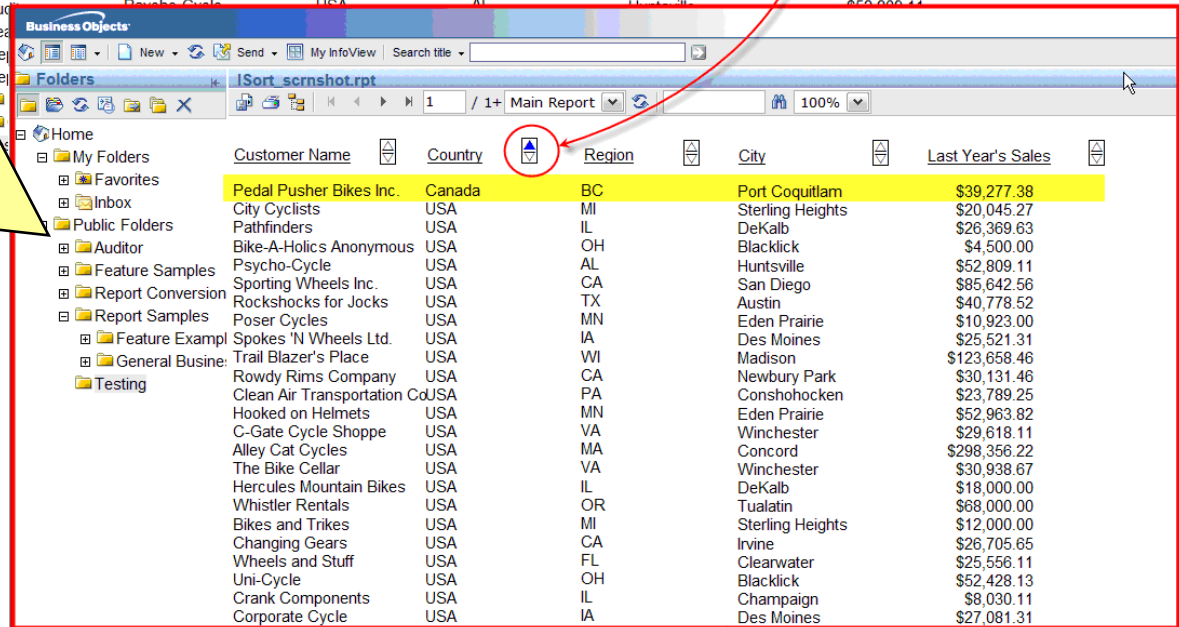
INTERACTIVE SORTING

- ▶ In Java DHTML and .NET Webform viewers



Benefits:

- 1) Good for CR.COM: Consumers can sort records in the report without a database connection.
- 2) Ease of Use: Consumers can stay in the viewer and reduce designer usage.
- 3) Reduced backlog: Reduces report proliferation by having a single rpt file support different sort orders.



INTERACTIVE SORTING

- ▶ On report controls
 - ▶ The report consumer interacts with the report directly
 - ▶ Bi-directional control promotes sort to top of sorting 'stack'
- ▶ No Database refresh
 - ▶ All sorting is done against the saved data instance
- ▶ Control over any currently sortable object
 - ▶ Database fields, Formulas, SQL expression fields
 - ▶ Group sorts, Group summary sorts
 - ▶ Objects not required to be on canvas
- ▶ Current limitations
 - ▶ Not available for use with subreports / drill down.

INTERACTIVE PARAMETERS

▶ Parameter Panel

Some parameters can be modified here.

Changes can be applied to saved data.

Benefits:

1) Good for CR.COM:

Consumers can filter existing report instances without a data connection.

2) Ease of use: Consumers can do more within the viewer and reduce designer usage.

3) Reduced backlog: Reduce report proliferation by having a single RPT file support different data sets.

The screenshot shows the Crystal Reports Viewer interface. On the left, the 'User Prompt Input' panel is visible, showing a list of parameters including 'Country', 'State/Province', 'City', and 'Department'. The 'City' parameter is set to 'Portland'. Below the list, there are options to 'Click to Add Value...', 'Click to Add Range...', and 'Click to Add...'. The main report area displays the title 'Portland, Oregon' and a 'BIG BOX-MART' logo. Below the title, there is a table with columns for 'Sales Budgeted', 'Sales Actual', 'Units Stocked', and 'Units Ordered'. The table contains data for various product categories and items, such as 'Descent', 'Endorphin', 'Mozzie', 'Electronics', 'Active Outdoors Cr...', 'Active Outdoors Ly...', 'InFlux Crochet Glox', 'InFlux Lycra Glove', 'Garden and Patio', 'Triumph Pro Helme...', 'Triumph Vertigo He...', 'Xtreme Adult Helme...', 'Xtreme Youth Helm...', 'Housewares', 'Romeo', 'Wheeler', 'Micro Nicros', 'Mini Nicros', and 'Guardian "U" Lock'.

	Sales Budgeted	Sales Actual	Units Stocked	Units Ordered
Descent	\$23,612.06	21.30 % \$96,033.66	35.82 % 370,455.42	37.56 % 526,097.78
Endorphin	\$3,651.08	3.29 % \$12,416.79	4.63 % \$74,866.88	7.59 % 110,469.96
Mozzie	\$28,861.68	26.03 % \$33,873.64	12.63 % 115,256.55	11.69 % 157,437.80
Electronics	\$56,124.82	50.63 % 142,324.09	53.09 % 560,578.85	56.83 % 794,005.54
Active Outdoors Cr...	\$308.00	0.28 % \$9,762.67	3.64 % \$13,482.96	1.37 % \$43,837.98
Active Outdoors Ly...	\$1,266.15	1.14 % \$6,403.89	2.39 % \$58,214.00	5.90 % \$39,097.59
InFlux Crochet Glox	\$0.00	0.00 % \$1,202.05	0.45 % \$11,608.25	1.18 % \$3,537.35
InFlux Lycra Glove	\$8,531.10	7.70 % \$3,934.32	1.47 % \$4,025.16	0.41 % \$7,932.17
Garden and Patio	\$10,105.25	9.12 % \$21,302.93	7.95 % \$87,330.37	8.85 % \$94,405.09
Triumph Pro Helme...	\$5,557.82	5.01 % \$12,581.04	4.69 % \$60,305.85	6.11 % \$35,421.33
Triumph Vertigo He...	\$4,119.91	3.72 % \$5,686.48	2.12 % \$94,144.03	9.54 % \$75,294.64
Xtreme Adult Helme...	\$3,134.73	2.83 % \$11,722.02	4.37 % \$26,252.68	2.66 % \$71,009.43
Xtreme Youth Helm...	\$1,111.80	1.00 % \$564.92	0.21 % \$7,292.23	0.74 % \$16,010.99
Housewares	\$13,924.26	12.56 % \$30,554.46	11.40 % 187,994.79	19.06 % 197,736.39
Romeo	\$12,235.80	11.04 % \$10,956.78	4.09 % \$39,660.85	4.02 % \$79,950.09
Wheeler	\$9,515.10	8.58 % \$6,480.43	2.42 % \$36,608.21	3.71 % \$27,763.39
	\$21,750.90	19.62 % \$17,437.21	6.50 % \$76,269.06	7.73 % 107,713.48
Micro Nicros	\$0.00	0.00 % \$15,272.64	5.70 % \$5,651.36	0.57 % \$13,701.12
Mini Nicros	\$7,300.90	6.59 % \$29,836.97	11.13 % \$25,277.15	2.56 % \$17,495.78
	\$7,300.90	6.59 % \$45,109.61	16.83 % \$30,928.51	3.14 % \$31,196.90
Guardian "U" Lock	\$0.00	0.00 % \$35.00	0.01 % \$6,105.66	0.62 % \$6,774.00

INTERACTIVE PARAMETERS

- ▶ Allow end users to change parameter values and see report based on current data set.
 - ▶ Constrained interactivity
- ▶ Allow Administrators, DBA's and Developers to minimize and control database hits.
- ▶ Providing a better way to show parameter value that is currently used to render the report.
 - ▶ Improved data transparency to the end user

INTERACTIVE PARAMETERS – TOOL PANEL

- ▶ The report author controls the content of tool panel
- ▶ How to put a parameter in the parameter side panel?
 - ▶ Parameter can be marked as “Do not show”, “Editable”, “Read Only”
- Limitations?
 - All parameter types can be displayed on the side panel.
 - Not all parameter types can be edited in the side panel.
 - Range Value Parameters cannot be edited in-place on the panel.

INTERACTIVE PARAMETERS - CONTROLLING DATA REFRESH

- ▶ The report engine will determine when it is necessary to refresh report data
 - ▶ In the field explorer, the parameter that will require data refresh will have a different icons.
 - ▶ The report engine will determine if parameter require data refresh based on the usage of parameter in the report.
- ▶ Rules to qualify a parameter as a data refresh parameter
 - ▶ Stored procedure or command parameters
 - ▶ Parameter is being used in Record Selection Formula

INTERACTIVE PARAMETERS API - OBJECT MODEL

- ▶ **CrystalDecisions.ReportAppServer.Controllers namespace**
 - ▶ **DataDefControllerClass Class**
 - ▶ **SavedDataFilterController Property**
- ▶ **CrystalDecisions.ReportAppServer.DataDefModel namespace**
 - ▶ **DataDefinitionClass Class**
 - ▶ **SavedDataFilter Property**
- ▶ The filter is applied to a report's saved data. Use the **SavedDataFilterController** to modify the filter.

INTERACTIVE PARAMETERS API - WORKFLOW

```
CrystalDecisions.CrystalReports.Engine.ReportDocument  
    reportDocument = null;
```

```
reportDocument = new  
    CrystalDecisions.CrystalReports.Engine.ReportDocument();  
reportDocument.Load(reportPath);
```

```
DataDefController dataDefController =  
    reportDocument.ReportClientDocument.DataDefController;
```

```
dataDefController.SavedDataFilterController.SetFormulaText("{data  
    root/Customer_x0020_Query.Country} in ['Mexico', 'USA',  
    'Canada']");
```

INTERACTIVE PARAMETERS API- DEMO #1

- ▶ WinForm viewer using RAS in-proc
- ▶ SavedDataFilterController used to filter by country, sales
- ▶ Interactive Sorting
- ▶ Data date and time on report doesn't change

MULTILINGUAL REPORTING

- ▶ **Product Locale**
 - ▶ The language of the UI
 - ▶ Language Packs
- ▶ **Preferred Viewing Locale**
 - ▶ The locale used for report formatting
 - ▶ Default is your browser locale
 - ▶ Many many locales...
- ▶ **Consistent use throughout the New Crystal Reports and the upcoming suite release**
- ▶ **Currency handling**
 - ▶ Default format is fixed
 - ▶ Of course you can set the formatting to anything you like

MULTILINGUAL REPORTING: SPECIAL FIELDS

- ▶ ContentLocale
 - ▶ Current user's Preferred Viewing Locale

- ▶ SelectionLocale
 - ▶ User's Preferred Viewing Locale at the time of data fetching. i.e., the Saved Data.
 - ▶ The locale used for record sorting when Crystal Reports does the sorting

MULTILINGUAL REPORTING WITH FORMULAS

```
// `Subject' field title, default to English
Select ContentLocale
  case "fr_FR", "fr_CA":
    "Sujet"
  case "de_DE":
    "Thema"
  Default:
    "Subject"
```

This formula returns the best match for the word 'Subject' depending on the user's Preferred Viewing Locale

MULTILINGUAL REPORTING

- ▶ Larger scale translation management: recommend Custom Functions (report-based or managed)
- ▶ Custom Functions are Unicode-based
- ▶ UFLs are MBCS so unfortunately not as well suited to Multilingual Reporting

MULTILINGUAL REPORTING: SDK

- ▶ ReportClientDocument.PreferredViewingLocaleID
 - ▶ Type:ReportAppServer.DataDefModel.CeLocale
- ▶ Must be set before opening a report

- ▶ Usage:

```
reportDocument.ReportClientDocument.  
PreferredViewingLocaleID =  
    CeLocale.ceLocaleGerman;
```

MULTILINGUAL REPORTING: DEMO #2

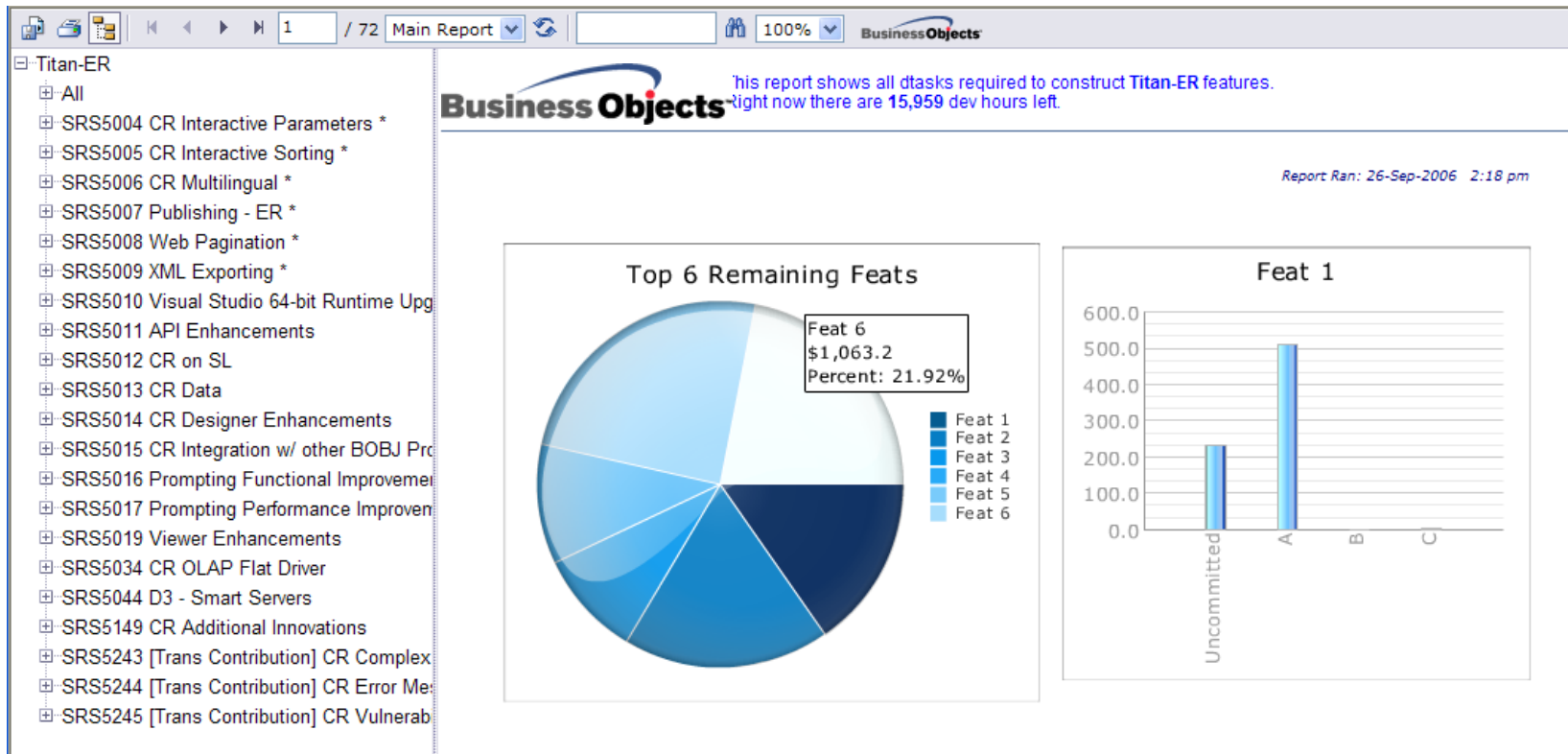
- ▶ Multilingual report using formulas and ContentLocale special field
- ▶ Winform Viewer client application
- ▶ Web application
 - ▶ Preferred Viewing Locale comes from the browser locale

FLASH INTEGRATION

- ▶ Flash Integration allows for ShockWave Flash (SWF) objects to be embedded inside of your Crystal reports
- ▶ Data binding between report elements and the Flash object through Flash Vars
- ▶ Allows for tight integration with Xcelcius charts and SWFs
- ▶ Allow Flash actions from within your Crystal report files (.rpts)

FLASH INTEGRATION WITH XCELSIUS

- ▶ Xcelsius chart embedded in a Crystal report
 - ▶ Chart is bound to Crystal Reports data



FLASH INTEGRATION

- ▶ Xcelcius SWF integration
 - ▶ SWFs created in New Xcelsius designer will have data linking ability in the New Crystal Reports (available Q1 2008)
 - ▶ Data linking is uni-directional – Report to SWF
- ▶ Non Xcelsius SWF integration
 - ▶ SWFs created outside the Xcelsius designer are supported
 - ▶ Data linking to the SWF is supported

FLASH INTEGRATION – DEMO #3

- ▶ Data linking to a Xcelsius Flash chart
- ▶ Flash button with bound data in a report. Call to a Web Service
- ▶ Web Service accepts data and writes to XML file
- ▶ Report on the XML over HTTP

FLASH INTEGRATION – DEMO #4

- ▶ Integration with ESRI Mapping
- ▶ Adobe Flexbuilder: data binding code to hook up mapping
- ▶ Web application

CONCLUSION

- ▶ Interactive Parameters and Interactive Sorting allow your Crystal reports a new level of flexibility without impacting the back-end
- ▶ Multilingual Reporting is now possible in Crystal Reports with its improved handling of locales and Language Packs
- ▶ Flash integration provides great extension points for Crystal Reports. Combine the power of Crystal Reports bound to Flash and open up a whole new world for your reports!
- ▶ As usual, we have SDKs for all the new features!

- ▶ Questions
 - ▶ Ian Treleaven, Program Manager, Business Objects
 - ▶ I will repeat questions to ensure everyone can hear

- ▶ Contact information
 - ▶ Ian.Treleaven@businessobjects.com
 - ▶ +1 604 647 8424

- ▶ Check out the Developer Library at <http://devlibrary.businessobjects.com>

- ▶ Visit us at the Crystal Reports Bar
- ▶ **Don't miss the Crystal Reports Power Hour!**

APPENDIX – MORE FEATURES

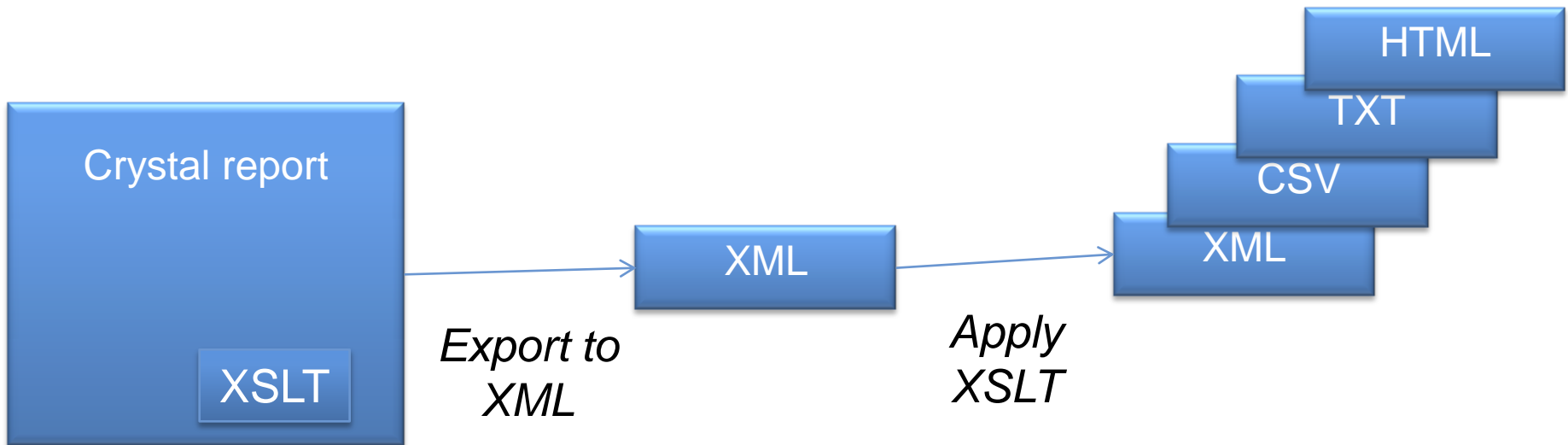
- ▶ New XML Exporter
 - ▶ See you at the 'Consume, Produce and Transform XML' Breakout
- ▶ Report Creation API
- ▶ OLE DB data source configuration in code
- ▶ Crystal Reports Designer Add-ins

NEW XML EXPORTER

- ▶ All new Crystal Reports XML exporter
- ▶ New Crystal Reports XML schema
 - ▶ Easy to use
 - ▶ Designed for developers
- ▶ Transform XML to industry-standard schemas and file interchange formats
 - ▶ XBRL, HL7, JXDM
 - ▶ HTML, CSV, RSS
 - ▶ Custom formats – anything that's text-based
- ▶ Embed multiple XML transformations in each report
- ▶ Export directly to the desired format with built-in transform engine

NEW XML EXPORTER INTERNALS

► Internal engine workflow



NEW XML EXPORTER

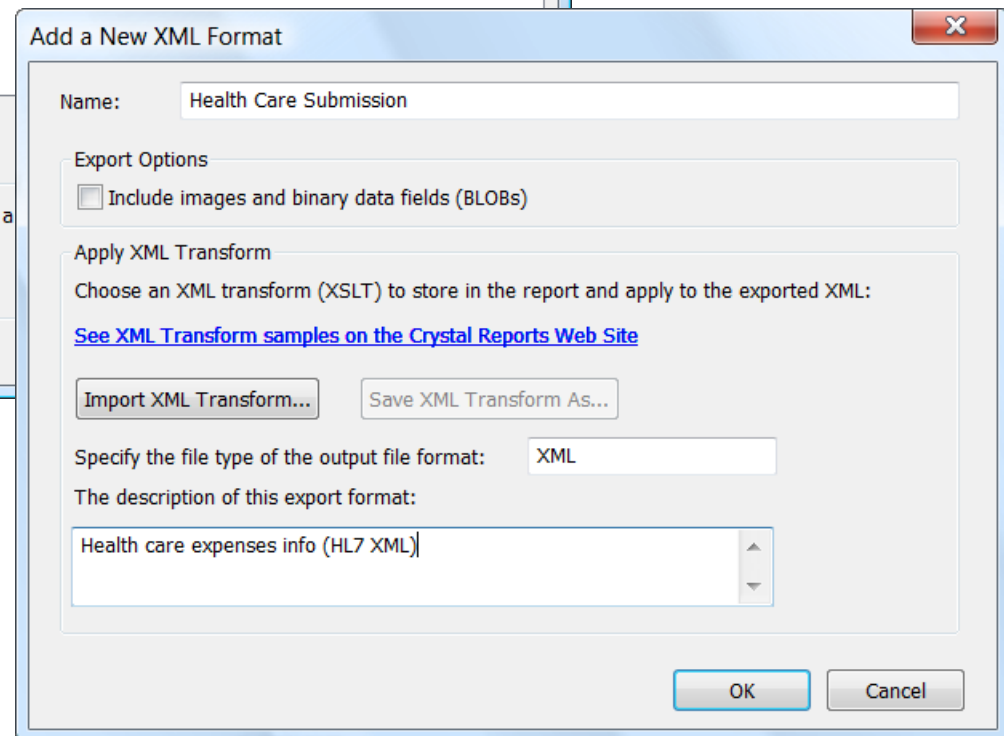
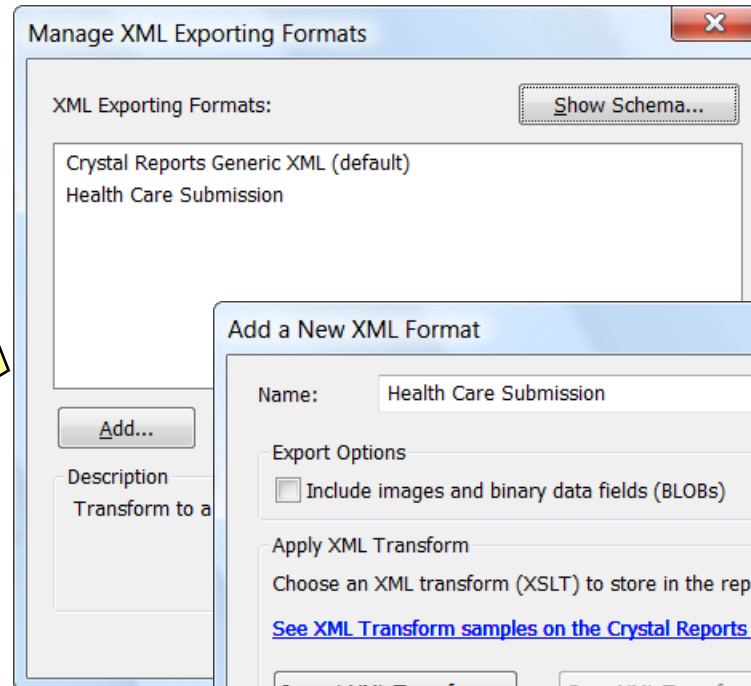
► In Crystal Reports Designer

Create multiple XML export formats in a single report.

Each format can be based on an XML transform embedded in the report.

Benefits:

- 1) Create industry-standard or custom XML formats from your reports.
- 2) Simplified XML schema is transformed using industry-standard XSLT, providing a wide range of output possibilities.
- 3) Transforms are stored in the report for easy management.



REPORT CREATION API - OBJECT MODEL

- ▶ ISCRField
- ▶ ISCRTTable
- ▶ ReportClientDocument.Database.Tables
- ▶ CrystalDecisions.ReportAppServer.DataDefModel.Table
- ▶ ReportClientDocument.DataDefinition.FormulaFields

REPORT CREATION API – WORKFLOW

```
Fields formulaFields =
    in_reportClientDocument.DataDefinition.FormulaFields;
int idx = formulaFields.Find(fieldName,
    CrFieldDisplayNameTypeEnum.crFieldDisplayNameShort,
    locale);
if (idx >= 0)
{
    result =

        in_reportClientDocument.DataDefinition.FormulaFields
[idx];
}
```

OLE DB DATABASE CONFIGURATION



Use the `ModifyTableConnectionInfo` method of the RAS API to change the database connection for a table called "tableName" to an OLEDB data source.

```
private void OpenSampleReport_inprocRAS() {
    ReportDocument reportDocument = new ReportDocument(); string sampleReportPath =
        @"C:\oledbReport.rpt";
    reportDocument.Load(sampleReportPath);
    ISCDReportClientDocument reportClientDocument = reportDocument.ReportClientDocument;
    ConnectionInfo newConnectionInfo = new ConnectionInfoClass();
    ConnectionInfo currentConnectionInfo = new ConnectionInfoClass();
    PropertyBag logonAttributes = new PropertyBagClass();
    PropertyBag connectionAttributes = new PropertyBagClass();
    logonAttributes.Add("Data Source", "DatabaseServer\\DatabaseInstance");
    connectionAttributes.Add("Database DLL", "crdb_ado.dll");
    connectionAttributes.Add("QE_DatabaseType", "OLE DB (ADO)");
    connectionAttributes.Add("QE_LogonProperties", logonAttributes);
    connectionAttributes.Add("QE_ServerDescription", "Enter description of your server");
    connectionAttributes.Add("QE_SQLDB", true); connectionAttributes.Add("Server
        Name", "DatabaseServer\\DatabaseInstance");
    connectionAttributes.Add("SSO Enabled", false);
    newConnectionInfo.Attributes = connectionAttributes;
    newConnectionInfo.UserName = "userName";
    newConnectionInfo.Password = "password";
    newConnectionInfo.Kind = CrConnectionInfoKindEnum.crConnectionInfoKindCRQE;
    rcd.DatabaseController.ModifyTableConnectionInfo("tableName", newConnectionInfo);
    crystalReportViewer.ReportSource = reportDocument;
}
```