# Rapid, Global Communication of Company Policies and Standards

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## Introduction

The challenge of "getting everyone on the same page" is a significant one for companies that operate globally, due to such factors as distributed office locations, language differences, and technology constraints. At the same time, studies show that successful companies adhere to a common vision and core set of values enterprise-wide, from "branding" of the company's image, to key business processes and procedures. Many companies are challenged to find new ways with which they can galvanize the creativity and productivity of their workforce to pursue company goals that employees share and support.

Company standards and policies have traditionally served the function of communicating new corporate programs and initiatives to the staff. To be effective, standards and policies rely on a shared culture in the workforce. Information management (IM) systems are becoming an integral part of this cultural landscape, partly because they provide the physical means to exchange information between management and staff, and partly because they are a ubiquitous part of the shared experience of company workers. IM systems also cross boundaries and hierarchies of management that makes them uniquely suited to serving purposes beyond the objectives for which they were designed.

This paper discusses an approach to developing IM systems whose mission is related to task management. In the experience of the authors, this approach promotes common vision, understanding, and action, in addition to improving efficiency in both the initial development and ongoing maintenance of task management systems.

## Reasons for Dysfunctional or Sub-optimal IM Systems

Deploying new IM systems that meet requirements and support an organization's goals has proven to be an elusive objective, and the likelihood of success does not correlate positively with company size. Some systems fail because of strategic or tactical deficiencies, but others are held back by disconnects between work processes and procedures, and the supporting elements of the system. Because computers have transitioned over the past two decades from being a helpful resource, to being an indispensible member of most work teams, our ability to interact effectively with them is mission-critical.

IM system developers can improve user acceptability by following two suggestions. First, user needs must be defined along with user requirements. Requirements can be reduced to "punch lists" and prioritized as to importance to the system and to users. Needs are more complex, and are likely to defy simplification or reduction, such as to a list of criteria. Second, both user needs and requirements must be integrated with IM processes in a fundamental and intuitive way.

The problem appears to be that organizations, and in many cases, the IM developers themselves, fail to see the importance of understanding the needs of users for a "common language." Consequently, both the systems and data are predicated on meeting functional requirements, rather than addressing user needs for working with recognizable processes and procedures. Both Windows and web page development tools such as ASP.NET have greatly improved our ability to create colorful and interesting computer screens, menus, and other functional components. However, the system as a whole – including data -- must be intuitive to earn the reputation of being "user-friendly," and most IM systems fall well short of this goal.

IM systems that are not viewed as being intuitive almost never succeed, at least not for very long, because they invariably give rise to unsatisfactory ratings and frustration on the part of the users. Users simply have too many examples of highly intuitive systems in their everyday use of the Internet to be content with anything less, and the excuse that business systems deal with more complex subjects than common websites tends to fall on deaf ears.

## Purpose of Organizing Tasks

This section discusses why intuitive IM systems and data have been replaced with much more efficient, but often less intuitive and difficult to use systems. An alternate approach to organizing data is proposed, which is based on the concept of an operational activity, or "Ops Activity," as it is more commonly known, to communicate common work processes across a spectrum of IM systems functional components.

### Functionality and Data

From a user's perspective, systems comprise both Functionality (i.e., automated work processes, such as filling in a form or searching in a list), and Data. It would be difficult to conceive of a business IM system that does not comprise both of these elements. Programmers often add a third layer, "Business Logic," when describing their system model; however, business rules and logic appear to be embedded in the Functionality of systems from the user's point of view.

In the parlance of knowledge management (KM), the functionality of an IM system exists to enable users to derive information from data, and, if sufficiently rich context exists, to evolve wisdom from this information. Information alone can fulfill numerous mission requirements; however, most companies find that expanding wisdom is the most reliable means to improving decision-making.

Using Intuitive Labels and Concepts to Organize Data

Ops Activities represent work processes and use the common sense identification to communicate meaning to users through the data itself, as opposed to using system features for this communication. The reason why intuitive labeling of data may not "come naturally" to system developers is because standard practices often lead them in the opposite direction.

For example, Equipment Identification Numbers (EINs) are used in many task management systems to uniquely identify plant equipment. In the simpler and less data-intensive IM systems used in the past, EINs could be descriptive of the items to which they applied while also serving the main purpose of providing a unique identifier to facilitate data searches. A storage tank, for example, may have been identified as "Tank-101," and a cooling tower as "CT-002." In current data management systems, such as SAP, equipment are often represented by a 20-digit or longer EIN whose sole function is to uniquely index the equipment list. Users must rely on the functionality of the systems or an external cross-reference list to deliver even the most basic information about the equipment.

Why have we moved from intuitive ways of identifying equipment to extremely precise, but non-intuitive approaches? The answer is that older database management systems were less efficient at indexing alphanumeric data than indexing pure numeric data. Today's computer systems are sufficiently advanced to handle indexing and searches in lists that contain mixed data types, and can therefore handle other methods of "packaging" data to be more intuitive to users. Self-explanatory labels for data elements such as Ops Activities can facilitate communication of knowledge management (KM) elements across the enterprise. These elements may then be leveraged to integrate other work processes and enhance IM systems.

Ops Activities are self-explanatory and capable of leveraging work across a broad cross-section of business practices. They are, in a word, "inclusive" of a spectrum of data management procedures and concerns, as opposed to being defined for use within the boundaries of an immediate use of the system. An analogy may be found in the field of sustainable design for buildings, a subject area that was spearheaded by popular author and practicing architect William McDonough.

In his groundbreaking book entitled, Cradle to Cradle: Remaking the Way We Make Things, Mr. McDonough argues convincingly for the benefits from a fundamental shift in design philosophy. In a recently published interview that appeared in Discover Magazine (October, 2008), he described his design process as "starting from a principles perspective [instead of] starting with goals or with tactics or with conventional practices." He goes on to discuss how this philosophy led his team to build the largest "living roof" in the world (10.4 acres) atop the Ford Motor Company assembly plant in Dearborn, Michigan. "We started from the idea of a healthy workplace," he explained, "and from that principle grew the question of how you would have healthy water… healthy soil… [and] healthy air."

IM systems are not typically conceived or designed with an organization's principles in mind; they are more commonly proposed to solve specific problems associated with processing data. However, until Mr. McDonough explored sustainability in his design practice, the same could be said of designing buildings. Ops Activities are responsive to a core principle in the IM systems that manage tasks and document task results; namely, an intuitive and flexible organization of work processes. The basic ideas of this approach may be transferrable to other types of IM systems as well.

## Ops Activities Development Process

Ops Activities are predicated on the "common language" of users in the workplace and a universal understanding of what the terms in that language represent. The beginning point is an analysis of all business processes that occupy the time or attention of users – not the purpose of the activities, but the activities themselves.

Ops Activities Analysis attempts to define the functional elements of work process supply chains, and then define the most appropriate and widely understood terminology for data associated with those elements. Where "layers" of activities are found, as one frequently finds in complex work processes, the Ops Activities Analysis must also "nest" sub-activities under and within higher-level ones in the manner of an outline.

### Step 1– Define Work Elements

Table 1 contains a list of the unique regulatory requirements that apply to designing, installing, operating and maintaining a closed vent system (CVS). This list is a subset of federal CVS requirements, which constitutes only a subset of all rules that apply to a CVS. However, as an illustration of how an Ops Activity Analysis is performed, this "subset of a subset" of rules will suffice.

Table 1 consists of two columns, one showing the citation of the rule that contains the requirement, and the other showing the regulatory text of each rule. A listing such as this is the first step in developing an Ops Activity Analysis, however, unlike Table 1, the scope of the tasks listed should be as broad as possible. The idea is to capture all requirements and explain what is known about the responsibilities of company personnel to meet those requirements.

### Step 2 – Identify Tasks

Table 2 consists of an abbreviated version of the CVS requirements shown in Table 1, plus two new columns. One column shows the description of a task which will satisfy the requirement when performed as scheduled. The other column consists of a brief description of the Ops Activity that best describes the action(s) of all tasks that share the same Ops Activity (note: these are examples only).

The level of detail in defining tasks and Ops Activities depends on the scope and complexity of the business areas being studied. For example, a company that operates

a chain of general automotive repair shops might conduct an Ops Activity Analysis to improve its business practices, in which the major business components likely to be defined would include oil changes, front end alignments, and brake jobs. A company that specializes in providing oil changes, on the other hand, may consider all major business components to be oil change related, such as removing the oil drain plug, replacing the oil filter, and adding new oil. In the case of a company specializing in analyzing used lubricating oil to assess engine condition, a common practice with aircraft and certain industrial machinery, major work elements would be categorized differently from either of the first two companies, and so on.

With respect to CVS compliance, the work elements correlate with actions that personnel must take to properly design, operate, maintain, inspect, and keep records for, a CVS. Because the requirements are conveniently explained in the applicable rules, we can move quickly past the requirements analysis and move directly to task definitions, i.e., what tasks need to be performed by plant personnel to comply with CVS requirements? Experience has shown that task descriptions communicate most effectively when they begin with a verb and are followed as closely as possible by the subject of the verb. Additional modifiers and supporting data should follow this verb-subject pairing as needed, as shown in Table 2.

Step 3 – Assign Tasks to Ops Activities

The last column of Table 2 contains the Ops Activity that was assigned to each of the listed tasks. More than a subject matter categorization, the three Ops Activity definitions shown in Table 2 summarize, in operational terms, all of the tasks to which they have been associated. A 30-character label has been found to be the ideal length of an Ops Activity, i.e., long enough to differentiate Ops Activities even in extremely long lists of tasks, yet concise enough to provide a name, as opposed to a description.

Ops Activities are not detailed enough to inform plant personnel of all steps needed to complete a work assignment. They are intended only to provide a mechanism for grouping tasks into higher assemblies. An average-sized process industry plant may have tens of thousands of equipment-specific tasks involving monitoring and inspections, reporting, testing, recordkeeping, and other types of work processes. Hence, the very act of categorization creates opportunities for more efficient management and reporting of data.

By way of example, the plant whose data was used to develop Table 2 is required to perform about 22,000 equipment-specific compliance tasks under its applicable requirements. These tasks represents 3,600 unique (i.e., not equipment-specific) tasks, attesting to the fact that some rules require action at all equipment of a certain type (e.g., storage tank inspections). The Ops Activity Analysis for this plant categorized 3,600 unique tasks into 46 Ops Activities.

Ops Activities are not inscrutable identification numbers or obscure index labels. They are self-explanatory labels that represent and summarize a large number of tasks. The utility of developing Ops Activities is discussed in the next section.

| Table 1<br>Selected Federal Requirements (40 CFR Part 61) for Closed Vent System Requirements | |
|---|---|
| Citation No. | Regulatory Text |
| 61.349 | For each closed-vent system and control device used to comply with standards in accordance with §61.343 through §61.348 of this subpart, the owner or operator shall properly design, install, operate, and maintain the closed-vent system and control device |
| 61.349 | Vent systems that contain any bypass line that could divert the vent stream away from a control device used to comply with the provisions of this subpart shall install, maintain, and operate according to the manufacturer's specifications a flow indicator |
| 61.349 | Repair shall be completed no later than 15 calendar days after the emissions are detected or the visible defect is observed. |
| 61.349 | The visual inspection shall include inspection of ductwork and piping and connections to covers and control devices for evidence of visible defects such as holes in ductwork or piping and loose connections. |
| 61.349 | Each closed-vent system and control device shall be visually inspected initially and quarterly thereafter. |
| 61.356 | For each closed-vent system complying with paragraph (a) of this section, one or more devices which vent directly to the atmosphere may be used on the closed-vent system provided each device remains in a closed, sealed position during normal operations ex |
| 61.356 | Specifications, drawings, schematics, and piping and instrumentation diagrams prepared by the owner or operator, or the control device manufacturer or vendor that describe the control device design based on acceptable engineering texts. |
| 61.356 | A description of the operating parameter (or parameters ) to be monitored to ensure that the control device will be operated in conformance with these standards and the control device's design specifications and an explanation of the criteria used for selection. |
| 61.356 | Dates of startup and shutdown of the closed-vent system and control device. |
| 61.356 | A statement signed and dated by the owner or operator certifying that the closed-vent system and control device is designed to operate at the documented performance level when the waste management unit vented to the control device is or would be operating |

| Table 2<br>Tasks and Ops Activities for Selected for Closed Vent System Requirements | | | |
|---|---|---|---|
| Citation No. | Basis of Task (i.e., Rule Text) | Task Description | Ops Activity |
| 61.349 | For each closed-vent system and control device used to comply with standards… | Design, install, operate, and maintain CVS & control device in accordance with following requirements if used to comply with standards in accordance with 61.363-61.348. | CVS Installation & Maintenance |
| 61.349 | Vent systems that contain any bypass line that could divert the vent stream… | Install, maintain, and operate according to manufacturer's specifications flow indicator that provides record of vent stream flow away from control device at least once every 15 minutes. | CVS Installation & Maintenance |
| 61.356 | For each closed-vent system complying with paragraph (a) of this section… | May use one or more devices which vent to atmosphere provided each device remains closed, sealed during normal ops except when needs to open to prevent physical damage. | CVS Operations and Records |
| 61.356 | Specifications, drawings, schematics, and piping and instrumentation… | Maintain design analysis that includes specifications, drawings, schematics, and piping & instrumentation diagrams, prepared by owner; or control device manufacturer or vendor that describe control device design. | CVS Operations and Records |
| 61.356 | A description of the operating parameter (or parameters) to be monitored… | Maintain record of description of operating parameter(s) to be monitored to ensure that control device will be operated in conformance with these standards & control device's design specifications. | CVS Operations and Records |
| 61.356 | Dates of startup and shutdown of the closed-vent system… | Maintain records of dates of startup & shutdown of closed-vent system & control device. | CVS Operations and Records |
| 61.356 | A statement signed and dated by the owner or operator certifying that the closed-vent system and control device is designed to operate … | Maintain statement signed and dated by owner/operator certifying that CVS & control device is designed to operate at documented performance level when waste manage unit vented to control device is op at highest capacity expected to occur. | CVS Operations and Records |
| 61.349 | Repair shall be completed no later than 15 calendar days after... | Complete repair of CVS/control device no later than 15 calendar days after emissions are detected or visible defect is observed. | CVS Tests, Inspection & Repair |
| 61.349 | The visual inspection shall include inspection of ductwork and… | Visually inspect CVS ductwork, piping and connections to covers & control device, for evidence of visible defects such as holes in ductwork and loose connections. | CVS Tests, Inspection & Repair |
| 61.349 | Each closed-vent system and control device shall… | Visually inspect each closed-vent system and control device initially and quarterly thereafter. | CVS Tests, Inspection & Repair |

Step 4 – Define the Primary Tasks for Ops Activities

Ultimately, human effort (or, in some cases, machine effort) will be needed to take action on the tasks that have been defined and categorized by Ops Activity. The need to document the fact that prescribed actions were taken often leads compliance managers to using task groups to streamline recordkeeping as well as gain acceptance from users. Process industry personnel, especially operators, do not have enough hours in their work day to validate each and every compliance task on an equipment-specific basis. Tasks must be summarized to reduce the number of required confirmations of task completion by users.

In the case of compliance assurance systems, the level of detail of compliance records, regulatory sufficiency of those records, and user acceptability, are all major objectives. Ops Activities exist to provide a definition for the tasks summarization level. "Primary Tasks" is the term that identifies operational deployment of Ops Activities for recordkeeping. All tasks grouped under an Ops Activity are members of a task group whose Primary Task is identified by the same Ops Activity. Although the grouping of tasks may be changed from time to time, or in certain situations, Ops Activities are useful because they define a default schema for organizing tasks. This is the reason why Ops Activities are assigned to unique tasks instead of equipment-specific tasks.

Table 3 shows the same tasks and Ops Activities that were shown in Table 2, but it also includes Primary Task definitions in the columns that have been added on the right side of the chart. Specific attributes of Primary Tasks that are recommended to be considered in an Ops Activity Analysis include:

- Primary Task Description – a long description of the kinds of actions that the task group comprises
- Task Frequency – how often task "history" data is planned to be updated
- Responsible Person – who will be expected to update task "history" data
- Task Group Level –the level at which task groups will be created for recordkeeping, i.e., equipment-level, process unit, or site-wide.

Step 5 – Review Use and Maintainability of Ops Activities

One principle of an organization that is pertinent to Ops Activities is increasing staff efficiency and effectiveness. Employees generally react favorably to empowerment, and the bonds of trust that are formed with management can lead to a more productive corporate culture. Task management systems are usually deployed at least in part to increase accountability; any factors that empower staff to accept greater accountability for their work are likely to have a positive impact on the corporate culture.

In addition to enabling intuitive recordkeeping and analysis of task completion records, Ops Activities can also empower staff to efficiently maintain their task lists. The IM system must provide capabilities for adding new Ops Activities, rearranging task members of existing Ops Activities, and modifying Primary Task information. To ensure that future maintenance is efficient, all adds and changes to the "official" Ops Activity list should be made centrally and deployed with little or no effort to all users.

| Table 3<br>Tasks and Ops Activities and Primary Tasks for Closed Vent System Requirements | | | | | | |
|---|---|---|---|---|---|---|
| Citation No. and Task Description | | Ops Activity | Primary Task Description | Task Fre-quency | Respon-sible Person | Task Group Level |
| 61.349 | Design, install, operate, and maintain CVS & CD in accordance with following requirements if used to comply with standards…. | CVS Design and Maint-enance | Design, Install, and Maintain Closed Vent Systems as required by NESHAPS. | Semi-annual | Plant Engineer | Unit |
| 61.349 | Install, maintain, & operate according to manufacturer's specifications flow indicator that provides record of vent stream flow away from… | | | | | |
| 61.356 | May use one or more devices which vent to atmos provided each device remains closed… | CVS Operations and Records | Comply with NESHAPS requirements concerning the design and operation of closed vent systems and control devices. | Monthly | Unit Super-visor | Equip-ment |
| 61.356 | Maintain design analysis that includes specifications, drawings, schematics, & piping & instrumentation diagrams prepared by…. | | | | | |
| 61.356 | Maintain record of description of operating parameter(s) to be monitored to ensure that CD will be operated in... | | | | | |
| 61.356 | Maintain records of dates of startup & shutdown of closed-vent system &… | | | | | |
| 61.356 | Maintain statement signed and dated by owner/operator certifying that CVS & control device is designed to operate…. | | | | | |
| 61.349 | Complete repair of CVS/control device no later than 15 calendar days after emissions are detected… | CVS Tests, Inspection & Repair | Inspect and operate closed vent systems and control devices as required, maintain records, and make timely repairs of malfunctions in accordance with applicable rules. | Quar-terly | Maint-enance Super-visor | Site-wide |
| 61.349 | Visually inspect CVS ductwork, piping and connections to covers & control device, for…. | | | | | |
| 61.349 | Visually inspect each closed-vent system and control device initially… | | | | | |

The IM system must also “broadcast” changes that were made to a central database to their facility and unit-specific data domains. When updating is done, detailed change logs are essential, especially when system records are being created to confirm compliance with regulatory requirements.

## Summary

Tasks and task groups have become more common in recent years as the use of task management systems has grown. Several reasons are behind this trend, including new government rules, plant safety concerns, and quality improvement initiatives. As discussed in this paper, recordkeeping for environmental compliance has relied on task management systems for compliance assurance for many years. Other examples of corporate initiatives that involve task management systems include:

ISA/ANSI 84.00 Standards - Compliance with OSHA rules require plant engineers to maintain records of interlock trips, investigations, and follow-up actions, to demonstrate a company’s adherence to prescriptive (e.g., NFPA 85) and performance (e.g., IEC) standards.

Operations Logs and “Routine Duties” - Many plants now require operators to log their completion of checklists, inspections, etc., often using mobile computing devices to make the transition to paperless a system.

Pharmaceuticals Industry Procedures - New federal rules require every step that is taken to produce an FDA-controlled product to be fully documented and literally signed-off on by managers.

Plant Maintenance - Task lists have been used to describe maintenance procedures for many years, but companies have only recently started keeping actual-performed maintenance records. Regulatory requirements associated with air emissions from maintenance, start-up and shut-down events have generated interest in actual-performed maintenance records at many process industry plants.

Sarbanes-Oxley - This federal law requires extensive documentation of corporate actions, procedures, and decisions, to ensure that shareholders and creditors received fair and balanced reporting of a company’s potential liabilities.

Task management will continue to grow in many businesses because it is associated with numerous corporate goals and objectives, such as increased accountability and efficient oversight of operations. Ops Activities provide a method for organizing tasks into intuitively identifiable blocks to support tracking of results, staff training, and communication of responsibilities to company personnel. They have also been shown to enhance performance reporting and analysis, and simplify the maintenance of databases following changes in tasks and recordkeeping policies.