# Scenario-based Path for Implementing Enterprise Knowledge Management: Post-print of the Interview with Ms. Piao Yongmei, Knowledge Management Expert at China Mobile Design Institute, from Knowledge Management Forum

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## Abstract

KMF: Greetings, Ms. Piao! We appreciate you accepting this interview with Knowledge Management Forum. Our journal has been conducting interviews with experts and scholars in the knowledge management domain since 2016, encompassing professionals from software, consulting, training, scientific research, finance, and various other sectors. You are our first interviewee from the communications industry. As we understand, China Mobile Design Institute is a leading entity in China's communications design and consulting sector, boasting substantial design and consulting expertise, and representing a quintessential knowledge-intensive enterprise. Could you please begin by providing an overview of China Mobile Design Institute?

## Full Text

## Preamble

**Expert Interview: Scenario-Based Pathways to Enterprise Knowledge Management—*Knowledge Management Forum* Exclusive Interview with Pu Yongmei, Knowledge Management Expert at China Mobile Design Institute**

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**Pu Yongmei** is a knowledge management expert and senior engineer who has dedicated nearly ten years to knowledge management at China Mobile Communications Group Design Institute Co., Ltd. She led the establishment of the company's knowledge management system and oversaw the development of two generations of knowledge management platforms. With extensive practical experience in knowledge management and planning consulting, she has directed projects that have received national first-class awards.

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## 1 Combining Scenarios, Transforming Knowledge, Applying Knowledge

**KMF:** Ms. Pu, thank you for accepting our interview. Since 2016, *Knowledge Management Forum* has interviewed experts and scholars in knowledge management across software, consulting, training, research, finance, and other sectors. You are our first interviewee from the telecommunications industry. As we understand, China Mobile Design Institute is a leader in domestic communications design consulting with formidable expertise—a typical knowledge-intensive enterprise. Could you begin by introducing the knowledge management context at China Mobile Design Institute?

**Pu Yongmei:** China Mobile Design Institute is a directly affiliated design enterprise of China Mobile Communications Group, with a history dating back to 1952. It is a nationally accredited Grade-A consulting, survey, and design unit, vice-chairman unit of China Engineering Consulting Association, and a Beijing high-tech enterprise. The institute holds qualifications for planning, feasibility studies, evaluation, survey, design, consulting, project general contracting, and engineering supervision for information and communication projects of all scales, communication information network integration, communication building construction, and civil architecture. Our certifications include Grade-A qualifications in electronic communication broadcasting (communication engineering), electronic system engineering, and construction engineering (architectural engineering), as well as first-class information system integration and service qualifications. We are authorized by the National Development and Reform Commission to conduct investment consulting evaluations, have passed ISO9001 international quality system certification, and hold the "People's Republic of China Foreign Contracted Engineering Business Certificate," enabling us to undertake foreign contracted engineering projects. We are also the founding unit of the Communication Committee of China Engineering Standardization Association.

From a macro-logical perspective, design institutes primarily apply mature tech-

nologies to engineering projects, emphasizing practical application. Our core consideration is whether the integration and fusion between mature technologies and real-world scenarios are sufficiently robust.

**KMF:** In this integration process, achieving knowledge transformation represents the core work of knowledge management. However, different enterprises pursue knowledge management through different pathways. Among our previous interviewees, we have encountered SMEs and small startup teams. How does a large state-owned enterprise like China Mobile Design Institute achieve knowledge transformation?

**Pu Yongmei:** Each enterprise operates in a different environment and positioning. The market environment determines the urgency of tasks. I believe that enterprises with successful knowledge management typically face intense and dynamic market conditions. Such organizations need to maintain vitality by rapidly capturing, extracting, precisely connecting, and disseminating knowledge.

We have also observed companies that start knowledge management and innovation initiatives with great fanfare, only to see them fizzle out after a few years. My summary of our institute's knowledge management development is "slow-cooking"—knowledge management cannot be a short-term campaign. We should not seek momentary excitement and spectacle but rather focus on establishing long-term mechanisms and forward-looking planning.

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## 2 Aligning Knowledge Management with Organizational Structure

**KMF:** Could you elaborate on the specific knowledge management setup at the design institute? How is the position structured?

**Pu Yongmei:** At that time, leadership attached great importance to knowledge management, establishing a dedicated knowledge management position under the Technical Department—likely one of the earliest units in China to create such a specialized role. Our knowledge management is positioned as "professional technical knowledge management." For ten years, there has been only one full-time staff member serving as the institute-level manager.

The institute-level manager, together with part-time knowledge management administrators at all staff levels, maintains the knowledge management operations system using a three-tier organizational structure: institute-level, first-level (professional), and second-level (catalog) administrators. We have nearly 100 part-time knowledge management personnel, with most management team members serving as experts or above from the headquarters' professional institutes, enabling them to provide professional leadership and coordination. During implementation, we encountered challenges. For instance, under current man-hour management systems, how should we measure and evaluate part-time knowledge

management work? Sometimes the workload is substantial but not immediately reflected in man-hours. However, large enterprises also have advantages—strong execution capabilities that enable coordinated top-down implementation.

Our knowledge management position is established within the Technical Department, primarily managing 全院专业技术知识 across technical domains including wired communications, wireless communications, network optimization, switching networks, network communications, communication buildings, planning consulting, and R&D integration. It is responsible for organizing 全院力量 to 梳理、保存、分享 technical domain enterprise-level knowledge assets.

Parallel functional departments to the Technical Department include Enterprise Development, Planning, Marketing, Human Resources, and Information Systems. While these departments recognize the overarching principles of knowledge management and establish management teams as required, they can upload functional domain knowledge to the institute-level knowledge management platform. However, the institute-level knowledge management position does not currently conduct horizontal knowledge management assessments of these parallel functional departments.

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## 3 Advancing New-Generation Knowledge Management Concepts

**KMF:** We understand that China Mobile Research Institute is implementing a new generation of knowledge management concepts. Several keywords have emerged—"rectifying the root," "tracing the source," "clarifying the lineage," and "grounding in practice." These concise terms seem to contain profound meaning. Could you elaborate on this new management philosophy?

**Pu Yongmei:** After long-term development, our knowledge management work must elevate its management level to better accommodate business progress. Therefore, during the development of our second-generation knowledge management platform, we collaborated with consulting companies to propose a knowledge management strategy for long-term development, which can be summarized as "one core," "four objectives," and "five major initiatives."

The "one core" focuses on enhancing knowledge management capabilities under the design institute's large-scale production organizational model.

Around this core, we achieve knowledge management improvement through four aspects—"rectifying the root," "tracing the source," "clarifying the lineage," and "grounding in practice." Specifically: (1) *Rectifying the root* involves transitioning from document management to knowledge management through planning and implementation of the knowledge management system; (2) *Tracing the source* ensures the purpose of knowledge management work by taking the driving forces of knowledge management as the fundamental starting point; (3)

*Clarifying the lineage* establishes frameworks and principles for knowledge management work and its coordination with various departments; and (4) *Grounding in practice* ensures design solutions are implementable by fully considering resource requirements and implementation difficulty in light of the design institute's current situation.

**KMF:** What specific measures implement these four conceptual aspects?

**Pu Yongmei:** Centered on project objectives, we implement the overall project through five main aspects: First, *building the system* relies on foundational theories and best practices to conduct top-level system design (including eight major categories) and achieve coordination with other work systems, connecting knowledge management work from points to surfaces. Second, *formulating the pathway* involves decomposing system implementation tasks and establishing phased implementation paths and objectives. Third, *expanding scope* strengthens knowledge management coverage on existing work foundations (such as including third parties and partner companies, extending assessments to individual levels, etc.). Fourth, *optimizing design* involves redesigning based on existing work foundations and system blueprints, such as process optimization. Finally, *strengthening standards* provides relevant standard frameworks for medium- and long-term implementation work to ensure subsequent grounding.

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## 4 Professional Orientation: Establishing a Knowledge System

**KMF:** According to public information, China Mobile Design Institute has 12 functional departments, 6 professional institutes, and 14 branches. Managing knowledge across these diverse departments and institutions to form enterprise-level knowledge management is indeed a significant challenge.

**Pu Yongmei:** When we initiated knowledge management, enterprise knowledge was initially scattered across various departments without a unified platform for centralized sharing. Knowledge sharing existed in a one-to-one transmission state. Some professional institutes and branches stored their knowledge on local servers. At that time, collection and upload tasks at headquarters were often handled by institute secretaries, with each link in the collection/upload process potentially causing delays. Knowledge frequently remained only on experts' computers or got stuck with secretaries. Even knowledge uploaded to servers suffered from inconvenient sharing. As for branches, knowledge management levels varied—some branches had no management, while others had their own sharing platforms.

**KMF:** How did you resolve this issue?

**Pu Yongmei:** We implemented several innovations: First, we created a professional technical knowledge management team, requiring technical personnel

to serve as knowledge administrators at all levels, ensuring professionals handle professional work. Second, we broke administrative barriers to create a professional-oriented knowledge framework, 梳理 from a professional perspective what knowledge should be accumulated—factual knowledge, skill knowledge, principle knowledge, and interpersonal knowledge related to business scenarios—establishing relevant attribute classifications to lay a solid foundation for building the enterprise knowledge edifice. Third, we enabled 全员参与, transforming the knowledge management transfer or intermediary model into direct upload by technical personnel, eliminating bottlenecks in knowledge collection. Fourth, we facilitated usage by constructing an institute-level knowledge management platform that enables convenient input, output, and management.

**KMF:** Could you elaborate on this knowledge classification setup?

**Pu Yongmei:** I believe each enterprise's knowledge classification model is closely related to its knowledge scenarios. For example, some companies focus on personalized knowledge management models that require accurately locating "big shots" and "gurus," making interpersonal knowledge particularly important. Manufacturing enterprises, concerned with workflow principles and skills, need to focus on principle and skill knowledge (see Figure 1 [Figure 1: see original paper]).

Therefore, knowledge within an enterprise is a dynamically changing matrix. Different enterprises in different environments and scenarios focus on different priorities. Many enterprises should 梳理 all four knowledge categories. Specifically, our enterprise previously emphasized compiling factual and skill knowledge, which encompass many types of knowledge regarding external products and basic tools. These four knowledge categories are mutually transformative.

We value the experience, methodologies, and best practices of top experts. We need to extract and abstract interpersonal knowledge, factual knowledge, and skill knowledge into principle knowledge to form our core enterprise knowledge. Our institute has a fine tradition of transforming interpersonal and principle knowledge, with many outstanding experts voluntarily compiling and organizing research papers, R&D projects, experience summary reports, and best practice summaries.

Our first-generation knowledge management platform development proceeded under special historical circumstances through a simultaneous development, consulting, and decision-making model that appeared chaotic. However, having the project team on-site with detailed communication at each step ensured platform development closely aligned with actual business scenarios. Our headquarters' business departments are organized by specialty, and staff are accustomed to searching for materials along professional lines—a mindset determined by our organizational structure and historical factors. Therefore, our knowledge system setup also takes profession as the primary orientation, implementing professional orientation as the core principle on our first-generation knowledge management platform. Through nearly ten years of promotion and application, practice has

proven that our established first principle—"professionalism"—is highly suitable for our institute, suggesting that knowledge-intensive enterprises should adopt professionalism as the first dimension of knowledge attributes (see Figure 2 [Figure 2: see original paper]).

**KMF:** How did we determine the principle of professional orientation when designing the knowledge classification?

**Pu Yongmei:** Traditionally, our enterprise designed knowledge classifications based on administrative department divisions. This approach has its roots—departments naturally stored knowledge in their local or server folders, and when centralized, the classification became department-based. However, this approach weakens professional capabilities. Our knowledge classification is a large tree where all knowledge can hang, allowing the enterprise knowledge tree to flourish. If each department or individual has their own classification tree, everyone only sees fragments and cannot achieve aggregation and accumulation. Therefore, in knowledge classification, we need to break departmental boundaries and adopt a professional orientation, enabling everyone to upload knowledge according to the "professional-oriented" knowledge system. Of course, we can also have supplementary administrative department-oriented classifications, forming a multi-dimensional classification system. The first principle of multi-dimensional knowledge system construction remains the professional principle, with administrative departments and knowledge attributes placed within filterable dimensions.

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## 5 Ensuring Efficiency and Quality of Knowledge Output

**KMF:** With such a professional-oriented knowledge accumulation architecture, combined with our knowledge management platform and part-time knowledge administrators, has organizational enthusiasm for knowledge sharing improved?

**Pu Yongmei:** In knowledge sharing, the knowledge management platform is merely the hardware condition. I believe the core factors are sharing culture and atmosphere. Our institution's predecessor has over 60 years of history and accumulation. In the first 50 years, the apprenticeship model was the primary knowledge sharing mode, where information transmission faced basically no obstacles and might even have been efficient. People did not perceive significant inconvenience. If we suddenly create a platform requiring employees to upload documents, even with perfect functionality, employees may lack enthusiasm. Therefore, as knowledge management platform administrators, our core objective is to collect the organization's core assets for secondary development and utilization to increase enterprise knowledge asset value. To achieve this, we need management measures to boost the efforts of technical experts and teams.

Specifically, these management measures involve KPI design. In the initial KPI assessment phase, we selected departments as assessment objects. The

benefit of assigning indicators to departments is that department leaders organize and promote them. The general approach to indicator design involved assessing departmental per capita output and platform participation rates at the department granularity. After several years of implementation, leveraging administrative power gradually created a knowledge sharing atmosphere. Everyone learned that document uploads earn points and incentives—not only on the knowledge management platform but also in expert sequence evaluations. Knowledge management platform original document accumulation shifted from passive to active. We discovered that coordinating with the Human Resources Department to award points in expert sequence evaluations is an effective measure for knowledge-intensive enterprises.

Previously, our knowledge sharing assessments were relatively 粗放 and lacked incentive measures—we even needed to "beg" experts to upload documents. However, after implementing these KPI and incentive measures, knowledge sharing earned points and benefits. Gradually, people realized this was beneficial for both public and private interests, forming a knowledge sharing culture with increasing numbers contributing original knowledge. We establish knowledge sharing culture through this guidance and gradual approach.

**KMF:** Having addressed knowledge output, how do we ensure knowledge quality? And how do we ensure confidentiality and security during knowledge sharing?

**Pu Yongmei:** Our institute has eight major technical specialties that can be further divided into nearly 100 sub-domains. We assign 100 experts to maintain knowledge systems for each sub-domain. When users upload knowledge, they must first select the major specialty and sub-domain, then fill in various knowledge attributes according to system prompts. In the first process 环节, knowledge administrators review the professional attributes of uploaded knowledge to ensure implementation of the "professional orientation" core concept. Having professionals handle professional matters is much better than having a "secretary" process everything. This is the first quality assurance measure for the knowledge repository.

Administrators also review whether knowledge is genuinely original or reproduced, whether relevant attributes are reasonably filled, and whether knowledge that has passed departmental/institute-level assessments can have additional "review level" management attributes attached for weighted points in expert sequence evaluations. After perfecting the professional orientation mechanism, overall document quality definitely improves.

**KMF:** After collecting these knowledge documents, do different experts have different reading permission levels?

**Pu Yongmei:** Some institutions prefer classification by administrative level—for example, granting different browsing/download permissions to first-level leaders, second-level leaders, and employees. However, we have discovered a pattern: knowledge only plays a role when it reaches those who need it. Lead-

ers with greater authority may have less time for professional knowledge, making permissions useless. Our current knowledge classification includes: Level 1 for custom scope sharing, Level 2 for institute-wide non-confidential sharing, Level 3 for standardized 成果 specific process sharing, and Level 4 for project business document sharing. For Level 4, after system integration, if an employee was a member of the original project team in the project management system, there is no encryption issue on our knowledge management platform. For non-project team members, the project 成果 involves confidentiality. Non-project team members have two access pathways: obtaining watermark-encrypted documents or acquiring editable versions through built-in processes. This way, individuals with browsing and learning needs can quickly obtain documents, and even editable versions have accessible channels, though the process is much stricter than direct watermark-encrypted downloads.

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## 6 Achieving Project-Based Knowledge and Knowledge Scenarization

**KMF:** After establishing initial knowledge reserves and accumulation through the knowledge management platform, what are the next priorities?

**Pu Yongmei:** Let me give an example. Before the 1970s, clothing styles and fabrics were relatively uniform. After reform and opening up, with economic vitality, our clothes multiplied, and closets became insufficient. Beyond the currently popular "decluttering" method, we realized that organization and classification are crucial—the organizing principle is that clothes in the closet should suit the season and match work and life occasions.

This example illustrates that even with a "knowledge repository," professional orientation, and accumulated knowledge, obtaining useful knowledge at critical moments remains difficult with weak targeting. Therefore, we need to refine and systematically organize knowledge, striving to make knowledge scenario-based. For instance, when cooperating with knowledge management consulting companies, we found that as renowned overseas consulting firms with strict and 完善 institutional processes, they screen and declassify key information and data after completing projects before adding them to the knowledge management platform. Their knowledge declassification and sharing mechanisms are highly effective.

We hope to further 梳理 knowledge to form a treasure repository. In this repository, we 梳理 and subdivide scenarios and match them with knowledge solutions. This way, when new employees encounter new scenarios, they can obtain corresponding knowledge according to the scenario, reducing learning costs.

In summary, we emphasize achieving project-based and scenario-based pathways for knowledge management. We should make project management systems knowledge-based—not just setting up a knowledge management platform but

ideally integrating project management systems with knowledge management platforms. Knowledge should serve knowledge scenarios. Project initiation, review, and 成果 upload should each have corresponding standardized templates, with specific extraction requirements for final outputs to achieve end-to-end project knowledgeization.

**KMF:** In project operations, there is substantial intermediate data and process knowledge. Does our knowledge management platform only collect result knowledge, or does it integrate with every project management 环节?

**Pu Yongmei:** Yes, many knowledge management platforms function somewhat like archive systems, only responsible for archiving/storing documents. Our institute annually launches knowledge management annual plans to organize knowledge management 成果 output. The main output types include cases, exemplars, templates, work instructions, etc. We 剥离 core knowledge from business documents for centralized and unified management.

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## 7 Utilizing the Knowledge Management Platform for Critical Knowledge Access

**KMF:** How is the knowledge management platform utilized? For example, how dependent are researchers or engineering technicians on this platform? What is the application level?

**Pu Yongmei:** I believe our knowledge management platform plays a crucial role in key scenarios such as job transfers and onboarding new employees. For instance, when a colleague transitioned from being a technical 单项负责人 to project management, the platform enabled rapid acquisition of knowledge for the new position.

However, this also relates to user accumulation. Some users with strong learning capabilities and sufficient knowledge accumulation may have less need for the knowledge management platform. We once exchanged knowledge management experiences with a global company. They created a Q&A community with very active employee participation and good sharing effects. However, their knowledge management personnel gave us a sobering reminder: such Q&A communities may work for some super-large companies but not necessarily for others. This company has professional personnel in the six figures—if only a small percentage of these users reply to a post, it becomes a large number, making the post instantly popular. For smaller enterprises, everyone is busy with production tasks—who would pay attention to such a platform? However, does a quiet platform mean no effectiveness? Sometimes in critical scenarios, even if a post receives only one reply, as long as it solves the problem, it is effective.

Our knowledge management platform aims to ensure knowledge is available for inquiry in various critical scenarios and can preserve enterprise core knowledge assets for critical moments.

**KMF:** The platform supports uploading newly generated knowledge. What about previously accumulated knowledge stock, such as knowledge scattered across departmental servers? Will it all be migrated to this unified platform? Many enterprises face this confusion and challenge—is this workload worthwhile?

**Pu Yongmei:** This relates to knowledge timeliness. Communication technology has distinct characteristics—it continuously evolves forward. We may not need to expend such effort collecting outdated knowledge. We have found that many project types we previously handled no longer exist. For example, I once prepared a business plan report in my previous technical position, but our unit no longer undertakes similar business. It has lost timeliness and reuse value, making extensive collection and accumulation unnecessary. We direct limited energy toward forward-looking knowledge that better aligns with technology development directions.

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## 8 On the Use of Social Tools

**KMF:** You have discussed the knowledge management platform extensively. However, we also observe that many enterprises now utilize "lightweight" applications such as social media, mobile terminals, and apps in addition to "heavyweight" architectures like knowledge management platforms. From a knowledge management perspective, how do you view applications like new media, WeChat, and communities?

**Pu Yongmei:** This is an excellent question. We have eight institute-level technical groups with 3,500 participants, managed by the Technical Department. Our wireless technology group and wired technology group are already full. We now have a dedicated "Ask the Expert" section where we organize experts to regularly answer questions, addressing confusion and inquiries about new enterprise knowledge. Our professional WeChat groups are also very active, effectively sharing information such as professional science and technology committee meeting updates and latest technical issues. From a usage perspective, information circulation speed has noticeably accelerated through social media communication, and management information, meeting information, and questionnaire surveys have achieved better results than before.

However, WeChat groups have pros and cons. For instance, experts' time is precious, but group members constantly @ them, making answering questions seem like a mandatory task. Additionally, the inability to fully guarantee confidentiality and information security of mobile media content remains the most difficult challenge and potential risk in using mobile media.

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## 9 On Integrating Knowledge Management with Big Data

**KMF:** A significant trend in enterprise knowledge management is introducing new technologies such as big data and artificial intelligence to measure the technical sophistication of knowledge management. How do you understand this?

**Pu Yongmei:** Some researchers in our institute participate in analyzing our knowledge management platform data. We also conduct platform user behavior pattern analysis, such as which people might need what knowledge during what time periods, to guide our development and compilation of new knowledge.

However, I believe we need to combine intelligent recommendations based on big data with manual recommendations based on expert wisdom. Knowledge hotspots reflected by system data are not necessarily priorities. For example, highly browsed hotspots on the platform are often basic introductory and operational knowledge (such as computer usage), which may not be our key technical knowledge focus. Therefore, we need technical expert recommendations to balance the limitations of intelligent recommendations. In our quarterly recommendation section, expert-recommended documents have significantly higher click-through rates than other documents. We implemented "quarterly recommendations" in our first-generation knowledge management platform, where professional knowledge administrators under each knowledge system directory 梳理 a certain number of high-value technical documents quarterly.

I believe the ideal state of knowledge management integrated with big data analysis must first be built upon the project knowledgeization foundation mentioned earlier. If tens of thousands of projects are conducted annually, massive knowledge is generated, creating a foundation for big data analysis. However, without such large-scale data accumulation, starting with analysis and mining of some small modules is more practical.

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## 10 Knowledge Exchange in Open Innovation Environments

**KMF:** We now advocate open innovation. Enterprise knowledge includes not only internal departmental knowledge but also external knowledge from customers, suppliers, and even competitors. How should external knowledge be managed? Does your current business involve this area?

**Pu Yongmei:** Yes, this is involved. For knowledge-intensive enterprises like ours, external knowledge and external references are essential. We must not only focus on immediate tasks but also grasp the big picture. First, we procure external knowledge. We annually purchase various knowledge bases, including Chinese and English paper databases, and pay close attention to technical standards, purchasing national and industry standards. We also order technical materials based on specific needs. For example, following expert evaluation, we determined that a series of reports from a Dubai company (prospective reports

on wireless and network domains for 2030) are highly forward-looking and are currently being procured.

Additionally, China Mobile Group once encouraged our unit to undertake external business, requiring collection of competitor information. This naturally relates to enterprise core data, and both parties must consider data security. Later developments showed that major players in the communications field have established exclusive consulting units, and China Mobile Group no longer emphasizes undertaking external consulting business. Competitor data collection now relies on publicly available data.

*Note: Figure translations are in progress. See original paper for figures.*