



TL 9000 PERFORMANCE DATA AND ANNUAL REPORTS WEBINAR PART 2 OF 2

4 November 2020

Presented by Tom Yohe, TL 9000 Expert and TIA QuEST Forum Fellow

The Presentation will start soon! There may be silence before we start.



About TIA QuEST Forum

Who | Non-biased, Non-profit
Global
Proven track record

What | TL 9000, Sustainability, Customer Experience, Supply Chain Security, Culture of Quality
Networking/Best Practices Conferences
Benchmarking and Measurements

Why | Improve business performance
Supply Chain Management
Common quality language/standards for the ICT industry

What Is TL9000 ?

Created by the QuEST Forum

Globally recognized quality standard, designed to improve communications products: hardware, software and services

Built on ISO 9001 and its quality management principles

Includes requirements for continual improvement, customer satisfaction and reporting of industry standard measurements





Tom Yohe

TL 9000 Expert and TIA QuEST Forum Fellow

Tom is semi-retired and currently provides TL 9000 expertise and other support to TIA QuEST Forum. Tom's prior work experience in Reliability Engineering and Quality includes 7 years in Avionics prior to moving to Telecommunications. He has experience in all areas of reliability engineering, especially field performance monitoring. His last full-time position was as Quality Director for a multi-national telecommunications repair and reverse logistics company. Involved in the development of the TL 9000 Handbooks since the initial meetings in 1998, he is active in the Oversight and IGQ Work Groups.

Tom earned a BSEE from the University of Kansas. A former senior member of the ASQ, he was an officer of the Dallas Chapter of the IEEE Reliability Society for many years. Tom is a TIA QuEST Forum Fellow.



Using the TL 9000 Measurements Data

Tom Yohe
November 2020

Agenda

Analysis and use

- Positioning your product

- Validating data

- Setting targets

- Handling Anomalies

Tracking performance to targets

Summary

References

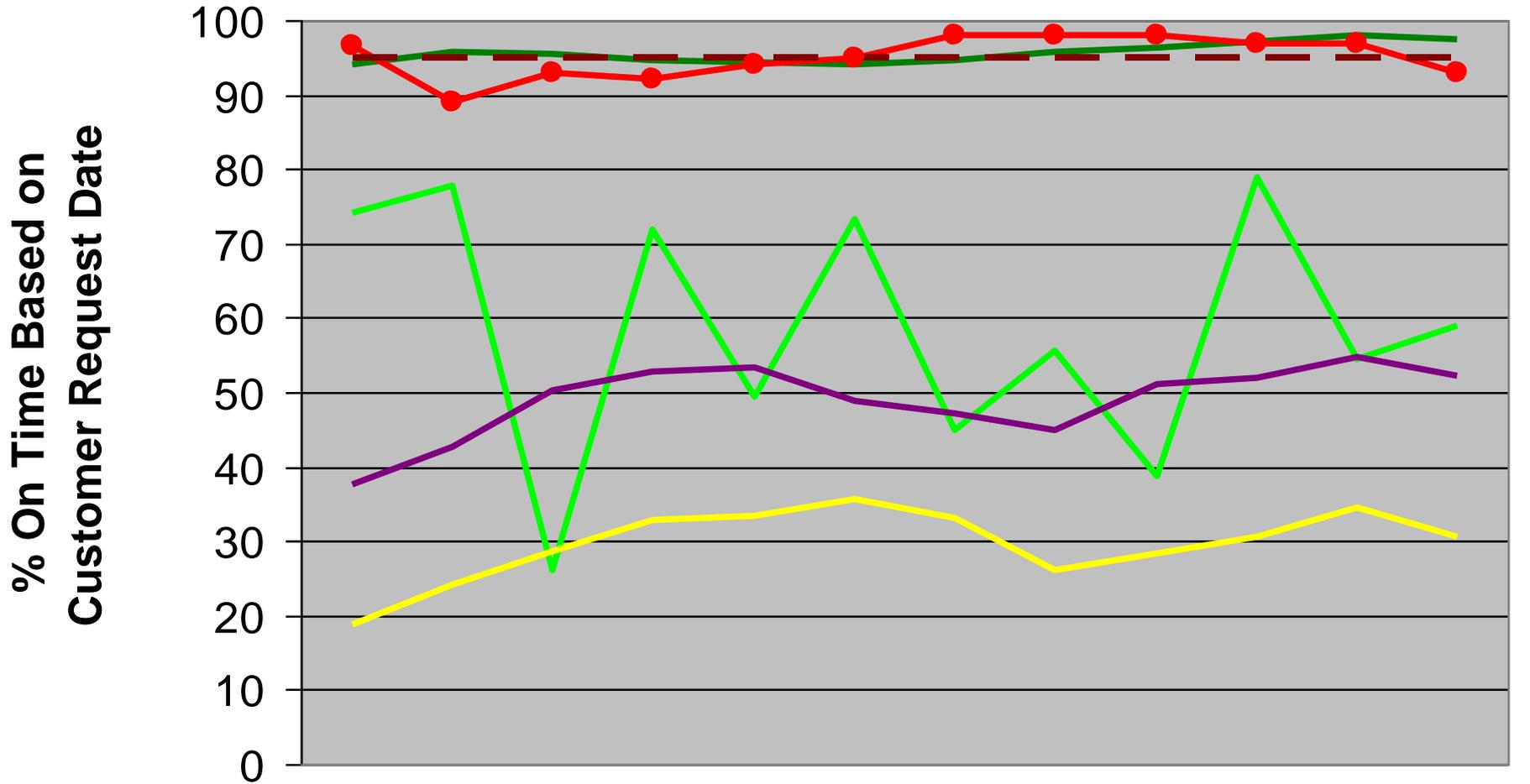
- TL 9000⁷ Measurement Outputs and Calculations
- How to Use QuEST Forum TL 9000 Measurement Performance Data Reports

http://www.tl9000.org/tl_resources/TL_9000_Measurement_Outputs_and_Calculations.pdf

http://www.tl9000.org/tl_resources/PDR_Usage.pdf

How to Analyze and Use Trend Data

On Time Items Delivery (OTI)

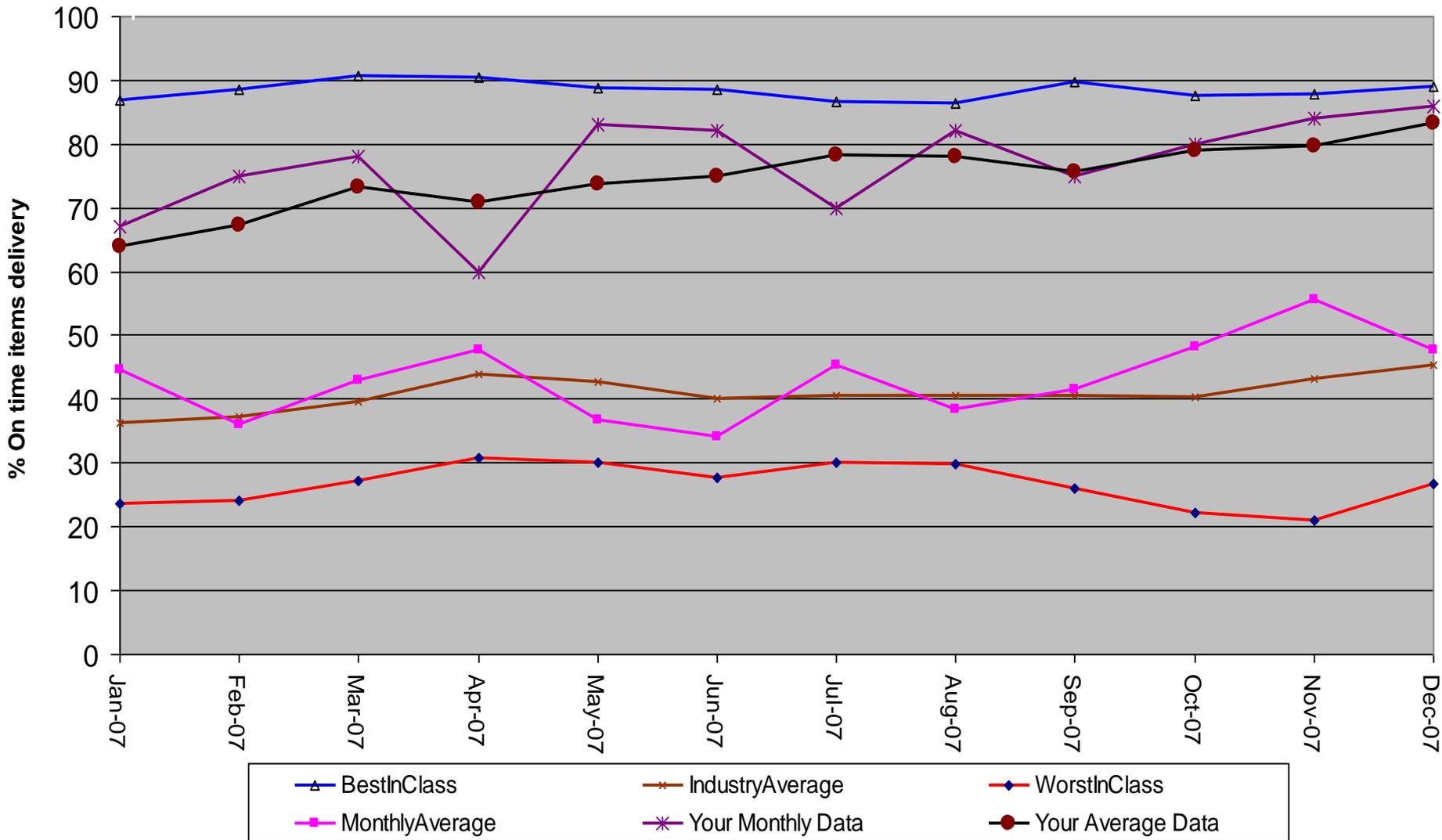


BIC, WIC, and IA stable compared to Monthly average

Company data also relatively smooth and near BIC and goal

Goal setting discussed later

Product Category 3.2.2.1.2.2 WDM/DWDM/Optical Amplification OTI





Observations

Company's monthly data more volatile

Chose to smooth with 6 month running average

Resulting plot shows strong evidence of continuous improvement

65% to 85% on time over the 12 months

Validating the Data

Identify the Competition

- Understand who is submitting data in your category
- Tools available on tl9000.org
- From top menu select –
 - TL 9000 Registration
 - Certified Registrations



ONE.
GLOBAL.
STANDARD.

TL 9000 REGISTRATION

Overview

概述

概要

개요

Resumen

Registration Process

Guidance Documents

Product Category Selection

RMS Fees

Using RMS

Certified Registrations

Benchmark and Performance Data

Individual Certification

TL 9000 Experts

TL 9000 CERTIFIED REGISTRATIONS

To view details of a 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.

Alpha Search

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#)

[N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

[Search](#) for Certified Registrations

TL 9000 registration is separate and independent of membership in TIA QuEST Forum. [Click here](#) for a complete listing of TIA QuEST Forum member organizations.

Data on Registrations and Certifications

To view information on registration and statistics, click on the appropriate listing.

1. [Certified Registrations and Locations Growth Trend](#)
2. [Certified Locations by Organization Size](#)
3. [Certified Registrations by Product Category](#)
4. [Certified Locations by Country/Region](#)
5. [Certified Registrations by Certification Body](#)
6. [Certified Locations by Company](#)

Searching TL Certified Companies

- Can search by:
 - Company
 - 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



Example - TL Registered Companies (27-Oct-20)

Product Category	Product Category Name	No. of Certified Registrations	No. of Certified Companies
1.2.3	<u>Media Gateways</u>	4	4
1.2.4.1	<u>Legacy Ethernet Switches</u>	6	6
1.2.4.2	<u>Virtualized Ethernet Switches</u>	1	1
1.2.7	<u>Application Servers</u>	7	7
1.2.8	<u>Service and Network Controller (SNC)</u>	6	5
1.2.9.1.1	<u>Legacy Core Routers</u>	7	7
1.2.9.2.1	<u>Legacy Edge Routers</u>	12	12
1.2.9.2.2	<u>Virtualized Edge Routers</u>	3	3
1.2.9.3	<u>Access</u>	15	15

1.2.8 SNC

TL ID	Registration Name	Company Name
TL 5418	Ericsson-LG Co., Ltd.	Ericsson-LG.Co.,Ltd
TL 2207	Huawei Technologies Co., Ltd.	Huawei Technologies Co., Ltd.
TL 6493	Huawei Software Technologies Co., Ltd.	Huawei Technologies Co., Ltd.
TL 1193	Nokia Solutions and Networks	NOKIA
TL 1424	Ribbon Communications	Ribbon Communications Inc.
TL 3161	ZTE Corporation	ZTE Corporation

Observations

- Can go from Report 3 to listing for category
- This example 6 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
 - Exclusions

Analysis

- Are these my key competitors?
- 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 MA?

Impact of Your Data

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Use competitive analysis to assess what % of the data is yours

Gauge the industry statistics if contribution is large

If you are large contributor and just below IA – true IA likely higher than shown

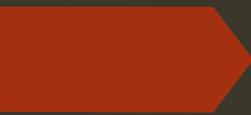
Opposite effect if you are higher than IA

Setting Targets

- Product life cycle
 - New, growing, mature, volume, maintenance or end of life soon?
- 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**

Anomalies



Anomalies

- All 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 information

How Do You Interpret When:

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The Best in Class 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 is:

- ▶ A single company's performance
- ▶ Their performance over most recent 6- or 12-month period
- ▶ They are a significant "player" in the market for this category
 - ▶ They must also represent $> 2\%$ of the NU's for a normalized measurement or have $>$ the defined threshold

Perfect Best In Class (Cont.)

What could a perfect BIC mean?

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 certifications to determine if this applies

Company could exceed minimum thresholds but still have a small portion of total market

- Research certifications to determine if this applies

Combination of two items above

- Try to understand contribution when multiple products in the category
 - High % of mature product will likely show better results deployments

R5.6 change to remove products in retirement will reduce the impact of very mature products.

Perfect Best in Class (Cont.)

If you see perfect BIC, what should you do?

- ▶ Acknowledge consistent excellent performance by competition
 - ▶ At least one company may be able to perform at “perfect” levels (6/12 months consecutively)
- ▶ Don't immediately accept that this is performance you need to strive for
 - ▶ Review competitors certified
 - ▶ Examine how many data points are included in BIC
 - ▶ Try to identify products and their market penetration
 - ▶ Look at gap between IA and BIC
 - ▶ Make intelligent decision as to how representative the BIC is
 - ▶ If it is, you know you have a high bar to strive for!
 - ▶ Now set your objectives consistent with your organization's strategy

Worst in Class Far Below Industry Average

Pay attention when you see this

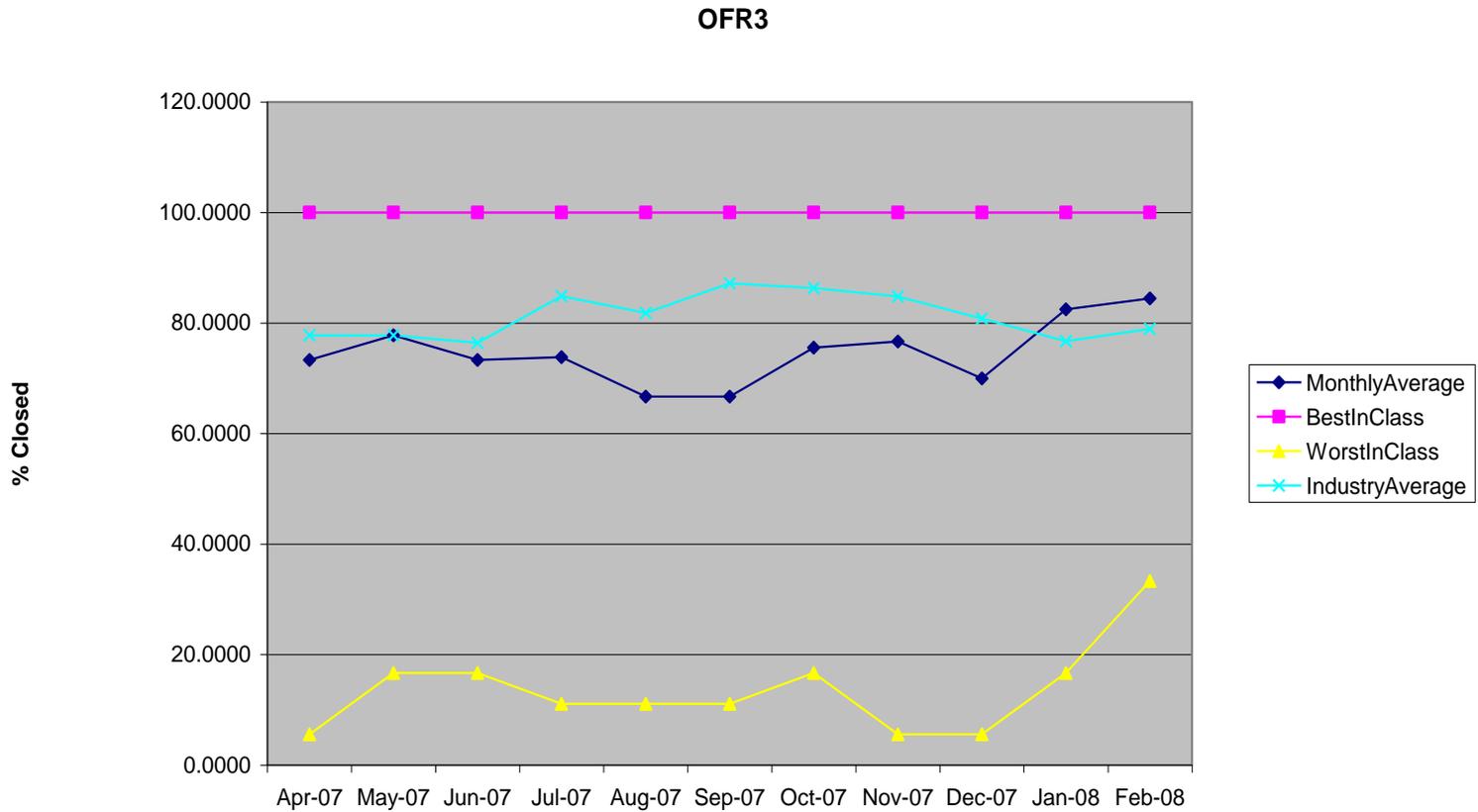
- ▶ You want to understand integrity/impact on IA
- ▶ Just as for BIC, WIC is a single TL ID's performance
- ▶ WIC represents their performance over most recent 6- or 12-month period for that measurement
- ▶ They're a significant "player" for the measure for this PCT
 - ▶ They must represent > 2% of the NU's for the measurement or have > defined threshold
 - ▶ Or they must represent > 5% of the total numerators

WIC Far Below IA (Cont.)

How to
analyze
this
situation?

- Look at the certified organizations
- Determine how many data points are included in WIC
- Try to identify products / market penetration for organizations included
- Look for potential “event” driven spikes
 - 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 is

WIC Far Below IA - Example



	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08
◆ MonthlyAverage	73.3333	77.7778	73.3333	73.8095	66.6667	66.6667	75.5556	76.6667	70.0000	82.5000	84.4444
■ BestInClass	100	100	100	100	100	100	100	100	100	100	100
▲ WorstInClass	5.5556	16.6667	16.6667	11.1111	11.1111	11.1111	16.6667	5.5556	5.5556	16.6667	33.3333
✕ IndustryAverage	77.7778	77.7778	76.3889	84.8485	81.8182	87.1795	86.3248	84.8291	80.7870	76.7094	78.9352

Spike in Monthly or Industry Average

Understand difference

- ▶ MA is single month's performance
- ▶ IA represents sustained performance (6 or 12 months)
- ▶ Therefore, MA is more volatile than IA
- ▶ Reviewing difference between MA and IA provides clues to whether:
 - ▶ Spike is "event" driven
 - ▶ Spike influenced by large or less significant player

Spike in Monthly or Industry Average

Look at nominal performance over 2-year period

- Measures with high steady state performance can be heavily influenced by individual events
 - Examples:
 - Outage data for high reliability categories
 - Return Rates for mature product

Watch for # of organizations / data points changing

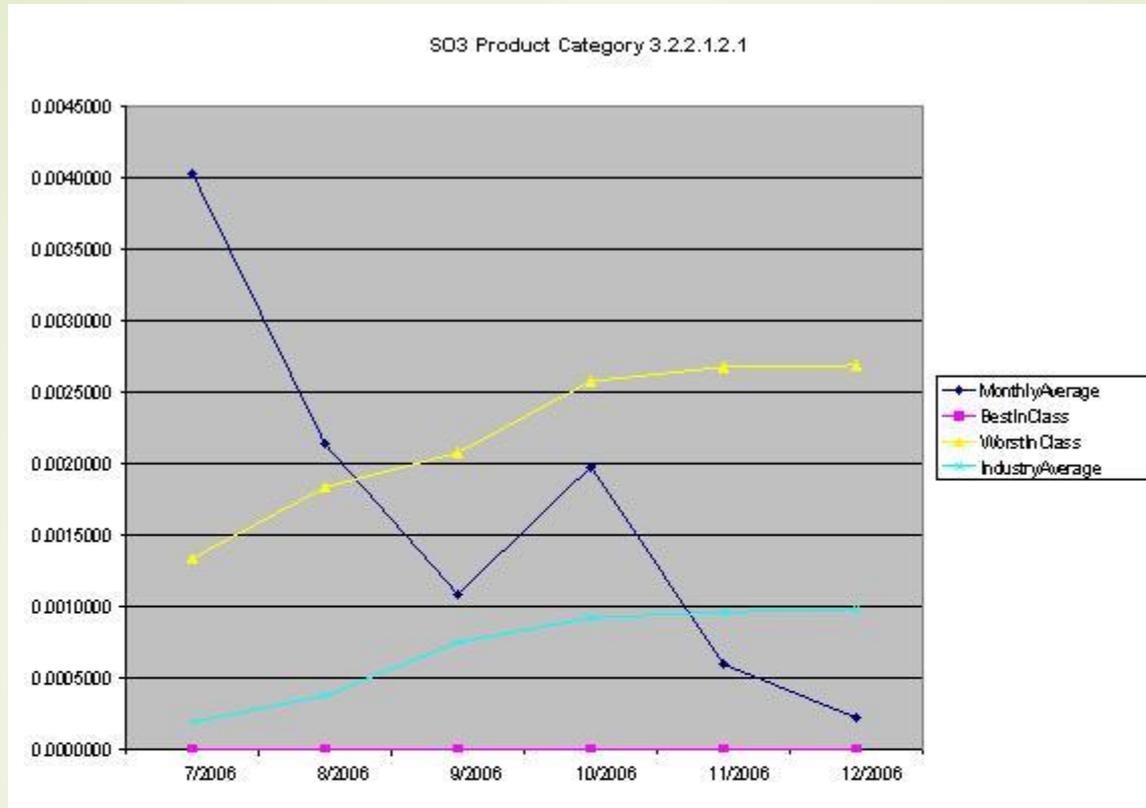
- WIC performers leaving market will often generate spike
 - When this occurs, you would see a spike in WIC
- Suspensions due to lack of data submissions

Understand the seasonal nature of Monthly Data

Make intelligent decision as to what spike could mean

Spike in Monthly / Industry Average Example

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S03 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 Performance

TL 9000 allows multiple submissions of data by an Organization for a particular Category

- Often useful when tracking
 - Multiple products
 - Multiple locations
 - Multiple processes

Or organization can simply track the data separately internally

- When used, organization's data for a single registration is aggregated by MRS
- Differentiation can
 - Identify weaknesses before it impacts PDR data
 - Appreciate performance across segmented areas

Best Practices for Monitoring TL Performance

Tracking Performance vs. Objective

- Pictures work better than words
- Key to driving needed change
- Trend charts to identify performance shifts
- Charts should incorporate PDR performance (i.e., BIC, IA, MA, WIC)
- Charts should use calculations consistent with PDR definitions to support comparability

Setting of Objectives

Review objectives systemically for applicability

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

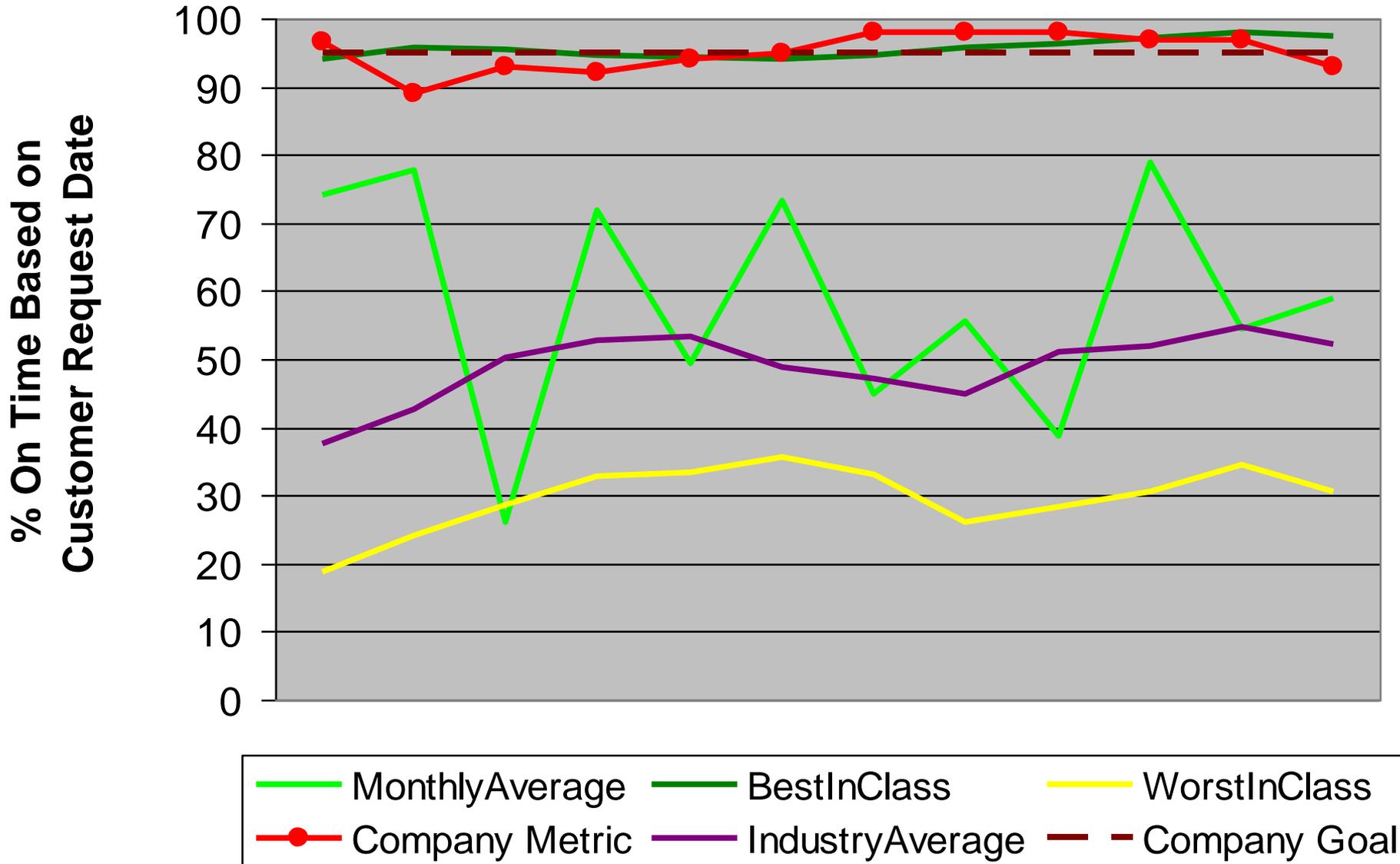
Set long- and short-term goals

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

Key inputs in setting 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

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 in business scorecards
- Make objectives (short and long term) very visible to stakeholders
 - Be smart in setting / adjusting objectives (previous slide)
 - Objectives should be aggressive for strategic focus areas
- Incentives for improvement
- Routinely report performance
- Emphasize organization's performance and trend relative to industry performance
 - Clearly note when direct competitors are in industry data

On tl9000.org -

- “TL 9000 Measurements Outputs and Calculations”
- “How to Use QuEST Forum TL 9000 Measurement Performance Data Reports (PDRs)”

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QuESTions & Answers



Upcoming Webinars:

India Hub Conclave 2020

Presented by: TIA QuEST Forum India Hub with special
Executive Keynote: Anuj Jain, President | Reliance Jio

Friday, November 6th @ 6:00 – 9:00 am EST/ 4:30 – 7:30 pm IST

TL 9000 On Time Delivery Item (OTI) Measurement Webinar

Presented by: Tom Yohe, TL 9000 Expert

Wednesday, November 11th @ 12:00 pm EST

Equipment Suppliers: Post COVID-19 Strategy

Presented by: ADTRAN, Fujitsu, Infinera

Wednesday, November 18th @ 6:00 pm EST

Training Auditors in a Virtual World – AB/CB Webinar

Organized by: Sheronda Jeffries, Cisco Systems

Wednesday, December 2nd @ 12:00 pm EST

Does your company operate in the ICT space? Are you a TIA QuEST Forum member? If not, sign up today and reap the immediate benefits of membership.

For additional information, please visit:

www.tiaonline.org

www.tl9000.org

