Lean in Emissions Data-Related Processes

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Goals

- Share experience with Lean in emissions data-related processes:
  - 3 Lean events: CAER (focus of this presentation), Non-point NEI and NATA
- Elicit ideas on processes you think could benefit from applying Lean in a collaborative way

What is Lean?

A process improvement methodology that helps identify and remove **waste**: steps that add no value, and that don't have to be there

Activity Value
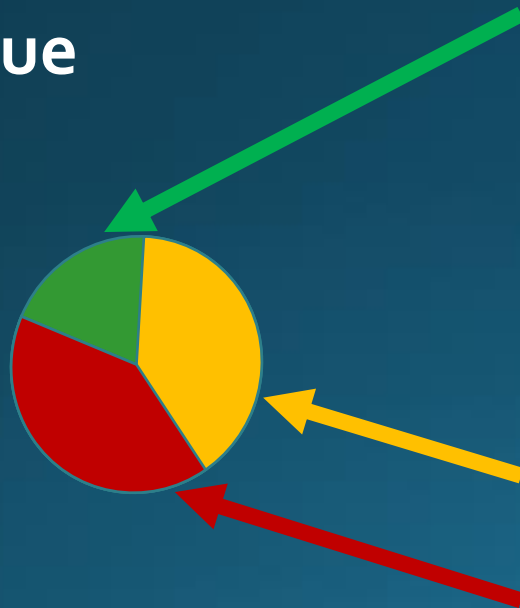
Value Added (VA): Any operation or activity your customers value and are/would be willing to pay for

Non-value Added (NVA): Any operation or activity that consumes time and/or resources but doesn't add value to the services/products provided from the customer's perspective.

Necessary: Regulatory or necessary for the business to function effectively (e.g. regulations, inspections quality control or that are required by law).
Unnecessary: Everything else- waste!

The 8 Types of Waste

WASTES	DEFINITION	EXAMPLES
Defects	Revise – Redo – Reworks - Repeats	• Inaccurate data entry or data transfer • Re-doing a test • Asking for information and only getting part of it
Over-production	Producing too much or too soon	• Delivering 3 paper copies of a rule to an office that doesn't need or want them • Making a decision too early and then having to go back and re-consider because circumstances have changed • Asking for information on an application that you don't use to make the decision
Waiting	Waiting on parts or information to finish step	• Holding requests until you have a stack and then processing them all at once • Waiting for the last person's comments before finalizing the briefing
Not utilizing available knowledge/skills	Any failure to fully utilize time and talents of people	• Not having specialists focused on specialized tasks • Not gathering input from experts (like you)

The 8 Types of Waste

| WASTES	DEFINITION	EXAMPLES
Transportation	Any nonessential transport	• Shipping hard copies for signature instead of scanning and emailing • Traveling to a meeting for a discussion that could have been held over the phone or email
Inventory	Any more items or information than what is required to get the job done	• Storing all the old drafts of everything you've ever written • Providing too much information that a decision-maker gets overwhelmed and can't make a decision • Sending an email copy of the file and a link to a shared copy and making reviewers guess which version to edit
Motion	Any motion that does not add value	• Navigating multiple screens to input data • Re-logging to an application 20 times a day • Searching
Extra or unnecessary processing	Any more than required by the customer	• Making gorgeous graphics for a reader than wants text (or vice versa) • Keeping multiple databases with similar info up to date • That 15th reviewer for the one page letter

Often wastes work together. For example, waiting for the last reviewer, or for a colleague to fix a defect, can take so long that the situation changes, the first part becomes obsolete, and you have to do it all over again.

*Information & materials borrowed with permission from the Lasater Institute

Adding Metrics

Process Time (PT) – time it takes to actually perform the work (includes talking, thinking, doing), if it happens without any interruptions

Lead Time (LT) - How long it takes from when the previous step is completed until the following step can begin (sum of PT + wait/delay times)
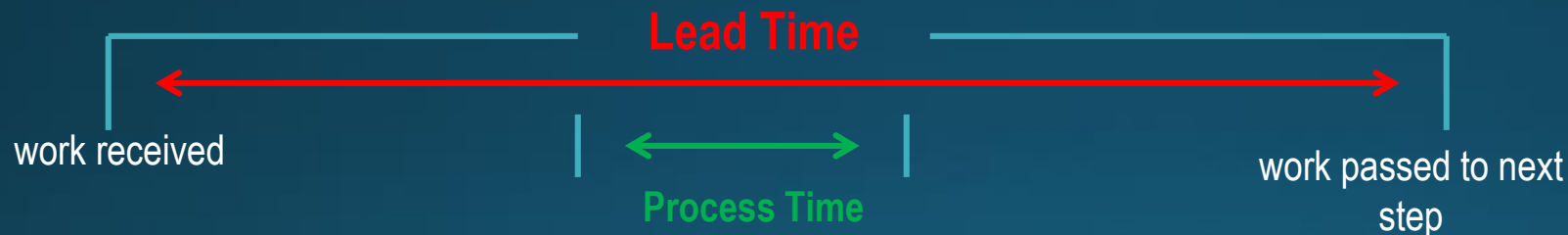
% Complete & Accurate (%C&A) - The percentage of the time the next person in the process can complete his/her step without asking for:

- Corrections to the info or material that was supplied
- Additional info that should have been supplied
- Clarifications for info that should or could have been clear the first time

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Key Lean Principles

- Engages those who actually do the work
- Helps people "learn to see" waste in a process
- Brings measureable and sustained improvements by using data and metrics to track progress
- Brings rapid, real-time change
- Focuses on doing over planning
- Builds and sustains momentum towards creating a continuous improvement culture

Steps in Lean

Pre-event:
- Team: everyone involved in the process including customers and relevant stakeholders
- Charter: scope of the process, goals to accomplish

Event:
- Mapping of the current state
- Measures and metrics
- Root cause analysis
- Mapping of future state
- Implementation plan

Implementation: Adoption of plan and continuous improvement

Three examples:

- Combined Air Emissions Reporting (focus of this presentation)
- Nonpoint – National Emissions Inventory (details in Rich Mason's presentation Wednesday Session3: Nonpoint and Point Sources)
- National Air Toxics Assessment (NATA - ongoing)

E-Enterprise Air Emissions Reporting

February 2015 – Currently the Combined Air Emissions Reporting Project (CAER)

Problem Statement

Current emissions data collection paradigm results in:

- potential duplication of effort by facilities,
- inconsistent information in EPA databases,
- to EPA performing after-the-fact reconciliation of the submitted information across programs

Emissions and related information collected by SLT agencies and EPA:

- Is in a variety of formats and according to different reporting schedules.
- Involves different regulatory and reporting requirements so facilities may have to report same information several times
- Involves some of the information sent directly to EPA, other information to state (which either uses it for its own purposes, and/or forwards it EPA to be put into a national database).

Goals of Lean Event

Project Goals:

- Facility reporting fewest instances needed to meet the most existing requirements.

- Government data handling: Single authoritative mechanism for annual emissions reporting (GHG, NEI, TRI), and stack test data (for CEDRI), as well as related facility and sub-facility data.

Improvement Goal – Timing:

- Release accurate data to the public in as close to real time as possible
- Make NEI point source data available within 9 months of end of emissions year
- Make all TRI, GHG, NEI data available in one place within 12 months of end of emissions year to public

CEDRI: Compliance and Emissions Data Reporting Interface

Goals of Lean Event

Burden reduction goals
- Reduce level of effort for facilities to meet all reporting deadlines by 50% or more.
- Determine fewer/a single mechanism that facilities can use to support 2 or more program needs for emissions data.

Process and accessibility goals
- Simultaneous EPA and state data revisions
- Use data from CEDRI to improve one or more emissions data programs (data quality).
- Eliminate manual matching needs across air emissions databases for facility-level data and sub-facility characteristics
- Provide facility-level, annual emissions values to a single, authoritative mechanism for public access to emissions of all pollutants collected by the EPA

CEDRI: Compliance and Emissions Data Reporting Interface

Scope and Boundaries

Starting point: NEI, TRI, GHG, CEDRI data reporting from facilities and/or states to EPA

Endpoint: publicly available data

Out of bound solutions:

- Eliminating emission programs
- Ignoring CBI
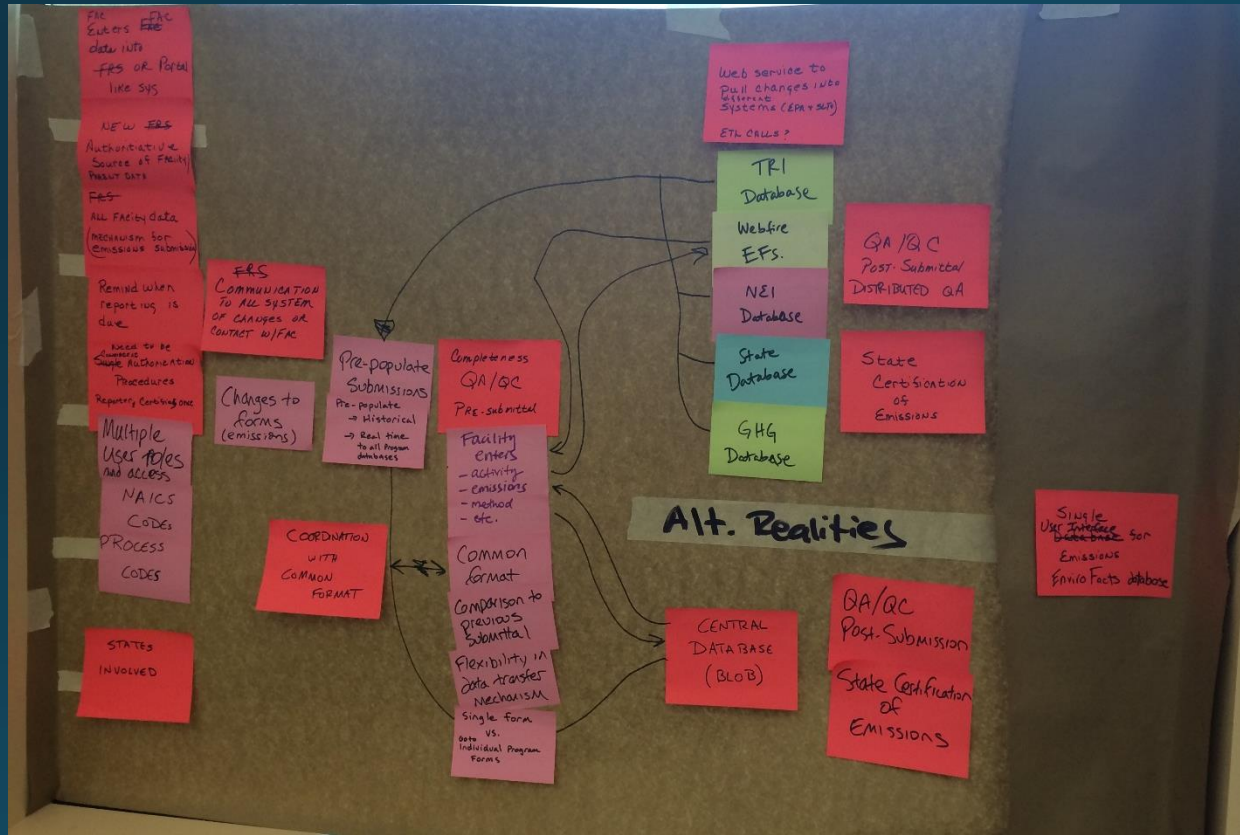- Solutions for which costs cannot be estimated.

In bound solutions:

- Short term (1-5 years): e.g. central data collection, data sharing, automation, back-end integration (regulations and industry practices permitting).
- Long term (8 years): regulatory changes for data flow and timing
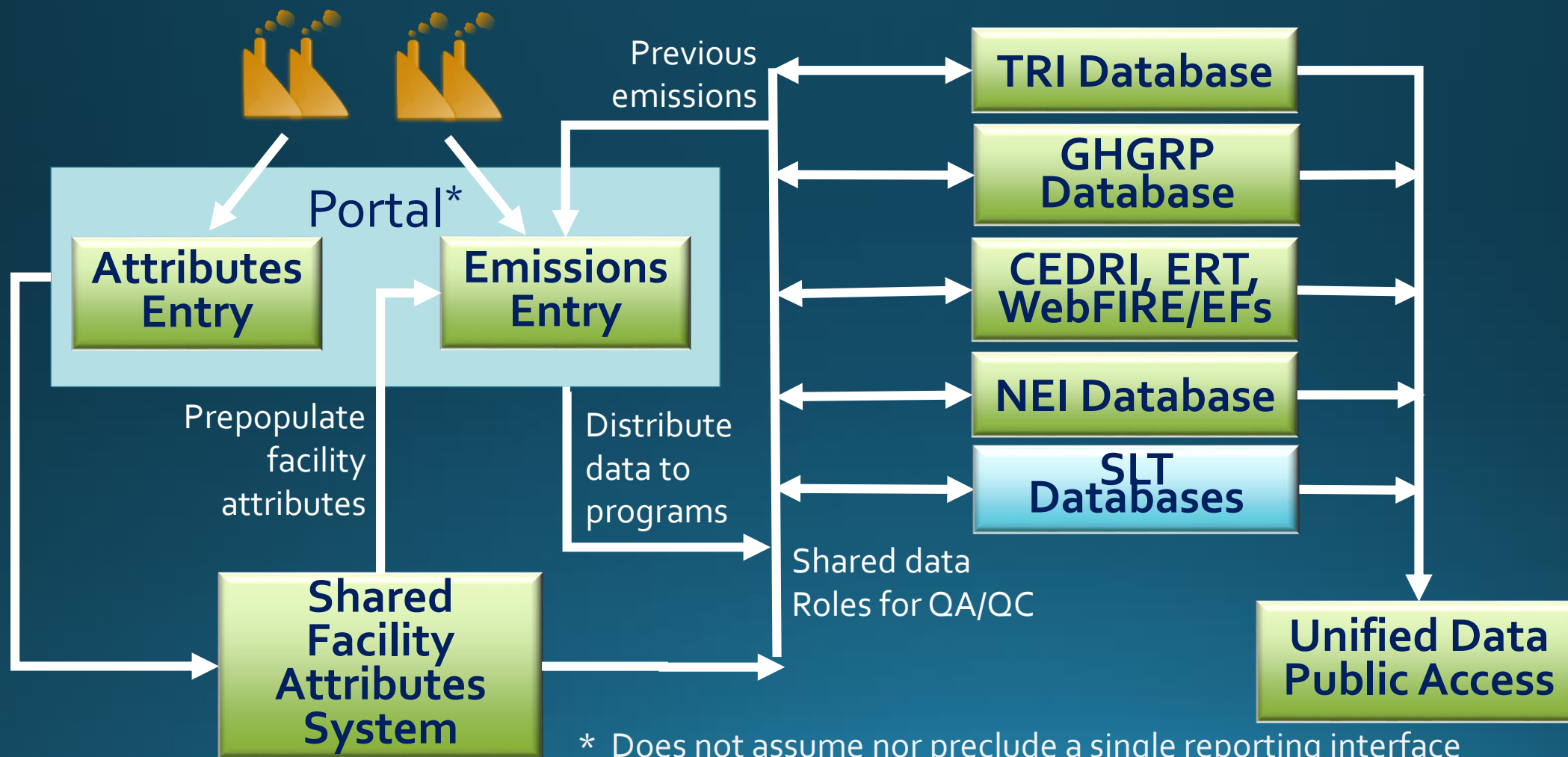
Current State
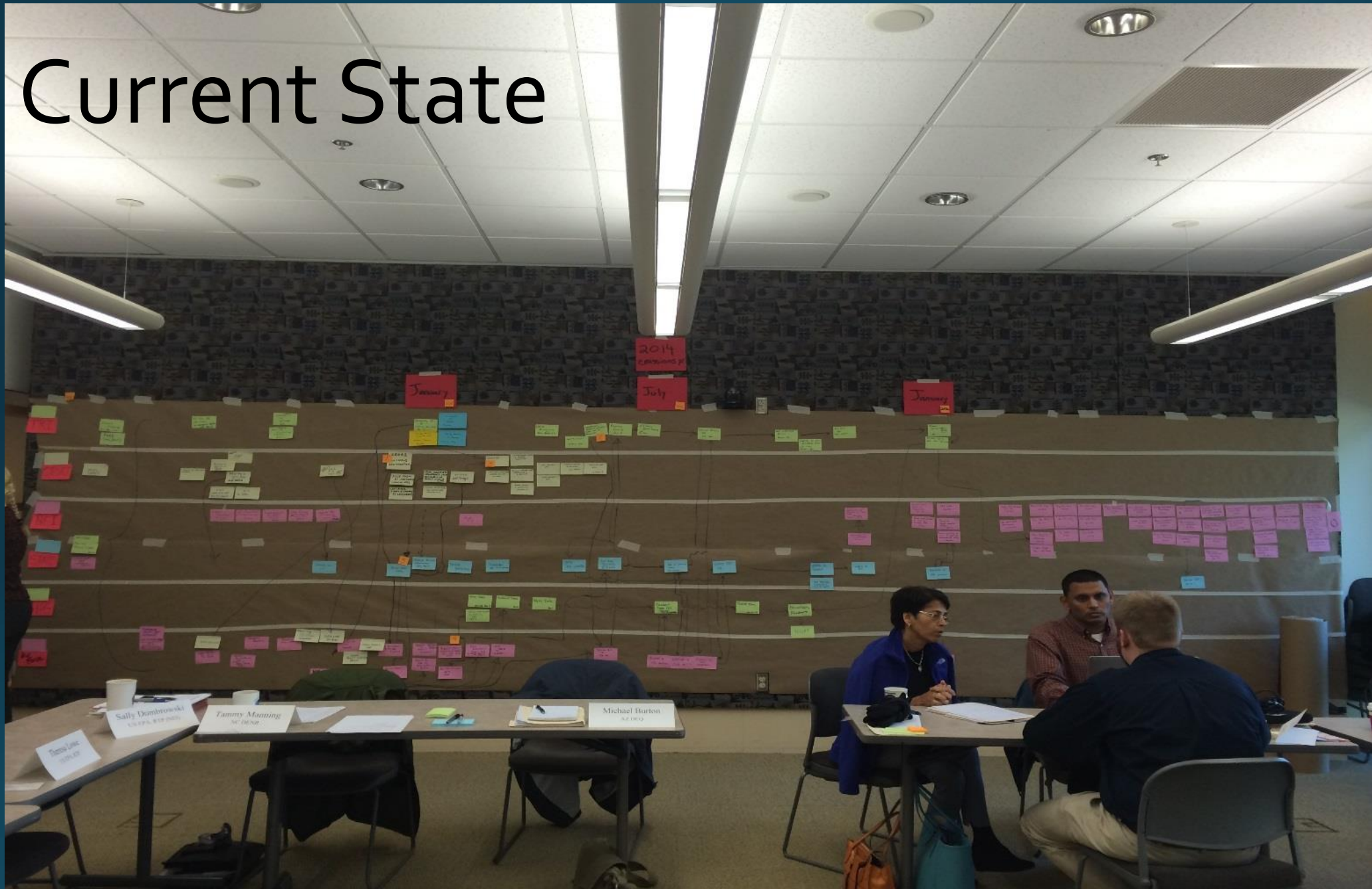
Future State

Process changes

- Compile and use shared facility attributes
- Single emissions/activity data entry portal
- Link program databases
- Enhance, share, and automate QA/QC across facility, EPA, region, state
- Present to public all reported air emissions (and facility) data in a unified way at the facility level

Air Emissions – Proposed Future State

Portal*

Attributes Entry

Emissions Entry

Previous emissions

Prepopulate facility attributes

Distribute data to programs

Shared Facility Attributes System

Shared data
Roles for QA/QC

TRI Database

GHGRP Database

CEDRI, ERT, WebFIRE/EFs

NEI Database

SLT Databases

Unified Data Public Access

* Does not assume nor preclude a single reporting interface

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Implementation

CAER program ongoing (Wednesday Aug 16 CAER sessions)

- Coordination among air offices and partnership with states and industry
- Facility Registry Service new data model towards shared facility data
- Short term wins projects: including SCC web search and web services (presentation in Tools and GIS Session 8)
- PDT activities (exploration of common form platform for combined reporting – CAER Sessions)

Team members

EPA: Marc Houyoux & Sally Dombrowski (Emissions Inventory Group), Ketan Patel & Theresa Lowe (Sectors Policies and Programs Division), Dave Turk & Dipti Singh (Toxics Release Inventory), Mark DeFigueiredo (EPA GHGI), Tamara Saltman & Kim Green-Goldsborough (Facilitators)

States: Michael Burton (AZ DEQ), Tammy Manning (NC DENR)

Industry/other stakeholders: Shane Irvin (Alcoa), Sean O'Brien (Conoco-Phillips), Frank Castaneda (Air Force)

Questions?

Thank you for your attention.

Send your questions and comments about the CAER project to **caer@epa.gov**.