(Don't) Measure (Just) Anything

Measure to Increase Your Value

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Leading the Light Generation.

An **ASML** company

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- **Measuring results to prove your value**

First, what really are metrics?

Formal Definition: Business metrics are data that represent key business processes that organizations track and monitor to assess the state of the company.

- Essentially, metrics are measurements against a target.
- The current state measured to a defined improved state

Measurements alone don't mean anything

- Metrics have little meaning without its relationship to an issue
- The analysis of metric data is what is critical – this is the *purpose* of metrics

Measure for a Purpose

Metrics are needed to:

- Confirm (baseline) a problem
- Confirm a successful solution
- Measure your value – your sphere of influence – how do you know you made a difference?

Conversely, why would you run metrics if:

- You're not going after a problem
- You don't need to baseline a performance
- No one cares about the outcome
- *There is no expectation for change*

Ok, so why are metrics so important?

The Importance of Metrics

If you *do* want something to change, metrics can

- **Expose problems**
- **Invoke change**
- **Show value**

Metrics Open the Kimono

- **You have to *expose* your gaps to get support for closing them.**

- **Flying low under the radar can work against you if you have problems to solve.**

- **The more dire the gap, the harder the job is for improvement – the wider the kimono should open!**

- **Exposure is good! It means you're tracking a problem, you've measured it, and it needs to change.**

Metrics Should be Change Agents

- **Metric data can tell a story, but it is the analysis that tell the *moral* of the story**

- **They drive conclusions →decisions → action → and improvement.**

- **Valid metrics are catalysts for a desired change.**

Metrics Can Show Organizational Value: Our Sphere of Influence

Can we measure our *Sphere of Influence*?

- **If you stopped doing your job today, would it make a difference?**

- **Of course it would . . . but can you measure it?**

- **Do you know your sphere of influence? Where does it stop and, more importantly, how can it expand?**

- **Metrics can tell you this *provided* you know**

  - where you impact your users/customers

  - have a new, improved target

  - can measure your progress

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A Rubric for Metrics

We now use a 3-step criteria Metric Check to confirm our results:

Metric Check:
✓ **Exposed our problems**
✓ **Created positive change**
✓ **Increased our value**

The following are some examples of how metrics helped expose our problems, create positive change, and increase our value (*some still in progress with no final results yet*)
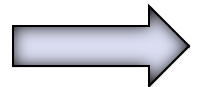
A Good Story about Metrics

- **Metrics gave us the data to convince management that we needed better tools (a CCMS)**
- **We were using FM and very manual, error-prone processes**
- **Identified key gaps and consequences of not having a CCMS**
- **We compiled metrics on:**

Issue	Consequences
Product Forecasting	Can't meet deadlines of the product portfolio
Cost of Poor Quality	Quality gaps due manual processes
Publishing Cycle Time	Excessive publishing time due to manual processes
Retention	High team frustration – potential for talent Turnover (loss of IP)
What Won't Get Done	Can't do it all under current conditions

Post-CCMS Data Confirmed Improvement and Value

- **This data built a compelling argument for the approval of a new CCMS!**

- **Our final metrics:**
  - ✓ Met all product deliverables on time since implementation
  - ✓ Reduced the time it took to publish a full doc set from 10 man days to 12 minutes
  - ✓ Still have the same core team members
  - ☆ **Assumed more responsibilities to help Tech Support (now develop and publish their tech bulletins and field alerts)**

Metric Check:
- ✓ **Exposed our problems**
- ✓ **Created positive change**
- ✓ **Increased our value**

Another Good Story about Metrics (in progress)

Measuring for trending: find the baseline

- We wanted to learn how long it took to find information on the Field Portal

- Based on anecdotal feedback, we suspected it took too long

- We have a baseline metric from a previous survey that told us it took 30% of our FSEs 10 – 20 minutes to find information they need.

For any one service event, can you estimate how long, on average, it takes you to find the information you need?	Response Percent	Response Count
Answer Options		
< 5 minutes	22.1%	15
5 to 10 minutes	41.2%	28
10 to 20 minutes	30.9%	21
20 to 30 minutes	4.4%	3
> 30 minutes	1.5%	1
answered question		68
skipped question		4

Redesigned Website Based on Survey Input

- **We had the evidence of poor design, but needed to look at other survey responses to understand why**

- **We looked at the organization and navigation on the Field Portal, and based on survey input:**
  - Simplified navigation
  - Reorganized content more intuitively
  - Simplified the interface
  - Reduced the unnecessary "interim page clicks"
  - Added snapshot windows of updates on the front page

Now Need to Measure for Results

- **We can now measure:**
  - Can FSEs find information faster to solve technical issues thus, reducing down time?
- **Follow up survey in Q4'16 to confirm – or not – whether we have made an impact to the FSEs so they can find information faster and reduce their service time.**
- **Let's take a look at the Before and After redesign . . .**
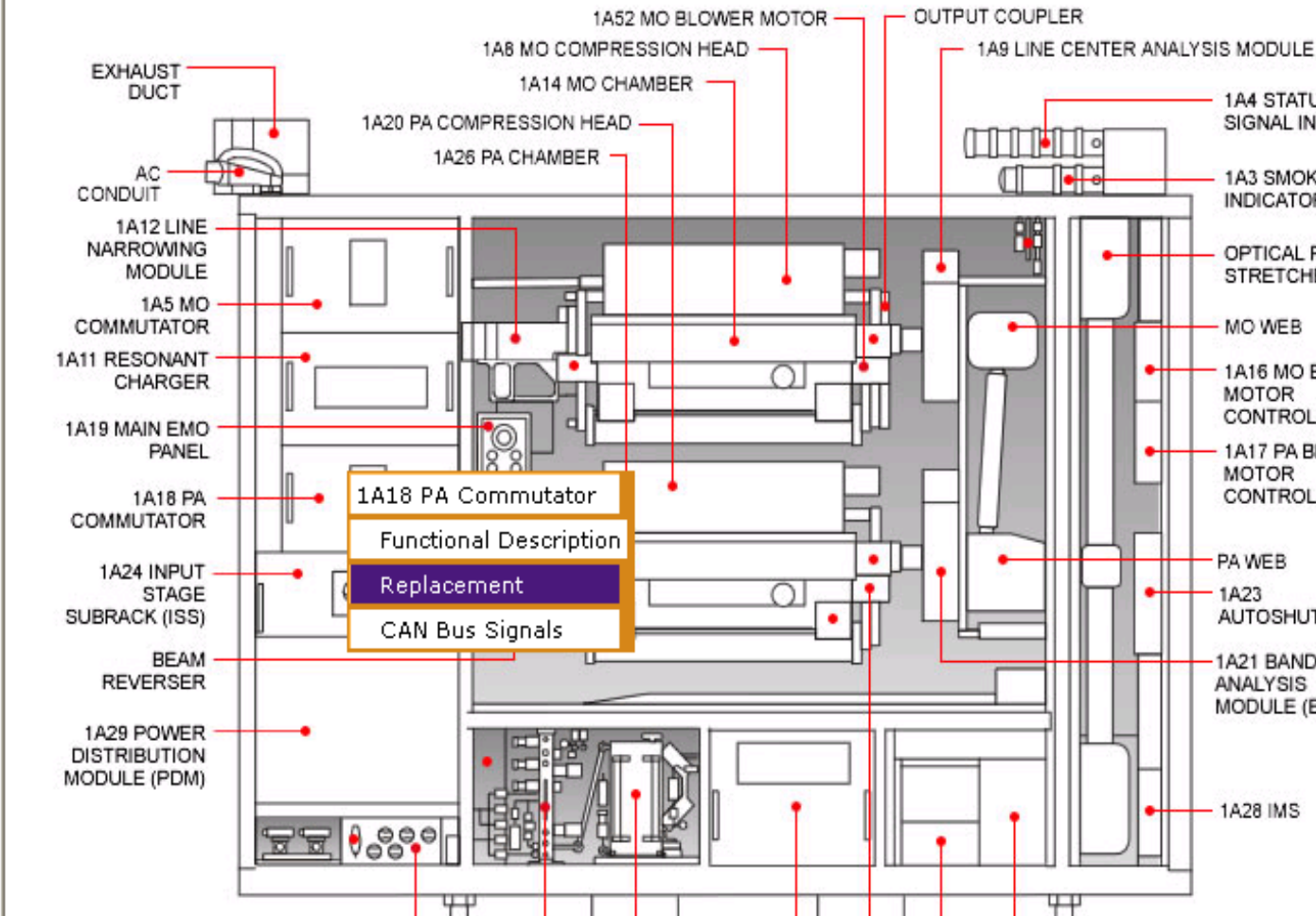
Before . . . busy, cluttered, too much on the page . . .

… and after redesign.

Although we feel this is a better design, we won't know if reduces the time to find information until we re-survey for results.

Menu Bar – for referential information
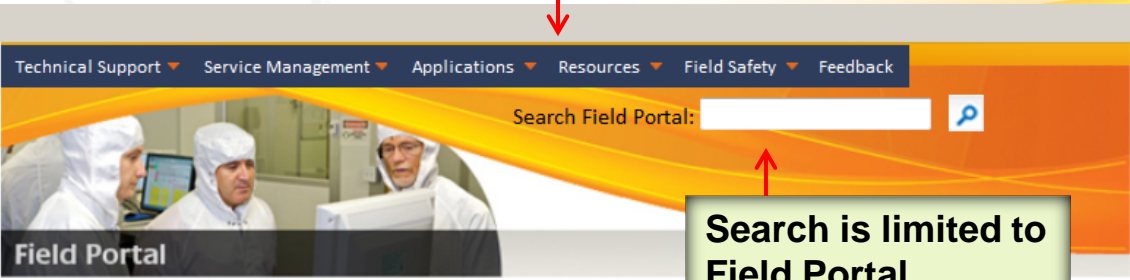
Search is limited to Field Portal

Technical Support ▾   Service Management ▾   Applications ▾   Resources ▾   Field Safety ▾   Feedback

Search Field Portal:

Field Portal

Welcome To The Cymer Light Source Field Portal

- Service Event Administration
- Parts Procurement
- Training
- Light Source eLibrary
- Data Products Procedures
- Field Service Library
- Mobolize Support Site

Information reorganized and consolidated under these subsites

Represents critical information needed for daily activity

Lastest FSL Updates

DatePosted	Title	Conte Typ
9/18/2015	T206000_A; Neon Reduction Upgrade Procedure	TB
9/18/2015	NERD 12.1.1.0	Tool Softwa
9/11/2015	A0467-1; XL 6kHz "Micron Only" Gas Configurable	FSA

eLibrary Updates

Release Date	Summary
6/19/2015	Posted the ISS Earth Leakage Breaker Conversion Field Rewor Procedure on the Upgrades page for XLA/XLR 6 kHz laser models. (CO 31347)
6/19/2015	Updates to the XLA/XLR (6kHz) Interface Module and Thermal

IT Update Summary

Date	Summary
7/30/16	VPN: The ASML VPN upgrades have bee completed and are for use. VPN users s switch to the new c ASAP to see the imp

Notification panes – snapshot view of what's new

Metric Check:
- ✓ **Exposed our problems**
- ✓ **Created positive change**
  Increased our value:
  will know with Q4 survey

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Another Good Story About Metrics - Quality

- We created metrics based on user feedback (problems users find with the website)
- Information is categorized by problem type, product, and severity
- Our original metrics showed 69 open Feedbacks in our database
- 47 were open >90 days with 5 as High Priority
- *This was unacceptable!*

Current Open DUV eLibrary Feedback Age/Priority

47 Feedbacks older than 90 days!

Legend:
- High
- Medium
- Low
- None

	< 30 Days	30 - 60 Days	60 - 90 Days	> 90 Days
High	0	3	2	5
Medium	4	1	7	34
Low		2	3	8
None	0	0	0	0
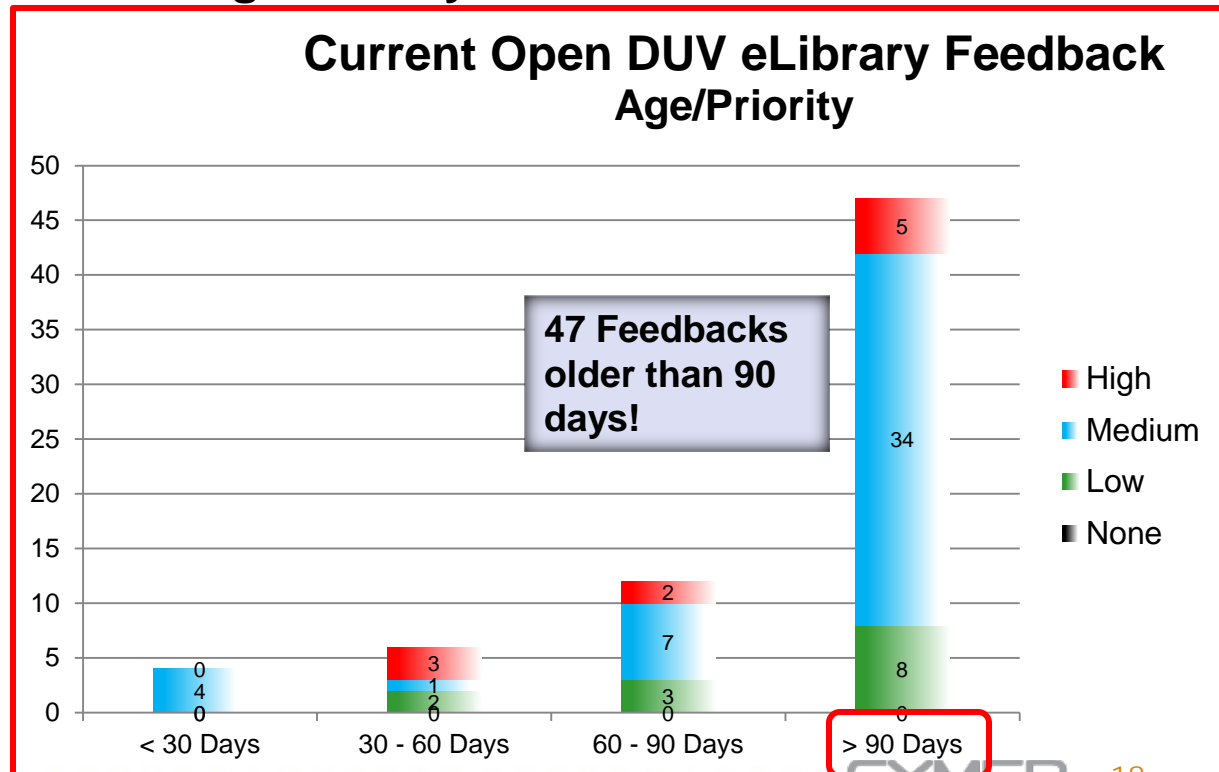
Examined the Process and Incoming Data

- **We scoured the source input – it was accurate**
- **We examined our quality processes and tools, and they were robust**
  - Engineering reviews
  - Tech Support reviews
  - Safety reviews
  - Peer reviews
  - Editorial reviews
- **We then looked closer at the Feedbacks**
  - Items marked High Priority were not - many were minor technical issues
  - All Feedbacks > 90 days were held up in Engineering or Technical Reviews
  - Feedbacks were languishing because the SMEs weren't responding to the writer's request for information to close the Feedback.
  - Engineers had moved on to the next project with no time allocated for input or reviews

Changed Process and Categorization

We changed our processes to:

- **Simplify priority to 3 levels:**

    (1) High = Safety, Potential Human /Product Damage

    (2) Medium = Technical Changes

    (3) Low = Minor Changes (typos, etc.)

- **Review Feedbacks when they come in; re-categorized if necessary**
    - Let submitter know if they were categorized incorrectly
- **Created status of "On Hold" for Feedbacks if no response from SME within 10 days – let submitter know**
    - Decided non-response from SMEs should not skew our metrics
    - Re-activate the Feedback into the metrics once SME responds
    - Critical: Worked with Engineering *with this data* to factor-in man hours for every project to include SME input and review for procedures

- **Now, look at our Feedback metrics .. .**

Field Portal eLibrary Feedback
Priority/Status
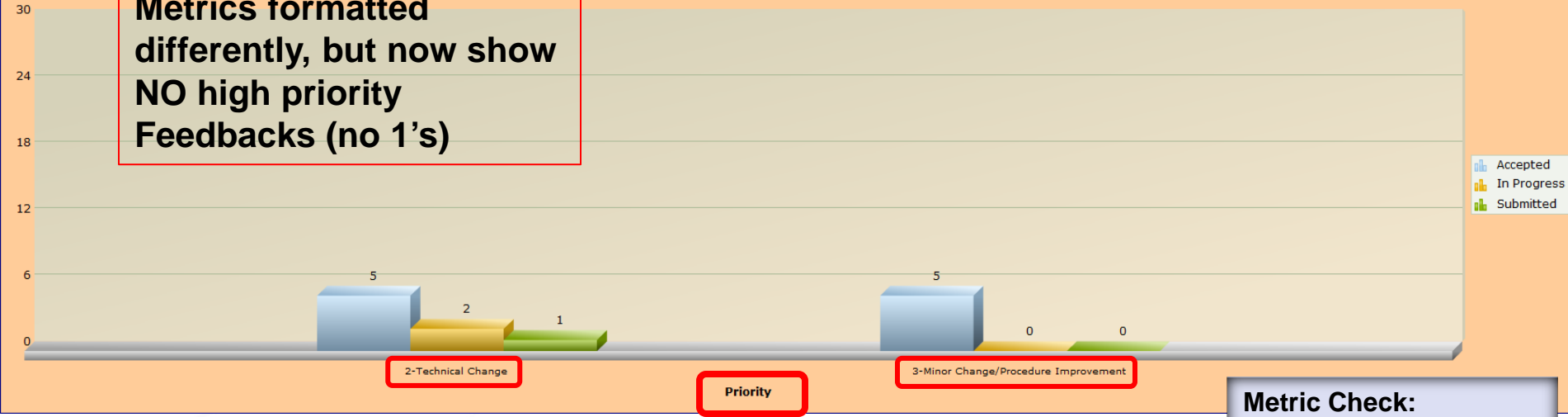
Metrics formatted differently, but now show NO high priority Feedbacks (no 1's)

- Accepted
- In Progress
- Submitted

2-Technical Change: 5, 2, 1
Priority
3-Minor Change/Procedure Improvement: 5, 0, 0

Metric Check:
- ✓ Exposed our problems
- ✓ Created positive change
- ✓ Increased our value

Field Portal eLibrary Feedback
Age (Days)/Status

Metrics show 7 Feedbacks > 90 days, but that is improvement over 47 previously

- Accepted
- In Progress
- Submitted

1 to 30: 2, 1, 1
31 to 60: 1, 0, 0
61 to 90: 1, 0, 0
Over 90: 6, 1, 0

Age
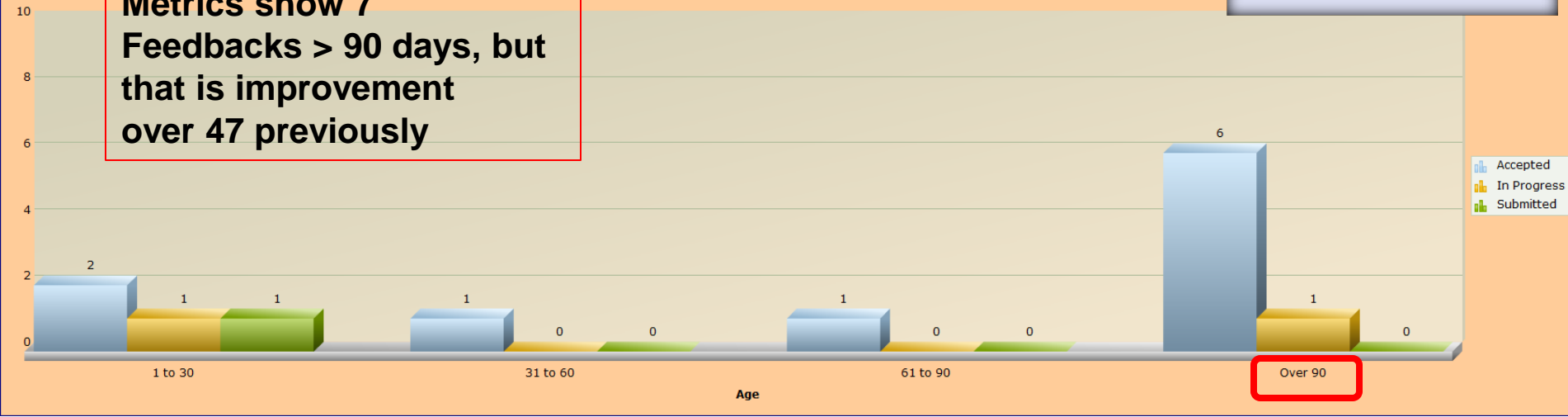
Some Ongoing Metrics Show We Still Need to Improve

- We have metrics that show we still have areas to improve
- Field Service Alerts (FSAs) are field notifications of important and urgent information
- The time between FSAs and the time procedures were updated was too long
- Field engineers had to compare FSAs to procedures to determine deltas – big time waster!
- We then prioritized changes from FSAs to update procedure *prior* to FSA notification
- Still have a ways to go to meet the goal . . .

Closure Rate to Incorporate FSAs Into Procedures

Chart legend:
- Closed FSA Related Feedback: 35
- Closed >30 Days After FSA Release: 20
- Closed <=30 Days After FSA Release: 15
- Open FSA Related Feedback: 6
- Open FSA Related >30 Days: 2
- Open FSA Related <=30 Days: 4
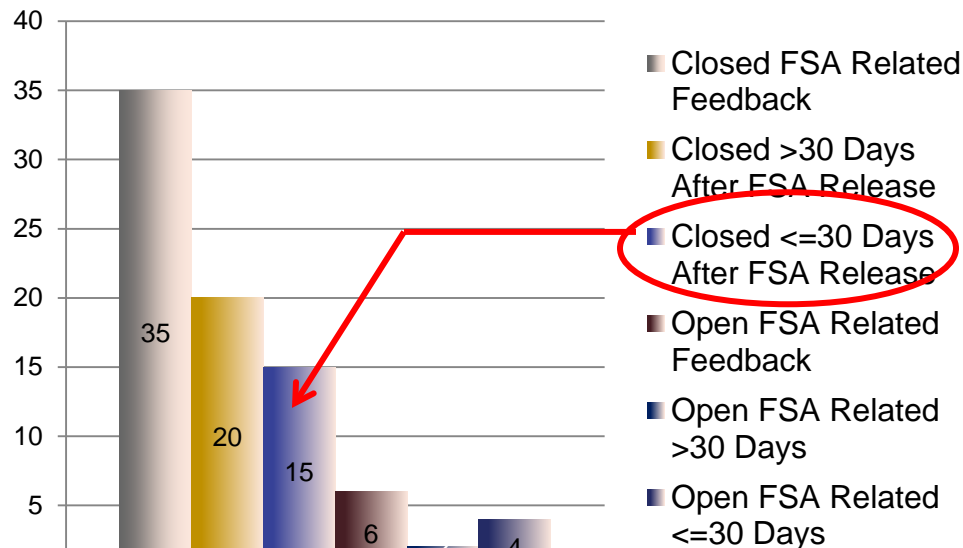
Metric Check:
- ✓ Exposed our problems
- ✓ Created positive change
  Increased our value:
  working on it!

A New Problem, a Need for New Metrics

- **We have a field service skills gap**
- **Not all service engineers (FSEs) know how to**
  - Accurately define a problem statement
  - Use a standard methodology for troubleshooting the problem
  - Derive root cause from data analysis
- **Results in**
  - Poor diagnosis
  - Longer down time
  - Going after the wrong problem

We have an opportunity – with what we can control - to expand and expose our sphere of influence at the point of use, at the customer site

How to Solve and What to Measure

How to Solve:

- **Research, propose, adopt, and train to a standard methodology for problem solving**
    - Benchmarked top companies in semiconductor field
    - Selected Intel's methodology: Model Based Problem Solving (MBPS)
    - Secured approval to have MBPS be the standard for all field service
    - Developed a training course in MBPS (training in progress)

But what to measure?

Measure for Results

We do know what NOT to measure:

- Number of FSEs who successfully completed the course
- Number of new skills taught
- Student evaluation of the course

- **These metrics don't tell you anything that matters to the customer**
- **The customer cares about results with product performance**
- **So, we need to know:**

  1. Did the training improve the FS skills in problem solving and finding root cause?
  2. Did the training make a difference for the customer?

Metric #1: Did the training improve the FS skills in problem solving and finding root cause?

- **We can first measure how well the new skills are being applied.**
- **We can compare the quality of the problem statements before and after MBPS training.**
- **We can compare:**
  - The accuracy of the problem statements by versioning the PPAR - how many times was it rewritten to correct the problem statement?
  - The initial diagnosis with final root cause - were they aligned?
  - The total time from problem detection to problem resolution - was the time decreased?

- **But what about measuring value with the customer? This is the most important!**

Metric #2: Did the training make a difference with the customer?

- **Our value is ultimately measured by customer satisfaction**
- **Customer satisfaction is measured by product performance**
  - Product up and running = happy customer
  - Product down = unhappy customer
- **We can measure uptime/downtime and compare that data before training and after**
  - Track and trend the duration of product down time (MTTR)
  - It might next year before we can correlate the results
  - We hope to have another good story about metrics next year!

Measuring Our Value for the Customer

- **With these new metrics, we can measure our influence on product performance by:**

Improved FSE skills

Faster problem solving

Faster service

Reduced downtime (MTTR)

Happier customer

Metric Check:
- ✓ **Exposed our problems**
- ✓ **Created positive change**

Increased our value:
program just started

Metrics can Prove your Value!

- **To effectively use metrics:**
  - be willing to expose your problems
  - want change, even if it is hard
  - target an increase in value for the customer
- **Use the Rubric to evaluate the degree of effectiveness**
- **Keep measuring! You can't improve what you don't measure . . .**