Measuring Research Impact in a Lean Management System: Experience of EPA's Office of Research of Development

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Building Bridges Across the S&T Enterprise

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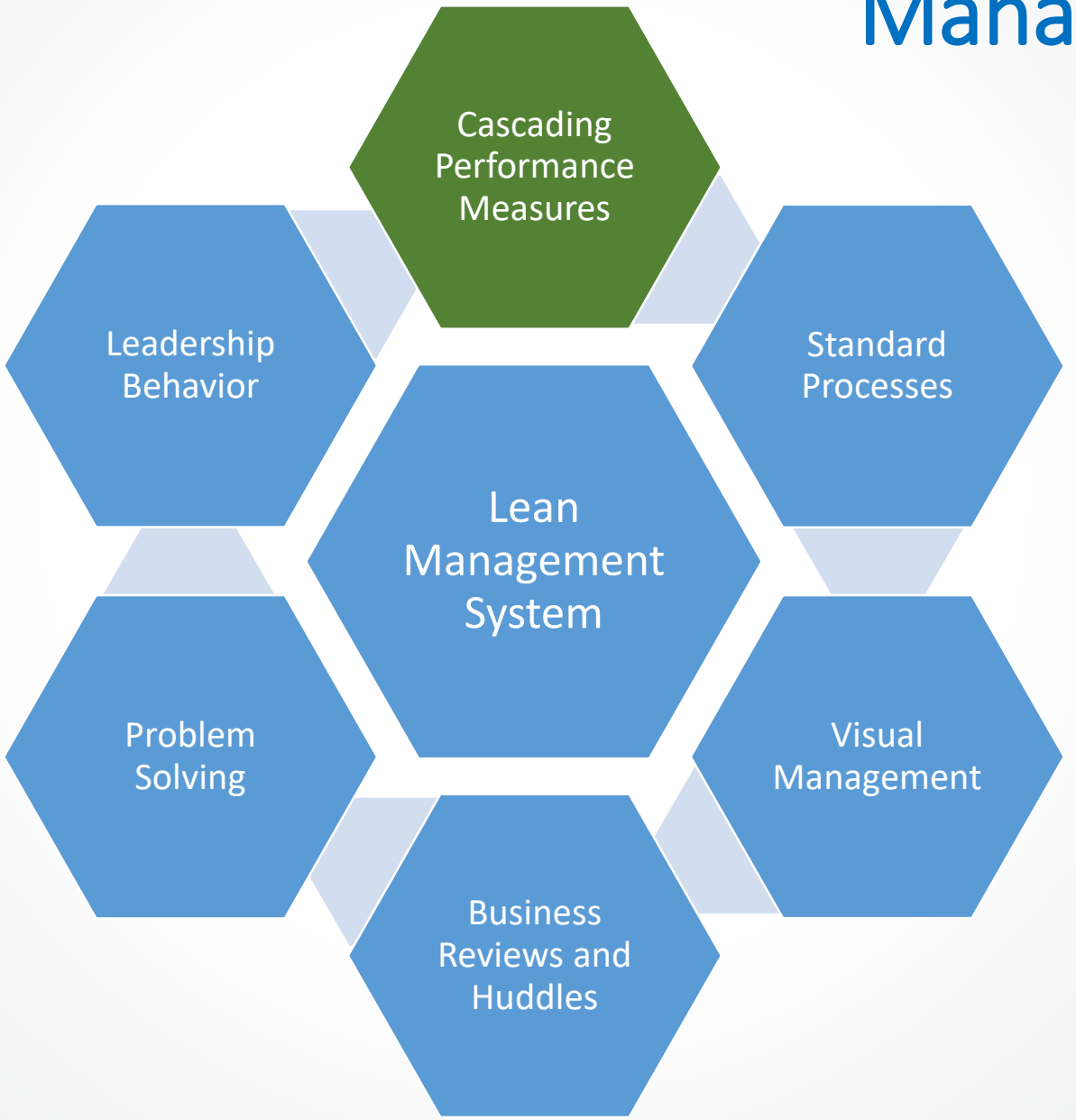
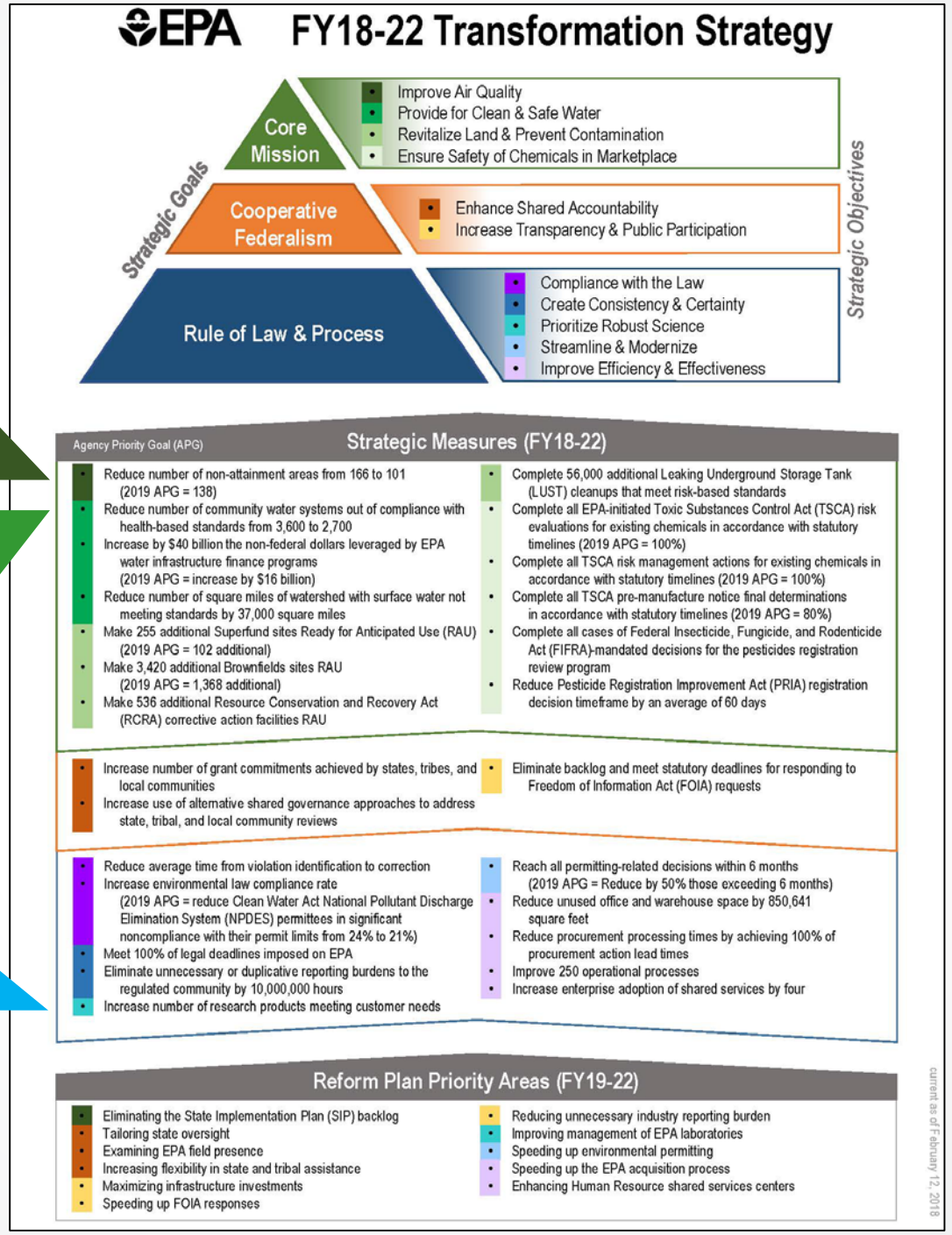
Components of Lean Management System



Air Strategic Measure:
Reduce number of non-attainment areas from 166 to 101

Water Strategic Measure:
Reduce number of community water systems out of compliance with health-based standards from 3600 to 2700

Research Strategic Measure:
Increase number of products that meet customer needs



EPA Transformation Strategy on a Page

EPA Research Strategic Measure (reported annually as GPRA Measure)

- Increase the percentage of research products that meet customer needs*
  - FY18 Performance: 77%
  - FY19 Target: 77%
  - FY20 Target: 80%

- **Meeting customer needs** is defined by three criteria:
  - Quality
  - Usability
  - Timeliness

- **Customer** = EPA Program Office/Region (currently)

* Note: strategic measure recently revised from increase the “number” of research products to increase the “percentage” of research products.

Meeting Customer Needs

Quality - The extent to which a research product meets scientific and technical standards, is rigorous and transparent, and advances the state of knowledge for a particular topic. A product is high quality if:

- It was developed in accordance with the ORD science and data policies, including but not limited to quality assurance and peer review.
- It is peer reviewed and published by the broader scientific community.
- Is sufficiently rigorous and transparent to support EPA regulatory and non-regulatory work.

Usability – The degree to which a research product is suited for and easily applied to actions within EPA's mission. A product is highly usable if:

- It provides information relevant to customer decisions or actions. The product informs the Agency and partners on scientific uncertainties, risk interpretations and future data needs.
- The product, along with key data and source material, are readily accessible to the intended audience.
- Sufficient engagement and support is provided to the intended customer to allow for full applicability

Timeliness – whether a product is delivered within a timeframe appropriate for customer use. A product is considered timely if:

- The anticipated product delivery date is determined considering customer use expectations.
- It is delivered by the anticipated delivery date.

Metric to Evaluate Strategic Measure

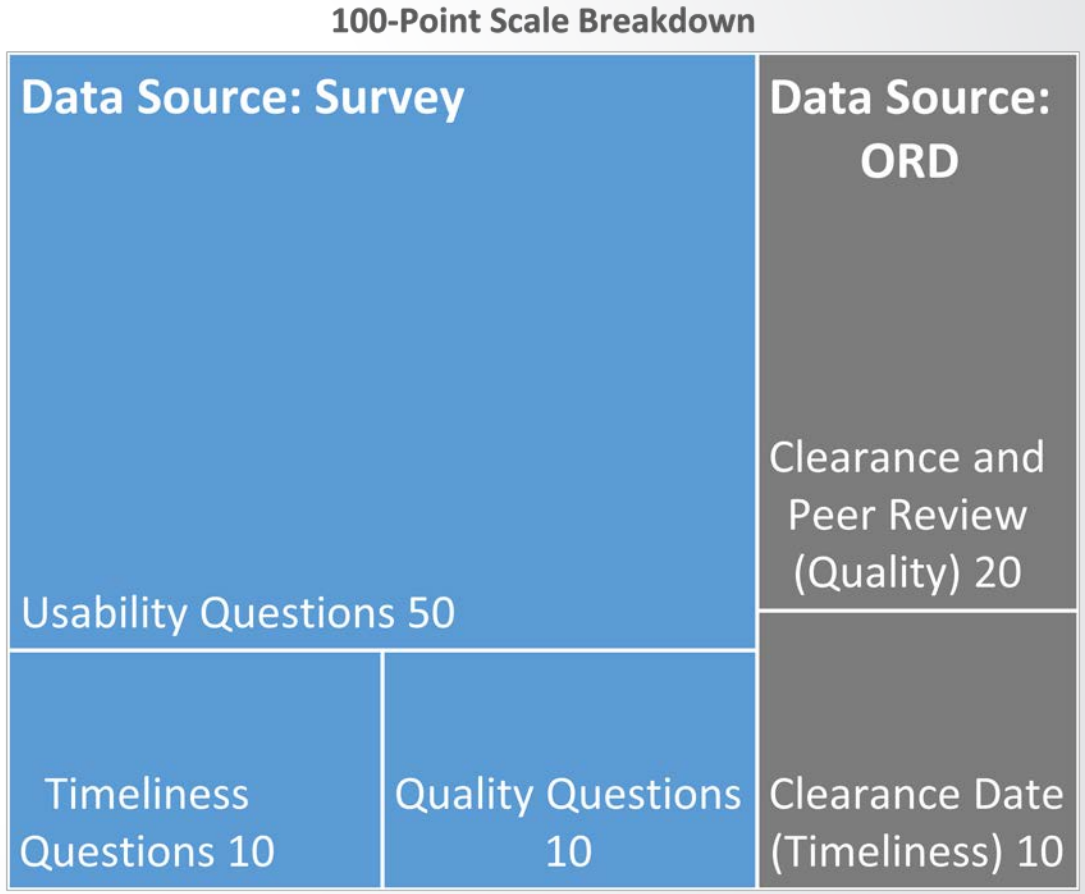
The EPA Office of Research and Development developed a metric to be use to report on the Strategic Measure.

- This metric scores individual products on a 100-point scale
- A product "meets customer needs" if its score exceeds this threshold (85 of 100)
- Metric used survey instrument as well as internal data.
  - 70 points come from customer survey
  - 30 points come from internal ORD sources
- The survey an estimated 15 minutes to complete

Sample Question:

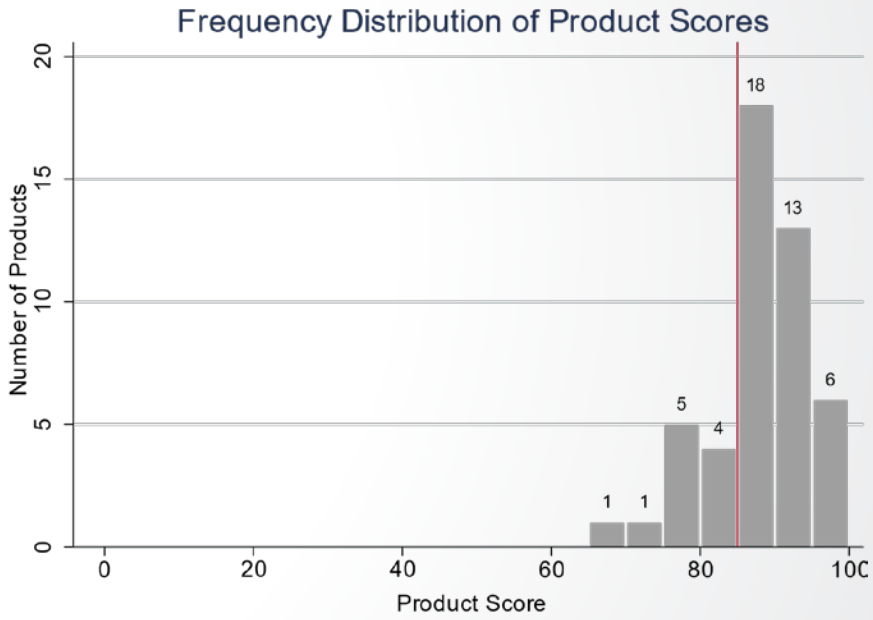
"The product is designed or presented in a way that is user-friendly for me."

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree



FY18 Results for FY17 Products

- Mean product score: 87.39 out of 100
- 37 of 48 products (77%) scored greater than or equal to 85 (met customer needs)



Key Take Away Messages

- EPA's Strategic Plan and Lean Management System are driven by measures related to organization goals/objectives/performance.

- Difficult to identify a single metric to evaluate the impact of research
  - Measurable/Quantifiable
  - Time lag
  - Variety of stakeholders

- Challenges with survey instrument
  - Response rate
  - Inherent biases
  - Reaching external customers

- EPA is reporting results of its Strategic Measure for research to meet GPRA requirements and continues to search for and evaluate/assess other approaches for measuring the impact of its research.