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Managing Knowledge in Project Environments

Abstract
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Keywords
knowledge management, projects, learning, organizations

Comments

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Managing Knowledge in Project Environments

By Olivier Serrat

Projects ought to be vehicles for both practical benefits and organizational learning. However, if an organization is designed for the long term, a project exists only for its duration. Project-based organizations face an awkward dilemma: the project-centric nature of their work makes knowledge management, hence learning, difficult.

Define:Project

In its everyday manifestations, a project[1] is an individual or collaborative endeavor contemplated, formulated, or carried out to achieve something that has not been done before. In the world of organizations, however, a project is often a major, time-bound enterprise requiring concerted inputs, activities, and outputs—that can involve considerable personnel or a single person, data and information, research, services, equipment, goods, materials, and of course finance—toward a unique product, service, or lasting outcome or result. (Indeed, projects are the normal mode of organization for entire industries such as aerospace, architectural practices, construction, design, publishing, research and development, shipbuilding, and software: they live or die by contracts for consulting, goods, works, and related services.)[2] Where a logic model is used to strengthen design and facilitate monitoring and evaluation—for example, in development agencies[3]—a project is framed by deliverables in a results chain specifying performance targets and indicators, data sources and reporting mechanisms, as well as assumptions and risks.

> *My personal philosophy is not to undertake a project unless it is manifestly important and nearly impossible.*
>
> —Edwin Land

[1] The word derives from Latin *projectum*, meaning, "something thrown forth," hence, a projectile—another related word.

[2] The value that project-based organization can add draws from (i) unity of command, since the project manager is also the functional manager; and (ii) focus, since everyone on the team only has the project for his/her primary responsibility, supposedly. From clear authority and direction, project-based organization is expected to beget swift decision making, simple and flexible team structures, shorter lines of communication, high levels of individual and collective engagement, maintenance of a permanent group of experts, and holistic support to project formulation and implementation. Obviously, the challenge is to move from the realm of the possible to the realm of practice: the *Knowledge Solutions* on working in teams list characteristics of successful teams and discuss how they might be developed. (They caution also that teams are not necessarily the best configuration for what an organization sets out to accomplish; hence, the existence of other ways to organize.)

[3] Bilateral and multilateral development agencies are major sources of financial support and professional advice to developing countries, purposely for poverty reduction. Their main devices are loans, grants, policy dialogue, technical assistance, and equity investments, all of them project-centric.

ADB Asian Development Bank

Large-scale projects from times past have been synonymous with the marshalling and division of labor by master builders and early engineers for the construction of burial mounds and temples then, as populations grew, fortifications, amphitheaters, roads, bridges, aqueducts and other hydraulic applications, cathedrals, harbors, railways, dams, etc. At the beginning of the 20th century, Henry Gantt,[4] a proponent of Frederick Winslow Taylor's theories of workflow efficiency, and Henri Fayol, a pioneer of modern management, synthesized planning and control techniques. Today, engineering continues to make good use of projects but applications cut across pretty much all spheres of human activity, such as business and science.[5]

> *I am opposed to the laying down of rules or conditions to be observed in the construction of bridges lest the progress of improvement tomorrow might be embarrassed or shackled by recording or registering as law the prejudices or errors of today.*
>
> —Isambard Kingdom Brunel

Projects drive change, and their good organization and coordination are the best way to concretize that. Project management—a discipline that emerged as a profession in the mid-20th century and sometimes seems to define working lives—is the application of knowledge, skills, and techniques to realize projects and their intended benefits efficiently and effectively over the period specified within scope, resources, and other limitations. Conventionally, its processes fall into five broad process groups: (i) initiating, (ii) planning, (iii) executing, (iv) monitoring and controlling, and (v) closing.[6] What is more, six parameters are always given weight in its methodologies: (i) time, (ii) cost, (iii) human resources, (iv) scope, (v) quality, and (vi) actions.[7] Project management is here to stay:[8] in fact, a growing number of organizations practice project portfolio management to analyze and collectively administer pools of (ongoing or proposed) projects and their interfaces based on such parameters, aiming to reduce uncertainty while honoring singular constraints imposed by external real-world factors.

> *Successful Project Management: Plan, execute, evaluate sounds simple, but most projects aren't well planned nor are they evaluated well. The tendency is to jump right into execution and as soon as execution is completed (which usually isn't soon), move on to the next project without evaluating what happened on the present project and what could have been improved. Successful project management requires more front and back end resources (and less middle) than are usually allocated.*
>
> —Anonymous

To be true to form (and its etymological roots), a project must be a one-off, unique set of activities meant to accomplish a desired outcome by a cut-off date. Crucially, therefore, the temporary nature of a project stands in sharp contrast with the business as usual, aka operations,[9] it both engenders and relies on. (Temporary means that every project has a definite beginning and a definite end, even though the

> *What is actual is actual only for one time. And only for one place.*
>
> —T.S. Eliot

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4 Henry Gantt (1861–1919), an American mechanical engineer, developed the eponymous chart in the 1910s to illustrate project schedules by defining and grouping terminal and summary elements in work breakdown structures.

5 The construction of a bridge, building, or road; the relief effort after a natural disaster; the acquisition or development of a new or modified information system; the introduction of a change in the structure, staffing, or style of an organization; the implementation of an improved business process; the expansion of sales into another market—all are projects.

6 In project environments characterized by a significant exploratory element, e.g., research and organizational change, these process groups are habitually reinforced by decision points—meaning, go-no-go gates—at which continuation is debated and decided.

7 Needless to say, other crosscutting parameters lie in project integration, communications, procurement, and risk management.

8 In a world of relentless change, organizing by project is on the increase: to meet increasingly complex challenges and ferocious competition in the public and private sectors, organizations must formulate innovative solutions. As one would expect, the mustering and concentration of resources that characterize projects as a knowledge-intensive organizational form promotes their burgeoning, even if the boundaries between projects and their permanent hosts in particular and the state of the art of knowledge management in general still constrain what learning has been experienced in one to fully benefit the other. (At the turn of this millennium Tom Peters affirmed that all work is now project work. See Tom Peters. 1999. The WOW Project: In the New Economy, All Work is Project Work. *Fast Company*. Vol. 24, pp. 138–144.) Because of demand, the techniques developed for project management are well-nigh innumerable: project management frameworks, scope management, communication, change management, and building support for projects are recurring areas of interest for which miscellaneous tools, methods, and approaches have been devised.

9 Be they (less and less) face-to-face or (more and more) virtual, project teams regularly include people who do not normally work together. In comparison, business as usual are recurring, permanent, or semipermanent activities for mass production of standard operations, typified by layers of management, sharp divisions of labor, and explicit instructions, manuals, and procedures; witness the numbers of support staff working in, say, administration or information systems and technology in most organizations.

duration need not be short.) And so, the management of projects and the administration of business as usual should be quite different and as such require discrete competencies in strategy development, management techniques, and collaboration mechanisms, not forgetting—the subject of these *Knowledge Solutions*—knowledge capture and storage and knowledge sharing and learning.

The Knowledge Quandary of Project Settings

In any project-based organization, sound knowledge husbandry is central to the delivery of current and future project performance. Knowledge is a strategic asset and a critical source of competitive advantage. In addition, apart from their innate worth, projects have for long also been a favored, flexible instrument for design thinking and systematizing complex processes of creativity and innovation. For these reasons, it might at first glance be a surprise that only for about 10 years has attention been specifically directed at what strengths, weaknesses, opportunities, or threats may relate to knowledge management in project environments[10]—compared to the more substantive work on organizational learning.[11]

> *If you want things to stay as they are, things will have to change.*
> —Giuseppe di Lampedusa

But let us look again: as it happens, knowledge management where learning is project-based confronts tough challenges; the causes are multiple and a short list of the chief extenuating circumstances will suffice. To note first and last, projects are transient: novel (but temporal) associations must be forged then fortified. Yet, pressing matters compete for what time, discipline, and skills ought to be made available for that; all the while, the certainty that team members will go their separate ways to take up other work when the project closes militates against earnest intentions to engage in deep knowledge sharing, never mind debriefings.[12] (Because knowledge is embodied in individuals, processes, and practices, short-lived organizational forms will necessarily operate in distinct circumstances and associated relationships in their respective external environments, thereby conditioning how knowledge might be harvested and shared.)

> *I love deadlines. I like the whooshing sound they make as they fly by.*
> —Douglas Adams

Next, no two projects are similar, even when they are framed by comparable historical and organizational environments:[13] in the same industry or market, they will differ markedly from one another. So, the discontinuities in flows of personnel, data and information, research, and other inputs that illustrate such variety make it hard to develop steady-state routines, maximize stocks and flows of knowledge, and seed learning across projects. (It may be tricky in the best of instances if, as purists surmise, information is inseparable from the people who create it, react to it, or pass it along.) Additionally, in certain if not most settings, such discontinuities are exacerbated by the fragmentation of project teams in isolated professions: since meaning must be shared if knowledge is to be understood, accepted, and exploited, codification and transfer of knowledge within a pluridisciplinary team—where no one member has ready (if any) access to peers—is complicated.

> *It is better to laugh about your problems than to cry about them. It's not that I'm so smart, it's just that I stay with problems longer.*
> —Albert Einstein

Moreover, reckoning that the project they are working on is the only one of its kind, as it might well be depending on perspective, project teams are prone to assume that the knowledge they hold is also unique, or at least does not

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[10] What progress has been achieved is confined to the use of information and communication technologies, largely for codification purposes. However, such technologies do not easily translate the situated nature of tacit knowledge and its embeddedness in social groups and situations.

[11] The *Knowledge Solutions* on overcoming roadblocks to learning spell out what obstacles can exist at the organizational level. They also translate at the project level.

[12] On top of this, team members are often assigned to more than one project at any given moment. And so, they do not readily see what personal gains they might derive from coding their experience.

[13] This is not to say that every project is an island; however, there are close bounds to insights generated by cross-section comparisons over simultaneous projects and historical trajectories over successive projects.

warrant being made explicit and validated for the benefit of a distant hierarchy:[14] this leads to "reinvention of the wheel" and the replication of mistakes. What is more, by their very nature, most projects are designed and implemented in a "hothouse" of planning and control: given the odds stacked against whatever is attempted without previous certainty of success, managers and their supervisors strive to deliver projects on budget and on schedule, with corresponding lack of emphasis on knowledge capture and storage and knowledge sharing and learning, let alone reflective practice or learning in teams. [Witness the millstones *(sic)*of associated business processes even though projects, as temporary organizations, clamor for empowerment and support, not the command and control that permanent organizations thrive on.]

Last but not least, projects are rich in politics:[15] agitators impact learning within and across them subject to individual authority levels, project sponsor actions, organizational environment influences, organizational arrangements between projects, inter-project assimilation practices, and connections with other projects. Despite their huge variety, project management tools that, notwithstanding their intrinsic usefulness, single-mindedly concentrate on initiating, planning, executing, monitoring and controlling, and closing make no impression when knowledge, not just data and information, must be managed. (At any rate, the attention they bring to bear on efficiency and effectiveness makes the act of capturing and transmitting knowledge a lesser priority during project design and implementation. This state of affairs is compounded by the fact that the potential knowledge requirements of prospective projects do not lie within the purview of the current project's concerns.) As things too often stand, the end of a project is consequently the end of collective learning and project amnesia sets in: domain, process, institutional, and cultural knowledge fades. Partnerships, communication channels, contacts, and other intangible relational and structural assets evaporate too as intellectual capital dwindles.

Knowledge Management in Project Environments—The Poor State of the Art

Surely, project-based organizations ought to reap hefty benefits—over and above the monetary value of the contracts that keep them in business—from the intrinsically creative and innovative nature of their work. Since projects involve the development of products and services, the prospects for fresh ideas to emerge that might be fructified elsewhere and for cross-functional learning to occur ought to be good. From good practices and lessons, one might also expect such organizations to develop or better utilize core capabilities, build sturdier technological platforms, and reduce project development times, among others.[16]

> *Ideas are like rabbits. You get a couple and learn how to handle them, and pretty soon you have a dozen.*
>
> —John Steinbeck

To date, beyond commonplace statements about the necessity to establish efficient knowledge systems to disseminate knowledge and experience across projects, what approaches have been taken to build organizational capacity with project-based learning have followed "cognitive" and "community" (or "personalization") models of knowledge management. The first, and by far the most common, has relied on codification[17] through process-[18] and documentation-based [19] methods for extraction, storage, and reuse of knowledge, more often than

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[14] To identify, create, store, share, and use knowledge, large organizations favor centralized approaches. Indeed, after concentrating it, they are wont to defer learning to certain points in time: first, specialized offices and departments collect and corroborate "lessons learned" for eventual release in prescribed formats; next, when they deem that a similar problem has emerged, they prescribe that a party should promptly avail of the knowledge.

[15] Quintessentially and incorrigibly, organizations are political structures.

[16] In the immediate, systematic retention of project experience would curtail project risks from mistakes, mishaps, and potential pitfalls, all with associated costs, no small benefit.

[17] Codification follows a "people-to-document" approach: knowledge is harvested from the person who holds it, made independent of him or her, and reused for other purposes.

[18] Here, the primary tools are self- and independent evaluations. The original purpose of these lies in performing a status analysis, which in effect reins in what learning might be collected. The *Knowledge Solutions* on learning from evaluation note shortcomings of evaluations for accountability and suggest how evaluations for learning might be retooled. After-action reviews and retrospects are a less frequently used—if more versatile—approach to learn immediately from successes and errors. The *Knowledge Solutions* on after-action reviews and retrospects elucidate their process. Micro articles are another: spanning at most one page of text, they describe a problem with the aid of a story and a solution to locate context-bound knowledge and document it in a learning diary after project implementation. ADB's *Knowledge Showcase* series follows a similar approach by structuring over two sides the problem or challenge faced, the approach taken to address it, and the outcome or result. (Even then, they are not easy to draft: as Blaise Pascal put it, "I would have written a shorter letter, but I did not have the time.") See ADB. 2008–. *Knowledge Showcases*. Manila. Available: www.adb.org/knowledgeshowcases

[19] Learning histories are a recent, valuable approach to documentation-based learning. The *Knowledge Solutions* on learning histories explain how they can be used to surface the thinking, experiments, and arguments of actors.

> *Nothing is too small. I counsel you, put down in record even your doubts and surmises. Hereafter it may be of interest to you to see how true you guess. We learn from failure, not from success!*
>
> —Bram Stoker

not relying on electronic repositories. The common feature and limiting factor of such methods is that contributions come about at the tail end of a project, not during it (when the seams of learning are probably richest).[20] If each project is distinctive, what good practices and lessons have been gleaned can only be nonspecific, meaning that they are of the know-how, not know-why variety. That is fine, since strengths and weaknesses can be generic, but it can only inform so much learning before doing.[21] The second approach, courtesy of the present, welcome vogue for communities of practice and other such social networks, has shone a powerful light on the tacit dimension of knowledge and encouraged dialogue between individuals, not between knowledge objects in a database. However, the embeddedness of tacit knowledge within social groups, promoted by storytelling and joint work, means that shared mental models or systems of meaning, buttressed by trust and norms, must exist to enable others outside these to understand and accept that knowledge. Both approaches, which call for different sets of incentives, are complementary and necessary but neither has sufficiently lent a hand. In project settings, what good practices and lessons have been extracted and stored in databases are not widely used because they are poorly represented[22] and archived. Conversely, where team members made time to help others cope with similar problems, crystallized their insights, and made them easy to find they are not accepted by reason of the "Not Invented Here," "Proudly Found Elsewhere," or " Invented Here, But Let's Reinvent It Anyway" syndromes. What is more, *pace* the interorganizational contractual obligations that characterize many projects, the temporal, disciplinary, cultural, and spatial differentiation of project teams ineluctably frustrates the efforts of members to understand and apply the insights of other social groups to their own context of practice and gives them no breathing space in which to build their own networks of actors because they are so task focused.[23]

> *I'm lazy. But it's the lazy people who invented the wheel and the bicycle because they didn't like walking or carrying things.*
>
> —Lech Walesa

Is there a strong, inherent contradiction between organizing in the short term for a long-lasting outcome or result and doing so for long-term, organizational performance improvement? How might a project-based organization be simultaneously oriented to both practical benefits and organizational learning?

Managing Knowledge in Project Settings

Projects need to be reconceptualized as knowledge carriers, not end products, bridging to both contemporaneous and yet-to-come projects. How might this be achieved? To learning organizations, these *Knowledge Solutions* recommend three realistic and mutually reinforcing options relating to (i) project typologies, (ii) organizational

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[20] The overwhelming emphasis that organizations place on (so it is said) learning after, as opposed to before and during a project, deserves commentary. To be sure, singly or in loud unison, the agents listed in the *Knowledge Solutions* on overcoming roadblocks to learning, e.g., the bias for action, undiscussables, commitment to the cause, advocacy at the expense of inquiry, cultural bias, not practicing what is preached, the funding environment, not thinking strategically about learning, not having strong leadership, inability to unlearn, organizational structures, knowledge inaction, false images, lack of penalties for not learning, exclusion, and complexity, conspire to usher in and implement new projects. Learning takes reflection and means behavioral change; yet, organizationally, behavioral change is daunting. Where glaring gaps in goals, incentives, and processes have been identified and must be closed—no easy task in large organizations as that requires supportive leaders, a culture of continuing improvements, a defined learning structure, and intuitive knowledge processes—it is assuredly easier to assume risks away, rush headlong, and stay the course at (well, nearly) all cost. Hence, the paucity of tools, methods, and approaches for learning before and during, and their infrequent use, since there is little demand.

[21] Peer assists are a rare form of learning before doing. The *Knowledge Solutions* on conducting peer assists publicize their process.

[22] Here and there, the design of electronic repositories of good practices or lessons is singularly deficient. With applicability during and after a project, a checklist allied to guiding questions might help individuals decide whether they are passing on a noteworthy lesson or not by shining a light on validity and the potential scope of application. Regular contributions might be framed in a project scenario highlighting an originating action, its outcome or result, the good practice or lesson, its applicability, conditions for reuse, and suggestions. Metadata would enable users to find the "right" lessons depending on need. Users would on their part be requested to answer questions, generated by the system, to add relevant context information.

[23] This said, there is no reason why a higher degree of formality than is usually warranted for a community of practice might not connect peers working in dispersed projects with one another. The key, we shall see, is to widen the compass of team activities from peripheral project roles to more central role positions within practice groups.

design, and (iii) strategic planning and operations. Others surely exist and project-based organizations could do worse than research what they might be.

> *Method is much, technique is much, but inspiration is even more.*
>
> —Benjamin Cardozo

First, if project environments are to be opened up for learning, it is essential to recognize that projects are not all one and the same. Realizing this will help project-based organizations maximize opportunities for knowledge management both within and across projects by applying techniques appropriate to the nature of the projects in question. Conveniently, Rodney Turner and Robert Cochrane[24] have shown that projects fall into four discrete types, which means project managers should use appropriate start-up and implementation methodologies.[25] The following summarizes the spectrum of their goals-and-methods matrix, highlighting the project management approach best suited to the conditions the four types exhibit. Leveraging the knowledge management architecture the author elucidated in *Learning in Development*,[26] it quickly weaves in preferential, exemplar knowledge management approaches:[27]

- **Well-Defined Goal and Methods.** Initiatives with well-defined goals and methods are typified by engineering and construction projects. Drawing from rich historical experience and known techniques, team members move swiftly into specialized activity-based planning of what must be done in the milieu of a stable project configuration. In this type of project environment, operative aids to knowledge management include regular, effective meetings and presentations during which team leaders—acting as conductors—lead skilled implementers in well-defined activities set against milestones, communicate experiences and learning, and hold problem-sharing sessions or project clinics. Briefings can also be organized with effect to support knowledge sharing in a structured project environment permitting sequenced communication, connection, collaboration, and capitalization. (Project management approach: task and activity scheduling. Knowledge management approach: leadership, technology.)

> *Often people attempt to live their lives backwards: they try to have more things, or more money, in order to do more of what they want so that they will be happier. The way it actually works is the reverse. You must first be who you really are, then, do what you need to do, in order to have what you want.*
>
> —Margaret Young

- **Well-Defined Goal, Poorly Defined Methods.** Initiatives with well-defined goals but poorly defined methods comprise product development projects. In these instances, while the functionality of the required product is known, how that is to be achieved is not sufficiently clear. In this type of project environment, advisable aids to knowledge management include collaboration mechanisms to identify peers who may have encountered and dealt with similar problems in the past; an accent would be placed on the definition of techniques. Ways to brainstorm and stimulate creativity and innovation would also be sought. Technology would play an important role in connecting peers and team members, for example with wikis, to advance joint work. (Project management approach: milestones for components of product. Knowledge management approach: leadership, learning, technology.)
- **Poorly Defined Goal, Well-Defined Methods.** Initiatives with poorly defined goals and well-defined methods include systems development projects. In such cases, in the search for sharper definition of the goal, milestones representing completion of lifecycle stages come to the fore but should not blind team

[24] Rodney Turner and Robert Cochrane. 1993. Goals-and-methods Matrix: Coping with Projects with Ill-Defined Goals and/or Methods of Achieving Them. *International Journal of Project Management*. 11 (2). pp. 93–102.

[25] To note, projects are originally of a particular type but they can in practice morph into another. Naturally, effective tools, methods, and approaches for knowledge management will need to change synchronously.

[26] ADB. 2010. *Learning in Development*. Manila. Available: www.adb.org/publications/learning-development

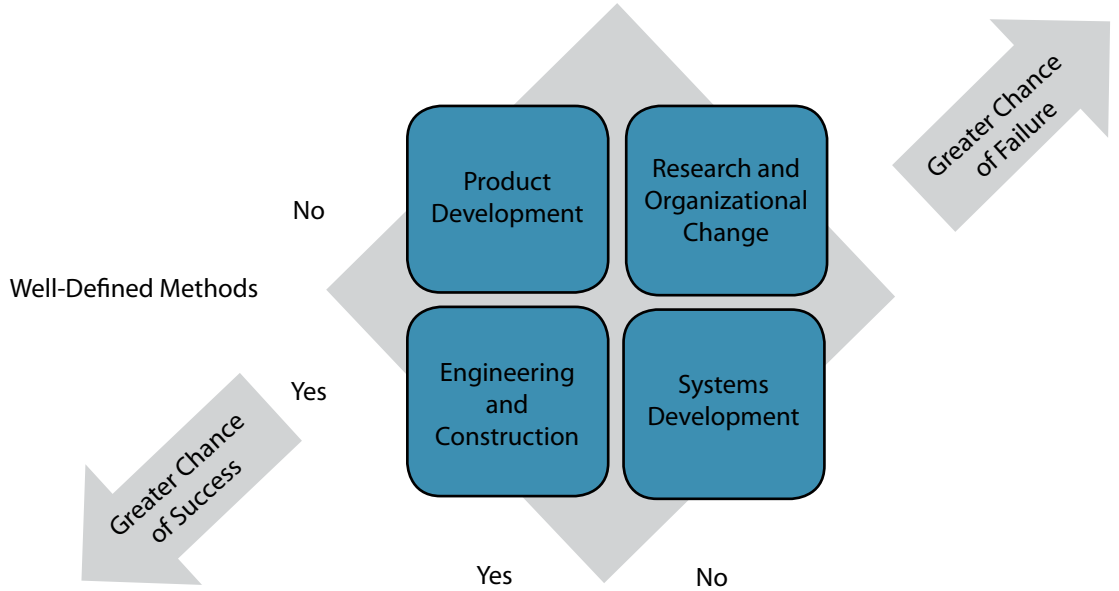
[27] The *Knowledge Solutions* series aims to build competencies in the areas of strategy development, management techniques, collaboration mechanisms, knowledge sharing and learning, and knowledge capture and storage. In conjunction with the 2x2 matrix, but also from a wider perspective, readers are invited to search its articles for (other) tools, methods, and approaches relevant to the four project typologies presented. In no particular order, they would pertain among others to leadership, human resources, project management, routine procedures, organizational practices, knowledge ecologies, internal and external relationships, knowledge partnerships, trust, and information and communication technologies. See ADB. 2008–. *Knowledge Solutions*. Manila. Available: www.adb.org/knowledgesolutions

members to the complicated and complex and to the need for emergent strategies, with willingness to embrace failure on the way. In this type of project environment, useful aids to knowledge management center on people issues and the sponsoring of informed dialogue. Coaching and mentoring, knowledge facilitators, and internet forums would all score highly as team members agree on the goal in close working relationships. (Project management approach: milestones for lifecycle stages. Knowledge management approach: learning, organization, technology.)

- **Poorly Defined Goal and Methods.** Initiatives with poorly defined goals and methods encompass research and organizational change projects. Here, a chaotic context owes to unclear directional sources. From the onset, team members must define the mission, engage in scenario planning, navigate and practice the strategy, refine the objective, and assiduously cater to team-building and engagement. There is no stable project configuration: inspiration, negotiation, and communication are paramount in a conflict-prone state of affairs. In this type of project environment, valuable aids to knowledge management include (i) harnessing top talent, (ii) being flexible about the procurement of new skill types, (iii) stimulating creative thinking, (iv) identifying peers in and outside the organization, (v) tapping internal knowledge markets, and (vi) managing change. (Project management approach: mission definition, refinement of objective, team building. Knowledge management approach: leadership, learning, organization, technology.)

> *The true method of knowledge is experiment.*
> —William Blake

Figure 1: Categorizing Project Types



Source: Adapted from Rodney Turner and Robert Cochrane. 1993. Goals-and-methods Matrix: Coping with Projects with Ill-Defined Goals and/or Methods of Achieving Them. *International Journal of Project Management*. 11 (2). pp. 93–102.

Second, and for traditional, project-based organizations, the bad news: the command-and-control hierarchies that configure them may speed the preparation of relatively simple deliverables within pressured deadlines but run counter to the exploitation and exploration of knowledge for learning and organizational performance. Hierarchies cannot straightforwardly, to maximize their organization's knowledge-related effectiveness, conduct any of the following: (i) monitor and facilitate knowledge-related activities; (ii) establish and update knowledge infrastructure; (iii) create, renew, build, and organize knowledge assets; or (iv) distribute and apply knowledge assets effectively. This should matter a lot to project-based organizations. Auspiciously, the resolution is close

at hand and they need not despair: if their strength lies in projects, surely, might an organizational configuration parallel to, but integrated with, that of offices and departments not be advantageous?

The rise of communities of practice bodes well but is per se insufficient: the learning infrastructure of knowledge-intensive organizations, that project teams would tap and enrich in chorus, must be enlarged. To help manage knowledge in project settings, Saverino Verteramo and Monica De Carolis[28] have made a vital distinction between customary (sector and thematic) communities of practice[29] and (technical) practice groups—the former being in the main dedicated to learning, with contributions from a swath of disciplines; the latter translating as a project-based organizational structure for experts engaged in subject-specific domains transversal to projects, such as project management, business development, etc. Practice groups, the origin of which lies especially in the legal profession, would represent bodies in which discrete and objective facts as well as practical information can be found; learning loci in which professional competencies can be improved; and social networks in which both exploitation and exploration of knowledge take place. More structured, stable, and formalized than communities of practice, practice groups can be an effective organizational solution for managing knowledge in project-based organizations. Projects nourish practices and are nourished in turn: through projects, personnel acquire or develop competencies and improve practices of interest; through practices, ideas and innovations that generate other projects are sparked and recognized.

> *Most Japanese companies don´t even have a reasonable organization chart. Nobody knows how Honda is organized, except that it uses lots of project teams and is quite flexible.*
>
> —Kenichi Ohmae

Figure 2: Practice Groups and Communities of Practice

Characteristic	Practice Group	Community of Practice
• Outlook, Design, and Support • Goal • Size • Membership	• Internal; medium level of formalization; must be identified; requires a high level of support. • Strategic and operational goals are driven by exploitation and exploration processes covering the short, medium, and long term. • Small, stable group. • Partly defined by senior management in the early stages.	• Internal and/or inter-organizational; low level of formalization; emerges from interactions; can be identified; must be cultivated intentionally. • Generic, medium-term goals are formed around knowledge needs. • The size fluctuates with membership; can be small or large. • Membership is voluntary.

Source: Adapted from Saverino Verteramo and Monica De Carolis. 2009. Balancing Learning and Efficiency Crossing Practices and Projects in Project-Based Organizations: Organizational Issues. The Case History of "Practice Groups" in a Consulting Firm. *The Electronic Journal of Knowledge Management*. 7 (1). pp. 179–190.

Third, to activate the transformation of projects as knowledge carriers to the future, the priority of knowledge management should be reflected in strategy and its operationalization, with inputs at all stages from communities of practice, practice groups, and, of course, offices and departments. In brief, strategic plans should

[28] Saverino Verteramo and Monica De Carolis. 2009. Balancing Learning and Efficiency Crossing Practices and Projects in Project-Based Organizations: Organizational Issues. The Case History of "Practice Groups" in a Consulting Firm. *The Electronic Journal of Knowledge Management*. 7 (1). pp. 179–190.

[29] There are many different kinds of communities of practice. They may (i) organize and manage information that is worth paying attention to, i.e., filter; (ii) take new, little-known, or little-understood ideas, giving them weight, and making them more widely understood, i.e., amplify; (iii) offer a means to give members the resources they need to carry out their main activities, i.e., invest and provide; (iv) bring together different, distinct people or groups of people, i.e., convene; (v) promote and sustain the values and standards of individuals or organizations, i.e., build community; and/or (vi) help members carry out their activities more efficiently and effectively, i.e., learn and facilitate.

systematically identify the particular instruments needed to enhance the organization's knowledge management capacities at the requisite level, be it the global, regional, national, provincial, commune, or local level, or else the industry, sector, or market level. In terms of operating outputs, the project cycle would need to be retooled to integrate knowledge management throughout project design, implementation, and evaluation, evidently in light of the four discrete types discussed earlier. In both instances—strategic and operational, protocols for identification, creation, storage, sharing, and—yes—actual use of knowledge should be set.

Further Reading

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Knowledge Solutions

Asian Development Bank

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to two thirds of the world's poor: 1.8 billion people who live on less than $2 a day, with 903 million struggling on less than $1.25 a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

Knowledge Solutions are handy, quick reference guides to tools, methods, and approaches that propel development forward and enhance its effects. They are offered as resources to ADB staff. They may also appeal to the development community and people having interest in knowledge and learning.

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