

Collaborative Process Asset Repository System

Draft 1

May 1, 2009

www.osellus.com

Organizational process asset repository, or “library”, is an indispensable part of any process improvement endeavour. By enabling uniform process performance and facilitating the sharing of best practices and process improvement across the organization and its projects, a process asset repository provides cumulative long-term benefits¹.

Rather than treating a process asset repository as containing abstract concepts, this paper pragmatically approaches the organization's process repository as an integrated, collaborative system. To concretely describe key aspects of process asset repository, the rest of this paper discusses the functionality of Osellus IRIS Process Author a commercially available process asset repository system. Such systems substantially reduce the organization's process improvement overhead.

Role-based process access

Process asset repository system provides role-based access to all of organization's process assets and standards² addressing the process needs of various individuals, groups, and projects. It services the process-related activities of a user in a format most suitable for that user's role; hence, the organization's processes can be created, managed, consumed, and improved with minimal impedance. Examples of supported formats include the following:

- Clear and concise definition and management of process assets for process owners and the process group
- Process descriptions with contextual aids and training content for project team members
- Project plans and workflows for project managers
- Lessons learned and process usage information for program manager and process owners
- Graphical rendering of the process architecture and dependencies—with editing functionality—for process owners
- Process objectives for process owners, process group staff, process action team members and upper management
- Process appraisals results for process owners, the process group, senior management sponsors, and leaders in the organization
- Process improvement and coverage reports for the process group, senior management sponsors, and leaders in the organization

Each role has its own highly usable portal with comprehensive functionality such as context-sensitive search.

¹ Deployment of process asset repository is a key requirement of CMMI level 3 capability and maturity

² Work environment standards, covered in a later section, are examples of organization's common standards.

Process objectives

Process improvement cannot take place in isolation; rather, it occurs in accordance with the organization's process needs and objectives³—many of which are directly derived from the parent company's business objectives⁴. Once the organization has documented its process needs and objectives, it can define its processes in alignment with the defined needs and objectives.

The process asset repository system captures the organization's process needs and objectives and facilitates mapping of various process elements to applicable objectives. Moreover, this mapping is used during appraisals to measure the organizational process coverage, and it forms the basis for the organization's process improvement plans.

Process definition

Definition of process assets at the organizational level is a fundamental change in behaviour. Projects no longer create their processes from scratch but instead use the best practices of the organization, hence improve quality and save time and money.

Organizations sets of standard processes collectively cover all processes needed by the organization and its projects and typically includes lifecycle, technical, management, administrative, support, and organizational processes.

A process asset repository system incorporates a persistent object model engine that facilitates definition of processes at a granular level. The object model supports a variety of process elements (activity, role, work product, and guidance⁵), key attributes of each process element⁶, and relationships between process elements⁷. Also, the object model can be extended to handle the organization's specific process needs.

The organization's process group and process owners are responsible for definition and authorship of the organization's set of standard processes. They use the process asset repository system's process author portal for all their process definition activities. This portal abstracts the complexities of the underlying object model by providing graphical and form-based interfaces, hence simplifying the process definition effort. Moreover, the organization can control access to each process or process area by assigning authorship privileges to individual process owners and process group members.

Other process definition requirements such as archiving and change control are handled behind the scenes by the process object model engine.

³ Examples process objectives include cycle time, defect removal rate, productivity, and customer satisfaction.

⁴ Typically business objectives relate to finance, technology, quality, human resources, and marketing.

⁵ Templates and development tools are some of the examples of guidance.

⁶ Description, steps, input, output, entry criteria, and exit criteria are some of the examples of activity attributes.

⁷ Precede dependencies, and work breakdown are some of the examples of activity-to-activity dependencies. Another important association RACI is between activities and roles. Support for RACI is required by governance frameworks such as CobIT.

Tailoring

For effective usage of a process in a project, it must first be tailored to better meet the specific characteristics of the project. In most cases, project managers tailor the organization set of standard processes to create defined processes. A process asset repository system fully supports process tailoring. Project managers start by searching the process portal for processes that meet the high-level criteria of their projects. They then review the details of each short-listed process and select one for their project. As the final step, the selected process is altered—according to tailoring guidelines—to better suit the project's unique needs resulting in defined processes. A process asset repository manages all of the organization's defined processes.

Work environment standards

Although work environment standards are unrelated to the processes, the management of these standards is important for effective process improvement. Work environment standards allow the organization and its project to take advantage of common tools, training, and maintenance. There is also a potential for substantial cost savings from volume purchases. Examples of work environment standards include, standard workstation hardware and software, project management tools, requirement management tools, design tools, evaluation and testing tools.

Application of work environment on an organization's project follows a similar pattern as that of processes'. An organization's work environment standards are tailored to create a project work environment, which is important to the project startup phase.

Measurements

A process asset repository system captures both product and process measurements as part of the organization's set of standard processes. Process owners and the process group identify appropriate measurements based on its ability to provide visibility into the process performance and to satisfy the organization's process objectives. An organization's project capability is also a factor in selection of the measurements. Process authors must make sure that the organization's project teams have the required tools and expertise to perform the measurements correctly. An organization's set of standard processes and defined processes capture measurement details such as, points at which measurement should be performed, and measurement method and procedure.

Process architecture

For an organization to address various aspects of software development and diverse types of projects and environments, it requires a large number of processes and process components.

Moreover, typically, there exist a large number of dependencies between the processes. It is not enough to simply document an organization's processes. The sheer number of processes and their dependencies can overwhelm any organization if an appropriate

process architecture is not in place. Process architecture⁸ facilitates the management of an organization's processes and reduces the process improvement effort⁹.

The process asset repository object model also allows organizations to define a process architecture that best fits an organization's characteristics—such as, size, management structure, type of projects—and objectives.

As a best practice, organization's processes are often organized hierarchically with multiple levels of abstraction. A hierarchical process architecture fosters process element and component reuse by rule-based propagation of changes and updates throughout the process repository.

Collaborative environment

Rather than a top down process dissemination model in which processes are defined--in isolation--by the process authors and consumed by project teams, our process asset repository system supports a collaborative environment in which process consumers are fully involved in process development--by providing feedback and lessons learned about the usage of the processes in their projects. This multi-directional flow of process information has a number of benefits. It provides a vehicle for process consumers to fully benefit from what other consumers and projects have learned and therefore an invaluable resource for the process updates and improvements. Furthermore, it instills a sense of ownership across the members of the organization.

The importance of collaboration should not be underestimated. Non-collaborative process definition can undermine the credibility and applicability of the organization's processes. Unfortunately the need for effective collaboration is missing in the current process improvement and governance frameworks.

The volume of collaboration among process owners, the process group, and process consumers is an excellent indicator of the organizational process maturity.

Over time, the perpetual accumulation of the captured process knowledge has a compounding effect. It results in an exponential growth in the organization's usable process knowledge base.

⁸ CMMI usage of the term process architecture is different than the usage of the term here. In CMMI definition, process architecture provides rules for connecting the process elements of a standard process. In here, connections of process elements of a standard process are captured as workflows and work breakdown structures defining relationships between roles, activities, work products, and templates, and ordering activities with precede dependencies and entry and exit criteria.

⁹ Organization's process become stale and irrelevant over time if not updated and managed in a timely manner.

Automated appraisals

Appraisal plays a central role in any rigorous process improvement endeavor. Appraisal makes a process improvement measurable, motivates the process owners, and gains sponsors buy-in. Traditional paper-based appraisals are time consuming and costly. By utilizing process architecture and the organization's process objectives, a process asset repository system digitizes and automates the appraisal method required for assessment of the organization's processes and process improvement activities. Automated appraisals may be performed on the entire organization, a smaller part of the organization, or a single process. It is recommended that the process group perform appraisals periodically and as needed to maintain an understanding of an organization's process strengths and weaknesses and to identify improvement opportunities.

The appraisals results and improvement recommendations and action plans are captured and traced in the management sponsor portal.

Project management support

Using the process portal, project teams can quickly select an appropriate process and work environment standard from the organization's set of standard processes and work environments. They can then tailor their selections to create defined processes and work environments to better meet the project specific needs. This results in a project consumable package consisting of descriptive process information, training materials, project plans and tool templates for the critical project startup phase.

Moreover, the project team can share feedback and lessons learned—from the application of processes on the project—with process owners and other project teams.

Institutionalization

The institutionalization of an organization's processes is the overarching goal of process improvement and governance frameworks. Over time, it makes organization learning and process improvement part of the fabric of the organization.

Role-based portals and collaborative aspects of process asset repository system are the main drivers of organizational process institutionalization. These aspects concretely implement the concept of internalization in governance frameworks and institutionalization in process improvement frameworks.

Conclusions

A process asset repository system is of paramount importance in achieving and sustaining organizational process improvement. Without such a system, process improvement will be extremely costly and unattainable for most organizations.

Osellus IRIS Process Author®, a collaborative process asset repository system, is designed to satisfy the process improvement requirements of any sized organization with minimum overhead.