

Developing Metrics to Facilitate Quality System Maturity and Accountability

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Agenda

Topic	Presenter	Time Frame (minutes)
Welcome and introductions	Marion	5
QRPI Initiative Background	Marion	10
“Stages of Quality” paradigm	Lou	15
Proposed Metrics and Next Steps	Marion & Lou	10
Open forum for discussion	Everyone!	20

Disclaimer: The views expressed in this presentation are those of the author(s) and do not necessarily represent the views or policies of the U.S. Environmental Protection Agency.

Quality Reporting Process Improvement Initiative

Background

- EPA Quality Policy requires annual assessment and reporting of Quality System Status
- Traditionally accomplished via QA Annual Reports and Work Plans (QAARWPs)
 - Prepared by NPOs and Regions; and reported to EPA Office of Environmental Information (OEI) Enterprise Quality Management Division (EQMD)
 - Process widely viewed as “cumbersome, confusing, very time-consuming, and the least useful aspect of the Agency’s Quality System”

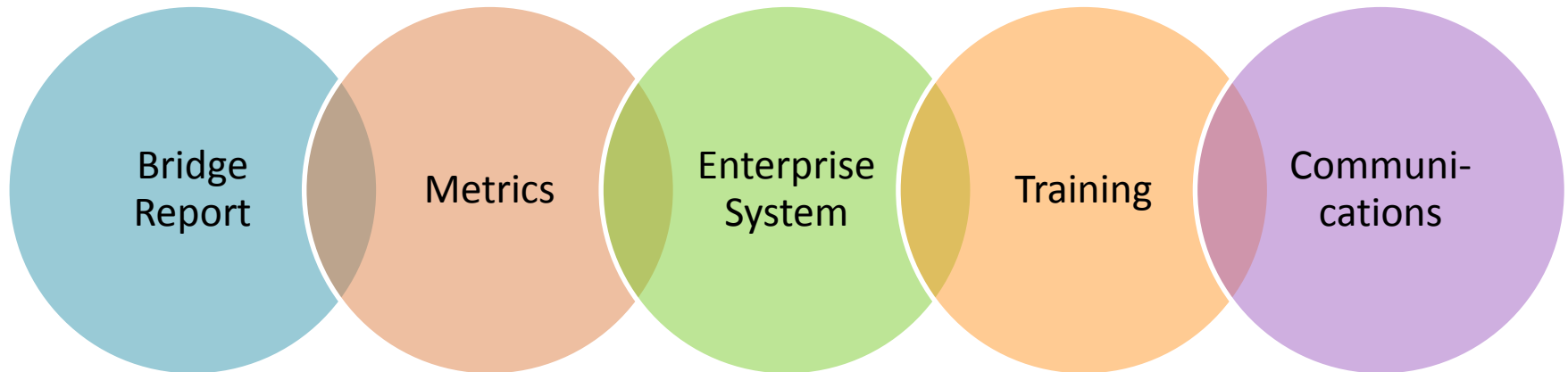
Background (continued)

- 7/15: EQMD conducted a LEAN Kaizen event with Quality Community representatives from across the Agency
 - Goal: Streamline process and reduce burden
 - Recommended Solution
 - Establish an enterprise reporting system to support real-time data collection and reporting across EPA
 - Develop standardized reporting metrics
 - Projected Outcome: Could decrease processing time by 19%, wait time by 74%, and process steps by 91%



Background (continued)

- Late 2015
 - Quality Reporting Process Improvement (QRPI) Implementation Team established
 - Sub-teams convened to
 - Address specific aspects of the LEAN recommendations
 - Develop interim (bridge) reporting format for use while new systems were being developed
 - Communicate progress and results



Metrics Team Representation

Reflected the diversity of EPA organizations and experts implementing EPA's Quality System

Team Member	Office/Region
Marion Kelly	Co-Chair, Office of Water
Vincia Holloman	Co-Chair, Office of Environmental Information
David Charters	Office of Land and Emergency Management
John Warren	Office of Environmental Information
Paul Groff	Office of Research and Development
Linda Himmelbauer	LEAN Project Co-Lead, Region 8
Lora Johnson	Office of Research and Development
Barbara Leczynski	Office of Chemical Safety and Pollution Prevention
Juan Parra	Office of Environmental Information
Terry Simpson	Region 3
Robert Tallent	Office of Environmental Information

Metrics Challenges

- Success depends on
 - Enterprise System availability and capability
 - Management commitment to/resources for real-time data capture and reporting
 - Consistent interpretation of measured items
 - e.g., what is a “project?”
- Lack of a consistent, compliance baseline across EPA
- Varied EPA perspectives regarding needs
 - Different missions and challenges / different needs for measuring effectiveness and efficiency
- Schedule
 - 10/1/2016 implementation mandate



Goals for Developing Metrics



- Short term: identify metrics that
 - Measure **compliance** with EPA Quality System requirements
 - Can be calculated from data captured in real time
 - Will provide a consistent and quantifiable baseline for measuring improvement across the Agency
- Long term: identify
 - Compliance metric updates after baseline is established
 - Metrics to characterize **efficiency** and **effectiveness**

Anticipated Benefits



- Support continuous improvement
 - Help identify strengths, weaknesses, and priorities
- Eliminate subjectivity and simplify annual reporting
 - Enable OEI to extract annual status information
- Reduce need for data calls
 - Query enterprise system to identify projects that relied on a specific organization or focused on a particular pollutant, indicator or treatment technology
- System + Metrics = Landmark achievement
 - Eliminate ~80 different systems and approaches
 - Reflect increased level of quality system maturity

Approach to Developing Metrics

- Weekly conference calls and an in-person meeting
- Considered
 - EPA Quality Policy (CIO 2105) requirements
 - > 100 metrics suggested in the FY 2015 QA Bridge reports
 - **Lou Blume’s “Stages of Quality” paradigm**
- Applied logic model to select 10 draft **compliance** metrics
 - Sought feedback from EPA Quality Community
 - Via online survey
 - During 6/2016 Chicago meeting
 - Refine metrics based on feedback



The 10 Proposed Metrics

1. No. of Approved QMPs ÷ No. of Organizations that need QMPs
2. No. of EPA QAMs to the nearest 0.1 FTE
3. No. of EPA approved QAPPs
4. No. of EPA-approved QAPPs ÷ No. of Required QAPPs
5. No. of EPA-approved QAPPs ÷ No. of Extramural Agreement
6. Percent of approved QAPPs that required one review, two reviews, etc.
7. No. of QSAs
8. No. of QSAs ÷ No. of EPA approved QMPs
9. No. corrective actions implemented to correct non-conformances ÷ No. of non-conformances found during assessments and audits
10. Percent of personnel that completed required QA Training

Stages of Quality

Stages of Quality System Implementation

- Quality programs are not implemented with the stroke of a pen upon the approval of a Quality Management Plan (QMP)

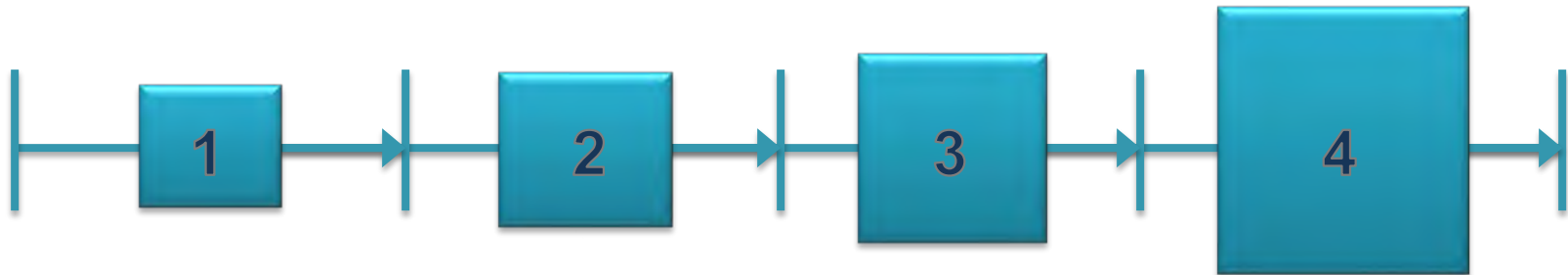


- Functional quality programs do not just happen – they evolve, typically after QMP approval

Value of Defining Stages of Implementation

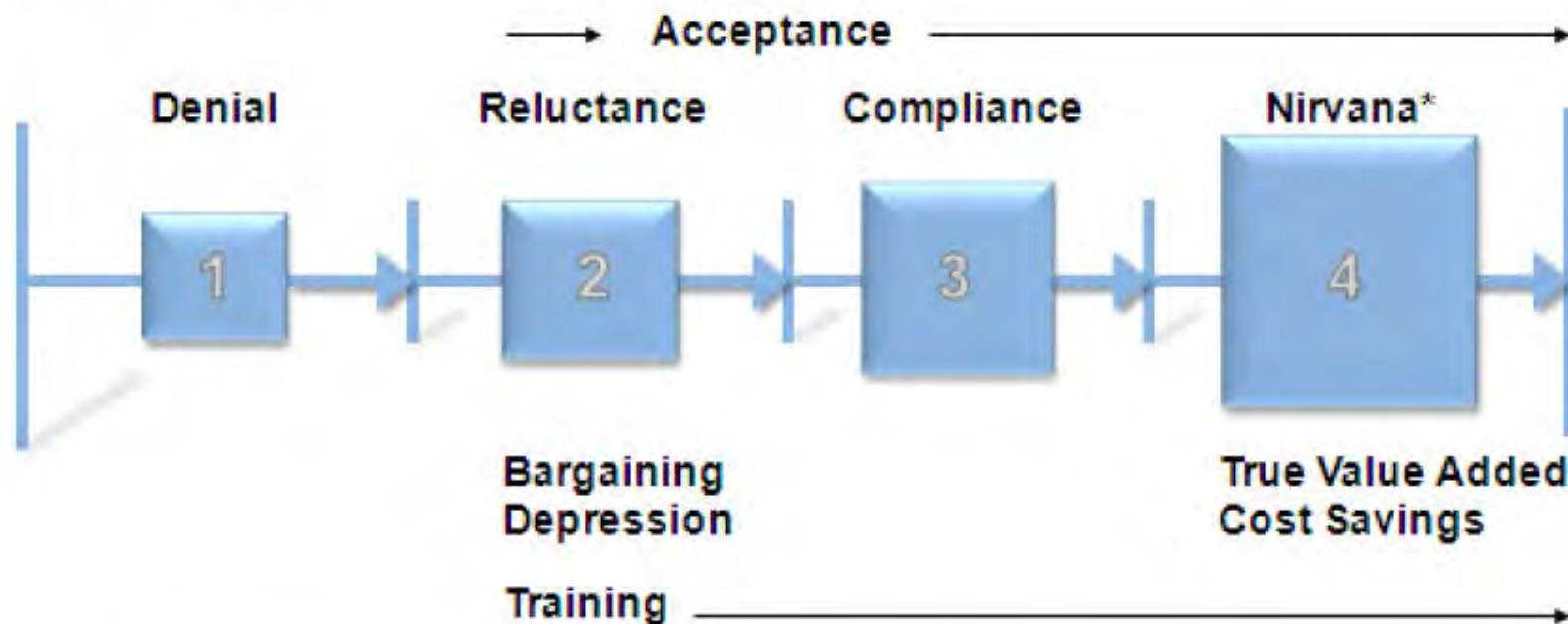
- Provides a metric to measure success
- Emphasizes the fact that good programs take time and continuously improve
- Illustrates a quality continuum
- Establishes realistic expectations

Quality Infrastructure



Stages of Quality

1 – 5 years



Baby Steps

* Ideal condition of perfect harmony and peace



Stage 1: 0-25%

Characteristics	<ul style="list-style-type: none">• External pressure forces development of quality system• One person appointed to QA• No formal infrastructure for training, review, assessment and inventory
Actions	<ul style="list-style-type: none">• Appoint additional QA personnel, through management edict, try to harness enthusiastic people showing initiative• Artful Dodgers (Hide from Quality Manager)• Argue that project is not technical or no data, no sampling
Attitudes	<ul style="list-style-type: none">• Management views quality as outside their primary focus• Minimal understanding throughout organization, seen as an insurance policy• Staff have narrow view of when quality is needed
Keys to Success	<ul style="list-style-type: none">• Develop generic QMP (not too prescriptive)• Encourage broader ownership across the office• Try to document existing processes that relate to Quality (e.g., workload planning, expenditures)• Avoid using top down logic for selling Quality versus explanation of the benefits

Stage 1 Questions

Focus on Awareness

- How do quality system components relate to our day-to-day activities?
- Who will lead our quality program and what do they need to be successful?



Stage 2: 25-50%

Characteristics	<ul style="list-style-type: none">• QMP approved• QAPPs developed for some projects• Polarization of Quality Manager and Project Officers (Pos)
Actions	<ul style="list-style-type: none">• QA staff identify delinquencies & try to fill gaps• Training initiated, typically introductory• Good opportunity for external management system reviews• Develop inventory of projects/expenditures• Emphasize value of QA
Attitudes	<ul style="list-style-type: none">• Most see QA as bureaucratic exercise• Difficult exchanges between QA staff & POs• Problem: “How will my QM fix this?”
Keys to Success	<ul style="list-style-type: none">• Management takes ownership• Develop inventory, capture quality during award phase, build rapport with grants, contract staff• Build on positive behavior & ignore nay-sayers

Stage 2 Questions

Focus on Inventory

- How many active projects do we support?
- What percent collect environmental information?
- How many of these projects have approved quality documentation?



Stage 3: 50-75%

Characteristics	<ul style="list-style-type: none">• QMP approved and partially implemented• Quality Managers involved in management meetings• Management begins to ask QA questions
Actions	<ul style="list-style-type: none">• Project Officers employ systematic planning for all projects• QA staff involved in project planning• Inventory of projects 100% implemented
Attitudes	<ul style="list-style-type: none">• Most staff believe QA provides value• QM feels like part of the team and not tattle-tale• Problem: “How will we fix this?”• Management becomes enlightened by Quality status (answers to questions)
Keys to Success	<ul style="list-style-type: none">• QA staff must stay involved at project-level• Recognize and reward QA successes• Orient limited QA money to high priorities

Stage 3 Questions

Focus on Implementation

- How many projects have been assessed to evaluate key quality concerns and quality implementation?
- Are we focusing quality resources on the most important office decisions?
- Are we prioritizing resources to areas of greatest uncertainty?
- Is this uncertainty relevant to the decision to be made?



Stage 4: 75-100%

Characteristics	<ul style="list-style-type: none">• Quality system is comprehensive• QA is a component of daily activities for all staff• Peer review & info quality key parts of quality system• Managers are actively involved and well-trained• Office is perceived positively by external clients
Actions	<ul style="list-style-type: none">• Use QA training & experience in hiring criteria• Staff use “we” terms instead of “you” terms• Continually re-evaluate, QM provides data assessments that relate to office-wide goals
Attitudes	<ul style="list-style-type: none">• Staff seek out QA personnel for assistance• Staff are empowered to improve quality• Staff reveal QA concerns - know they’ll be heard
Keys to Success	<ul style="list-style-type: none">• Quality Manager integral part of project development• Project Officer seen as enforcer and not Quality Manager• Hire people with positive QA attitudes• Quality system relates to organizational goals

Stage 4 Questions

Focus on Reflection

- Have true environmental outcomes been addressed?
- Have we discussed how these quality issues affect the decision?
- Is the final product disseminated, consistent with Information Quality Guidelines and Peer Review (reproducible)?
- Have we discussed recommendations for improvement?



What Holds Managers Back?

Fear of additional resource demands

Narrow view of quality (e.g., focus on lab data); not seen as their function

They do not have battle scars from poor quality

Not realizing the management tools associated with the quality process

Where is your quality system?

WWTTW?

WWTTW = What would the taxpayers want?

Metrics Workgroup: Products and Next Steps

Metrics: Where are we now?

- Identified 10 draft metrics
 - Intended to provide reliable information for senior managers about EPA Quality System health & performance
 - Not intended to compare QA activities and accomplishments among organizations
- Limitations
 - Focused only on compliance
 - Ignores efficiency and effectiveness, which tend to reflect higher stages of maturity

Next Steps

- Using Quality Community feedback to
 - Clarify scope and meaning of each metric
 - Eliminate or defer those deemed to be of little value
- Create new workgroup for implementation of adopted metrics
 - Evaluate and refine as needed
- Explore ideas for measuring efficiency and effectiveness



Stages of Quality: Compliance, Efficiency, & Effectiveness

	Stage 1: 0-25%	Stage 2: 25-50%	Stage 3: 50-75%	Stage 4: 75-100%
Characteristics	<ul style="list-style-type: none"> External pressure forces development of QS One person appointed to QA No formal infrastructure for training, review, assessment and inventory 	<ul style="list-style-type: none"> QMP approved QAPPs developed for some projects Polarization of QM and POs 	<ul style="list-style-type: none"> QMP approved and partially implemented QMs involved in management meetings Management begins to ask QA questions 	<ul style="list-style-type: none"> Quality system is comprehensive QA is a component of daily activities for all staff Peer review & info quality key parts of QS Managers are actively involved and well-trained Office is perceived positively by external clients
Actions	<ul style="list-style-type: none"> Appoint additional QA personnel, through management edict, try to harness enthusiastic people showing initiative Artful Dodgers (Hide from QM) Argue that project is not technical or no data, no sampling 	<ul style="list-style-type: none"> QA staff identify delinquencies & try to fill gaps Training initiated, typically introductory Good opportunity for external MSRs Develop inventory of projects/expenditure Emphasize value of QA 	<ul style="list-style-type: none"> POs employ systematic planning for all projects QA staff involved in project planning Inventory of projects 100% implemented 	<ul style="list-style-type: none"> Use QA training & experience in hiring criteria Staff use "we" terms instead of "you" terms Continually re-evaluate QM provides data assessments that relate to office-wide goals
Attitudes	<ul style="list-style-type: none"> Management views quality as outside their primary focus Minimal understanding throughout organization, seen as an insurance policy Staff have narrow view of when quality is needed 	<ul style="list-style-type: none"> Most see QA as bureaucratic exercise Difficult exchanges between QA staff & POs Problem: "How will my QM fix this?" 	<ul style="list-style-type: none"> Most staff believe QA provides value QM feels like part of the team and not tattle-tale Problem: "How will we fix this?" Management becomes enlightened by Quality status (answers to questions) 	<ul style="list-style-type: none"> Staff seek out QA personnel for assistance Staff are empowered to improve quality Staff reveal QA concerns - know they'll be heard
Keys to Success	<ul style="list-style-type: none"> Develop generic QMP (not too prescriptive) Encourage broader ownership across the office Try to document existing processes that relate to Quality (e.g. workload planning, expenditures) Avoid using top down logic for selling Quality, vs. explanation of the benefits 	<ul style="list-style-type: none"> Management takes ownership Develop inventory, capture quality during award phase, build rapport with grants contract staff Build on positive behavior & ignore naysayers 	<ul style="list-style-type: none"> QA staff must stay involved at project-level Recognize and reward QA successes Orient limited QA staff to high activities 	<ul style="list-style-type: none"> QM integral part of project development PO seen as partner and not QM Hire people with positive QA attitudes Quality system relates to organizational goals

Yellow = Compliance | Blue₃₀ = Effectiveness | Green = Efficiency

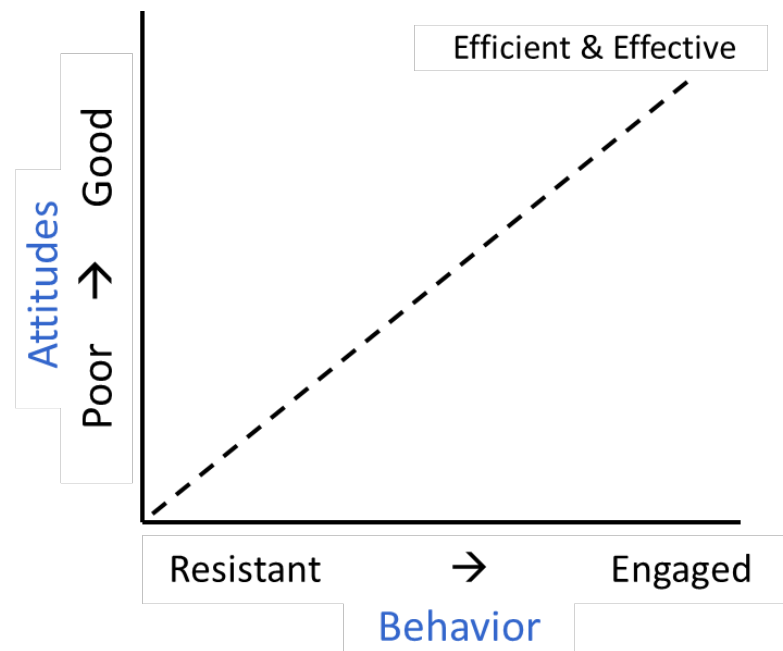
Observations

- As you move through the stages of maturity
 - Focus shifts from compliance to effectiveness and efficiency
- Stage 4 links Quality System to Organizational Goals
 - “Continually re-evaluate, QM provides data assessments that relate to office-wide goals” (*action*)
 - “Quality System relates to organizational goals” (*key to success*)

Observations



- More than half of the assessment factors in the stages are based on an attitudes or behaviors, e.g.,
 - Artful dodgers vs. staff seeking out QA personnel for assistance
 - Polarization of QMs and Project Leads vs. QM feeling like part of the team
 - Staff use “you” instead of “we” terminology vs. staff feel empowered to improve quality
 - QA seen as a bureaucratic exercise vs. value of QA is emphasized



Questions

- If quality system success is largely based on attitudes and behaviors that impact efficiency and effectiveness
 - How do we *objectively measure* and quantify it?
 - Surveys? QSAs? Other ideas?
- Are there other ways to measure effectiveness and efficiency?
 - No. of products vs. no. challenges lost due to data quality (e.g., legal or IQG) Other ideas?
- How do we quantitatively tie how well a quality system relates to organization's goals?
 - GPRA? Strategic Plan? Data Quality Records?
- What role would the enterprise QM system have?

Open Discussion
Let's hear your thoughts!



Quality for Peak Performance!

Please send comments and questions to:

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GLNPO: FYs 2012 – 2016 active project status

Issued	# Projects	# Projects Requiring QD	# Awaiting QD	# Undergoing Review	# Conditionally Approved	# Fully Approved	% Fully Approved
FY2012	62	40	0	1	2	38	93%
FY2013	60	41	2	2	1	36	88%
FY2014	36	31	0	1	2	28	90%
FY2015	48	34	0	4	1	29	85%
FY2016	51	43	19	7	3	14	33%

QD = quality documentation