



Road Weather Management L01 e-Tool Demo



U.S. Department of Transportation
Federal Highway Administration

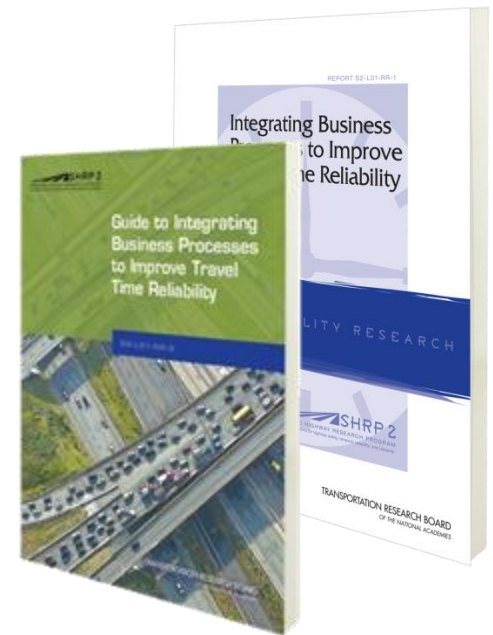
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Introduction

- This e-tool is based on research conducted in **SHRP2: *Integrating Business Processes to Improve Travel Time Reliability (L01)***
- The e-tool is designed to assist agencies in identifying their business processes that effect travel time reliability
- Reliability is dependent on many agencies and processes
- Opportunities exist to reduce the impact of congestion triggers



Introduction

- **Process – A series of actions or activities that result in a specific or desired outcome to accomplish a specific goal**
 - The method by which an incident is detected (911 call, service patrol call, etc.)
- **Business Process Mapping**
 - Provides a visual representation of steps and connections
 - Identifies areas for improvement
 - Highlights resource needs
 - Identifies additional support needs

Application of e-tool

The e-tool can be used to assess business processes for the following operational areas:

- Incident management
- Work zones
- Planned special events
- Weather/road weather management
- Traffic control/traffic operations
- Capacity/recurring congestion
- Fluctuations in demand



Intended Use of e-tool



Includes an orientation and an application module

- **Orientation module:**

- Provides background
- Introduces case studies

- **Application module:**

- Intended for use in a group setting
- Ideally, the orientation module has already been completed



IDENTIFYING INFLUENCES



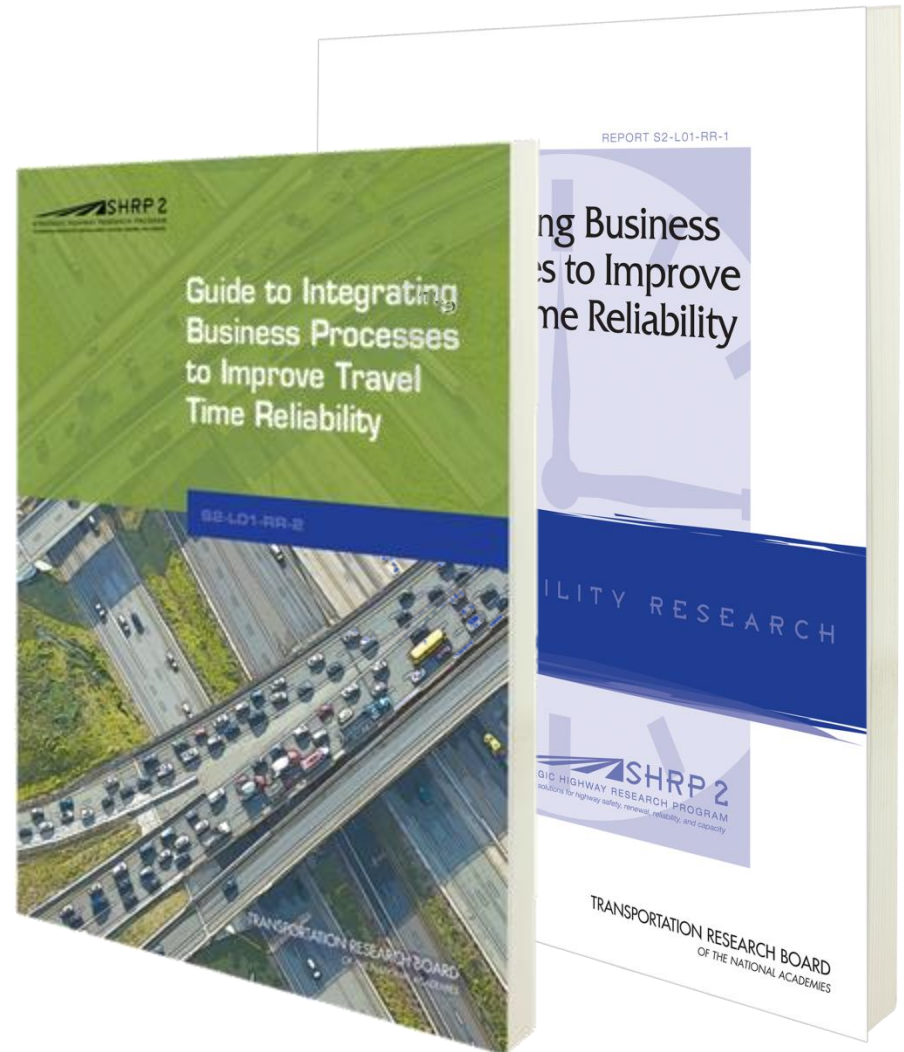
Identifying Influences

**What made it
apparent that there is
a need to improve a
business process in
order to improve
travel time reliability?**

TOP DOWN

EVENT DRIVEN

NEEDS BASED



Top Down



- **Also known as “big directive”**
- **Legislative requirement or management – level directive**
- **Washington State DOT (WSDOT) Joint Operations Policy Statement and Instant Tow Program**
 - Directive came from the governor’s office
 - Work closely with the Washington State Patrol

Event Driven

- **Caused by a specific event or hazard, like an accident**
- **Nevada DOT I-80 Winter Closure Program**
 - Significant crash due to weather
 - Major delays
 - There was a need to prevent further instances



Needs Based

- **Also known as “opportunity based”**
- **Evolves over time according to recurring needs**
- **Influences day-to-day operations**
- **Florida DOT Road Ranger Program**
 - Need to assist distressed vehicles
 - Initially implemented to assist with work zones, later expanded to assist stranded motorists



STEP
2

**DEFINING THE SPECIFIC
RELIABILITY GOAL**



Defining the Specific Reliability Goal



- **Used to measure success**
- **Focuses your efforts**
- **Assists in the development of benchmarks**
 - Reducing incident clearance time
 - Providing 24/7 operations
 - Improving resource efficiency
 - Reducing congestion
 - Reducing delays

NDOT Example

- NDOT identified a problem with truck queues idling on I-80 near the California state line.
- NDOT defined a goal of limiting the number of trucks parked or idling on shoulders by providing advance notice of a closure near the state line.



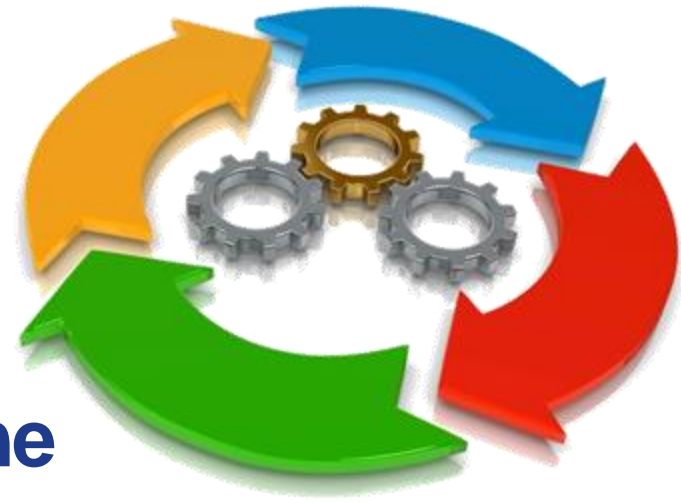
STEP
3

**IDENTIFYING AND
DOCUMENTING
CURRENT BUSINESS
PROCESSES**



Identifying and Documenting Business Processes

- **A business process:**
 - Defines a series of actions or activities that result in a specific or desired outcome to accomplish a specific organizational goal
 - Is most likely something your agency does on a daily basis
- **The purpose is to formally document the business process associated with one of the operational areas**



Identifying and Documenting Business Processes



- **Benefits**

- Better understanding of the business process
- Identifying gaps in communications or data flows
- Identifying missing stakeholders
- Formalizing roles and responsibilities to ensure continuity and retaining institutional knowledge

Identifying and Documenting Business Processes



- Demonstrate multiple methods by which a visual representation of an agency's business process can be developed
- No method is better than another
- Users are referred to the final reports of SHRP2 *Integrating Business Processes to Improve Travel Time Reliability (L01)* for additional information

Identifying and Documenting Business Processes

- **Start with the basics:**
 - Which agencies or organizations are key to a successful implementation?
 - NDOT identified the following stakeholders:
 - NDOT Road Operations Center
 - Caltrans
 - Nevada Highway Patrol
 - California Highway Patrol
 - Local law enforcement
 - Freight companies
 - The motorists



Identifying and Documenting Business Processes

- **Gather all documentation for your management program:**
 - Standard Operating Procedures
 - Formal Memorandums of Understanding
 - Informal exchanges of information and data
 - Current management methods
 - Others
- **Next, document the process or reverse engineer the current management process**
 - Data flows
 - Decision points
 - Process integration points
 - Critical input and output
 - Responsible entities
 - Integration of processes

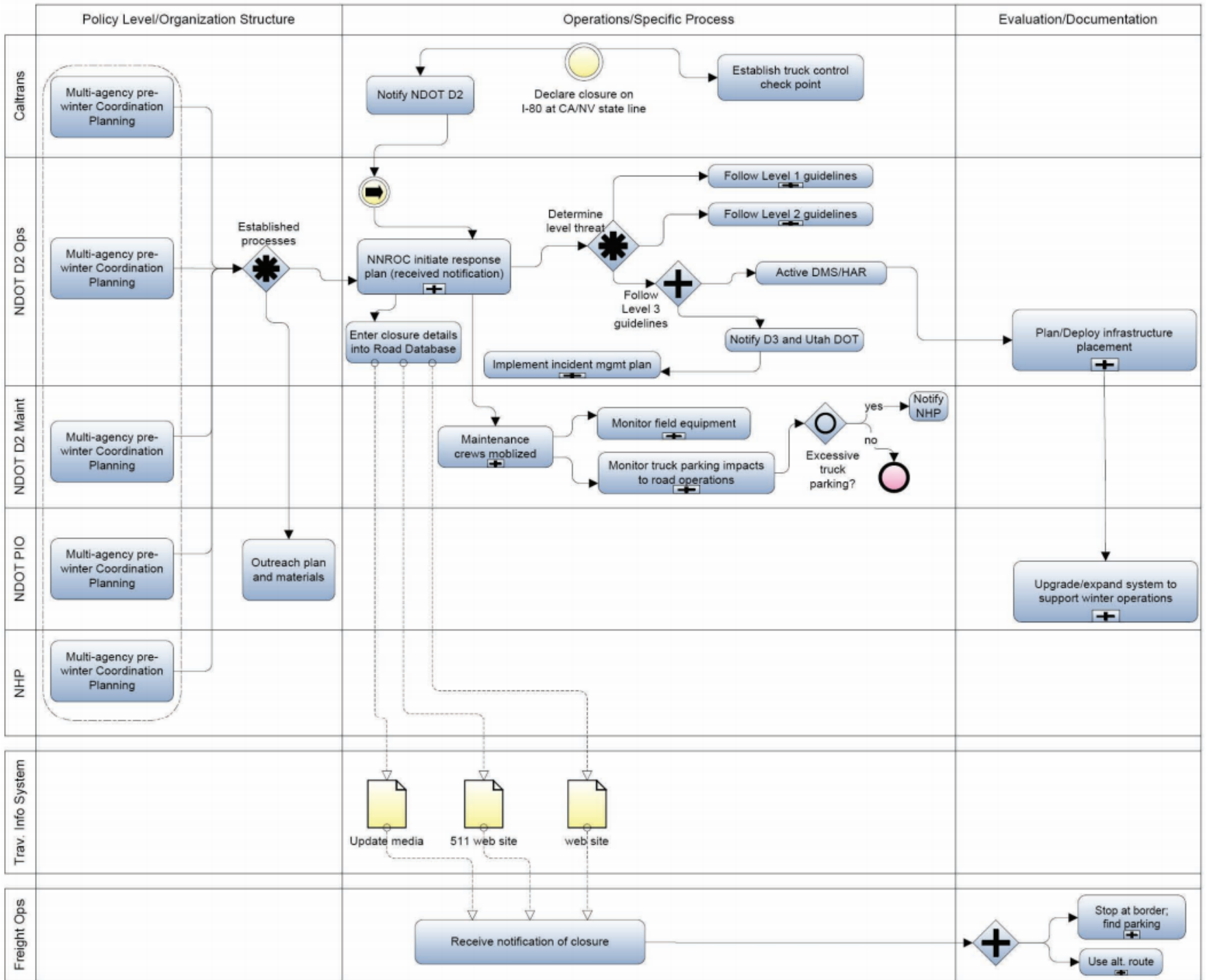
Identifying and Documenting Business Processes

- Next, create a visual representation of the operations process
- There are several approaches to mapping business processes
- In some cases, a sketch may be sufficient
- In other cases, a more comprehensive and complex drawing may be required



NDOT BPMN Example

- **Business process modeling is more formal than the previous flow chart**
- **Makes connection between:**
 - Those who create the process
 - Those who implement the process
 - Those who perform the process
- **Business Process Modeling Notation (BPMN) is detailed in L01 Report**

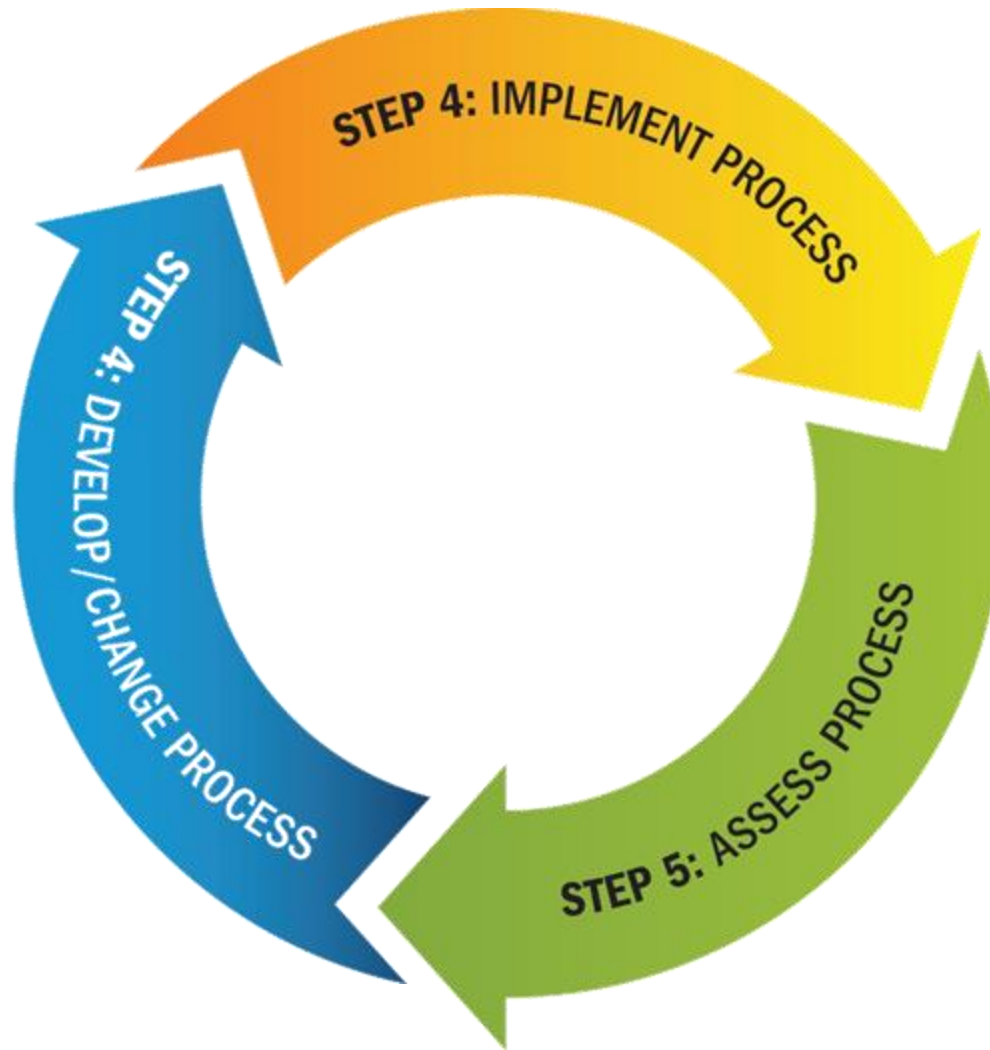




DEVELOPING/CHANGING AND IMPLEMENTING PROCESS



Developing/Changing and Implementing Process



Develop/Change Process



- **Utilize map from Step 3 and influences described in Step 1**
- **Change business process to reflect changes in:**
 - Policy
 - Procedures
 - Decisions made by the group
- **Timeframe for moving forward to implementation**
 - Depends on agency's ability to develop/change the current business process
 - Unique for each agency and each situation
 - Formal or informal in nature

Implement Process



- **The approach to this step varies**
 - Number of agencies involved
 - Depth of process
- **Be sure to involve all stakeholders**
 - Office managers
 - Operators
 - Field workers
- **Timeframe for moving forward to Step 5**
 - Needs to be sufficient to allow for stabilization of new process
 - Each iteration of implementation of refined process may reduce time

NDOT Example



- Coordinating agencies established a hierarchy of closure events based on expected duration.
- Motorists are warned of the closure or forced to detour based on the expected duration.
- For very long closures, other neighboring states are also warned.

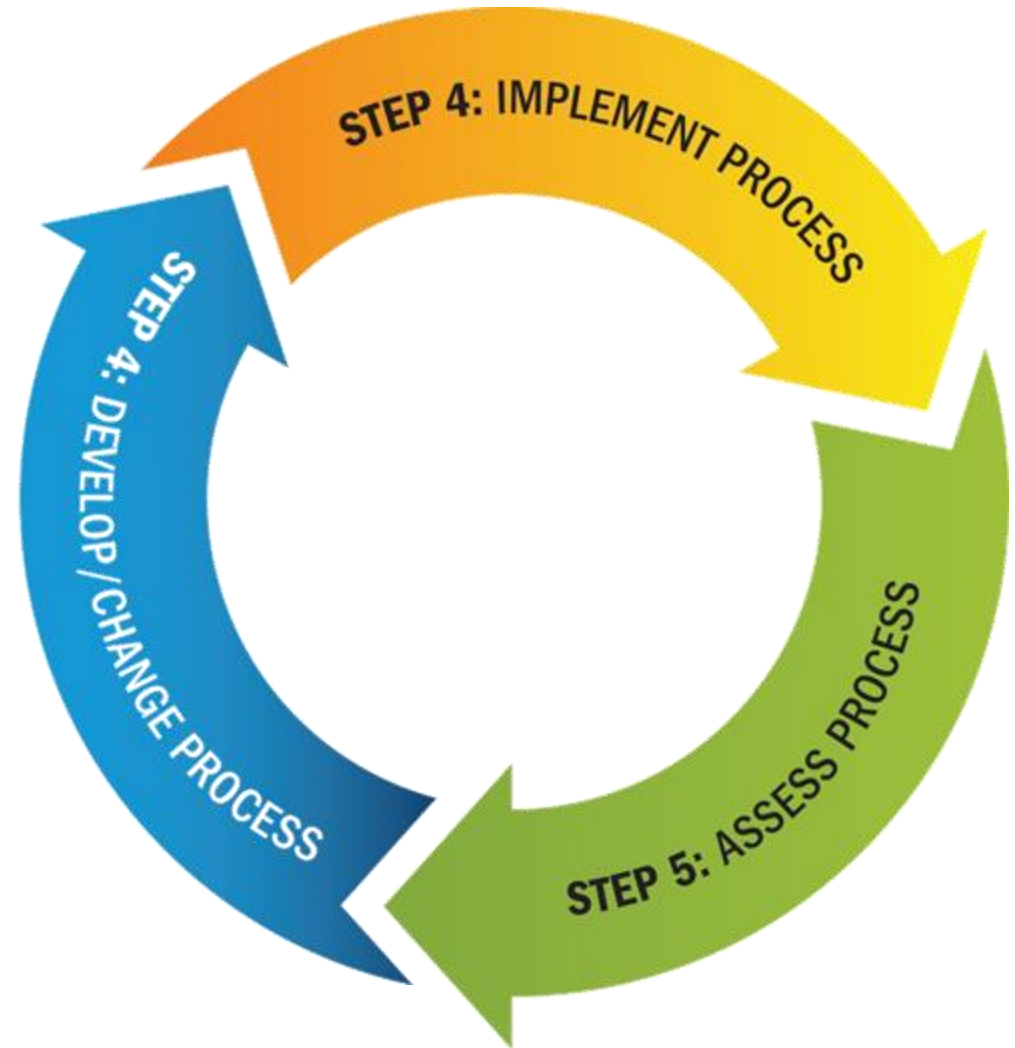
STEP
5

ASSESSING THE PROCESS



Assessing the Process

Important to determine the effectiveness of the newly developed process



Assessing the Process

- **Necessary Information:**
 - Measure of success
 - Method of continuous evaluation
 - Necessary data
- **Benefits:**
 - Better communication with senior managers and the public
 - Ongoing performance measurement
 - Measurement against pre-implementation conditions

NDOT Example

- Recurring nature of events allows for ongoing assessment.
- Collaborating agencies meet to identify opportunities for enhancement.
- Performance measures include public usage, number of notifications issued, and queue length.



STEP
6

DOCUMENTING THE PROCESS



Documenting the Process

- **Occurs once the new process has been implemented and proven effective**
- **Includes:**
 - Details of new business process
 - Details of evaluation process
 - Benefits
 - Lessons learned
 - Roles and responsibilities of stakeholders



Documenting the Process

- **Helps to demonstrate performance**
- **Facilitate easier updates**
- **Example of documentation**
 - Internal memorandums
 - Informal memorandums of understanding
 - User guides
 - Agreements between stakeholders
- **Other types**
 - Evaluation meetings
 - Reports
 - Flowcharts

NDOT Example



- Continual planning meetings with coordinating agencies.
- Tailoring of operational procedures to specific events.
- Formal agreement with Caltrans to activate restrictions and turnarounds in Nevada.

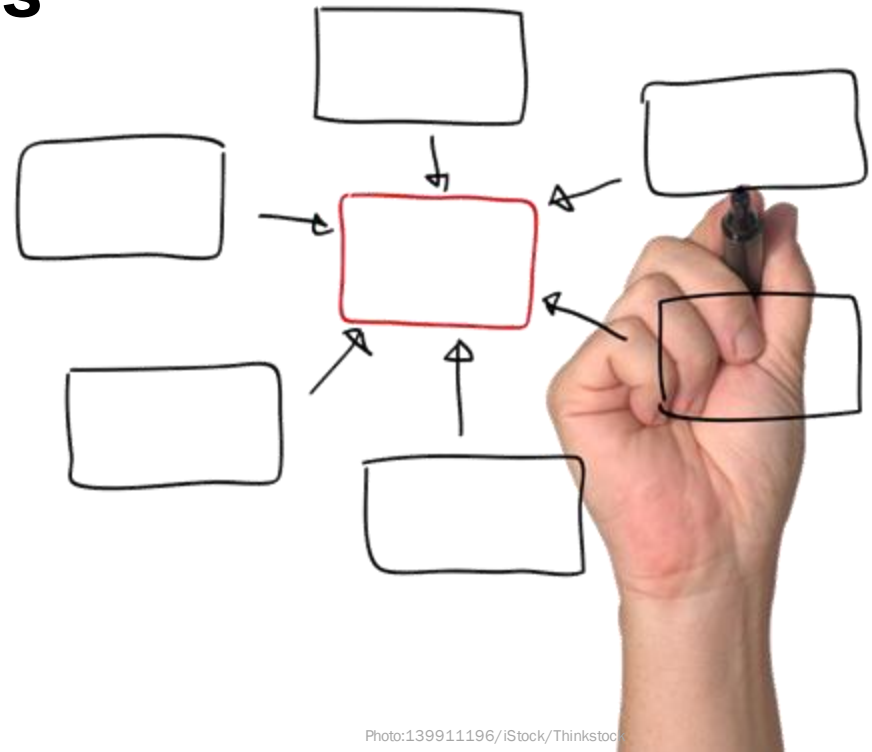


INSTITUTIONALIZING THE PROCESS



Institutionalizing the Process

- **The way in which a new or changed process is incorporated into existing policies or management programs**
- **Starts at the higher levels**
- **Important to link to firmly established agency goals**



Strategies and Considerations



- **Stakeholder buy-in**

- Requires more than adoption of operational activities or processes
- Example, effective operation of the I-80 corridor during winter involves multiple state DOTs, interagency cooperation, and established operational procedures.

- **Tangible results**

- Benefits and outcomes must be tangible and directly related to each agency and operating unit

Strategies and Considerations



- **Developing formal documentation that is accessible and available to everyone**
 - Example, inter-agency agreement on a network directory
- **Ensure documentation is sustainable**
 - Documents such as MOUs that require formal approval have a better likelihood of outlasting informal agreements

NDOT Example



- Long-standing agreement between Caltrans and NDOT established the initial framework.
- Cooperation between the agencies allowed for the installation of necessary infrastructure.
- Collaboration prewinter allows both states to continually review and refine procedures.
- Need to provide information to freight traffic has inspired key enhancements for NDOT.