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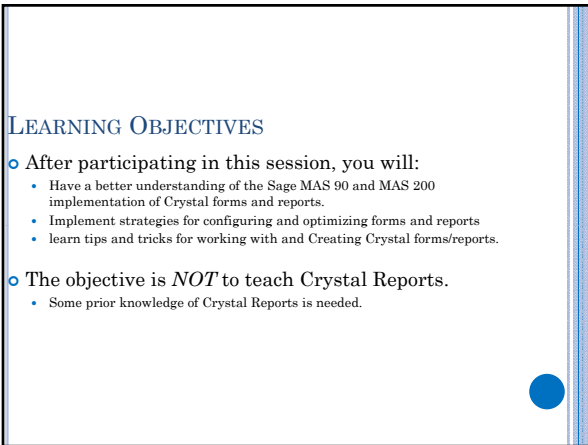
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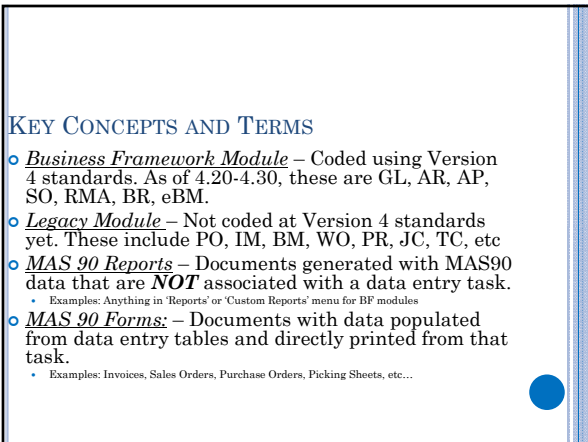
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AGENDA

- o Sources of MAS 90/200-related Crystal Information
- o ODBC Driver Facts and Linking Tables
- o How Reports and Forms Behave in BF
- o Adding a New Report in Report Manager




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AGENDA

- o Power of Business Framework
  - Mapping Columns to Worktables
  - Creating Custom Reports based on BF worktables.
- o General performance tips
- o Examples of making legacy forms run faster
- o Remote Crystal Printing for MAS 200
- o Common errors




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SOURCES OF INFORMATION

- o Crystal Reports for MAS 90 and MAS 200 [Online Manual \(CRCD.PDF\)](#)
  - Installed with 3.71 (Help / Manuals )
- o [TRSG](#) - for 4.0x and 3.71
- o File Layouts (formerly TRSG)
  - Installed since 4.10 Business Desktop / Resources (or \mas90\help\FileLayouts.chm)
  - Also contains Cross-Reference Tables
- o InfoSource Knowledge Base (KB) Entries (Sort using the 'Application' drop down)
- o Business Objects/SAP Support Site <https://www.sdn.sap.com/irj/sdn/businessobjects-support> (knowledgebase articles are called "notes")
- o Sage Community Forums [www.community.sagemas.com](http://www.community.sagemas.com)




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CRYSTAL 10 / 8.5 COMPATIBILITY

- o Must use the Crystal 10 designer to modify 4.10 or higher .rpt files
- o Crystal Runtime Engine / Print Engine used with 4.10 BF rpt → CRAXDRT.DLL Legacy rpt → CRPE32.DLL
- o Must use the Crystal 8.5 designer to modify < 4.10 forms and reports even if clicking Form button opens Crystal 10
- o Crystal 8.5 .rpt files cannot be **saved** in 10 format or they will become unusable.
- o Crystal 8.5 cannot **open** reports in v10 format.




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ODBC DRIVER FACTS AND LINKING TABLES

- o Link Fields by Primary Key(s)
  - Link by as many key fields as possible.
  - Otherwise repeating or missing data may appear
- o Many Join types in Visual Linking / Database Expert
  - Use only "Equal/Inner Join", "Left Outer Join" and "Not Equal To Join"
  - When you need a 2nd LOJ, consider a linked sub-report instead, as only one LOJ is allowed.
  - Determine if you really need a Left Outer Join (LOJs)
    - o Assess data to see if LOJ can be changed to Equal/Inner
    - o Example – Terms Code Description on PO form




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ODBC DRIVER FACTS AND LINKING TABLES

- o Decide which table is Primary/Detail table and which is Lookup table
- o Link from Primary/Detail table to Lookup tables
- o Link from Line **Detail tables** to **Header tables**
  - AR\_InvoiceHistoryDetail → AR\_InvoiceHistoryHeader
  - SO\_SalesOrderDetail → SO\_SalesOrderHeader
  - ARO → ARN ( 4.05 or earlier)
  - CI\_Item → CI\_ExtendedDescription




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ODBC DRIVER FACTS AND LINKING TABLES

- o [Data Views available w/o using Business Insights Reporter](#)
  - Tables are "pre-joined" for you  
See ..\mas90\help\views\_40.pdf to see list of views
  - Display in ODBC with a "v" in front of the table name (vCustomerSalesHistory)
- o Rules for SQL Server ODBC Driver
  - Supports multiple join types
  - Support read-write access to MAS\_XXX databases but do not use it to write back data into MAS 200 for SQL
    - o Importing into MAS\_XXX databases not supported except through Visual Integrator




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HOW FORMS WORK – BUSINESS FRAMEWORK

- o Use one work table that is **never** populated therefore never needs to be reinitialized.
  - A temp file with is created, then deleted After printing.
- o Form Codes default to the user who last used it. (SY\_LastFormUsed.M4T)
  - If Bob uses the 'Bobs Orders' form code that is the form code he will see the next time he enters the printing task.
- o When a new Form Code is created a Crystal Report file is **NOT** created.
  - Form Codes and Crystal Reports do **NOT** have a one to one relationship.
- o When a Form Code is created a record is created in SY\_ReportSetting.M4T a crystal .rpt file is **NOT** created.
  - Therefore multiple form codes can be associated with one Crystal Report in Report Manager Using the 'Copy' feature.




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PREVIEWING FORMS WITH DATA - LEGACY

1. Open the printing task and preview.
  - S/O Sales Order Printing for example
2. Open a second instance of the printing task and press the 'Form' button.
  - Do not close the first preview window or task.
3. Press the 'Refresh' button that looks like a yellow lightning bolt.
  - The temporary crystal work tables are populated by the preview window in MAS.




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PREVIEWING IN BUSINESS FRAMEWORK

1. Open the printing task and preview.
  - S/O Sales Order Printing for example.
2. Open Windows Explorer and navigate to the company data directory.
  - ..mas90\mas\_abc\soabc for example.
3. Find the form's work file and the associated temp file with a long number appended on the end.
4. Rename the work file's extension to 'good' then remove the session information from the temp work file.
5. Open and preview the Crystal Report.




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REPORT SETTINGS IN BUSINESS FRAMEWORK

- o You can maintain multiple report settings for your form but point it to your common (typically customized) .RPT file.
  - Use Report Manager / Add New Format or Copy to takes existing report settings / form codes and apply them across companies or apply the (all) report settings format. The (all) report setting allows you to set up and customize an .rpt file that can be used by all report settings.
  - Click on Designer button to design form. Note current location of .RPT by clicking on File / Save As in Crystal Reports.
- o The .RPT in ..\mas90\reports is used unless:
  - Designer button is clicked.
  - Copy button used in Report Manager.




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ADDING A REPORT TO THE MENU

- o The filename must include 'custom' (without quotes) at the end. (For example myReportCustom.rpt)
- o Crystal reports cannot be added to menu if...
  - It is a report created from a canned BF report.
  - It is a form, from either BF or a Legacy module.
  - Reports created through Business Insights Reporter.
    - o These can be added to menu in BIR
  - Custom reports that use a DSN other than SOTAMAS90.
- o You can change or hide reports using sy\_menu\_ui.




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REPORT AND FORM SETTINGS IN REPORT MANAGER

- Report settings (printer, tray, how many copies, Multi Part...) are saved with the **Form Code**.
- If a user prints to an existing form code and changes any options (Print Comments, Sort Order, **Printer**) the change will be retained. Any user who opens that form code will see those changes.
- Each User or Group of users with different settings should have their own form code.




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ADDING FIELDS TO FORMS OR REPORTS IN BF

- In 4.10 or higher, customizing a form or report will not necessarily require adding a new table, if Customizer is installed.
- With Customizer, any field from a parent table that makes up the Temp table can be added to the report.
- This includes UDF's if they are on one of the parent tables.
- Examples:
  - Directly adding a UDF to SO Invoice Worktable
  - Indirectly adding the Std Price of an Inventory Item to SO sales order Worktable
  - Adding UserCreatedKey (or UserUpdatedKey) to SO Worktable then joining sy\_user table to display LastName and FirstName




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DOT MATRIX PRINTERS IN BUSINESS FRAMEWORK MODULES

- Supported only where a Dot Matrix template is found
- Dot Matrix templates based on Okidata native printer fonts.
- Native Printer Fonts are fixed pitch fonts (a.k.a. monotype / monospace fonts) that reside directly on the printer as opposed to scalable or fixed pitch fonts that are sent from Windows. Native fonts print faster than Windows fonts
- Even if not using Okidata printer, test print a form to make sure print output does not appear in NLQ / LQ mode. Modification of the .rpt may be required if test fails.




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DOT MATRIX PRINTING

- o How to use Native Printer Fonts:
  - Within .rpt, select File / Printer Setup
  - Select actual dot matrix printer.
  - Press Ctrl-A to select all fields, then use font drop-down on toolbar to select a native printer font
  - Look for '10 cpi' in name. The 'cpi' denotes a native printer font. Fonts such as 'Courier 10 cpi' and 'Sans Serif 10 cpi' print slower than 'Utility 10 cpi' or 'HSD 10 cpi' or equivalent.
  - If a fast native printer font is not found, try installing an alternate driver, particularly with Epson drivers. If Epson, search on Epson support site for 'scalable font' driver.
  - Use a the Microsoft generic text driver.
  - Sage Customer Support cannot assist with this procedure and does not guarantee optimal results




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REPORT CONVERSION

- o *MASCRCW.EXE* and *MASCRCW.INI* (\Mas90\Home)
  - Not run as part of migration or conversion
  - To use run *MASCRCW.EXE* or "convert as you go" method
  - Run on legacy forms and reports.
  - Attempt to run on BF reports
- o Attempt is made to update .RPT to use current dictionary
- o No guarantee .RPT will convert properly when converting from legacy to BF
  - You may need to manually fix .RPT or recreate it from scratch.
- o Adds "Converted to Version x.xx" in File / Summary Info / Keywords
- o When printing a Crystal report from inside of MAS 90/200, "x.xx" in Keywords is checked against "Key=" value in *MASCRCW.INI* file
  - If it doesn't match, Conversion Wizard appears.




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GENERAL PERFORMANCE TIPS

- o When modifying standard Crystal reports and forms, when possible, instead of adding/joining a table, add the desired column to the existing worktable by sourcing the worktable's Business Object
- o Consider using views – may require 'Select Distinct' in Crystal to avoid data from repeating in some views
- o If you are adding Logos to the form make the image as small as possible.
- o Sub-reporting is often faster than using left outer joins.




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GENERAL PERFORMANCE TIPS

- o Nongraphical forms still available for use legacy modules
  - Choose by module which forms will print graphically in Setup menu under Options
- o Use MS Access queries or queries from other ODBC applications to produce same output if Crystal is too slow. Create Access DSN on each workstation and point Crystal to that
  - Avoids overhead of Crystal print engine(s)
  - If duplicates or #DELETED appears in query, use the 'Unique Values' option in query properties so that 'Select Distinct' is used in SQL Statement
  - Reports using the Access Driver cannot be added to 'Custom Reports' on the menu.
  - Enforce Double must be selected when pulling data from MAS into Access.




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GENERAL PERFORMANCE TIPS

- o Grouping/sorting time often reduced by using formulas instead of fields
- o Don't group on 'database fields' as data will be sorted/grouped over the network by the workstation
- o Hanging and high CPU usage may occur at workstation
- o Group on 'formula fields' so that "server" will send data down to workstation unsorted, which then sorts the data locally → MAJOR PERFORMANCE INCREASE!
- o 'Perform Grouping on Server' option works similarly but is for SQL databases only and not compatible with 'Convert Database Null Values to Default' which is needed for printing legacy forms.




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LEGACY PERFORMANCE

- o A/R Statements <= 4.05
  - Create a formula called @SortOnServer pointing to {AR\_20CrystalStmntPrinting.SortKey}. Change Group Header 1 to use this formula field. (When grouping by a field create a formula using only that field then group by that formula)
  - File / Report / Options: Select the option *Use Indexes or Server for Speed*
  - In Visual Linking Expert, change LOJ on ARD\_SalespersonMasterfile (ARD) to an Equal Join if printing the Salesperson Name. If Salesperson Commission Reporting not used then remove the Name field. This will remove all ARD table references from the SQL query.




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LEGACY PERFORMANCE

- o Examples of making legacy forms run faster
  - In all cases when making changes to legacy forms choose Database / SQL Query / Reset
  - Purchase Order Form
    - o Change Left Outer Join to APE\_TermsCodeMasterfile to an Equal Join or remove Terms Code Description from form
  - A/P Check and Payroll Check
    - o If using MICR, change LOJ to GL\_CheckMier table to an Equal/Inner Join.
    - o If not using MICR, remove the @MICR database field from form (which removes table from SQL statement)




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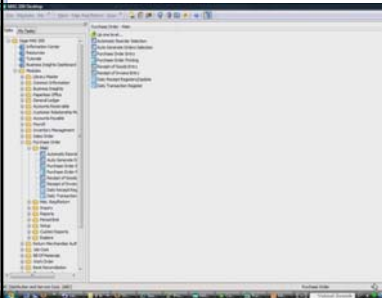
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LINKED SUBREPORT




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REMOTE PRINTING MAS 200

- o Client/Server ODBC Driver for 4.10+
  - Processes ODBC on MAS 200 server
  - Copies .RPT to client (as necessary) and Crystal print engine processes it locally
  - Performs well but not conducive to low speed connections
  - Ideal for high speed WAN connections
  - For LAN workstations and TS/Citrix connections, better performance with regular client based driver
  - Carefully go over KB article: *How to Install and Configure Client Server ODBC Driver-Res 451950*




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CS ODBC REMOTE PRINTING FOR MAS 200

The image shows four screenshots from a Windows XP environment:

- System Configuration (MSD) ODBC17**: A dialog box with 'Enable ODBC Driver' checked and 'ODBC Driver Name' set to 'MSD ODBC Driver'.
- System Configuration (MSD) ODBC17**: A dialog box with 'Enable ODBC Driver' checked and 'ODBC Driver Name' set to 'MSD ODBC Driver'.
- Services**: A screenshot of the Windows Services console showing the 'MSD ODBC Driver' service. A red box highlights the 'Start' button, and a red arrow points to the 'Start' button.
- System Configuration (MSD) ODBC17**: A dialog box with 'Enable ODBC Driver' checked and 'ODBC Driver Name' set to 'MSD ODBC Driver'.

•Set up System

•Enable User

• Install service

• Set up service

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### REMOTE PRINTING

- Crystal Enterprise / Web Reports
- Special installation instructions in [Sage Software Online](#) > Downloads > Installation information supersedes any other instructions. Do not use Keycode on the CD
  - ODBC processing on server → .RPT is saved with data in `.\mas90\reports\web folder`
  - IIS box has CE installed which will spool data from the 'saved with data' .RPT to the workstation's browser
  - Crystal Activex control is installed in workstation's IE browser.
  - Printing is done through the Crystal toolbar (Activex control), not browser's Print option
  - Above info describes Sage MAS 200 implementation of CE → NOT the Business Objects "out of the box" implementation

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### REMOTE PRINTING

- Terminal Services (TS) / Citrix
  - Most widely used Crystal remote printing solution for both MAS 200 and MAS 90.
  - The TS/Citrix box typically resides in same server room as the "MAS Server" and may be connected to the same common switch.
  - When running Workstation Setup be sure to run it from another computer in a Remote Desktop session or an ICA client session.
  - Do not run Workstation Setup directly at the TS/Citrix server. Otherwise "not enough memory for operation" or "error in formula" errors occur when printing forms.

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**COMMON ERRORS**

- Multiple MAS90 databases in Crystal Report after adding tables to an existing report or form.
  - Exit the report the reopen, remove the table and verify database. After logging onto the SOTAMAS90 DSN add the table back.
- Repeating or missing data
  - Improperly linking tables
  - Placing fields from both a header table and details table in the Details section
    - Either create a group for the header table and place the header fields in the group section
    - OR
    - Use the SELECT DISTINCT option in File / Report Options
  - linked data from a subreport



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**QUESTIONS?**



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