

Communities of Practice

Lessons learned from DaimlerChrysler Tech Clubs

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Executive summary

The complexity and competitiveness of markets are driving companies worldwide to respond creatively to the challenges of the knowledge economy. The American Productivity & Quality Center (APQC), an internationally renowned resource for process and performance improvement, has recognized DaimlerChrysler as a global leader in “Knowledge Management” (KM) and “Communities of Practice” (CoPs). DaimlerChrysler is extremely fortunate to have the industry’s best-practice model for building and sharing dynamic knowledge the “Tech Clubs” by which DaimlerChrysler enabled the success of its car-platform structure

These Tech Clubs, organized around disciplines such as body or electronics, are an example of what are commonly known as communities of practices (CoPs)—groups that steward expertise in particular areas. Firms must learn to support and leverage such communities to compete successfully in knowledge-intensive markets. Tech Clubs demonstrate the power of informal groups of people who take responsibility for an area of knowledge in the business. Their story shows how the success of an on-line knowledge resource such as the “Engineering Book of Knowledge” depends on the existence and quality of communities that take ownership for it. Tech Clubs are becoming known in business circles as an exemplary model of effective knowledge management.

A practical model to help managers do this includes four elements:

- how communities of practice contribute to business outcomes
- how to develop successful communities
- how to design a community-based knowledge strategy for an entire business unit
- how corporate leaders can integrate knowledge management initiatives throughout the firm

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Introduction

A number of external and internal drivers are causing DaimlerChrysler (DC)—like most large firms worldwide—to focus on knowledge. Typically, companies first respond to this challenge by focusing on technology designed to capture and distribute information. Such solutions have worked well for certain kinds of knowledge, such as regulations, standardized procedures, and customer profiles. But technology approaches by themselves have failed to address more significant challenges to foster innovation, build skills, and reuse and leverage knowledge assets. Leading firms such as Johnson & Johnson, Shell, IBM, British Petroleum, the World Bank, and Hewlett-Packard have turned their focus to the development of *CoP*—communities of experts who build, share, and apply knowledge and are in the best position to manage it.

DaimlerChrysler is fortunate to have a well-developed, living example of how such communities can take responsibility for managing knowledge. DC “Tech Clubs” are considered best practice in the automotive industry today. They have been a critical element of the successful move to the car-platform structure, while providing an ongoing forum for innovation, knowledge exchange, and professional development. Tech Clubs have also been the key to the success of the “Engineering Book of Knowledge.” Many firms have learned the hard way that even the most sophisticated technologies and databases fail to work when respected practitioners have not committed themselves to debate, apply, and maintain their contents.

DaimlerChrysler uses different strategies for KM. Besides CoPs we support the “Austauschgruppe”, a two-year rotation program for DaimlerChrysler employees worldwide, Circle Member Group, a knowledge transfer program via scientists and international experts, different Scholarship programs and Colloquia. This Article though focus on the lessons learned from Tech Clubs. It outlines the action steps that forward-thinking managers are taking at DaimlerChrysler and in other leading companies. It does not specify every detail, but it provides a direction for those ready to lead the way.

1. Forces for change

Communities of practice are not an end in themselves. They are a response to external and internal forces that are driving firms to find new ways to manage complexity, reduce cycle time, and leverage knowledge assets.

External forces

External forces drive the need to organize for knowledge:

- The knowledge economy changes the rules of competition
- Globalization and rapid technological changes make knowledge the key to success
 - Increasing product and market complexity overwhelms the capacity of hierarchical structures and increases reliance on networks; e.g. the need to track and understand regulations worldwide means engineers must communicate with colleagues across the firm
- Competitors in all industries where DaimlerChrysler is a player have started initiatives to reap the benefits of better knowledge management
- Greater reliance on suppliers increases the need for better knowledge sharing and co-development
 - The need to anticipate technology developments, test components, and incorporate them in overall vehicle design requires constant discussion among engineers on both sides

Internal drivers

- Internal knowledge challenges to develop expertise:
 - Communication gaps among projects as well as within functional groups
 - Goal to reduce development cycle
 - Increasing complexity of engineering processes increases need to combine the collective knowledge of diverse experts
 - Expertise walks out the door as people retire or move to other jobs and as the suppliers provide a greater percentage of car components
- Lack of shared understanding of knowledge management and communities of practice and how they can contribute to business goals
- Urgency to leverage the advantages of Tech Clubs and EBoKs throughout the company
- Support integration and realize knowledge synergies across the whole corporation

These driving forces are likely to intensify in the coming years. Responding to them requires capabilities that take years to develop. Being first provides a key competitive advantage.

2. *The Tech Club story*

Many people have heard of the Tech Clubs at DC, and there is growing interest in applying these ideas. Successful transfer of Tech Club practices is more likely when managers understand clearly what business problem were addressed by Tech Clubs and what it took to support them.

The move to platforms was a success

The main impetus for the rise of the Tech Clubs was the move to “car platforms,” which are cross-functional, product-based structures. At DaimlerChrysler Auburn-Hills (DC-AH), there are five distinct platforms: large cars, small cars, trucks, minivans, and Jeep. Each platform is responsible for all phases of development associated with the whole vehicle. Engineers of all specialties report to supervisors within the platform on which they work. As a result, their primary focus is on the development of a specific vehicle.

The platform structure was a successful response to the Japanese threat in the late 1980's to gain market share with a flood of product innovations introduced at shorter and shorter time intervals. The move to platforms permitted simultaneous cross-functional development with a single-vehicle focus. Since then, DC-AH has cut the product-development cycle time from 60 to 30 months and reduced R&D costs to 2.7% of sales.

The move to platforms caused problems

The move to platform did not come without costs. Senior managers realized the anticipated benefits of the platform structure were at risk when they started to see a host of new problems: multiple versions of the same part with slight variations, uncoordinated relationships with suppliers, lessons learned that did not travel, and mistakes that were repeated across platforms. The company had gained the advantage of product focus, but lost the ability to learn from its own experience.

Tech Clubs to the rescue

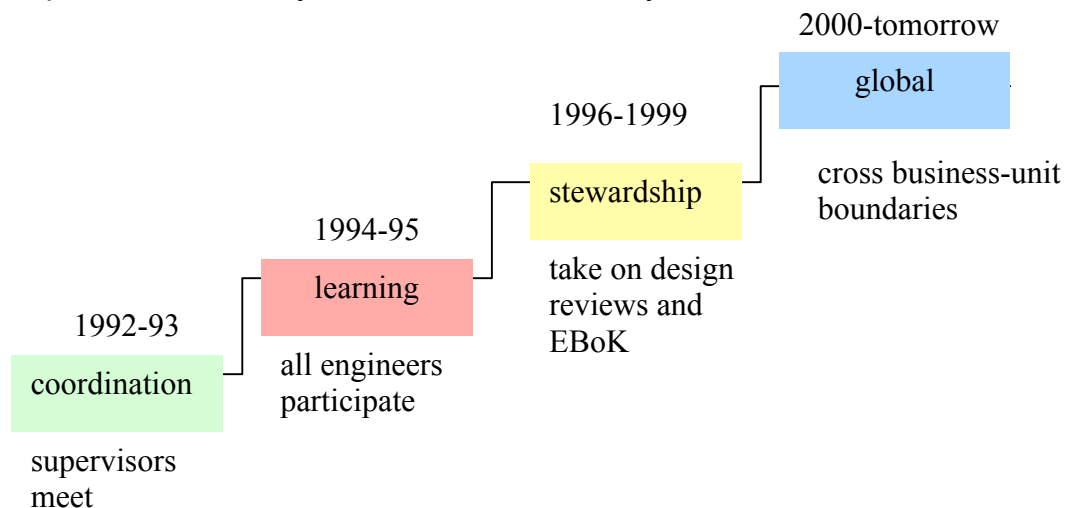
Senior managers and engineers alike soon realized that there was a need for communication across platforms. Former colleagues from functional areas started to meet informally. Managers recognized the value of these relationships, but wanted to keep the primary allegiance and formal reporting relationships in the platforms. Rather than formalizing these groups into a new matrix structure, they decided to sanction and support these informal meetings. The Tech Clubs were born.

The Tech Clubs grow up

Since 1992, the Tech Clubs have evolved through four distinct phases.

- In the first couple of years, supervisors from sub-specialty areas would meet to discuss issues related to parts, suppliers, and new technologies.
- After some time, they realized that the learning taking place in these meetings could be enhanced and leveraged if all engineers in a given specialty area participated. Tech Clubs also invited representatives from purchasing, warranty analysis, and scientific labs.
- As the Tech Clubs matured, they took more active responsibility for their area of expertise. For instance, they started to conduct design reviews for their members before a design went through quality gates. Around that time—it was 1996—Jack Thompson came up with the idea of creating an Engineering Book of Knowledge (EBoK), a Lotus Notes database that would capture the relevant knowledge that engineers needed to do their job, including compliance standards, best practices, lessons learned, and supplier specifications.

He quickly realized that the EBoK vision could only succeed if the engineers themselves took responsibility for creating and maintaining the contents. They had to sell the idea to the Tech Clubs. There was some skepticism at first (such documentation had been tried several times in the previous forty years), but some Tech Club leaders saw an opportunity for consolidating Tech Club knowledge and taking stewardship of it. In retrospect, Jack believes that the adoption of his idea by the Tech Clubs was key to its success.

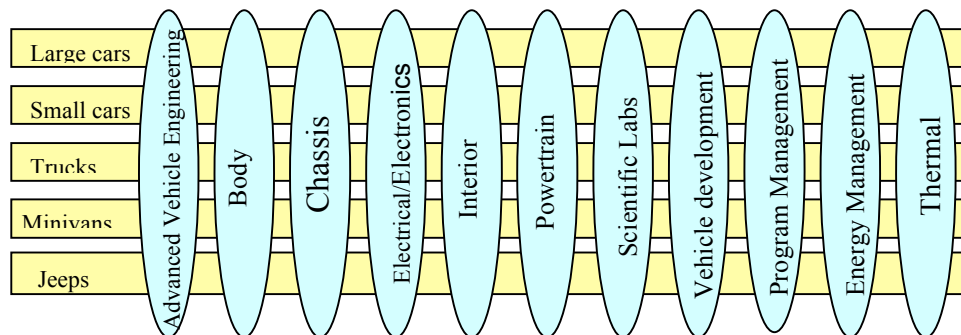


- Today, the challenge of Tech Clubs is to broaden participation across functions and business units and a stronger integration into the day to day work processes. Many Tech Clubs are also realizing that they need closer links with functional areas such as manufacturing, sales and marketing, and quality management.

The structure of Tech Clubs

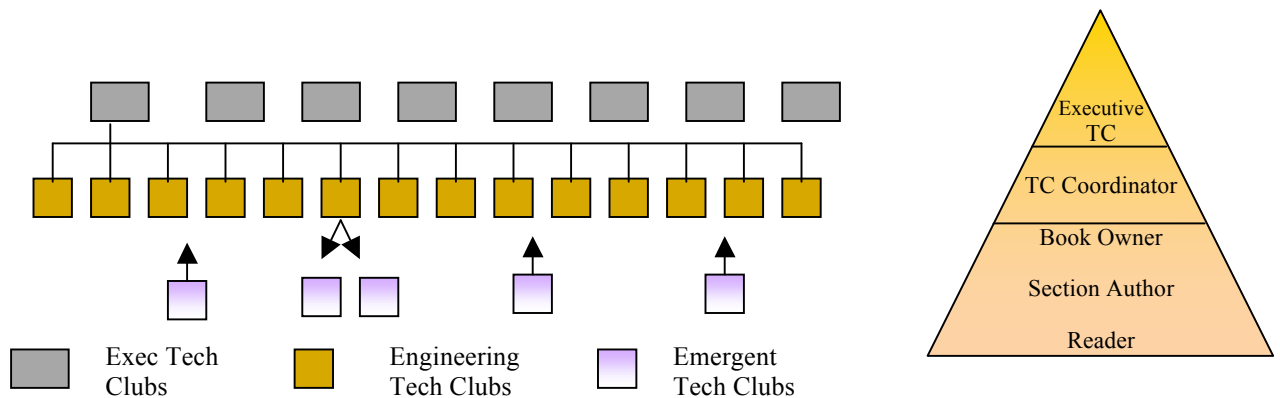
Tech Clubs cover the eight main disciplines in product development: Advanced Vehicle Engineering, Body, Chassis, Electrical/Electronics, Interior, Powertrain, Scientific Labs and Proving Grounds, and Vehicle Development. In each area, Tech Clubs are structured at multiple levels: executive, engineering, and emergent Tech Clubs.

For example, the Executive Tech Club for Body includes the Body managers from each of the five platforms. Their role is to organize and coordinate a set of engineering Tech Clubs in each of the 14 Body subspecialties, such as Wipers, Bumpers, and Doors. These sub-clubs are responsible for documenting lessons learned, conducting design reviews, and standardizing practices for their area. Engineers with a more specific concern—such as electronic overhead displays—can start a more informal kind of Tech Club; they can apply for official status if they attract enough participation.



Roles associated with Tech Clubs and the EBoK include:

- Executive Tech Club members select Tech Club Chairs, review decisions and recommendations, identify EBoK topics, and assign Book Owners.
- Tech Club Chairs organize meetings, set agendas, coach presenters (e.g., suppliers who come to a meeting), follow up on decisions, coordinate with other groups, and network with members to identify issues and build the community.
- The Tech Club EBoK Coordinators insure that all EBoK sections have a peer review and formally approve new sections for release to the readers
- Book Owners coordinate the writing of EBoK chapters for their discipline, identify sections, assign Section Authors, follow up on feedback, and monitor progress.
- Section Authors write EBoK sections and respond to feedback; they may be assisted by a team of engineers from each platform.
- Readers provide feedback and suggestions for new contents.



The Tech Clubs promote the development of knowledge and relationships among engineers across platforms. They develop and document process standards, component specifications, engineering know-how, and supplier knowledge. The Tech Clubs' ability to steward cross-platform functional expertise enables the platforms to achieve their cycle-time, cost, and quality objectives.

Can others benefit from the DC experience?

Many people have questions and doubts about what the DC experience means for their business. Here is a dialogue you may have yourself:

We have different products. Why should we imitate them?

Nobody is talking about imitating wholesale. The point is to understand what these communities of practice can do, what it takes to develop them, and then to apply this understanding to improve knowledge-creating processes in other business and staff units.

Chrysler Corporation needed Tech Clubs because they were organized as platforms. We already have centralized engineering organizations. Why do we need Tech Clubs?

Many stories suggest that people do not communicate as much as they should, even within engineering organizations. And what about people working in different projects? (Not to mention people across different business units.)

This knowledge management thing is too theoretical. It does not have practical applications. Isn't it just a fad?

There is lot of evidence that the Tech Clubs and the EBoK are working. People keep coming to the meetings without being told to because they find value in what they do. Learning to manage knowledge through communities is the key to

success in the knowledge economy and organizations that do it well are gaining a competitive advantage. This is why a large number of leading organizations have adopted this approach (Shell, IBM, Johnson & Johnson, and many others).

How are people going to find the time to manage knowledge when they are already under pressure to produce?

The development process at DC is already twice as lean as in the past and yet they find time to share and document knowledge without additional resources. They do it because it has value to them. It is not just an extra task or a “nice to have.” It helps them perform their job better and save time on their projects.

We put the emphasis on technical excellence and on specialists. Knowledge is power. How can we hope to get our engineers to participate?

DC also has a specialist track, and they make sharing your knowledge a condition for advancement in these tracks. Their experience suggests that technical leaders do not lose power by participating in Tech Clubs, but on the contrary gain prestige by being recognized by their peers. Their names are associated with EBoK’s chapters and with community leadership. The questions they receive are also of better quality because people have participated in Tech Club meetings or read an EBoK chapter before turning to them. As one Tech Club chair put it, “Teaching others give you power; keeping it to yourself diminishes it.”

3. A community-based model for knowledge management

To leverage the lessons of the Tech Clubs, it is useful to have a conceptual framework that explains how they create value and what it takes to make them successful.

Tech Clubs are examples of what are commonly known as communities of practice.

A community of practice is a group of people informally bound by a shared practice related to a set of problems: product-development engineers developing new electronic controls for engines, quality managers from different business units sharing methods to prevent errors, consultants specializing in strategic marketing, artists gathering in cafes and studios to invent new styles, teenagers forming a gang to deal with growing up in a specific neighborhood, or first-line managers congregating for lunch to commiserate about their delicate position between management and the front-line.

Members of a community of practice typically solve problems, discuss insights, share information, talk about their lives, interests, and ambitions, mentor and

coach each other, make plans for community activities, and develop tools and frameworks that become part of the common knowledge of the community. Over time these mutual interactions and relationships build up a shared body of knowledge and a sense of identity.

Communities of practice are nothing new. Most of the communities people hear about are in engineering, but there are many in other areas. Some are called Tech Clubs, some are called networks, some are called exchange groups. Some are recognized, and some are not. Some are doing well, and some are struggling.

Communities of practice should be distinguished from other common structures in order to understand their specific function in organizations and what managers can do to make them successful.

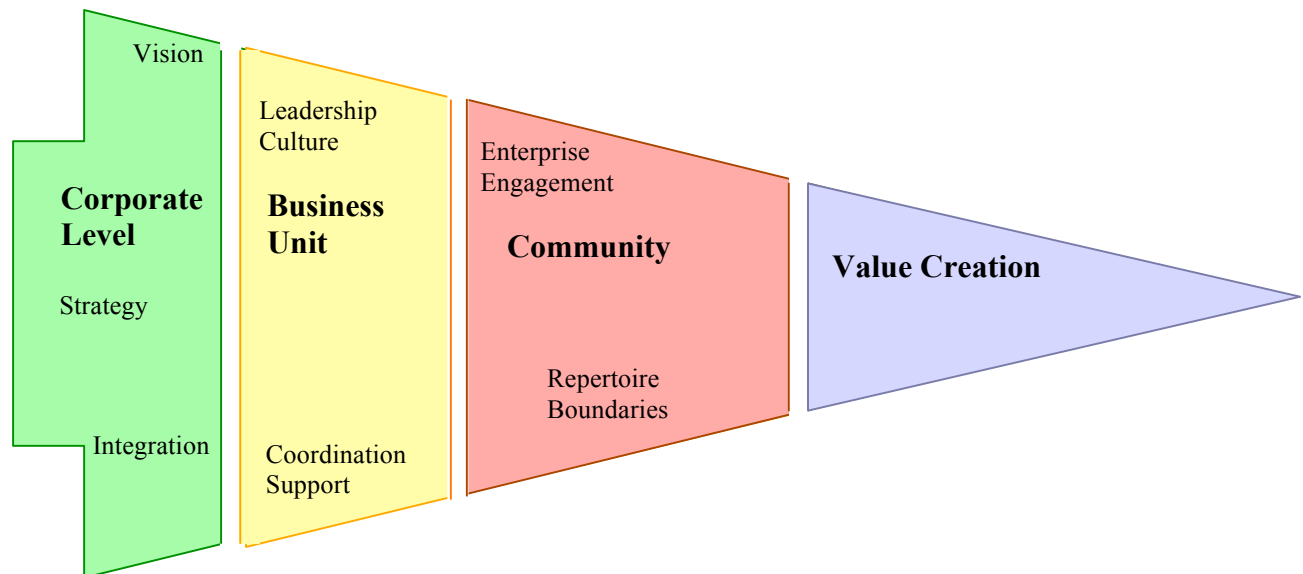
Communities of Practice versus other structures

	Communities of practice	Functional units	Project teams	Informal networks
<i>Purpose</i>	Develop capability	Produce an output	Accomplish a specific task	Disseminate information
<i>Boundary</i>	Knowledge domain	Market, product, or function	Assigned charter	Scope of relationships
<i>Connection</i>	Identity	Reporting relationships	Commitment to goal	Interpersonal acquaintances
<i>Time scale</i>	Enduring	Enduring	Temporary	Variable

In some cases, people participate in what they call a network or a team that would be better understood and treated as a community of practice. See also Wenger, Etienne and Snyder, William. 2000. Communities of Practice: The Organizational Frontier (Harvard Business Review, Jan./Feb. 2000)

The business context of communities of practice

A model to apply communities of practice in a business has four main elements: value creation, community, business unit context, and corporate level.



The first element is the *value created by the community*:

- what the community achieves, such as strong relationships with key suppliers or a toolkit for young engineers
- value to participants, such as professional development and reputation
- a way to trace how specific kinds of knowledge improve performance
- contribution to business results: cycle time, innovation, cost, quality.

The second element is the *community itself*:

- how it defines what it is about—its sense of joint enterprise (e.g., engineers who care about the intricacies of wiper design and performance)
- how people interact and learn together—the mutual engagement by which members build their community (e.g., quality managers from different plants who help each other and develop close relationships)
- the capability they produce—their shared repertoire of language, tools, methods, databases, and stories (e.g., an EBoK or a story about a supplier)
- its relations with the rest of the world—how it manages its boundaries (e.g., a Tech Club may invite a purchasing manager to its meetings and recommend specific purchasing policies).

The third element is the *business-unit context*:

- the role of senior management to provide direction and resources
- the importance of culture in shaping the ways people share knowledge, work with others, and place value on the development of capabilities
- the need to coordinate the development of communities with other related initiatives (e.g., process improvement, quality management, or training)
- the support that communities need, including HR, IT, coaching, technologies, budgets, and time allocation.

The fourth element is the *corporate level*:

- the vision of how knowledge is key to DaimlerChrysler's ambition to become the most successful and respected automotive and transportation products and services provider
- a strategy that defines core competencies and allows you to identify and develop critical areas of knowledge for achieving business objectives
- an integrating function that coordinates and leverages knowledge-development initiatives across business units and functions

The rest of this document will discuss communities of practice in terms of the four dimensions defined in this model.

4. *Value creation: what can communities of practice do for you?*

Communities of practice serve business objectives by taking ownership of a critical area of knowledge. For instance, Tech Clubs contribute to business goals such as increased efficiency, innovation, and delighted customers through knowledge-development activities such as:

- help each other solve problems and coordinate decisions
 - discuss issues that arise in car platforms and initiate projects to address them (e.g., establishing noise standards for wipers; deciding which parts should be common)
 - review designs and make recommendations to car platforms
- build expertise for the organization in critical areas
 - identify best practices and share lessons learned
 - document and update relevant knowledge in the field through EBoKs
- keep up with latest ideas and technology developments
 - evaluate suppliers and make recommendations to purchasing
 - scan external technology developments by talking with colleagues and suppliers, and reading trade publications

- benchmark the company's expertise against world-class standards
 - review J.D. Power ratings and warranty results to find areas for improvement
 - track competitors

- enable members to build skills, relationships, and reputation
 - provide opportunities for experts to connect across car platforms
 - invite newcomers to participate in expert discussions
 - make recommendations for formal training and promotions

The most visible output of the Tech Clubs are the EBoK chapters they produce, but one cannot emphasize enough that the EBoK project only succeeded because the Tech Clubs were already active and took ownership for the content and use of the chapters in their domains.

- Discussing EBoK content is a regular item on their meeting agenda
- Members say that they value the content of the EBoK because they participate in active discussions by which the Tech Club as a whole reviews and agrees on the content of their chapters
- Publicizing lessons learned, codifying expert solutions, and choosing best practices depend on a high level of trust and reciprocity among members
- People agree to share and document their knowledge because they value the recognition of their peers and of the organization at large.

Communities of practice are the key to knowledge management because they provide the day-to-day social context where knowledge can actually be managed. Leading firms that are addressing the knowledge challenge have discovered that technology solutions do not succeed by themselves. They have concluded that knowledge must be managed by the people who own it: the people who need it, create it, and use it. Otherwise, fancy databases get populated with inadequate information that is never used.

5. For community leaders: How to develop communities?

The development of communities includes five distinct, but interrelated streams of activity:

- Define the domain (for example, seats)
 - Think through what knowledge about seats will contribute most to performance
 - Map issues and knowledge sub-areas for seats, such as adjustment controls, or upholstery

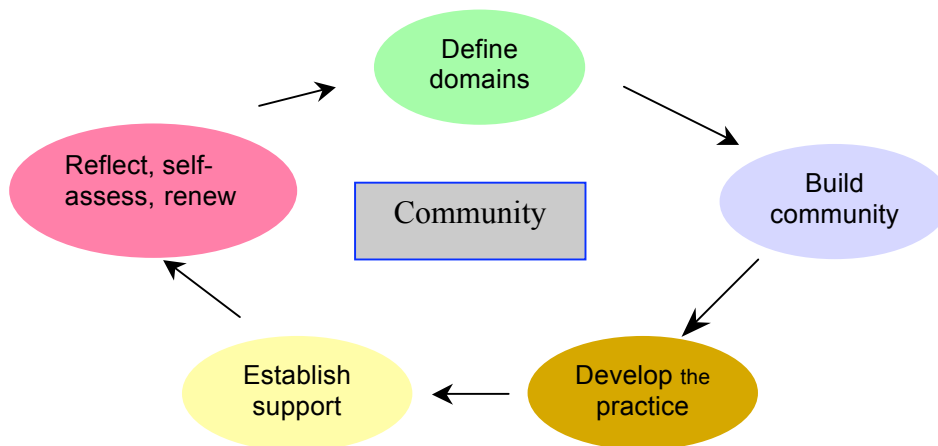
- Build the community

- Find all the people who should participate in a seat community, including engineers, purchasing managers, and others
- Identify potential leaders and core group members
- Organize events to bring participants together (e.g., monthly meetings, workshops, and teleconferences)

- Develop the practice
 - Decide how to share and develop knowledge (e.g., invite a supplier to talk about new seat technologies)
 - Specify what to document (e.g., supplier standards, best practices)
 - Identify the tools and facilities that the community will need (e.g., an EBoK)

- Establish support
 - Find a corporate sponsor for the community (e.g., the Interior Executive Tech Club)
 - Identify HR policies and IT facilities required to support the community
 - Coach leaders and core group members (e.g., provide meeting facilitation)

- Initiate a process of reflection and self-assessment for the community to renew itself.



These streams of activity will continue throughout the lifecycle of a community. During the start-up phase, a typical sequence of activities to develop a community would include:

- Interview recognized experts and potential community members
- Conduct a launch workshop to bring the community together and to start working on the five types of activities described above, e.g., discuss common issues and problems; decide on regular events, roles,

- expectations, and norms; define activities that will serve the development of their practice, etc.
- Provide coaching and education for both community leaders and sponsors to help them understand what it takes to develop an effective community.

Critical success factors

- Creates value for both members and the organization
- Leadership that appreciates the nuances
- An energetic core group
- Enough interactions to build relationships

Pitfalls

- Starting with technology and documentation before convening the community
- Giving the task of documenting the knowledge to outsiders
- Underestimating the skill and effort required to realize the full potential of a community

6. *For business unit leaders: How to devise a knowledge strategy*

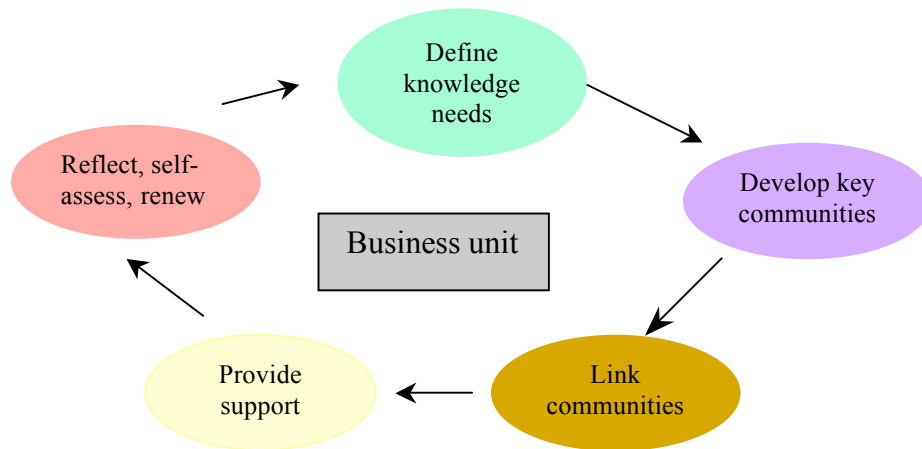
Senior managers and others can have much influence on the development and success of communities. At the organizational level, devising a knowledge strategy involves five streams of activity:

- Understand the business unit's knowledge needs in the context of its strategy and performance objectives
 - Create a map of knowledge domains critical to the business
 - Assess levels of competence in each domain and compare with competitive benchmarks
 - Identify existing or potential communities to steward knowledge in these domains.
- Develop the key communities
 - Identify potential leaders and core-group members of key communities
 - Provide education to leaders and members about communities' purpose and their unique characteristics
 - Encourage a stronger sense of ownership for their area of expertise and its relation to the business.
- Link communities throughout the business unit with relevant learning initiatives and functions

- Identify the processes and initiatives that should be linked with communities, such as process improvement, quality management, and training
- Identify areas where communities have to work together, for instance: wipers and heating, product development and manufacturing, passenger cars and commercial vehicles.

- Provide support: communities of practice need three kinds of support
 - senior management sponsorship:
Companies such as the World Bank and American Management Systems have created a board of champions who handle issues that require power in the organization; they provide critical seed funding, free up expertise, and align policies and systems in ways that help communities, not hinder them. At DC, the Senior V.P. of Engineering has as an approved goal the completion of EBoK sections. This goal is cascaded to all levels of the organization.
 - help with process, skills, and technology:
Firms such as IBM have internal support teams that provide considerable support to both established and nascent communities; these teams help them develop a learning agenda, plan learning activities and innovation projects, and establish an on-line resource. At DC-AH, a support team provides one-on-one coaching, helps design and facilitate meetings, and encourages the communities to link to other groups
 - access to resources:
Communities of practice generally have rather modest needs; these may include meeting space, traveling funds, communication technologies, and budgets for special projects. In some organizations, the issue of members' time allocation needs to be addressed directly, especially for community leaders whose responsibilities almost always require a significant time commitment. Technology too often is the exclusive focus, but it is rightly seen as an enabler; at DC, selecting a simple, intuitive commercial code (e.g. Lotus Notes) has helped Tech Clubs succeed without a large investment in systems development or training.

- Assess/renew
 - Communities, like teams and business units, benefit from rigorous analysis of the value they contribute to the organization. Such assessments help direct resources to value-creating activities and legitimize the role of the community in the organization
 - Formal and informal assessment methods currently in use at DC include: attendance levels at meetings, a scorecard of the number and quality of EBoK sections completed and approved, surveys of EBoK users, JD Powers ratings, and warranty performance
 - Other metrics to consider include: spread of innovation across platforms and business units, number of repeated errors, and the time required for new engineers to get certified or to be able to work independently.



Critical factors

- Recognition of participation and contributions
- A culture that promotes initiative and collaboration to build expertise
- Senior management follow-up on community ideas and recommendations

Pitfalls

- Verbal support without corresponding action
- Insufficient attention to community leadership and performance problems
- Overemphasis on extrinsic incentives

7. *Next Steps for DaimlerChrysler at the corporate level*

In a multi-divisional firm such as DaimlerChrysler, communities of practice present challenges and opportunities that go beyond single business units. Communities can help build capabilities and networks of experts that cross business-unit boundaries and create links with external experts and resources. The corporate center has an important role to play: It provides forums and integrating mechanisms to help foster and coordinate KM initiatives.

Groups in various DC business and staff units have initiatives to develop knowledge strategies and foster communities of practice. DaimlerChrysler Corporate University is acting as an integrator to support and coordinate these initiatives. It fulfills this role by providing five core services:

- Organizes a community of practice among leaders of KM initiatives to learn together, coordinate efforts, and develop action plans. The KM community will hold meetings, conferences, and workshops
- Acts as the corporate integrator to help the KM community find and consolidate KM expertise from internal and external sources and build an on-line resource that includes case studies, tools, methods, best practices, and a directory of experts
- Provides and brokers consulting, education, and support to KM initiatives in business units:
 - educates senior managers about the opportunities and requirements of communities of practice
 - helps KM leaders design knowledge strategies
 - coaches community leaders to perform their new roles effectively
- Coordinates and integrates related functions and activities such as strategic planning, IT, HR, and quality management.
- Forms a KM Board of senior managers: acts as a liaison, and provides support to the KM Board to identify priorities and monitor progress.

* * *

The Tech Club experience shows how leaders can develop knowledge-based structures—communities of practice—that complement formal structures to achieve performance objectives.