

Purpose & Scope

The purpose of this document is to provide examples of reports using Microsoft Excel® with Instrument Manager™ and ODBC. It is not intended to be a highly technical document in scope, but rather a high level tutorial on how to extract information from Instrument Manager using Microsoft Excel. It is intended to be a living document and serve as a central repository for information regarding this topic

Intended Audience

The intended audience for this document is Data Innovations LLC direct customers and Data Innovations'® business partners and their customers.

Definitions

ODBC – Open Database Connectivity provides an industry standard method for two
applications to share data. In this document, Microsoft Excel (one application) is querying
and extracting data from Instrument Manager's database (second application) for ad-hoc
reports.

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Overview

The purpose of this document is to provide examples of reports using Microsoft Excel® with Instrument Manager and ODBC.

Report Application:

Information can be extracted from Instrument Manager with ODBC access using an ODBC-compliant application such as Microsoft Excel, Crystal Reports, Open Office, etc... The most common ODBC-compliant application in the laboratory is Microsoft Excel® and the reason for using it for our example reports. If you are using another application, this guide should provide guidance on how to develop similar reports in other applications.

Microsoft Excel® 2007 was used in the development of this guide. The same instructions can be used for Microsoft Excel 2003 user being cognizant of the differences in how Excel 2003 screen appear different than 2007.

How to Develop an Example Report:

To develop any of the example reports, follow these steps:

- 1. Review the *Before You Begin* section (page 2)
- 2. Perform the *Importing Data from Instrument Manager* instructions (page 3)
- 3. Perform the *Modifying the Data in Excel* instructions (page 6)
- 4. Perform one of the reports examples from the Creating a Report section

Before You Begin. . .

Before you begin using these instructions, you need to ensure:

- Your version of Instrument Manager is v8.08 to v8.14 and has the ODBC and Specimen Management software module licensed.
- Ensure "Allow Extrinsic Functions in SQL Statements" in the Instrument Manager database is enabled (See Appendix A on page 15 for Instrument Manager v8.08 v8.14).
- The end-user system connecting to Instrument Manager has ODBC connectivity established as defined in ODBC User's Guide for Instrument Manager.
- The end-user system has Microsoft® Excel 2003 or above. (These instructions were written using Microsoft Excel 2007).
- User should have at least a basic understanding of pivot tables / pivot charts in Excel.

Consideration(s):

 The SQL statement in *Importing Data from Instrument Manager* section extracts information of all specimens in Instrument Manager. If your data retention is larger than 30 days or you have large daily specimen volumes, you should consider modifying the SQL query statement.



Importing Data from Instrument Manager This process defines how to extract key data from Instrument Manager to develop reports. **Action / Description** Step 1 With Excel open, select From a Microsoft ₩ 17 - C1 - @ Q) ∓ Query from the Data → Other Sources Insert Page Layout Formulas Data Review menu. Connections A Z A Z A From Other Sources Connections All Connections From Other Sources Connections All Connections From Other Sources Connections C From Web From Text Z↓ Sort Access Get Exte From SOL Server From SQL Server Create a connection to a SQL Server table. Import data into From Analysis Services Create a connection to a SQL Server Analysis Services cube. Import data into Excel as a Table or PivotTable report. 2 From XML Data Import From XML Data Import Open or map a XML file into Excel. 3 4 From Data Connection Wizard 5 Import data for an unlisted format by using the Data Connection Wizard and OLEDB. 6 7 From Microsoft Query 8 Import data for an unlisted format by using the Microsoft Query Wizard and ODBC. 9 2 From the Choose Data Source window, Choose Data Source select the Instrument Manager ODBC connection and select OK. Databases Queries OLAP Cubes OK <New Data Source: CACHE Samples* CACHE User dBASE Files* Options. MS Access Database* 2 ✓ Use the Query Wizard to create/edit queries 3 Select Cancel on the Query Wizard -Query Wizard - Choose Columns Choose Columns window to close the What columns of data do you want to include in your query? wizard. Available tables and columns: Columns in your query: Select Yes in the preceding confirmation CalTaskField CalTaskTest dialog box (Do you want to continue editing CalTest this Query in Microsoft Query?) ⊕ Carrier Preview of data in selected column

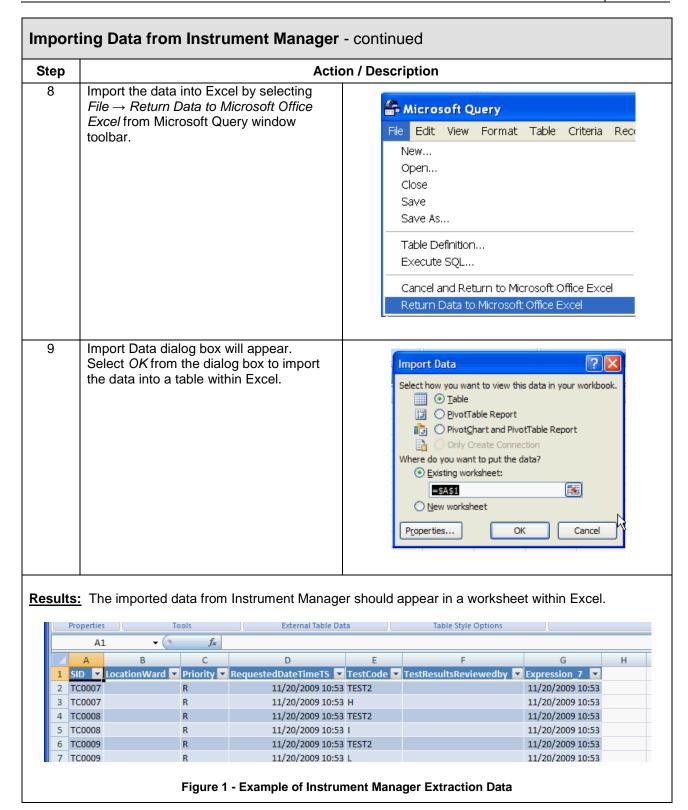
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tep	Actio	on / Description
4	Select Close on the Add Tables window.	Add Tables Table: CalResult CalTaskField CalTaskTest CalTest Carrier Carrier CBLayout CBResource Options Schema: (All)
5	Select the SQL button on the tool bar in Microsoft Query to enter the SQL statement to import the data from Instrument Manager.	File Edit View Format Tak SQL
6	Insert the following SQL statement into SQL statement window for the appropriate version of Instrument Manager. Instrument Manager v8.08 – v8.14 SELECT sinfo.SID, pinfo.LocationWard, sinfo.Priority, sinfo.RequestedDateTimeTS, tinfo.TestCode, tinfo.TestResultsReviewedby, cast(\$\$timestamp^imconvert(status.DateTime) as TIMESTAMP) As ReleasedDateTimeTS FROM IM_SM.pinfo pinfo, IM_SM.sinfo sinfo, IM_SM.status status, IM_SM.tinfo tinfo WHERE sinfo.Patient = pinfo.Patient AND tinfo.Specimen = sinfo.Specimen AND tinfo.Patient = pinfo.Patient AND ((tinfo.TestStatus='Released')) AND (status.Test=tinfo.Test) AND (status.Status='Released'))	
7	Select <i>OK</i> from the resulting confirmation window.	Microsoft Query SQL Query can't be represented graphically. Continue anyway? OK Cancel Help

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Modifying the Data in Excel

This process defines how to modify and format the data after it is extracted from Instrument Manager in preparation for developing the report(s).

Step	Action / De	escription
1	In cell H1, enter 'TAT' (without the quotes) for the label of this new column.	H I 7 ▼ TAT ▼ 9 10:53 ♥ ▼
2	In cell <i>H2</i> , enter the equation '=G2-D2' (without the quotes) to subtract the result time from the sample arrival time and then copy the formula for all the rows in the spreadsheet for column H.	G H I sion 7 TAT 2009 10:53 =G2-D2 2009 10:53 0 2009 10:53 0
3	Copy and Select <i>Column H</i> and change the format of Column H to <i>h:mm:ss</i> by going to Home → Format → Format Cells → Custom and select OK.	Format Cells Number Alignment Font Border Fill Pr Category: General Number Currency Accounting Date Time Percentage Fraction Scientific Text Special Custom Custom Scientific Time Thirm:ss AM/PM h:mm:ss AM/PM h:mm:sm AM/PM h:mm:sm AM/PM h:mm:sm AM/PM h:mm:sm AM/PM h:mm:sm AM/PM

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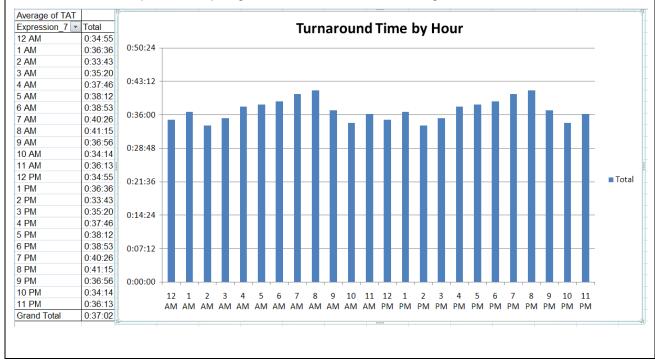
Report: Turnaround Time

Description of the Report:

This report provides the turnaround time by hour for all the test results in Instrument Manager. It is based on the assumption that the test arrival date/time is established when the order is downloaded from the LIS and the result completion date/time is based on the date/time of the result from the instrument.

Example of the Report:

Below is an example of the report generated from Instrument Manager into Microsoft Excel.



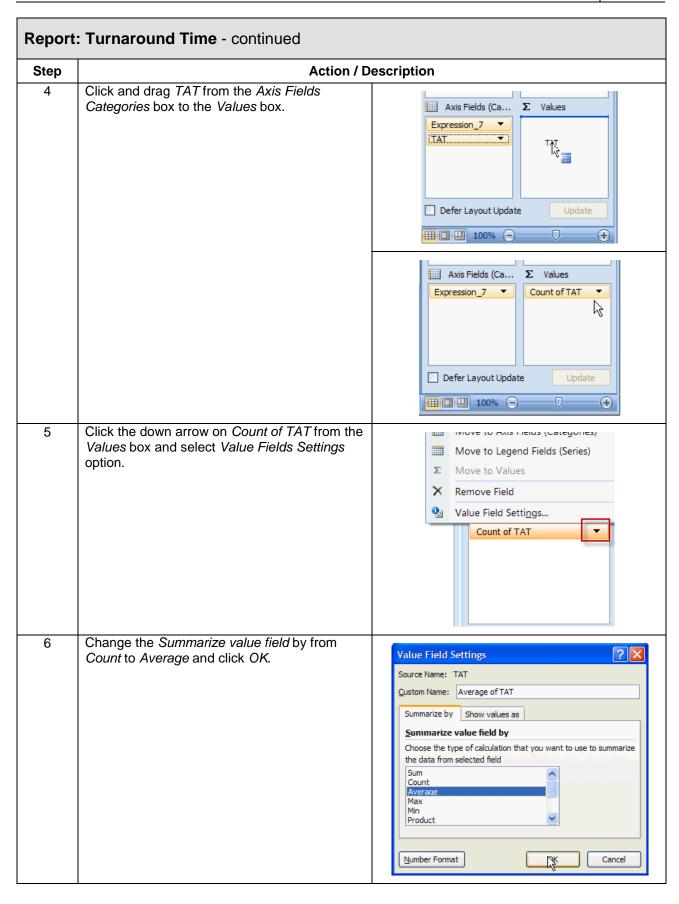
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Step		escription
1	Select a cell within the new dataset and select PivotChart from the Insert → PivotTable menu.	Home Insert Pag PivotTable Table Picture Clip Art Illust RivotChart B 1 SID LocationWard F
2	Select OK and using the default values from the Create PivotTable with PivotChart dialog box.	Create PivotTable with PivotChart Choose the data that you want to analyze Select a table or range Table/Range: Table Query from IM_ODBC Use an external data source Choose Connection Connection name: Choose where you want the PivotTable and PivotChart to be placed New Worksheet Existing Worksheet Location: CANCEL CANCEL
3	Click the checkbox next to Expression_7 and TAT in the PivotTable Field List box.	PivotTable Field List Choose fields to add to report: SID LocationWard Priority RequestedDateTimeTS TestCode TestResultsReviewedby Expression_7 ▼ TAT

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tep	Actio	n / Description
7	Select the Column B (all the values in the Average TAT column) and change the format to h:mm:ss by going to Home → Format → Format Cells → Custom and select OK.	B1
		Number Alignment Font Border Fill Pro Category: General Number Currency Accounting Date Time Percentage Fraction Scientific Text Special Custom Cust
8	Select any cell in <i>Column A</i> (e.g. A3) that is not a label and right-click and select ' <i>Group</i> ' from the menu.	10 11/20/200 11 11/20/200 12 11/20/200 13 11/20/200 14 11/20/200 15 11/20/200 16 11/20/200 17 11/20/200 18 11/20/200 19 Grand Tot 20
9	Select Hours from the Grouping dialog box and deselect Months and click OK.	Auto Starting at: 11/20/2009 10:53:09 Ending at: 11/20/2009 10:53:42 By Seconds Minutes Hours Days Months Quartors Years Number of days: 1



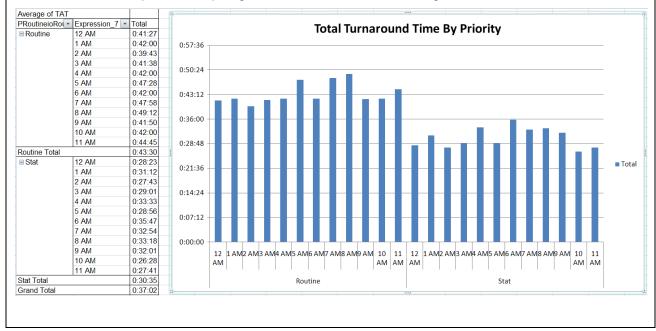
Report: Turnaround Time by Priority

Description of the Report:

This report provides the turnaround time by hour and by specimen priority for all the tests in Instrument Manager. It is based on the assumption that the specimen arrival date/time is established when the order is downloaded from the LIS and the result completion date/time is based on the date/time of the result from the instrument.

Example of the Report:

Below is an example of the report generated from Instrument Manager into Microsoft Excel.





Report	: Turnaround Time by Priority - continue	ed
Step	Action / Description	
1	Select a cell within the new dataset and select PivotChart from the Insert → PivotTable menu.	Home Insert Pag PivotTable Table Picture Clip Art PivotChart B 1 SID V LocationWard V F
2	Select OK and using the default values from the Create PivotTable with PivotChart dialog box.	Create PivotTable with PivotChart Choose the data that you want to analyze Select a table or range Table/Range: Table_Query_from_IM_ODBC Use an external data source Choose Connection Connection name: Choose where you want the PivotTable and PivotChart to be placed New Worksheet Existing Worksheet Location: OK Cancel
3	Click the checkbox next to Priority, Expression_7 and TAT in the PivotTable Field List box.	PivotTable Field List Choose fields to add to report: SID LocationWard Priority RequestedDateTime TestCode TestResultsReviewe Expression_7 ▼TAT

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Report: Turnaround Time by Priority - continued **Action / Description** Step 4 Click and drag TAT from the Axis Fields Categories box to the Values box. Axis Fields (Ca... Σ Values Expression_7 ▼ Defer Layout Update Update **III** 100% (-) III Axis Fields (Ca... Σ Values Expression_7 ▼ Count of TAT b Defer Layout Update Update **(III** 0 | 100% (-) Click the down arrow on Count of TAT from the iviove to Axis Fields (Categories) Values box and select Value Fields Settings Move to Legend Fields (Series) option. Σ Move to Values X Remove Field Value Field Settings... Count of TAT Change the Summarize value field by from 6 Value Field Settings Count to Average and click OK. Source Name: TAT Custom Name: Average of TAT Summarize by Show values as Summarize value field by Choose the type of calculation that you want to use to summarize the data from selected field Count Product Number Format Cancel



Step	Actio	n / Description
7	Select the Column C (all the values in the <i>Total</i> column) and change the format to h:mm:ss by going to <i>Home</i> → <i>Format</i> → <i>Format Cells</i> → <i>Custom</i> and select <i>OK</i> .	A B C 1 Average of 1 2 Priority ▼ Expression_7 ▼ Total 3 ■ Routine 7/14/2009 0:41 0.028784722 4 7/14/2009 1:42 0.029166667 5 7/14/2009 2:39 0.027581019 6 7/14/2009 3:41 0.028912037 7 7/14/2009 4:42 0.029166667 7/14/2009 5:47 0.032962963 9 7/14/2009 6:42 0.029166667 10 7/14/2009 7:47 0.033310185
		Number Alignment Font Border Fill Pro Category: General Number Currency Accounting Date Time Percentage Fraction Scientific Text Special Custom Counting Date Time Percentage Fraction Scientific Text Special Counting Date Time May Physical Counting Text Special C
8	Select any cell in Column A (e.g. A3) that is not a label and right-click and select 'Group' from the menu.	10 11/20/200
9	Select Hours from the Grouping dialog box and deselect Months and click OK.	Grouping Auto Starting at: 11/20/2009 10:53:09 Finding at: 11/20/2009 10:53:42 By Seconds Minutes Hours Days Months Quarters Years OK Cancel

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Appendix A: Database Configuration for Instrument Manager v8.08 - v8.14

This process defines how to ensure a key database configuration option is enabled to allow advanced SQL statements Instrument Manager system using ODBC for Instrument Manager.

Step	Actio	n / Description
1	On the Instrument Manager system, click on the Cache (blue cube) icon in the lower right corner of your desktop.	10:30 AM
2	Select System Management Portal from the Cache menu that appears.	Terminal System Management Portal Documentation Remote System Access Preferred Server [CACHE] About Exit
3	For v8.08 and v8.09 Enter "Admin" as the User Name without the quotes and "SYS" as the Password and click on the Login button. For v8.11 and above: The login / password is based on the user login and password and their security rights in Instrument Manager.	Please enter your user name and password to login: User Name: [logn Hee Password:] Logn Logn
4	Select Configuration from the InterSystem's System Administration page.	System Licensed to Home About Help Logout [Home] System Administration System administration tasks Configuration Security Management Licensing Database Encryption

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Appendix A: Database Configuration for Instrument Manager v8.08 - 8.14- continue		
Step	Action / Description	
5	Select SQL Settings from the InterSystem's System Confirguration page.	System Configuration Configure settings for this system Namespaces
		> Local Databases > Remote Databases
		 Memory and Startup Database Backup Settings Journal Settings
		 Task Manager Settings SQL Settings Studio Source Control Settings
6	Ensure Allow Extrinsic Functions in SQL Statements option is set to Yes.	grity Checks on Foreign Keys for INSERT, UPDATE, and DELETE: Yes V Default SQL Schema Name: SQLUser Allow Extrinsic Functions in SQL Statements: Yes V on for GETDATE(), CURRENT_TIME, and CURRENT_TIMESTAMP: 0 (0
7	Click the Save button in the lower-right of the window to the configuration options.	Save Cancel
8	Close the browser window for the InterSystems System Management Portal by clicking the red-X (close button) in the upper-right corner of the browser window.	

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