

Raising Standards. Bridging Technologies. Building Value.

# TL 9000 Measurements and Benchmarking

#### Ken Koffman & Tom Yohe 2009 EMEA Best Practice Conference



#### Raising Standards. Bridging Technologies. Building Value.

#### Agenda

- TL 9000 Performance Data Report (PDR) data
  - Lets understand what is published what, when, and how
- PDR Outputs
  - Monthly Average, Best in Class, Worst in Class, & Industry Average
- How to access the data
- How to analyze and use
  - Positioning your product
  - Validating data
  - Setting targets
  - Handling Anomalies
- Tracking performance to targets
- Summary

#### References

- TL 9000 Measurement Outputs and Calculations Release 4.0
  - Latest revision 1 June, 2007
  - Located on Member's Performance Data Reports page and at:

http://www.tl9000.org/tl resources/TL 9000 Measurement Outputs and Calculations.pdf

How to Use QuEST Forum TL 9000
 Measurement Performance Data Reports

http://www.tl9000.org/tl\_resources/PDR\_Usage.pdf

#### Acknowledgements: PDR Improvement Team

- Vinny Arrigali Cisco
- Rod Bothwell Desera Group
- Ed Bryan Adtran
- Beth Ford AT&T
- Jim Hudec Cisco
- Ken Koffman BigBand Networks EB Sponsor
- Sandy Laird Cablcon
- Richard Morrow UTD
- Mark Shirahama Tellabs
- Alice Woo Juniper Networks
- John Wronka Alcatel-Lucent Sub-team Lead
- Tom Yohe Telmar Network Technology

## Lets Understand the PDR Data: What, How, and When

## What is published?

- For each Product Category, we publish all required measurements
- For each measurement, we publish
  - Monthly Average
  - Best in Class
  - Worst in Class
  - Industry Average
  - # of data points associated with each of above

Copyright 2009 QuEST Forum. All Rights Reserved Copyright 2009 QuEST Forum. All Rights Reserved

## **Monthly Average**

- Composite average
- For a given measure
  - All submitted values are summed
  - Resulting sums are used in the formula for the measurement
- Represents overall performance based on all of the data submitted for the month
- Same method all measurements

#### **Best In Class**

- Best performance smoothed data
- Single certified registration
- Submitted data for each month of smoothing period (minimum 6 months)
- To be included in Best In Class the sum of the Registrations submissions must be either:
  - >=2% of the sum of the denominators for all submissions or

>= threshold value for the category which ever is smaller

FRT/OFR based on NPR denominators

#### **Worst In Class**

- Worst performance smoothed data
- Single certified registration
- Submitted data for each month of smoothing period (minimum 6 months)
- To be included in Worst In Class the sum of the Registrations submissions must be either:
  - >=2% of the sum of the denominators for all submissions,
  - >= threshold value for the category, or
  - >= 5% of sum of numerators for all submissions

### **Industry Average**

- Composite average of all data for the smoothing period from the eligible data
- FRT and OFR based on average value calculation for comparability to BIC/WIC
- Therefore, includes only certified registrations that have submitted data for each month of the smoothing period (minimum 6 months) and has over 2% of the reported population or meets floor threshold number

#### **Data Rules**

- Data from certified registrations only
- At least three separate companies
- Process governed by Section 3.5.1 e) in the Measurements Handbook

#### **Basics**

- All data converted to identical basis
  - Calendar month
  - Most current revision
- Last 24 months calculated each time
- Multiple submissions from same registration (TL ID) aggregated
- Multiple registrations from same company not combined (except for 3 company rule)

Copyright 2009 QuEST Forum. All Rights Reserved Copyright 2009 QuEST Forum. All Rights Reserved.

#### Monthly Average Example NPR1

Submission	#1	#2	#3	#4	#5
Np1	2	5	4	2	3
NPRs	15	30	20	16	30

- Np1 sum = 2+5+4+2+3 = 16
- NPRs sum = 15+30+20+16+30 = 111
- Monthly Average NPR1 = 12\*16/111 = 1.73

Copyright 2009 QuEST Forum. All Rights Reserved Copyright 2009 QuEST Forum. All Rights Reserved

## **Smoothed Outputs**

- Want Best In Class and Worst In Class based on sustained performance
- Data smoothed by using composite average for six or twelve month period
- Calculated by TL registration ID for smoothing period
- No number calculated if data not available for each month of the period

#### **Smoothing Periods**

- Six months

   NPR, FRT, OFR, OTI, SFQ, SPR
- Twelve months

   OTS, SO, SONE, EIO, FR, SQ
   Report after six months for new category

#### **FRT & OFR Exception**

- Value set to 100% if there is no data
  - No problems due for FRT
  - No problems overdue for OFR
- Using composite average would penalize perfect monthly performance
- Smoothed number based on average of the monthly calculated values

#### **FRT2 Average Example**

Month	1	2	3	4	5	6
Fr2c	0	0	1	0	0	0
Fr2d	0	0	1	1	0	0
FRT2	100	100	100	0	100	100

Average value = 500/6 = 83.3%
Composite value = 1/2 = 50.0%

Copyright 2009 QuEST Forum. All Rights Reserved Copyright 2009 QuEST Forum. All Rights Reserved

#### **Eligibility Floors**

- Vary by product category and measurement
- Example 3.2.4 DSL NPR – 500 NE's
   FRT – 120 NE's (from NPR)
   OTI – 600 items
   SONE – 500 NE's
   FR – 50,000 FRU's
- Table 6 in reference document

Copyright 2009 QuEST Forum. All Rights Reserved Copyright 2009 QuEST Forum. All Rights Reserved.

#### **Zero Denominator Rules**

- Numerator and denominator are zero 0/0
- Numerator >zero and denominator = zero n/0
- Possible interpretations

0 100% Not Valid No Data

#### **Zero Denominator Rules**

Measurement NPR1,2,3 NPR4 FRT2,3,4 **OFR2,3,4** OTI OTS **SO1-4 NEO1-4** 

0/0 Not valid No data 100% 100% No data No data No data No data

**n/0** Not valid n/1 Not valid Not valid Not valid Not valid Not valid Not valid

Copyright 2009 QuEST Forum. All Rights Reserved Copyright 2009 QuEST Forum. All Rights Reserved

### **Zero Denominator Rules**

Measurement	0/0	n/0
EOF/IOF	No data	n/1
ERI, YRR, LTR	No data	Not valid
NYR	No data	n/1
SFQ	No data	n/n
SPR1,2,3	Not valid	Not valid
SQ	No data	n/n

## 2009 Schedule

Processing and Posting Date	Date of Data
31-Jan-09	Dec 2006 through Nov 2008
28-Feb-09	Jan 2007 through Dec 2008
28-Mar-09	Feb 2007 through Jan 2009
25-Apr-09	Mar 2007 through Feb 2009
30-May-09	Apr 2007 through Mar 2009
25-Jun-09	May 2007 through Apr 2009
27-Jul-09	Jun 2007 through May 2009
29-Aug-09	Jul 2007 through Jun 2009
26-Sep-09	Aug 2007 through Jul 2009
31-Oct-09	Sep 2007 through Aug 2009
28-Nov-09	Oct 2007 through Sep 2009
26-Dec-09	Nov 2007 through Oct 2009

#### Access to PDR Data – Members

- 1. Log in at questforum.org or tl9000.org
- 2. Select "Member's Area" from left menu
- 3. Select "Performance Data Reports" under "Resources" from center menu
- 4. Read usage agreement and select "I Agree"
- 5. View on line or download single product category or download all product categories

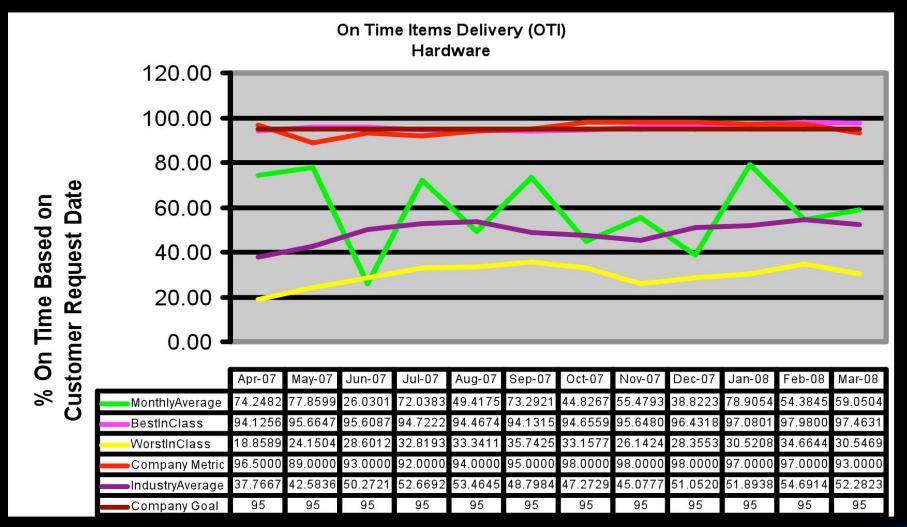
## **Purchase of PDR Data**

		One Category	All Categories
Introductory Pricing	QuEST Forum Affiliate (Liaison Member, TL 9000 Registered Company)	\$250	\$1,250
ry	Not a QuEST Forum Affiliate	\$500	\$2,500
Long-Term Pricing	QuEST Forum Affiliate (Liaison Member, TL 9000 Registered Company)	\$500	\$2,500
n	Not a QuEST Forum Affiliate	\$2,500	\$15,000

### **Importing PDR data into Excel**

- Open the text file in a text editor such as Notepad.
- Select all the text in the file and Copy.
- Open Excel.
- Go to a convenient cell and select Paste.
- Next select the column with the text, all rows.
- Select Data then Text to Columns.
- Click the delimited radio button.
- Click the Comma check box only. Do not select the Space check box.
- Make sure the 'Treat Consecutive Delimiters as One' is not checked.
- Click Next then Finish
- Detailed step by step procedure is included at end of presentation

## Example



Copyright 2009 QuEST Forum. All Rights Reserved Copyright 2009 QuEST Forum. All Rights Reserved

## **Available to All TL 9000 Registrants**

- Annual Data
- Published once per year for prior calendar year
- Accessible through the RMS
  - Log into RMS
  - Select a registration
  - View private registration profile
  - Double click category number

#### ANNUAL INDUSTRY DATA

QuEST Forum TL 9000 Annual Data Report For The Year 2008

Product Category 3.2.6.3 Digital Video Cable Transmission Equipment

Requirement 3.5.2 i) of the TL 9000 Quality Management System Measurements Handbook, Release 4.0, directs TL 9000 certified organizations to "compare internal measurements to the available industry performance data reports and take steps to improve products and processes as appropriate". To assist TL 9000 registrations in meeting this requirement the QuEST Forum provides the following data for each registration's product categories. The average data below is derived from data submitted for the year 2008 from all valid TL 9000 registrations to the TL 9000 Measurements Repository System.

	Average
asurement	Value
NPR1	0.00511
NPR2	0.00297
NPR3	0.00202
FRT2	87.1
FRT3	95.8
OFR2	74.5
OFR3	66.0
OTI	87.9
301	0.199
202	6.98
503	0,188
304	5.74
NEO1	0.00309
NE02	0.147
NE03	0.0108
NEO4	0.907
NYR	0.0648
ERI	3.31
YRR	3.45
LTR	3.66
SFQ	0.528
SPR1	0.00124
SPR2	0.000902
SPR3	0.000448

Nes

#### **XML Access**

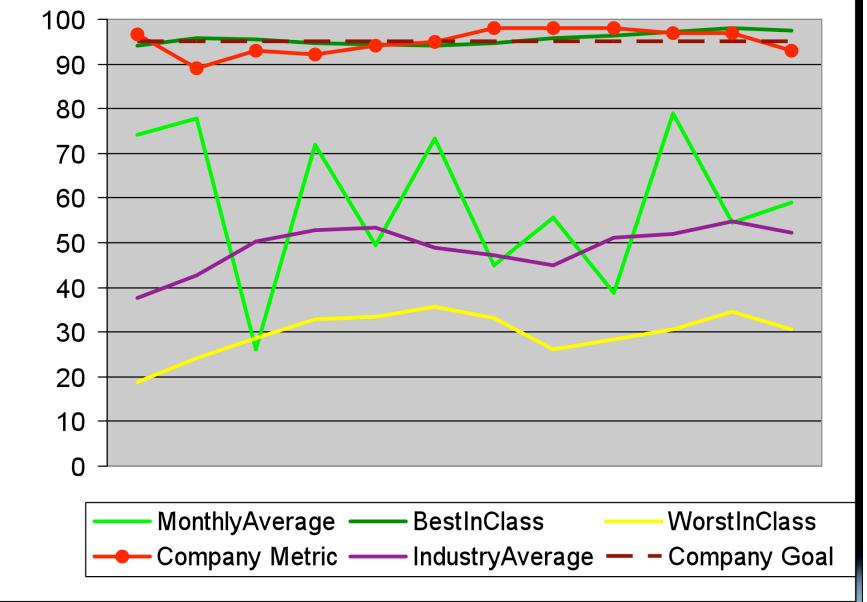
 Contact UTD for information on setting up XML access to the Trend data

 Contact button on the web site or e-mail to contact@questforum.org

#### How to Analyze and Use Trend Data

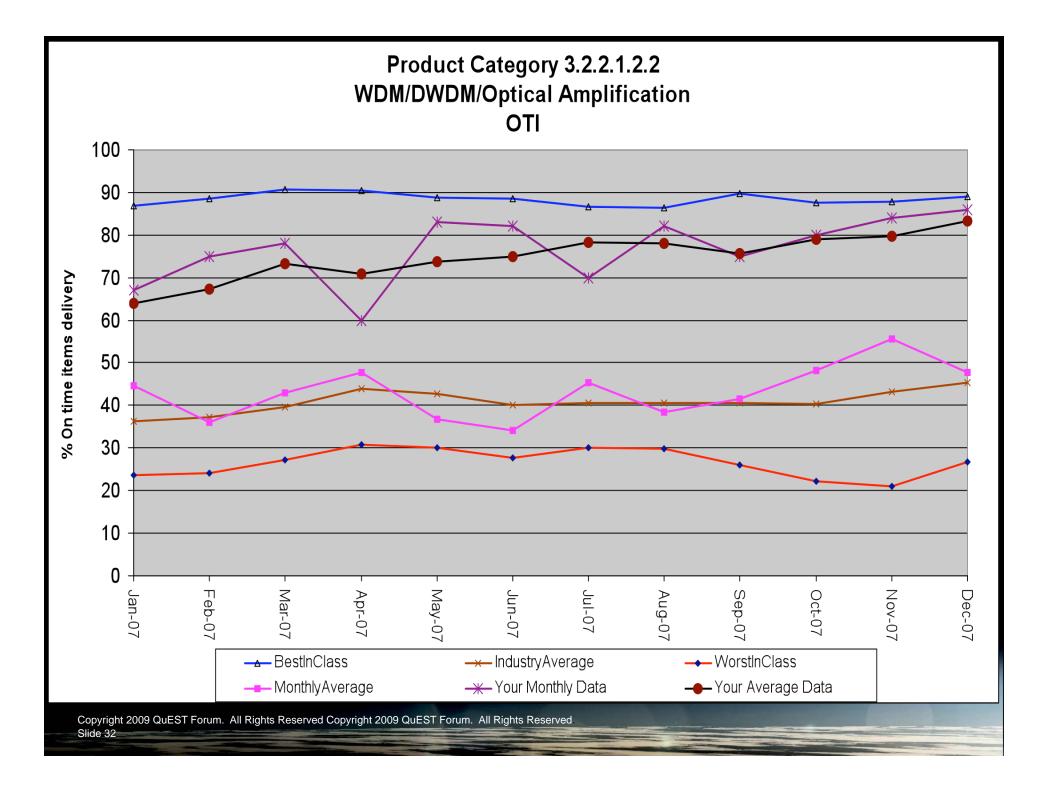
#### **On Time Items Delivery (OTI)**





#### **Observations**

- BIC, WIC, and IA stable compared to Monthly average
- Company data also relatively smooth and near BIC and goal
- Goal setting discussed later



#### **Observations**

- Company's monthly data more volatile
- Chose to smooth with 3 month running average
- Resulting plot shows strong evidence of continuous improvement
- 65% to 85% on time over the 12 months

## Validating the Data

#### **Identifying the Competition**

- Need to understand who is contributing data in your product category
- Tools available on tl9000.org

• From top menu select – TL 9000 Registration Registered Companies

File Edit View Favorit		=avorites 🚱 忌 = چ 📨 = 🔜 鑬 🚷 🔏		
	000.org/registration/registered_compa		💌 🄁 Go	Links »
Que		anies.html         000 REGISTRATION       ALERTS AND NEWS       REGISTRARS & AUDITORS       TRAINING       RESOURCES       HANDBOOKS         T going any server of the company's certified TL 9000 registration, enter the first few letters of the company name below or click on the appropriate letter. Please note that TL 9000 registrations that are not yet certified are not displayed.         Company Name:         Search by Company Name         Alpha Search         A dyanced Search         Nume:         Compary Name:         Search by Company Name         Alpha Search         Advanced Search         Nume:         Compary S I U V W X Y Z         Advanced Search         T source of QuEST Forum member organizations.         Click here for a complete listing of QuEST Forum member organizations.         Date of Registration and statistics, click on the appropriate listing.         Registrations by Date of Registration         Alpha Registration Locations by Country         Certified Registration Locations by Country         Certified Registration Locations by Regions of the World         Certified Registration Locations by Regions of the		

### **Searching TL Registered Companies**

- Can search by:
  - Company
  - Product Category (under Advanced Search)
  - Use specific reports
- Report 3 Certified Registrations by Product Category
- Note all reports are dynamic based on data at the time they are run

Copyright 2009 QuEST Forum. All Rights Reserved Copyright 2009 QuEST Forum. All Rights Reserved.

Slide 37

## Example - TL Registered Companies (10-Jun-09)

Product Category	Product Category Name	No. of Certified Registrations	No. of Certified Companies
1.1	Circuit Switch	14	11
1.2.2	Access Multi-service	20	17
1.2.3	Media Gateways	4	3
1.2.5	Broadband Multi-service	1	1
1.2.6	Packet Gateway	3	3
1.2.7	Application Servers	9	8
1.2.8	Service and Network Controller (SNC)	8	5
1.2.9.1	Core Routers	12	11
1.2.9.2	Edge Routers	17	16
1.2.9.3	Access Routers	2	2

## **1.2.8 SNC**

Registered Name	TLID
Lucent Technologies – Switching Solutions	<u>1016</u>
Alcatel-Lucent (North America)	<u>1056</u>
Alcatel Shanghai Bell Company Limited	<u>2363</u>
Alcatel FSD	<u>4238</u>
Huawei Technologies Co., Ltd.	<u>2207</u>
Nortel, Carrier Networks & Common Engineering	<u>2444</u>
Xener systems	<u>3518</u>
ZTE Corporation	<u>3161</u>

## **Observations**

- Can go from Report 3 to listing for category
- This example 8 registrations, 5 companies
- Can go from category list to scope for each registration examine for
  - H, S, or V or combination (determine measures being reported)
  - Locations
  - Products

Slide 40

– Exclusions

## **Analysis**

- Are these my key competitors / customers?
- How much of the market is represented?
- If key competitors missing or if only small portion of market is there, are BIC or WIC useful?
- Do I use only Industry Average?
- What is the delta between IA and Monthly Average?
- Other sources? Benchmark study?

## **Impact of Your Data**

- Use competitive analysis to assess what percent of the data going in is yours
- Need to gauge the industry statistics if contribution is large
- If you are large contributor and just below IA – true IA likely higher than shown
- Opposite effect if you are higher then IA

## **Setting Targets**

- Product life cycle
  - New/growing, mature/volume, maintenance, end of life?
- Importance of measure to customer
  - Expectations, SLAs, score cards / objectives
- Capability to improve
- Cost to improve
- Not going to go for BIC for all measures for all products

Copyright 2009 QuEST Forum. All Rights Reserved Copyright 2009 QuEST Forum. All Rights Reserved.

Slide 43

## **Anomalies**

## **Anomalies**

- All statistical data will have anomalies
- Variability should not immediately cause you to discard the data
  - Important competitive information is likely still available for use
- Understanding counting rules, exclusion rules, measurement population can allow Organizations to utilize this competitive information

## **How Do You Interpret When:**

- The Best in Class for the measurement is consistently perfect?
- The Worst in Class is much worse than the average?
- You see spikes/valleys in the Monthly averages

## **Perfect Best in Class**

- Remember, BIC data point for a month is:
  - A single company's performance
  - Their performance over most recent 6/12 month period for that measurement
  - They are a significant "player" in the market for this Product Category
    - They must also represent > 2% of the NU's for a normalized measurement (or have > defined threshold)

## **Perfect Best In Class (Cont.)**

- So what could a perfect BIC mean?
  - Company could be measuring mature product(s)
    - Those late in life cycle will tend to perform better
      - OTD, NPR, OFR tend to show better performance late in life cycle
      - Lower NPR tends to allow better FRT performance
    - Research registered companies/product to determine if this applies
  - Company could exceed minimum thresholds but still have a small portion of total market
    - Research registered companies/product to determine if this applies
  - Combination of two items above
    - Try to understand contribution when multiple products in Product category
      - High % of mature product will likely show better results vs. equal distribution of product deployments

Copyright 2009 QuEST Forum. All Rights Reserved Copyright 2009 QuEST Forum. All Rights Reserved.

Slide 48

## **Perfect Best in Class (Cont.)**

- So if you see perfect BIC, what should you do?
  - Acknowledge consistent excellent performance by competition
    - At least one company is able to consistently perform at "perfect" levels (6/12 months consecutively)
  - Don't immediately accept that this is performance you need to strive for
    - Review competitors registered in Product Category
    - Look at how many data points are included in BIC, when they entered
    - Try to identify products / market penetration for those products
    - Look at gap between Industry average and BIC
    - Make intelligent decision as to how representative the BIC could be
    - If its representative, you now know you have a high bar to strive for!
    - Now set your objectives consistent with your organization's strategy

## **Perfect BIC - Example**



#### **Worst in Class Far Below Industry Average**

- Pay attention when you see this
  - You want to understand integrity/impact on Industry Average
    - Just as for BIC, WIC is a single company's performance
    - WIC represents their performance over most recent 6/12 month period for that measurement
    - They're a significant "player" for the measure for this PCT
      - They must also represent > 2% of the NU's for a normalized measurement (or have > defined threshold)
      - Or the Organization's contribution to the numerator for that measurement must represent > 5% of the total for the time window

Copyright 2009 QuEST Forum. All Rights Reserved Copyright 2009 QuEST Forum. All Rights Reserved.

Slide 51

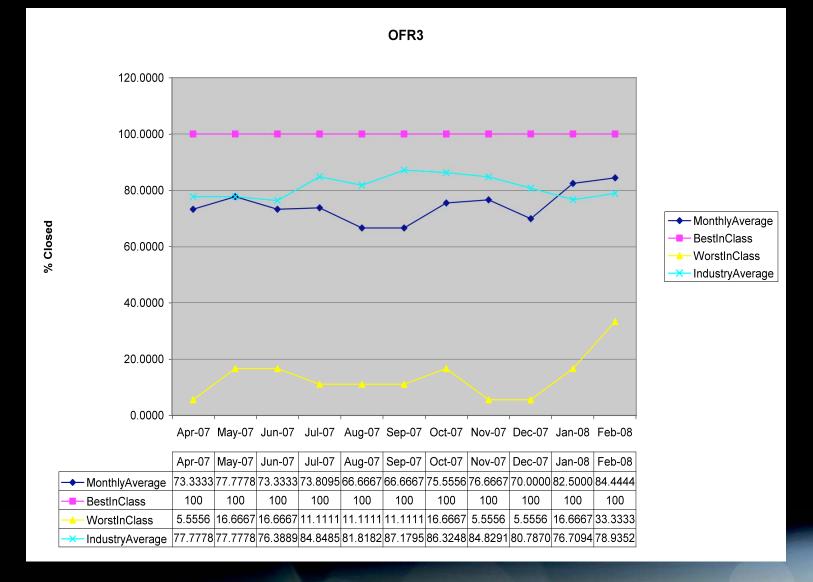
## WIC Far Below IA (Cont.)

- So what should you do to interpret this situation
  - Look at the registered Organizations
  - Look at how many data points are included in WIC
    - Review when Organizations became certified and when their data could begin to be eligible
  - Try to identify products / market penetration for Organizations likely included in data
  - Look for potential "event" driven spikes
    - Could see this by seeing simultaneous shift for WIC and IA
    - Single event for smaller "player" could create large shift between WIC and IA
    - Make intelligent decision as to how representative the WIC and IA could be

Copyright 2009 QuEST Forum. All Rights Reserved Copyright 2009 QuEST Forum. All Rights Reserved.

Slide 52

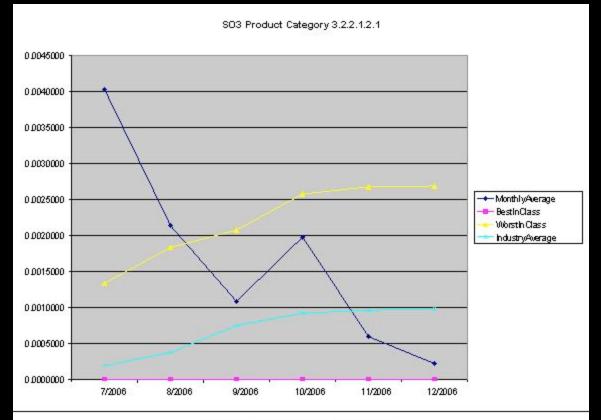
## **WIC Far Below IA - Example**



## Spike in Monthly / Industry Average

- Understand difference between measures
  - Monthly Average is single month's performance
  - Industry Average represents sustained performance (6/12 months)
  - Therefore, significantly more volatility in Monthly Average vs IA.
  - But reviewing difference between MA and IA provides clues to whether:
    - Shift is "event" driven
    - Shift influenced by large or less significant player in Product Category
- Look at nominal performance over 2 year period
  - Measures with optimum steady state performance have heavier influence from individual events
    - Examples: Outage data for high reliability PCTs, Return Rates for mature product
- Watch for # of Registered Organizations / data points changing
  - WIC performers leaving market will often generate spike
    - When this occurs, you would see a smaller scope spike in WIC
  - Suspensions due to lack of data submissions can also drive spikes
- Understand the seasonal nature of Monthly Data
- Make intelligent decision as to what spike could mean

#### Spike in Monthly / Industry Average Example



#### SO3 Product Category 3.2.2.1.2.1

Measurement-SO3	7/2006	8/2006	9/2006	10/2006	11/2006	12/2006
MonthlyAverage	0.0040330	0.0021358	0.0010849	0.0019784	0.0005955	0.0002202
BestInClass	0.0000014	0.0000012	0.0000012	0.0000012	0.0000004	0.0000000
WorstInClass	0.0013355	0.0018348	0.0020769	0.0025764	0.0026765	0.0026906
IndustryAverage	0.0001934	0.0003734	0.0007497	0.0009207	0.0009628	0.0009817
MonthlyAveCount	15	15	15	15	15	15
BestInClassCount	4	5	6	6	6	6
WorstInClassCount	4	5	6	6	6	6
IndustryAveCount	4	5	6	6	6	6

# **Monitoring Performance**

#### **Best Practices for Monitoring TL Measurement Performance**

- TL 9000 allows multiple submissions of data by an Organization for a particular Product Category
  - Often useful when tracking
    - Multiple products
    - Multiple locations
    - Multiple processes
  - When used, all Organization's data for a single registration is aggregated when creating PDR
  - Differentiation can
    - Help Organization see weaknesses before it impacts PDR data
    - Appreciate performance across segmented areas within Organization

#### **Best Practices for Monitoring TL Measurement Performance**

## • Tracking of Performance vs. Objective

- Pictures work better than words
- Colors / highlights for message key to driving needed change
- Trend charts key in seeing performance shifts
- Charts should show calculations consistent with PDR definitions to support comparability
- Charts should incorporate PDR performance (i.e., BIC, IA, MA, WIC)

#### **Best Practices for Monitoring TL Measurement Performance**

### Setting of Objectives

#### - Objectives systemically reviewed for applicability

- Annual is best practice, not more frequent than semi-annual unless market focus changes
  - Constant goal shifts causes churn in organization

#### Set long and short term goals

 Helps organization understand whether performance optimization or process revamping is required long term

#### Key inputs in determining goals

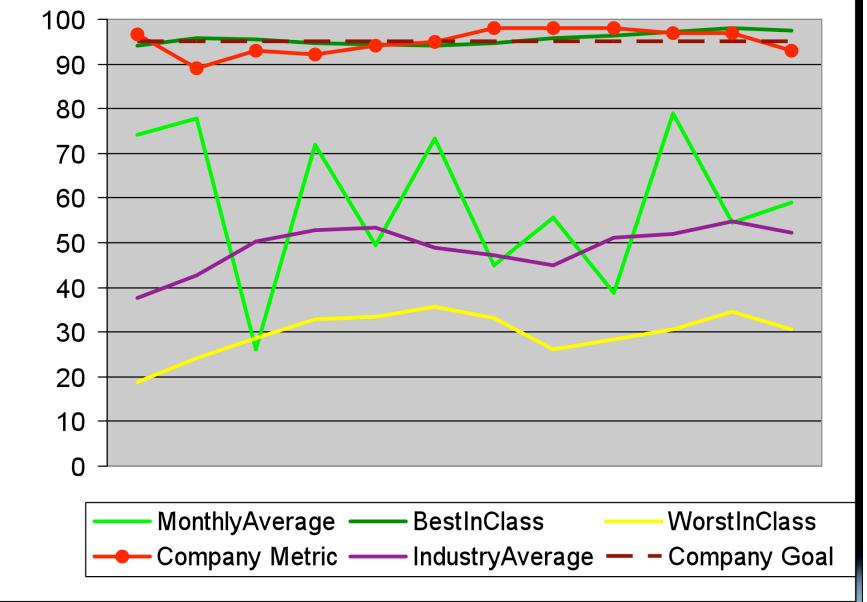
- Corporate strategy
- Current performance
- Industry Benchmarking (ex., TL 9000 PDR data)
  - Do due diligence when interpreting industry performance
  - Review Organizations included, data stability, data integrity
  - Use as important tool and act when appropriate

Copyright 2009 QuEST Forum. All Rights Reserved Copyright 2009 QuEST Forum. All Rights Reserved.

Slide 59

#### **On Time Items Delivery (OTI)**





## **Scenarios**

- Target set at 95% close to BIC
- What if:
  - Planning to exit the market?
  - Key growth product?
  - Customer puts premium on OTD?
- For SO Measurement, if your products are a key parts of network – likely to set target at BIC

## **Performance Improvement**

- Reason behind this analysis is to determine areas for improvement
- Likely to require capital investment, manning, and other resources
- Need to treat as a project and use your standard business process improvement techniques

#### **Using TL Measurements to Drive Continuous Improvement**

- Include TL Measurement performance and/or improvement in business dashboard / scorecards
- Make objectives (short and long term) very visible to all stakeholders
  - Be smart in setting / adjusting objectives (previous slide)
  - Objectives should be aggressive for strategic focus areas
- Incent executives, teams, and stakeholders based on performance and/or improvement
- Routinely report on performance to all stakeholders
  - Emphasize Organization's performance and trend relative to industry performance
  - Clearly note when direct competitors are in industry data

## **Feedback Wanted**

- PDR Usage Paper
- Need input on
  - usefulness of data
  - what is missing
  - what can be left out
- IGQ team solicited for feedback

# Discussion area open on QF Website (under IGQ)

 <u>http://portal.questforum.org/questVer2/jsp/workgroup/mssgBoard/</u> showTopics.jsp?forumId=6&team\_id=4

## Q&A

## **Contact Information**

- "TL 9000 Measurements Outputs and Calculation – Release 4.0" on tl9000.org
- Contact function on either web site
  - questforum.org
  - tl9000.org
- Richard Morrow rmorrow@utdallas.edu
- Ken Koffman ken.koffman@bigbandnet.com
- John Wronka jwronka@alcatel-lucent.com
- Tom Yohe tom.yohe@telmarnt.com

## Step by Step Instructions to Import Data into Excel

# How can you incorporate into your performance results?

- Import information into Excel spreadsheet
  - Download text file via
    - Individual Product category Download
    - Download all PCT data via Zip File
  - Convert text to Excel usable information
  - Import into Organization's performance charts to show industry average, BIC, and WIC on your performance charts
  - See following example for 1.1 Switching

## **Download txt file from PDR Area for PCT**

#### TL9000-TrendData-1.1-2007July28.txt - Notepad

#### 

File Edit Format View Help BProductCategory 1.1BCopyright 2007 by QUEST Forum for licensed use only. Derived from TL 9000 certified data on 28 July 2007[🔼 .0. - o.o. 0.0. 0.0, 0.0, 0.0, 0.0, 0.0, ō.o. 0560MonthlyAveCount 11. 12, 10. 11. 11. 11. 10. 10. 10. 10. 10. 10. 10. 10. /2007, MonthlyAverage 0.07234574. 0.17306875. 0.17570719. 0.21378052. 0.10588235. 0.15903604. 2.2787476, 2.1067505. 2.1135912. 1.9958122. 54. 2.229773. 2.0967376. 2.016265. 1.8418118. 9. Я. 9. 9, 12, 12, 12, 1200ProductCategory 1.10Copyright 2007 by QuEST Forum for licensed use only. Derived from TL 9000 certified data on 0.005988024, 0.01793722, 0.011102207, 0.01102032, 0.011422482, 0.00945762, 0.0038033861, 0.0, 0.00945762, 0.0038033861, ģ, 0.4641910MonthlyAveCount 11. 11, 12, 11. 11. 10. 10. 10. 10. 10, 12, 10. 10. 3/2007.0MonthlyAverage 007, 80.72484. 86.84117. 87.141304, 81.619995. 94.494675. 74.68254, 81.097885, 80.63492, 81.349205, 80.75397, 65.47619, 80.15873, 58.104397, 9, 8. 9. 9. 9. 9. 12. 12. 1200ProductCategory 1.10Copyright 2007 by QUEST Forum for licensed use only. Derived from TL 9000 certi 10. 100.0, 100.0. 100.0. 100.0. 1ÕO.O, 100.0. 100.0. 100.0. 95.95764, 96.762150MonthlvAveCount 11. 11. 12, 11, 12, 12, 10, 10, 10, 10, 10, 10, 2/2007. 3/2007, MonthlyAverage 60.988125, 53.54635. 56.427933, 53.745026. 53.568 17.788921, 15.737638, 14.12114, 13.33091, 9.409341, 8.695055, 9.091881. 10.190782. 12.380 9, 8, 9, 9, 8, 9. 9. 12, 12, 1200ProductCategory 1.10Copyright 2007 by QUEST Forum for licensed use only. Derived from TL'S 10, 10, 100.0, 100.0, 100.0, 100.0, 100.0, 100.0, 100.0, 100.0, 100.0 39.5687560MonthlyAveCount 11, 11, .448265. 36.687126. 11. 12. 12, 12, 12, 10. 10, 10. 10. 10. 10. 3/2007, DMonthlyAverage 1/2007. ź/2007, 87.853035. 88.591064. 83.868614. 80.178986. 27827, 26.713781, 29.86111. 34.89294, -27.472958. 22.831417. 21.504686, 20.933088, 16.028955, 5, 5, 5, 5, 4. 4. 6. 62914, 0.022362057, 0.020040696, 0.0182615670MonthlyAveCount 8, 8, 8. З, З, З, з. з. 4 ź/2007, 1/2007, 3/2007, DMonthlyÁverage 12/2006, 1.1240654. 1.5651798, 2.3019252, 10.701533, 10.695833, 9.892389, 9.798436, 2.369563. 0015. 5.203365. 4.9592066. 5.048611. З, 4. 3. 3. 3. 4, 5, 5, 5, 5, 500ProductCategory 1.10Copyright 2007 by QUEST Forum for licensed 1805, 0.0010977682, 0.0011316012, 0.0011408159, 0.0011475738, 0.0011891874, 0.00114005, 7.7877473E-4, 7.4597425E-4, 0.010010273, 0.009587856, 0.008823366, 0.0079881860MonthlyAveCount 50405, 8, 8, з, з, з, īí/2006. 12/2006. 1/2007. ź/2007. 0.6124206. 0.64209765. 0.98636764, 1.2068357, 1.6587147, 0.5047155, 0.7143813, 1.3696764, 5237. 4.2286553, 4.080167. з, З, 4, 4. з, з. З. з. **4**, 500ProductCategory 1.10Copyright 2007 by QUEST Foru DMonthlyAveCount 2, <sup>2</sup>, 1/2007, <sup>2</sup>, 2/2007, 2, 2, 2, 2. 2, 2. 11/2006, 3/2007,OMonthlyAverage /2006. 12/2006, , , , , 1, 1, 1, 1, 1, 1. 1. 1. 1. 1. 1. 200ProductCategory 1.10Copyright 2007 by . ,

### Highlight all data in file and click "copy"

D TL	.9000-TrendD	ata-1.1	1-2007July28.txt - Notepad	
File	Edit Format	View	Help	
7,	Undo	Ctrl+Z	8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8	800ProductCategory 1 0.022987038, 0.018270401,
1124 7,	Cut	Ctrl+X	020575095, 0.020911392, 0.021763343, 0.020026777, 0.018359695, 7, 7, 7, 7, 7, 7, 7, 7, 7,	0.0175842380MonthlyAveCount 8,7,
7, 8/2 8735	Сору	Ctrl+C	7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7	3/2007,0MonthlyAvera 36.492393, 9.929722,
ssco	Paste	Ctrl+V	8. 8. 8. 9. 8. 8.	7, 7, 8. 800Pro
7, ncla 95e-	Delete	Del	0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0,	ó.o. o.o.
3, 7/2 4556	Find	Ctrl+F F3	3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3	3. 3.
5	Replace	Ctrl+H	2 2 2 2 2	3, 3, 3, 3,
8961 6Е-4	Go To	Ctrl+G	22/15E-4, 0.0010154684, 9.609053E-4, 9.339641E-4, 8.489263E-4,	
, 6/20 225, 5,	Select All Time/Date			3, 3, 1/2007, 2/2007 0.15998754, 0.35566095, 3, 3,
607E 41,	-4, 5.5988: 0.00191617	13E-408 6, 0.0	Bestinclass 3, 2.321368E-4, 1.5457788E-4, 1.1891351E-4, 1.123 0019584782, 0.0020617465, 9.38624E-4, 9.2938554E-4, 7.777673E-4, 7.	315014E-4, 1.1893102E-4, 1 402056E-4, 6.775446E-4,
2006 7, 11,	, 6,20 5.1786966	006, 1,	6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6	12/2006, 1/2007, 3.336007, 3.4221296, 3, 3, 3,
3469 7,	3, 5, 0.638 0.5815175	7107, , (	3, 4, 4, 6, 6, 6, 0.85169870BestInClass , 0.21880339, 0.23654117, 0.2 0.5696429, 0.565944, 0.57360274, 0.6104943, 0.6062456, 0. 5, 4, 4, 3,	5, 29086527, 0.30464402, 0 87776047, 0.86359537,
006, , 0,	, 5/20 23.805769, <u>11</u>	06, ,	5, 5, 4, 4, 4, 3, 6/2006, 7/2006, 8/2006, 9/2006, 10/2006, 22.17237, 22.7989, 23.501215, 24.14825, 24.71496, 23 11, 110BestInclassCount , 7, 7,	11/2006, 3.422003, 0.538419, 7, 7, 7,

6, 0.00BestInclass

0, 6/2006,

15.

0.0,

0, 0, 0.059492140BestInClass

150BestInClassCount

0, 7/2006,

8, 100.0,

0,

0.0,

0.0,

150BestInClassCount

8, 100.0,

0, 0,

0, 9/2006,

0.0,

0, 0,

>

7, 100.0,

0, 10/2006,

0.0,

Copyright 2009 QuEST Forum. All Rights Reserved Copyright 2009 QuEST Forum. All Rights Reserved. Slide 70

0.0,

0.0,

15.

0, 0.049334947,

15.

6/2006,

0.0,

7, 7.5471697, 0.0,

15.

4/2006,

5,

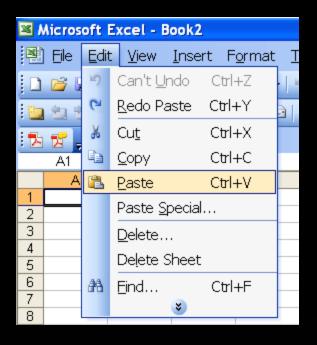
0, 3/2006,

0.0,

## **Open spreadsheet and Paste Data**

 Put Cursor on Cell A1 in empty spreadsheet

## Click Edit/Paste



## **Result looks like**

	NCrosoft Excel - Bo	OKZ											
	Eile Edit View I	insert F <u>o</u> rma	at <u>T</u> ools <u>D</u> a	ita <u>W</u> ind	ow <u>H</u> elp	Ado <u>b</u> e	PDF						
1	📂 🖬 🔒 🎿 🞑	🕰   X 🗈 🛍	- 🤊 - 😣	$\Sigma \cdot \stackrel{A}{z} \downarrow \stackrel{Z}{A}$	100 🗎	% •	🕜 🧯 Aria	al		<b>-</b> 10	• B I	Ū∣≣	= = •
: 🖢	1 1 2 S 1 1	3 X) 🗿 🔩	🔁 🕅 Reply	with <u>C</u> han									
1	77 . 💷 .												
	A1 🔻 🏌												
4	A B	C E	) E	F	G	Н	1	J	K	L	M	N	0
2	ProductCategory 1.1												
	Copyright 2007 by QuE	ST Forum for liv	censed use only	Derived fr	nm TL 9000	certified	data on 28 J	uly 2007					
	Measurement-NPR1	4/2005		6/2005	7/200				10/2005.	11/2005.	12/2005	5. 1/20	06, 2/
	MonthlyAverage	0.017447794					0.01526771			010843459			2511816.
		0.0030237432		0.0	0.0		0. 0.0				.0. 0.		0. 0
	WorstinClass		0.122711174,		27, 0.1191		0.1190266,				0.1196343	0.1259458	
	Industry Average		0.019276131				0.018257674				0.0163591		
	MonthlyAveCount	. 11.	11,	12,	11,	11,	10,	13,	15,	14.	14,	13,	13,
10	BestInClassCount	, 10,	10,	10,	9,	9,	9,	9,	9,	9,	9,	9,	12,
11	WorstinClassCount	, 10,	10,	10,	9,	9,	9,	9,	9,	9,	9,		12,
12	IndustryAveCount	, 10,	10,	10,	9,	9,	9,	9,	9,	9,	9, 1		2,
13													
	ProductCategory 1.1												
15	Copyright 2007 by QuE	ST Forum for li	censed use only	. Derived fr	om TL 9000	certified	data on 28 J	uly 2007					
	Measurement-NPR2	, 4/2005		6/2005	7/200				10/2005,	11/2005,	12/200		
	MonthlyAverage	, 0.07234574,		0.175707			0.15903604				0.12520659		1228, 0.08
		0.0060698027,					0.006015037				0059790732		5474, 0.0
	WorstinClass ,	1.6036717,	1.5120482,	1.5000968				1.6837224,				.7853029,	1.83328
	IndustryAverage ,	0.07352101,	0.08941518,	0.106810			0.13826062,				0.15112257,	0.14443	
	MonthlyAveCount	. 11.	11,	12,	11,	11,	10,	13,	15,	14,	14,	13,	13,
	BestInClassCount	. 10,	10	10,	9,	9,	9,	9,	9,	9,			12,
	WorstInClassCount	, 10,	10,	10,	9,	9,	9,	9,	9,	9,	9,	9,	12,
	IndustryAveCount	, 10,	10,	10,	9,	9,	9,	9,	9,	9,	9,	9, 1	2,
25													
	ProductCategory 1.1				TI 00000		1.1.07.1	1 0007					
	Copyright 2007 by QuE								0.0005	44,0005	10,000	4.00	
	Measurement-NPR3	4/2005		6/2005	7/200				10/2005,	11/2005,	12/2005		
	MonthlyAverage	0.7447564,	0.765328,	0.949284				0.8359291				0.01110	
	BestInClass ,	0.032518502,	0.032877557	0.033467			.030075189,				0.01793722		
	WorstInClass	3.4006474, 0.69208425.	3.197282	3.2403057	3.67305			1.1982007	4.120356			126624,	3.693326
	IndustryAverage ,	. 0.69206425,	0.6864944	0.723125	3, 0.8647 11.	549, U. 11.	.91987425, 10.	0.9416072	4, 0.9157 15.	7786, U.: 14	9216817, 14.	0.90416193 13.	3, 0.743 13.
	MonthlyAveCount BestInClassCount	. 10.	10.	12, 10,	9.	9,	9.	9,	9.	9.			13,
	WorstInClassCount	. 10,	10,	10,	9, 9,	9, 9.	9, 9.	9,	9.	9.	9.		12, 12.
	IndustryAveCount	. 10,	10,	10.	9, 9,	9.	9, 9,	9.	9.	9.			2.
37	muusu yAveCuunt	, 10,	10,	10,	5,	э,	э,	5,	0,	5,	5, 5	2, 1	4,
	ProductCategory 1.1						_	-			-		
	Copyright 2007 by QuE	ST Forum for li	concod uco only	Derived fr	- m TL 9000	certified	data on 28 Ji	uly 2007	-		-		
	Measurement-FRT2	. 4/2005		6/2005.	7/2005				0/2005.	11/2005.	12/2005	1/20	DG 20
- NU	measurementer RTZ	. 4/2003	, 3/2000,	w2000,	12000	, 012	2000, 37,	2003, 1	0/2000,	11/2000,	12/2003	, 1720	00, 21.

## **Convert data to usable format**

- Highlight column you pasted data into
- Click on Data/Text to Columns ...

M 🕅	\icro	sofi	: Ex	cel-B	00	k2														
	Eile	Ē	dit	<u>V</u> iew	In	sert	Forma	t <u>I</u>	ools	Dat	a <u>)</u>	<u>N</u> indo	w	Help	Ado <u>b</u>	e Pl	DF			
1	2		ai	AR	1.69	L X	E (2	- 1	0 - 1	A↓	Sor							Aria	al	
:						\$   m			· · ·		-					1		100	a	
1	2		2	o 🖄		S	🄰 🖳	()	₩∛Re		Eilte	er			•					
:											Vaļi	datior	۱							
· 🛌		7	27	5							Tex	/t to (	°alu	mns						
	A1				fx				-				Joiu	111113	•	-			-	
	A	1		В		С		)	E		Lįst				•			I		J
1	Dund		Ī.		-		_						*						-	
				ory 1.1		T F	and the second s				Devi		т			al al a		20.1		2007
<u> </u>	Сору	rign		NDD1	162	I For	Im for lie	cense	e use	oniy. רב	Derr	ved tro	mι	2 2000	centifie		ata or 105.		шу 200	
4	Mont	iurer MucA	<b>P</b> ent			0.017	4/2005 447794	<u> </u>	0/201 00000	100	0.01		200	0.000						
							447794 37432,									ο, ι 0.0		20771 0.0		0.0
							82192,													).126
				ge			433346,													
							11,													13.
	Bestl						10,		10,		10.		9,		9,		9,		9	
				Count			10,		10,		10,		9,		9,		9,			I.
	Indus						10,		10,		10,		9,		9,		9,		9,	
13		1			Ė								•						Ľ	
14	Produ	JetC	ateg	ory 1.1																
15	Сору	right	1 200	i7 by Qi	JES	T Foru	um for lie	cense	ed use	only.	Deri	ved fro	mΤ	L 9000	certifie	d da	ata or	i 28 Ji	uly	2007
16	Meas	urer	ment	-NPR2			4/2005			JS,	6/	2005,		7/200	5,	8/20	105,	9/	200	
17	Mont	hlyA	wera	ge		0.07	234574,	0.1	173068	375,	0.17	757071	19,	0.213	78052,	0	1590	3604,	1	D. 105
18	Bestl	nCla	18S	·	, 0		98027,													
19	Wors	tInC	lass			1.603	36717,	1.5	12048	2,	1.500	)0968,	1	1.51498	346,	1.58	37893	7,	1.6	8372
20	Indus	tryA	wera	ge		0.073	52101,									0.	13826	6062,		
																				13,
	Bestl						10,		10,				9,		9,		9,		9	
				Count			10,		10,		10,		9,		9,		9,			I,
24	Indus	tryA	waCi	ount			10,		10,		10,		9,		9,		9,		9,	

## Select "Delimited" radio button and click

ext" 🖻	Microsoft	Excel -	Book2						
	144		Colored They Area -	ormat T	ools Data	<u>W</u> indow	Help ,	Adobe PDF	
1	) 📬 🖫 🖁	_	2. 123. X ⊑						Arial
1	<b>a</b> 4a 4a 6	A CONTRACTOR	1301	ALE VALUE AN	AND REPORT	A San Sa Galan M	SOUCH CO.	and a second sec	
1. Contraction of the second s	5 💅 🚽 i s								
	A1	<b></b>	fx						
	A	В	С	D	E	F	G	Н	I J
1	ProductC	J.	onvert Tex	t to Colur	nns Wizar	d - Step 1	of 3		28
3	Copyright Measurer	2007 b rent-NF	The Text Wizard If this is correct,	has determine	d that your da	ita is Fixed Wid	ith.	bes vour data.	
567	MonthlyA BestInCla WorstInC	verage ss	Original data typ Choose the file	pe type that bes	t describes you	ur data:			
8	IndustryA MonthlyA	verage veCoun	O Elimited ○ Fixed wide			ommas or tabs columns with sp			
10		and the second second second							
12		veCoun	Preview of selec	ted data:					
14	Copyright	2007 b	2 ProductCs 3 Copyright			m for lice	nsed use	only. Deriv	ved fr
18	MonthlyA	verage	4 Measureme 5 MonthlyAv	ent-NPR1 Verage	:	4/200 0.01744779	5, 4, 0.0	5/2005, 02038198,	0.016
18	WorstInC	ss	6 BestInCla	155	, 0	.003023743	2, 0.000	36295608,	>
20 21 22	MonthlyA	veCoun				ancel	< Back	<u>N</u> ext >	Einish
24	Destincia	scour							

#### In delimiters Box, make sure only "Comma" is checked. Then click "Finish"

	Aicrosoft	Excel	- Book2
	Eile Ed	it <u>V</u> ie	w <u>I</u> nsert F <u>o</u> rmat <u>T</u> ools <u>D</u> ata <u>W</u> indow <u>H</u> elp Ado <u>b</u> e PDF
10	📬 🖬 🛔	14	🕰 🛛 🗶 🖻 🛍 • 🖉 • 👷 Σ • 💱 👬 🛍 100% 🛛 🖝 🎯 🦉 🕅 Arial
1	2 2 0		🔄 🗁 🏷 🏂 😼 🕼 🚩 Reply with Changes End Review
1		_	
	A1	-	fx
	A	В	
1		1	
2	ProductCa	egor	Convert Text to Columns Wizard - Step 2 of 3
	Copyright		This screen lets you set the delimiters your data contains. You can see
	Measurem		how your text is affected in the preview below.
5	MonthlyAv	erage	
	BestInCla		Delimiters Treat consecutive delimiters as one
7	WorstInCl	ss	□ Tab □ Semicolon □ Comma
	IndustryA	erage	Space Other: Text gualifier:
9	MonthlyAv	eCou	
and the second second	BestInCla	sCou	1012-1020a
and the second se	WorstInCl	ssCc	Data preview
12	IndustryA	eCou	and the design of the second
13		-	
	ProductCa	cegor	ProductCategory 1.1
	Copyright	in the second	Copyright 2007 by QuEST Forum for licensed use only. Derived from 🧾
_	Measurem	and the second se	Measurement-NPR1
	MonthlyAv		MonthlyAverage BestInClass
the second se	BestInCla	s	
	WorstInCl	and the second se	
	IndustryA	and the second s	
	MonthlyAv	and party and pa	Cancel < <u>B</u> ack <u>Next</u> > <u>Finish</u>
22	<b>BestInCla</b>	sCoun	

# PDR data is now in spreadsheet for your PCT with monthly performance in columns

	🛎 Microsoft Excel - Book2													
	AICTOSOTE I	Excel - Bo	DOKZ											
	<u>Eile E</u> dit	: <u>V</u> iew	<u>I</u> nsert Fg	<u>o</u> rmat <u>T</u>	ools <u>D</u> at	a <u>W</u> indo	w <u>H</u> elp	Ado <u>b</u> e P[	DF					
	🞽 🖬 🔒		🕰   🔏 🖻	à 🛍 •   *	) - 😣 Σ	E - A   Z   A↓	100 🛄	% 🔽 🤇	🖉 🖁 Aria	l				
:	🛅 🖆 🖄 🖾 🏷 🖄 🖄 👘 🕼 🕅 WReply with Changes End Review 🖕													
_	A1 - fx ProductCategory 1.1													
	A B C D E F G H I J													
1	ProductCa:	egory 1.1												
2	Copyright 2007 by QuEST Forum for licensed use only. Derived from TL 9000 certified data on 28 July 2007													
3	Measurem	4/200	5/200	6/200	7/200	8/200	9/200	10/20	11/20	12/20				
4	MonthlyAv	0.017448	0.020382	0.016545	0.027484	0.015268	0.013936	0.010843	0.010747	0.012512				
5	BestInClas	0.003024	0.00363	0	0	0	0	0	0	0				
6	WorstInCla	0.122822	0.122711	0.112194	0.11912	0.119027	0.126342	0.131722	0.119634	0.125946				
7	IndustryAv	0.020433	0.019276	0.018134	0.01852	0.018258	0.017625	0.016915	0.016359	0.016489				
8	MonthlyAv	11	11	12	11	11	10	13	15	14				
9	BestInClas	10	10	10	9	9	9	9	9	9				
10	WorstInCla	10	10	10	9	9	9	9	9	9				
	IndustryAv	10	10	10	9	9	9	9	9	9				
12														
	ProductCat	<u> </u>												
	Copyright 2									*				
	Measurem	4/200		6/200	7/200									
			0.173069	0.175707	0.213781	0.159036		0.124277		0.115632				
	BestInClas	0.00607	0.006061	0.006051	0.006033	0.006015	0	0.005988		0.002185				
	WorstInCla		1.512048	1.500097	1.514985	1.587894		1.686368		1.785303				
		0.073521	0.089415	0.106811	0.129627	0.138261	0.142169	0.153217	0.151123	0.144435				
	MonthlyAv	11	11	12	11	11	10	13	15	14				
	BestInClas	10	10	10	9	9	9	9	9	9				
	WorstInCla	10	10	10	9	9	9	9	9	9				
23	IndustryAv	10	10	10	9	9	9	9	9	9				

## **Example Spreadsheet**



