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Roles and Delegation of Authority (R/DA) System Enables Workflow Flexibility and Coordination

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Roles and Delegation of Authority (R/DA) System Enables Workflow Flexibility and Coordination

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Abstract

The processes of defining managerial roles and providing for delegation of authority are essential to any enterprise. At most large organizations, these processes are defined in policy manuals and through sets of standard operating procedures for many, if not all, business and administrative functions. Many of these staff-initiated, administrative functions require the routing of documents for approval to one or more levels of management. These employee-oriented, back office types of workflows tend to require more flexibility in determining to whom these documents should go to, while, at the same time, providing the responsible parties with the flexibility to delegate their approval authority or allow others to review their work. Although this practice is commonplace in manual, paper-based processes that exist in many organizations, it is difficult to provide the same flexibility in the more structured, electronic-based, workflow systems.

The purpose of this report is to present a framework or architecture for creating a R/DA system and provide some insights associated with its design and utilization. To improve understanding and clarify subsequent discussion, the goals and requirements for the major R/DA system components, namely, the database and interface modules, are initially presented along with the identification of important concepts and the definition of critical terms. Next, high-level functions relating the types of inputs to the outputs of the R/DA interface module are introduced and discussed. Then the relationships between the major R/DA modules and the primary components associated with its creation and maintenance are presented and analyzed. Finally, some conclusions are drawn relative to the advantages associated with developing a R/DA system for use in implementing an enterprise-wide, work-facilitating information system.

Roles and Delegation of Authority (R/DA) System Enables Workflow Flexibility and Coordination

Introduction

The processes of defining managerial roles and providing for delegation of authority are essential to any enterprise. At most large organizations, these processes are defined in policy manuals and through sets of standard operating procedures for many, if not all, business and administrative functions. Many of these staff-initiated, administrative functions require the routing of documents for approval to one or more levels of management. These employee-oriented, back office types of workflows tend to require more flexibility in determining to whom these documents should go to, while, at the same time, providing the responsible parties with the flexibility to delegate their approval authority or allow others to review their work. Although this practice is commonplace in manual, paper-based processes that exist in many organizations, it is difficult to provide the same flexibility in the more structured, electronic-based, workflow systems.

While Roles and Delegation of Authority (R/DA) processes are natural components of traditional workflow architectures, these processes are not particularly robust in commercial workflow packages. Most of the leading workflow package vendors provide technology and tools for handling basic routing to either individuals or groups. This technology tends to work best for high volume, customer-initiated, front office applications such as customer claims processing or technical support provision. However, it is not as effective in addressing the lower volume, employee-initiated, workflow applications such as personnel action requests, purchase requisitions authorization, or training course enrollment requests where having flexibility in routing is critical and being able to delegate authority is a requirement.

The challenge for the IS manager seeking to implement back office workflow applications is the design and development of a R/DA system that incorporates a set of generic tables for extracting electronically-stored information on specific relationships between the positions, responsibilities, roles and the employees within the enterprise. In particular, this system should have the capability for allowing: (1) the input of role definitions that are not already stored in corporate databases, (2) the integration of role information that is defined in corporate databases, and (3) the ability to delegate those roles.

The purpose of this paper is to present a framework or architecture for creating a R/DA system and provide some insights associated with its design and utilization. To improve understanding and clarify subsequent discussion, the goals and requirements for the major R/DA system components, namely, the database and interface modules, are initially discussed along with the identification of important concepts and the definition of critical terms. Next, a high level functional diagram relating the three type of inputs to the outputs of the R/DA interface module is presented and discussed. Then the relationships between the two major R/DA modules and the major components associated with its creation and maintenance are discussed. Finally, some conclusions are drawn relative to the advantages associated with developing a R/DA system for use in implementing an enterprise-wide, work-facilitating information system.

Desirable Characteristics Associated with a R/DA System

The R/DA system is considered to be primarily responsible for facilitating administrative workflow applications across an enterprise. Its database module is envisioned as being the generic repository of role and delegation of authority information. This module is designed to be the authoritative source of an organization's R/DA information. The interface module is structured to provide appropriate user linkages for establishing and maintaining role information, delegating role authority, and facilitating interaction with workflow applications. In order of priority, the eight major features that the systems architecture seeks to enable are listed below:

1. Delegation for some or all roles assigned to a person.
2. Integration of all existing positional information and relationships currently stored in electronic form.
3. Specification of roles, role responsibilities, and role assignments.
4. Designation of a single source for all electronic role information within the enterprise.
5. Designation of personnel to review work prior to management approval in electronic workflows.
6. Specification and implementation of the logic underlying the management of all group work.
7. Identification of which roles need to be assumed for a given business process based on table-driven rules.
8. Identification of whom should play what role in a given business process as specified through a set of table-driven rules.

Figure 1 provides an overview of the major elements that are involved with the R/DA system. *Inputs* include information on roles and relationships that already exists in databases within the organization, other roles and responsibilities entered by the system administrators, and requests from users to assign or delegate roles. *Guidelines* include additional information that is needed by the R/DA system to perform its functions. Although this set of constraints may contain externally-generated restrictions, in general it consists of organizational policies, procedures, and rules that have been designed to guide the internal operations and processes of the enterprise. *Participants* include all the organizational personnel that would have a need to assume or discharge a role or responsibility including managers at every level, project leaders, owners of processes and roles, and staff members. The *R/DA System* provides the capability to (1) define roles associated with a position in an organization (such as the Comptroller), (2) determine what roles are required for a specific application based on the corporate guidelines (this might be that the Vice President for Marketing is required to approve all new radio advertisements) and (3) identify who is assigned to the role, including any delegated person(s) as necessary. Finally, the *Outputs* document, communicate and implement any action taken relative to role definition or assignment and delegation assignment.

Figure 1 – Overview of the Roles and Delegation of Authority (R/DA) System

Concepts and Terminology

In general, it is important to recognize that there are three sources of roles and responsibilities that can be assumed. First, there is a distinctive set of responsibilities associated with each type of organizational position, for example, a vice president assumes a significantly different set of roles and responsibilities that does a first-line supervisor. Second, there are specific role sets associated with the functional aspects of a manager's position, for example, the manager of an IS department assumes a much different set of roles than does the manager of the firm's credit department. Third, individuals may assume unique roles that are associated with their particular background, experience, or interests regardless of their organizational unit responsibilities and/or their position within the enterprise. For example, within an organization, one person may be the champion for departmental efforts in process improvement whereas another individual may accept the responsibility of developing a corporate-wide employee satisfaction survey because of some special expertise that s/he has acquired in the past.

Delegation of authority can be categorized into one of two types. The first type is called *Temporary Delegation*. It involves the delegation of selected responsibilities to a specific individual for a specified time interval or until notified differently. For example, a work shift supervisor may delegate the approval of overtime to the shop foreman while s/he is on vacation during a specified two week period or a manager may delegate purchase approval authority within agreed-upon guidelines to his/her budget analyst for an indefinite period of time. *Concurrent Delegation* is a second type of delegation. As defined within specific corporate procedures, it allows any manager at the same management level to approve something in the absence of another manager. For example, if an employee requests approval to go to a training class being held in the next week, and his/her manager is currently on vacation and has not done a temporary delegation, the employee can ask any other manager to approve his/her course request.

In order to communicate effectively, it is necessary to ensure that important terms are clearly defined. This is especially true when commonly used words are used in a technical manner. Meaningful definitions of important terms are presented and illustrated in this section to further the understanding of the nature and scope of the R/DA system. Figure 2 provides a logic tree that illustrates the relationships between ten of the most important R/DA concepts. This figure utilizes sufficiency-based logic that is read in an 'if..., then...' format. The ellipse passing through two or more arrows is considered to be an 'and' gate, thus, if Entity A and Entity B exist, then Entity F can be defined.

If a Process and a Position exist, then a Responsibility can be defined.

If a Position and a Descriptor and an External Assignment exist, then an Externally Defined Performer can be identified

If a Descriptor and a Responsibility exist, then a Role can be defined.

(* In the case where only a single entity exists for the entire organization, it is possible to define a Role solely by the existence of a Responsibility)

If an Externally Defined Performer and a Role exist, then a Role Assignment can occur.

If an Internally Defined Performer (having an unique identification label) and a Role exist, then a Role Assignment can occur

If a Role Assignment and an Internally Defined Performer exist, then the authority to carry out or fulfill the Role can be Delegated.

Figure 2 - Relationships Among Important R/DA Concepts

Process: A set of activities that need to be performed to achieve a stated goal. In general, each process will be distinguished as a separate workflow application. Examples of processes include purchase requisitions, personnel actions, or training course enrollments.

Position: A label assigned to either a level of line management or other responsible job within an organization. Line management positions include chief executive officer, vice president, or manager whereas safety coordinator, project manager, or staff administrative assistant are examples of the latter group.

Descriptor: An attribute-value pair that is used to define a particular position more precisely. An attribute could be any characteristic such as a function or product/service or geographic location that would further delineate a position. A value would uniquely define the attribute such as a geographic region's value could be New England or Oregon, or Cleveland. Examples of attribute-value pairs include: function-manufacturing, product-XYZ toothpaste, service-ABC equipment installation, and location-southwest.

Performer: A person who can be assigned to a given role. This individual can be defined either internally or externally to the R/DA system.

Internally Defined Performer: Performers that are established, defined, maintained, and assigned completely within the R/DA system. These particular individuals might include Gloria Sanchez, technical lead of the ABC project; Allen Sheldon, owner of the LMN process, or staff budget specialists, Tom Blackwell and Martha Peters, in the accounting department.

Externally Defined Performers: Performer assignments that are based on a position and either a unique descriptor or a descriptor that can be defined based on an instance of the process. For example, there may be a business rule where the vice-president of finance must approve all purchases over a million dollars. There could be a role setup for this process called vice-president of finance approval for purchases. This role would be assigned to an externally defined performer where the position is vice-president and the descriptor will always be finance. In this case, even if the purchase were being made for manufacturing, it would still require approval from the vice president of finance. An example of where the descriptor is based on an instance of a process is shown in figure 3. In this example you must have a vice-president approval for all new policies in each functional area. In this instance, the new policy was for manufacturing and therefore it required approval from the vice president of manufacturing.

External Assignments: These assignments are the "lookup table" that determine which person is assigned to a position and unique descriptor. This table is populated based on information maintained in external systems (Human Resources, Financial, and Organizational Hierarchy). The external system will need to populate this table with an entry that assigns a single person to every possible position and unique descriptor that can be used in the system. For example, in figure 3 since the vice president is required to approve all new policies in his/her functional area, a person must be assigned as vice president for every functional area in this table. In the case of figure 3, Sue Kimm is currently assigned vice president for manufacturing. This table can be updated by the external system either in real time or during nightly processing to include changes associated with the person assigned to a given position and unique descriptor or add and delete positions and unique descriptors. For instance, if tomorrow upper management decides that they need to make Sue Kimm the new vice president for European operations, the changes can be made in the corporate Human resource and/or organizational hierarchy system which can then automatically update this table with the appropriate changes.

Responsibility: A duty associated with a process that can be assigned to and needs to be performed by a given position. Vice president approval for procurement requests over \$500K or line manager approval for new hire requests are both examples of specific responsibilities.

Role: A specific responsibility qualified by a descriptor (i.e. attribute-value pair). For example, according to corporate policy, any vice president can be responsible for approving procurement requests over \$500K. Therefore, the vice presidential approval for procurements over \$500K can be assumed by the vice president of any corporate function (Marketing, Manufacturing, Finance, etc). Other responsibilities may be assigned to specific roles. The manager of quality assurance may have the responsibility for approving all QA procedures for any new product lines. It is important to note one exception to defining a role, namely, if an organization uses a specific process in conjunction with a single unique position to define one of a kind responsibility, then a descriptor is not needed to qualify the resulting role. For example, if there is only one training director for the entire organization, then this resulting responsibility does not need a descriptor to create a role of directing organizational training.

Role Assignment: The potentially delegatable entity that is created when roles are distributed to performers. It is possible for a given role to have more than one performer (see Group Work below) and for a performer to be assigned more than one role. In the former situation, four senior staff accountants may be assigned the role of approving quarterly divisional budget modifications. An example of the latter situation is when a plant manager is assigned the roles of new hire approval and procurement request approval for purchases exceeding \$50K.

Delegation of Authority: The ability for a performer to temporarily assign his/her given role responsibility to one or more individuals for a specified period of time. For example, the manager of quality assurance who is going on vacation for two weeks may delegate his/her quality assurance approval authority to a trusted administrative assistant for that time period.

Using the terms and concepts presented above, Figure 3 has been created to illustrate the conceptual relationships that are employed in defining and assigning a role to an externally defined performer plus the temporarily delegation of that role. As logically presented in the figure, Sue Kimm, the vice president for manufacturing, is able to delegate her responsibility for policy approval to Jack Hirsch during her upcoming vacation.

Scenario: Sue Kimm is the vice president for manufacturing at a firm that requires all new policies developed in each functional area to be approved at the vice presidential level. In preparation for her annual 3 week vacation, she wants to delegate her authority for policy approval to Jack Hirsch, a manufacturing staff analyst.

Figure 3 - Illustration of Relationships Among R/DA Concepts for an Externally Defined Performer

In a similar fashion, these terms and concepts are utilized in Figure 4 to illustrate the logic underlying the defining and assigning of an role to an internally defined performer who then temporarily delegates that role to another internally defined performer. In this example, Elsa Leong, the coordinator for technical training in the state of Texas, is able to delegate her coordination responsibilities to Max Silver during her participation in a four day planning retreat.

Scenario: Elsa Leong is the technical training coordinator for an organization that has facilities throughout the nation. Her current role assignment is to coordinate technical Training at all of the organization facilities in the State of Texas. She has scheduled the annual retreat for the first 4 days of next week. Elsa has contacted Max Silver, the managerial training coordinator for Texas, and he has agreed to take assume her role of technical training coordinator during her absence.

Figure 4 - Illustration of Relationships Among R/DA Concepts for an Internally Defined Performer

Three additional R/DA concepts are presented and illustrated below:

Reviewer: A special type of responsibility/role that allows the performer to request that another designated person review work before the performer gives his/her final approval. For example, a manager may want his/her budget coordinator to review all purchase requests before s/he gives final approval. One of the major differences between a reviewer and a person assigned work through a delegation, is that if no reviewer is assigned, then the entire review process will be skipped. If no delegation is made for normal responsibilities or roles, then the work will stop until the performer who was initially assigned to the work completes it.

Group Work: Any role that has been assigned to more than one performer or an externally defined performer where the descriptor value is specified as "All". For example, if company policy states that you need an area manager's approval to attend a training seminar, an employee would normally get his/her own area manager to approve the request. However, if the employee's area manager is unavailable to respond in a timely manner, it may be common practice to identify another area manager who knows and trusts your area manager and who would be willing to review your request. In this case, it may be practical to make the responsibility for training request approval eligible for group work. Group work provides all area managers with the capability to respond to any request for training approval.

Primary Person: In a group work situation, the primary person is the performer who is normally assigned the role of performing the requested work. Relative to the group work example cited above: although all area managers have the capability to approve any employee training request, the requesting employee's area manager would be the primary person for processing training requests for his/her direct reports.

Macro Perspective of R/DA Relationships

A relatively comprehensive schematic diagram that depicts the major information flows, queries and relationships between a user, a work-performing application, the workflow package, and the Roles/Delegation of Authority (R/DA) system is presented in Figure 5. The *R/DA System* is comprised of six major components: the database, the role definition interface, the role assignment interface, the applications programming interface (API), the workbox interface, and the employee delegation interface. These components interact directly with the workflow software package and related applications to fully utilize the capabilities of the R/DA System.

The *R/DA Database* is a compilation of all of the information entered by the role definition interface, the role assignment interface, and the employee delegation interface. This information will then be used by the API, the workbox interface, and the delegation of authority interface.

The *Role Definition Interface* allows information to be entered about processes, positions, and descriptors. The processes and positions can then be linked to define responsibilities. Roles can then be defined based directly on responsibilities or the combination of responsibilities and descriptors. Business policies and their derived rules are then entered to determine the circumstances under which responsibilities and roles may be assumed by individuals within the enterprise. Information sources for role definitions are entered into the R/DA Database by IS designers from policy and procedure manuals, documented business processes, or current relationships as reflected in existing work processes

The *Role Assignments Interface* allows information to be entered about both internally and externally defined performers that, along with the defined roles, is used to create role assignments. Internal role assignments are defined by linking a specific employee with defined role. These assignments are completely managed within the R/DA system. External role assignments are entered based on a position and descriptor. This information can then be used to lookup the person currently assigned to a position and unique descriptor that has been loaded into the R/DA system from external sources of electronically stored data. The sources of this data include organization charts and corporate hierarchy structures that are often maintained in the human resource or financial management systems to determine the person currently assigned to that position/descriptor

The *Application Programming Interface* provides the communications and processing required between the R/DA database and the applications that use it. It can accept requests and information from the applications, process the requests based on the relevant information within the R/DA database, and send the relevant information back to the performing application. For example, upon receiving data about a user and associated task to be performed, the R/DA Interface will request the set of relevant policies or rules governing the action, sort through them, and forward specific applicable information back to the requesting application. Since an *Application* exist to accomplish administrative support activities, it sends resulting dispositions and role information to an appropriate *Other*

Database and to the *Workflow software package* for any subsequent routing or further processing. The *Application* provides one of the major links between the components of R/DA and the *Workflow software package*.

Figure 5 - Major Flows and Relationships in the R/DA System

The *Computer Workbox* is the other major link between the components of R/DA and the *Workflow software package*. The *Workbox* will request a list of roles that a particular user is assigned or delegated from R/DA and then request all work associated with that user's roles from the *Workflow software package*. The user has the ability to request information about work that s/he currently needs to perform, work that s/he is waiting for from others, or work that is already completed. The user, if s/he is a member in a group work situation, can also go in and access any work that has been assigned to that group. The workflow also will provide links to the applications that allow the user to initiate new workflow requests.

The *Delegation of Authority Interface* allows anyone who is assigned a role to go in and delegate one or more of those roles to one or more other people. This interface also allows people who are assigned to a role that allows reviewers to also designate who their reviewer(s) should be.

The *WorkFlow software package* is a proactive toolset for the analysis, compression, and automation of a work performing business process. This package enables an organization to develop and manage the process rather than just information about the process. A firm's intranet has enabled workflow applications to 'push' information and work to users instead of waiting for them to request data and tasks (Dykeman, 1998). In this regard, the *WorkFlow* package can notify and provide information and work to users. Moreover, upon receipt of updated role information and/or processed work, the *WorkFlow* package will communicate results and/or requests for further processing requirements with appropriate users.

R/DA System Experience

This R/DA system architecture has been successfully implemented at a large R&D facility in the southwestern United States. This implementation has been proven to realize all eight of the previously mentioned major features. These features have allowed the design of a highly flexible framework for implementing the wide variety of requirements associated with the applications envisioned for this system. To date, seven work applications ranging from processing foreign travel requests to approving enrollments in training and education courses have gone into production. Each application has been designed to utilize those features of the architecture that are required to allow it to match the flexibility inherent in the paper system that it replaced. The ability to electronically duplicate the wide range of application requirements was one of the main reasons underlying the development of this architecture for R/DA system.

For most of the high volume, external customer-initiated, front office, work applications that have highly structured processes where the requests of groups of customers are handled by any member of a group of customer service personnel, the commercially-available workflow packages appear to be relatively effective. In contrast, the R/DA system architecture described here is best suited to those IS environments where it is important to have the capability to adapt to changing internal customer requirements. The flexibility associated with enabling and disabling different functionalities for differing applications was a critical reason for designing and implementing this architecture. For example, although the R/DA system allows an user to delegate the capability to approve a given type of request to a colleague, the delegator remains responsible for performing that work and has the capability to access and take action on any of these requests at any time. This capability provides the delegator with the ability to process a request for approval even though that particular role has been previously delegated. Moreover, the delegator can assign a particular subset of his/her total responsibilities or roles to an internally defined performer. To illustrate, consider a manager who wants to delegate all of his/her positional responsibilities, except for personnel actions, to a colleague during the next month when he/she is on a special overseas assignment. Due to the confidential nature of personnel actions, he/she is able to exclude that role from those being delegated in the R/DA system.

In short, the R/DA system provides the internal user with the control over positional roles and work responsibilities that is being demanded in today's work environment. In addition, this real time system gives the necessary flexibility to IS developers in implementing a particular work application such that its functionality is tailored to specific requirements. From an IS manager perspective, the capabilities of this R/DA system allow the internal customers to be well served while concurrently providing an architecture that allows IS designers and administrators the flexibility they need to create and manage an effective system for facilitating the performance of work throughout the enterprise.

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Dykeman , J. "The road ahead for workflow: the future of managing the information process," Managing Office Technology, Vol. 43, No. 3 (April, 1998), p28-34

Figure Titles

Figure 1 - Overview of the Roles and Delegation of Authority (R/DA) System

Figure 2 - Relationships Among Important R/DA Concepts

Figure 3 - Illustration of Relationships Among R/DA Concepts for an Externally Defined Performer

Figure 4 - Illustration of Relationships Among R/DA Concepts for an Internally Defined Performer

Figure 5 - Major Flows and Relationships in the R/DA System

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