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KALiF

To Share is to Multiply

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Any errors of analysis are the responsibilities of the authors.

Forewords

An important feature of EU-supported R&D programmes is the way in which the collective expertise of a transnational consortium can be harnessed to achieve research objectives more effectively than would be achievable by organisations working in isolation. This exchange of knowledge across transnational boundaries within each consortium helps European researchers to maintain their position at the leading edge of developments and to leverage this expertise in order to make real impact in the marketplace.

The 16 projects with the theme "IT for Learning and Training in Industry (LTI)", which received support from the European Commission under the Esprit programme, were each distinctive in character and covered a broad range of industry sectors. However, all were concerned with innovation in the use of technology to improve the effectiveness of Corporate Knowledge Management and/or the development and leveraging of Corporate Knowledge Assets. It therefore seemed particularly appropriate to seek to extend the benefits of knowledge sharing within each project by facilitating, where appropriate, collaboration between projects.

Knowledge sharing across boundaries between and within dispersed organisations is an issue of wider relevance in a fast changing world of work. Many organisations today are working within a number of partnerships, not just in formal consortia but also as a consequence, for example, of new relationships to improve efficiency within supply chains or university/industry collaboration to facilitate effective innovation. Less distinct boundaries can also exist within single organisations, for example, where improved responsiveness to change has been effected by giving greater autonomy to corporate divisions or functional teams.

This wider interest in Intra-Organisational Knowledge Management and Intra-Organisational Learning prompted the presentations of aspects of the work of KALiF in book form to assist dissemination of the lessons learned.

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The transferability of knowledge is one of the major issues facing European organisations today. The sharing of knowledge supports corporate investment by capitalising on existing assets and helps accelerate the launch of new products, solutions and services. This is essential today, not just for strengthening competitiveness, but also for survival.

However, in the "European culture" the attitude to the creation of an efficient "knowledge-sharing" environment within large or small enterprises has not been developed sufficiently. The common approach is not to share knowledge and experience. Therefore, it can be a significant stimulus to set up initiatives that help European organisations learn about corporate knowledge sharing and corporate knowledge management in order to improve their own ability to share knowledge, to achieve optimal enterprise-wide advantage of the knowledge and expertise available in the organisation and, therefore, to better compete in the market.

Such initiatives also stimulate the creation of enterprise networks, made of large or small organisations that work and learn together

either at a national or multinational level. Working as a "unique body", these enterprises create the conditions to share knowledge and experience beyond the single enterprise. Such enterprises, networks and consortia are able to capitalise and maximize the return on research activities, to reduce duplication of efforts and spending in different organisational entities, to accelerate time to market for new products and compete in a bigger market. The result is an increase in financial benefit for those organisations that implement a sustainable knowledge-sharing programme.

Most European organisations currently lack the methodology to facilitate knowledge sharing or to co-ordinate research activities, internal projects and knowledge-dependent initiatives between different branches and departments. New methods and techniques must be defined in the interest of finding a "new approach" to motivate people to share knowledge, and to teach enterprises how to develop an appropriate methodology. Organisations that implement knowledge-sharing programmes will be able to recognise and appreciate the advantages, and experience the tangible benefits involved.

The European Commission, through its co-ordination of the IT for Learning and Training in Industry (LTI) programme of the EC Directorate-General Information Society, has demonstrated a clear vision and a strong commitment to support the implementation of the KALiF methodology aimed at knowledge management and organisational learning.

The valuable experiences gained by this implementation of KALiF serve as the basis for those who wish to facilitate knowledge sharing in government-funded R&D programmes and other multi-project environments.

It is in this spirit of fostering knowledge sharing and dissemination that the European Commission has made this book possible.

The reviewers of KLIF, the project that implemented the KALiF for the LTI programme.

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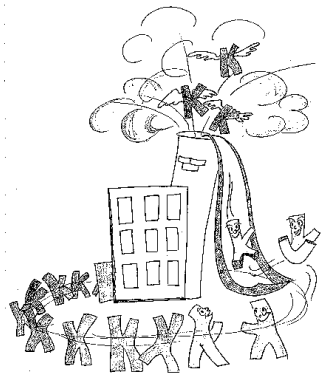
Introduction

One hundred years ago, if people were asked to identify the defining component of the industrial revolution, then at its height, most people would be likely to have chosen coal. Nations that possessed it in abundance prospered. World trade and the military logistics necessary to sustain huge empires depended on coal-fired ships and coal-fired trains. Today, the new industrial revolution is taking place not at the comparatively leisurely pace of a steamboat but at the explosive pace of a space vehicle launcher. This revolution is fuelled not by coal but by knowledge.



In the 21st century corporate strategists will increasingly see themselves as the architects of learning organisations and the orchestrators of knowledge management systems, harnessing this self-generating, self-multiplying, inexhaustible energy source. In a business world where knowledge and learning become prime assets, (albeit somewhat intangible and difficult to quantify) we perhaps need to ask ourselves whether the economy is rolling at full speed. If not, part of the problem may be that we are locked into a mindset of the old industrial age where burning our coal left us with ashes rather than with an ever-expanding heap of coal.

The crazy equations we feature on the cover of this book are light-hearted attempts at provoking some serious thought. They are intended to highlight the way in which knowledge exchange can work according to different and unexpectedly advantageous rules. In this new economy you can give things away and still gain. These new circumstances place demands on individuals and organisations alike. How can they adapt?

This book presents a methodology called KALiF for creating mutual gain through knowledge sharing.

KALiF is a directly applicable, multidisciplinary and practical approach to the effective capture and distribution of best practices, lessons learned and other types of knowledge[1] in complex, geographically dispersed environments. It is directly applicable because it can be applied without much adaptation in many different situations. It is multidisciplinary because it draws on insights from organisational science, psychology, knowledge management and economics, and because it takes full advantage of the possibilities that Internet technology is offering. Most of all, it is practical because it turns insights from these disciplines into a coherent framework with many practical guidelines.

The KALiF approach has already proved successful in various situations. The methodology is illustrated throughout the book with examples from a key application of the methodology in an EC-supported research and development programme.

[1] *The KALiF methodology makes use of a clearly defined taxonomy of types of knowledge. In this book, however, we will use terms as lessons learned, best practice, experience etc. interchangeably.*

1 Bottlenecks

Imagine you are very, very rich. You have made your fortune as an entrepreneur, sold your business and could be floating around on your yacht enjoying caviar and champagne for the rest of your life. But that is not you. Instead, you have chosen to make your money and your entrepreneurial skills and experiences available to start-up companies. You have invested time and (lots of) money in about 30 companies in the areas of advanced IT, biotechnology and e-commerce. Although all start-ups operate in the high tech industry, there are no direct competitors amongst them. Clearly it is in your interest that all start-ups thrive well. You realise that your experience is valuable to them, but they could also learn a lot from each other. They are all start-ups, they work in similar environments and they have to overcome similar hurdles to succeed in business. To facilitate sharing you have asked one of the start-ups to develop a members-only Internet site with discussion facilities, so the entrepreneurs can ask each other questions and discuss experiences and ideas without having to meet face-to-face. Although all of them reacted positively to the idea, after two months only three messages have been posted to the site, all sent by you... Still, having regular discussions with the entrepreneurs, you are convinced that they would all benefit a great deal from a more regular exchange of ideas.

Imagine you are less well off, but still… you are the marketing director of a multinational producer and vendor of consumer goods. Marketing is organised geographically, local marketing organisations having a relatively high level of autonomy. Traditionally, new products were rolled out in phases, using more accessible areas as test markets for the more conservative markets. This approach is, however, being challenged by the globalisation of the economy and the increased pace of innovation. When new products have been developed they need to be released as quickly as possible on the largest possible scale. In these hectic days there is no time anymore to collect and analyse the results of the test

markets, reflect on them and then further develop the strategy for other markets. To optimise the effects of the marketing effort, experiences and lessons learned acquired locally need to be made available directly to all other marketing areas. You have informed the regional marketing and sales directors about the need for close collaboration and effective exchange of experiences. They all agreed that this would indeed be beneficial for the company. In practice, however, not much has changed. The regional marketing staffs remains primarily concerned with the success of the new products in their own markets. They do not spend much time or effort on sharing their experiences and best practices with other area managers, not even for the sake of the company!

Imagine you are sympathetic towards the have-nots. You work for a large development organisation like Voluntary Service Overseas, which is involved in projects all over the world, mainly in the poorest countries. Each situation and project is unique in its own right. Since you do not have proven methods that would work in every situation your people have to improvise a lot to get things done. Although the improvisational skills of your fellow workers are beyond doubt, you realise that the projects often 'reinvent the wheel'. What you need is a way to make the experiences of your co-workers available to others. Of course post project evaluation is part of your standard approach, and each project produces an evaluation report with recommendations for future projects, but these recommendations usually concentrate on the essentials. What is needed is access to the more "mundane" day-to-day experiences and lessons learned of fellow workers: how to fix a back-up power unit, how to deal with bureaucratic local authorities, how to bargain for petrol, etc…

Imagine you are responsible for a large, partly EC-funded, thematic research programme, which consists of various more or less independent research projects. The projects are different of course; you would not fund two projects to do the same thing. Still, in many ways the projects are similar, if only because they take place in the same programme environment and because they are related to the programme theme. It is in your interest and also in the interest of the projects to spend the available resources as effectively as possible. Would it not be wise to set up some mechanisms to prevent the duplication of research efforts and perhaps other efforts as well? Of course it would, and for this reason you sometimes organise meetings for projects to present their results. Project managers dutifully show up at these "concertation meetings" and some of them volunteer to present their project to the others. After the meeting everybody goes home and continues to do the things they were doing before. Although useful in their own right, the concertation meetings do not really boost knowledge sharing the way you would like to see it. Projects do find out about what others are doing, but this hardly results in more intimate or effective collaboration.

Imagine you are a franchiser who wants to improve knowledge sharing among franchisees... Imagine you work for national government and want to improve the sharing of experiences between regional or local authorities... Imagine you work for an oil company and want to improve the exchange of lessons learned between exploration and production units… Imagine… We could go on like this for some more pages, but the point should be clear by now. In all of the situations described above free exchange of experiences would be instrumental to help an organisation achieve its objectives. This observation is recognised by all involved, but still it is difficult to get knowledge sharing off the ground.

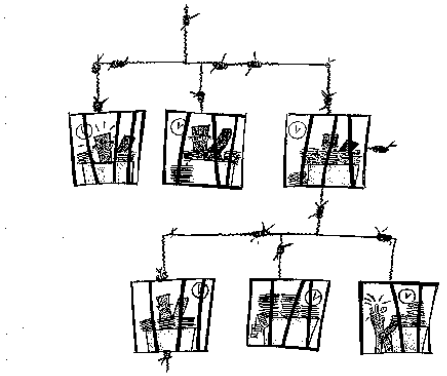
Why would this be?

Let us look at these situations from a somewhat different angle. Imagine you are running a start-up company, partially funded by the business angel described at the beginning of the chapter. You still have to finalise your product or service, you have to disclose potential markets for your product, you have to recruit personnel, you have to set up an administration, and thousands of other things that are new to you. The last couple of months you have probably learned more than in the preceding ten years. You are not unwilling to share these lessons with others in similar situations; you simply do not have the energy or time to do so. In the end your financial supporters, including the business angel we talked about earlier, will evaluate you on the success of your own business, not on the success of your efforts to help other start-ups.

Similarly, imagine yourself as a project manager of a large development project somewhere in Africa. You work eighteen hours a day dealing with larger and smaller problems, trying as best as you can to keep the project on schedule with the resources available. Of course you know that managers of other projects could benefit from your experiences, but when you have to choose between writing down your lessons learned and solving an immediate problem the choice is obvious. This is the project you are responsible for and therefore has first priority.

Or think of yourself as regional marketing and sales director. Of course you realise that the company as a whole would profit if you made your lessons learned available to others, but would you? You realise very well that – in the end – you will be held accountable for realising your sales forecasts, not those of others. You are not unsympathetic towards the idea of structured lessons learned sharing, but it is probably just the latest management fancy, and it might very well have passed by the end of the year.

In all situations, the essence of the problem is that the people who should do the sharing have other priorities. This is a matter of course: they should have other priorities since they have other responsibilities. This is how organisations work, and for good reason. The fundamental principle of an organisation is to distribute work – and therefore responsibilities – among people. No matter what type of organisation you are talking about (hierarchical, matrix, virtual, etc), it all boils down to ensuring that different (groups of) people do different parts of the job and that, in the end, all parts of the job are completed. It is this principle that allows for specialisation, and therefore exploitation of the complementary skills of multidisciplinary teams. Without specialisation, many achievements of modern society would simply not be possible. Could you imagine an airplane factory where each worker constructs his or her 'own' airplane?



But this 'divide and conquer' principle of an organisation has downsides as well. One of these we have just encountered: different workers have different responsibilities and therefore helping out colleagues does not always have top priority. Organisations are designed to get the job done as quickly and effectively as possible, not to maximise knowledge sharing. The

accent is on the logic of performance and not on the logic of performance *improvement.*

In the old 'coal and steam' economy the emphasis on production instead of learning was a rational choice. The high investments required for industrial production plants could only be recovered by the efficient production of high quantities of goods for longer periods. Efficient production lines and the decomposition of jobs into simple actions that could be applied routinely was the key to success. In the new 'knowledge' economy this is no longer the case however, as many management gurus lead us to believe. Assembly line work is usually less dependent on effective knowledge exchange than collaborative software development. Effective development, distribution and deployment of knowledge are the cornerstones of success in the economy of today and tomorrow. Therefore, many organisations have begun to implement knowledge management programmes, building 'knowledge management add-ons' to the existing organisational structures.

Knowledge management has many facets. We have seen knowledge management projects that:

- attempt to financially value the intellectual assets of an organisation;
- aim to make explicit and disclose the knowledge available in an organisation, typically through intranet technology;
- derive a corporate 'knowledge strategy' from the corporate business strategy;
- try to improve the knowledge-sharing attitude of employees to create a 'knowledge friendly culture'.

In this book we will present an approach that focuses on a particular aspect of knowledge management: the effective exchange of day-to-day experiences of co-workers in situations where this could benefit an organisation (or cluster of organisations), but where all kinds of obstacles hinder the spontaneous emergence of knowledge exchange. We have called this approach KALiF. KALiF is not a comprehensive methodology for knowledge management. It focuses on only one aspect, albeit a very important aspect: knowledge sharing. All scenarios discussed above – the start-ups, the marketing departments, the development organisation, the thematic research programme – describe situations in which KALiF would be applicable. In fact, KALiF has been applied to the case of the thematic research programme in which many of the ideas and concepts that constitute the approach were successfully tested.

In the following chapters we will describe the philosophy and the elements of KALiF. In the next chapter we will describe our ideas concerning the mathematics of knowledge sharing and the need for creating win-win situations for all parties involved. In chapter 3 we will present an overview of the KALiF methodology and in chapter 4 we will present a case study that will be used as an illustration in the remainder of the book. In chapters 5, 6 and 7 we will detail the main components of the KALiF methodology. In chapter 8 we will illustrate how the evaluation process is shaped within KALiF. In the final chapter, we will draw out some of the lessons we have learned from applying the KALiF methodology to one of the most complex environments and outline short and long-term goals for the development of the KALiF methodology.

2 The mathematics of knowledge sharing

If you have 2 apples and I give you 2 more, how many apples do you have?
Our schoolteachers bothered us with puzzles like this one throughout our childhood. They sought to teach us arithmetic, in most cases successfully we presume. Indeed, the correct answer is 4 : 2 plus 2 equals 4. As children we are taught that this simple mathematical equation is true. And for good reason, insight into the behaviour of numbers is an indispensable tool in our complex world where we continuously need to make calculations. How much money do I have in my pocket? Can I afford to buy this house? Is this bill correct? At what time will the train arrive? And so on. By the time we are twelve years old, most of us have mastered the rules of addition, subtraction, multiplication and division. Thus:

$$2 + 2 = 4 \qquad 2 \times 2 = 4$$

$$4 - 2 = 2 \qquad 2 \div 2 = 1$$

The power of mathematics lies in its abstract nature and the resulting broad applicability. The above equations are true at any time in any situation, no matter the subject matter. The mathematics used for calculating the number of apples you get, is also used in physics, economics, biology or any other science. If we add 2 apples to 2 other apples we get 4 apples, if we add 2 pears to 2 other pears we get 4 pears. If we add 2 ideas to 2 other ideas we get 4 ideas. No matter what we add, subtract, multiply or divide, the laws of mathematics always apply.

Or do they?

If I have 4 ideas, and I give you 2, how many ideas do I have left?
'Two', the mathematician would answer. Four minus two equals two. But is this really true? Do you really lose your ideas – or your knowledge – when you give them to someone else? Or do you simply keep the ideas that you have just given? Do the iron rules of mathematics apply here? Does '4 – 2 = 2' hold, or should we perhaps say:

$$4 - 2 = 4$$

By the same token, if I have 4 lessons learned and I share them with 4 other people, do we all end up with one lesson learned? Or do we all have 4? Again, does '4 ÷ 4 = 1' hold or should we say:

$$4 \div 4 = 4$$

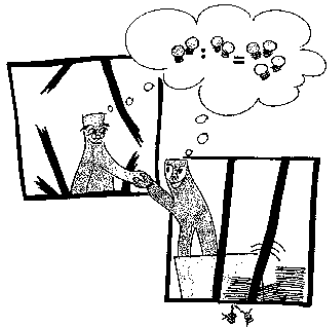
Or perhaps even:

$$4 \div 4 = 16$$

Since now 4 people all have access to 4 lessons learned! This leads to the astonishing result that:

$$4 \div 4 = 4 \times 4$$

Could we therefore conclude that, when talking about knowledge, ***"to share is to multiply"?***



There is something strange going on here. When talking about ideas, lessons learned, or knowledge in general, the universal laws

of mathematics do not seem to hold. Or are we doing something wrong?

Most likely we are: none of us is a mathematician and we are pretty sure the millennia-old art of mathematics has countered more severe attacks on its fundamentals than our little game with ideas. The point we want to make is that you do not lose knowledge when you give it away. You do not have any fewer ideas when you share them with others. As a matter of fact, you can even get more knowledge when sharing ideas with others. The idea of resources that increase through use may seem counter-intuitive. But this is how the knowledge economy works. It is like saying "to spend is to save".

The attentive reader will have noticed that we have introduced the term "*share*" for the '÷' operator instead of the more commonly used term "*divide*". Whereas the latter emphases the material (splitting up) aspect of sharing, the former focuses on the social (having together) aspect. You share the home, but divide the joint property. Still, both terms have a similar meaning and it is instructive to see how other languages deal with this distinction. German and Dutch have only one term ("teilen" and "delen" respectively) for both sharing and dividing. In these languages, the KALiF slogan "to share is to multiply" would be a true oxymoron. In Italian and Finnish the same word is used to denote both share and divide and we estimate that many other languages will have adopted similar approaches.

What does this all mean? Does the fact that the Dutch language does not distinguish between sharing and division imply that in the Netherlands sharing and division are two sides of the same coin? Probably not: none of us are cultural anthropologists, but we are pretty sure that Dutch nationals also understand the difference between having together and splitting up very well. The point we want to make is that "÷" interpreted as "divide" emphases the splitting up character. Whereas, "÷" interpreted as share emphasises the having together character. In languages such as English the distinction between these two interpretations is emphasised by having two words. In languages such as German and Dutch the essential relatedness of the interpretations is emphasised. Division is associated with competition: if you get more I get less, and vice versa. Sharing, on the other hand, is associated with collaboration: if we share we all get more.

This distinction is reminiscent of the differentiation in game theory between zero-sum and non-zero-sum games. Game theory was developed in the 1920s by the famous Hungarian mathematician John von Neumann (the same man who "invented" the digital computer). Though initially developed as a theory about rational strategies in gaming situations (in particular poker games, the story goes), the theory revolutionised economics, psychology, sociology, politics, warfare and many other areas. The theory consists of two distinct branches: one on zero-sum games and one on non-zero-sum games.

A zero-sum game is one in which no wealth is created or destroyed. So, in a two-player zero-sum game, whatever one player wins, the other one loses. The players therefore have no common interests. Think of the situation where we have to partition a cake. If I take a larger part, you will get a smaller part. If I win more, you lose more, and vice versa. Therefore in a zero-sum game "competition" is usually the optimal strategy.

Non-zero-sum games are different from zero-sum games in that wealth may be created or destroyed. So in a 2-player non-zero-sum game both players could win or both players could lose. In such situations it might well be that collaboration is the optimum strategy.

The prototypical example of a non-zero-sum game is the "prisoners' dilemma game". Imagine the following situation[2]: the police capture two criminals. The police suspect that they are responsible for a murder, but do not have enough evidence to prove it in court. They are able, however, to convict them of a lesser charge (carrying a concealed weapon, for example). The prisoners are put in separate cells with no way to communicate with one another and each is offered to confess.

If neither prisoner confesses, both will be convicted of the lesser offence and sentenced to a year in prison. If both confess to murder, both will be sentenced to 5 years. If, however, one prisoner confesses while the other does not, then the prisoner who confessed will be granted immunity while the prisoner who did not confess will go to jail for 20 years.

What should each prisoner do?

To help us determine the answer, let us look at a payoff matrix for each prisoner. The value in each cell is the time spent in prison, so the prisoners will try to end up in the matrix cell with the lowest number. The first number of each pair refers to the prison time of prisoner 1, and the second number to prisoner 2.

		Prisoner 2	
		Confess	*Not confess*
Prisoner 1	Confess	5 \ 5	0 \ 20
	Not confess	20 \ 0	1 \ 1

Let us assume the role of prisoner 1. We are looking to minimize our prison time. Since we have no way of knowing whether our partner in crime has confessed or not, let us just assume that he has not. If Prisoner 1 does not confess either, both will go to prison for 1 year. Not bad. But, if Prisoner 1 confesses, he will go free, while his partner rots away in jail. We will assume that there is no "honour among thieves" and each prisoner only cares about minimizing his jail time. From the above discussion, it is obvious that if Prisoner 2 does not confess, Prisoner 1 is definitely better off confessing.

Now let us look at the other possibility. Say prisoner 2 confesses. If Prisoner 1 does not confess, he will go to jail for 20 years. But if he does confess, he will get only 5 years in prison. It is clearly better to confess in this case as well.

So is that it? Has the problem been solved? Is each prisoner better off confessing? Well, it may seem so from the above discussion, but if we look at the payoff matrix, it is clear that the best payoff for both prisoners is when neither confesses! But game theory advocates that both confess.

What would you do? Would you confess or not? None of us (the authors) have ever been arrested for murder, but we are pretty sure that in this situation game theory would predict our behaviour accurately. In this situation, with high uncertainty about the strategy of the other player, the costs of one-sided collaboration simply outweigh the benefits of reciprocal collaboration. By collaborating you can win 4 years if the other does not confess either, but lose 15, in the case the other confesses. In the absence of further information about the other's strategy, confessing is the only rational decision.

The prisoners' dilemma game bears a lot of resemblance to the situation regarding knowledge sharing in many organisations. To begin with, like the prisoners' dilemma game, knowledge sharing

[2] *This formulation of the prisoners' dilemma game was taken with permission from the work of Janet Chen, Su-I Lu and Dan Vekhter. For more information about game theory check out their web site: http://www.stanford.edu/~jjchen/game/index.html.*

is a non-zero-sum game. The little tricks with mathematics we played in the first section of this chapter were intended to illustrate this. By knowledge sharing, you can create wealth. By sharing, or collaborating, both you and I may obtain an optimal result. Through knowledge sharing it is possible to create win-win situations!

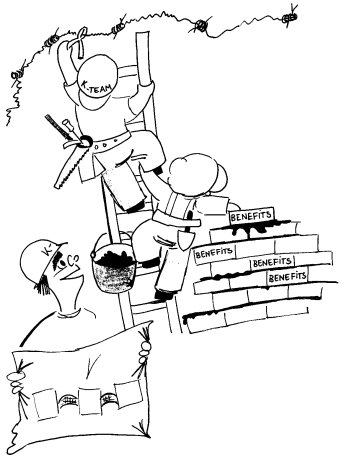
Secondly, as in the prisoners' dilemma game, the yield of sharing is partially dependent on the behaviour of others. If I were the only one sharing knowledge, I would be better off not to share. Since in this case I would not get access to the knowledge of others, there would be no benefits for me. Since making your knowledge and ideas available to others has a price – the effort it takes – the net result of knowledge sharing would be negative. Not confessing – or collaboration in the knowledge-sharing context – is only an optimal strategy if you have sufficient confidence that the other will select the same strategy. Trust is essential!

Further, like in the prisoners' dilemma, the optimal strategy depends on the relative costs and benefits of the resulting situations. We could presumably influence the decision of the prisoners by modifying the sentences. If, for example, the sentence for carrying a concealed weapon was only one week's imprisonment, the situation would change drastically and both players would probably choose not to confess. In the same way, knowledge sharing in organisations could be boosted by reducing the effort of sharing or improving the benefits. The costs and benefits of sharing can be influenced!

The potential for win-win situations, the essential role of trust in knowledge sharing and the potential to influence knowledge sharing behaviour by influencing the costs and benefits of sharing form the cornerstones of the KALiF approach that is presented in this book.

3 The KALiF methodology

KALiF, an acronym that originally stood for Knowledge and Learning Infrastructure, is the name of a methodology to boost knowledge sharing in complex professional environments. It consists of an integrated set of activities and services that together produce the KALiF added value. These activities and services come in three forms: events, on-site services and on-line services. We will consider these events and services in further detail, but first we must establish some common terminology.



When we use the term *KALiF*, we refer to the KALiF methodology. When we talk about a KALiF project in a particular organisational environment, for example the cluster of start-ups discussed in chapter 1 this will be called a *KALiF application.* In a KALiF application, a number of people are responsible for running the KALiF: they organise and facilitate events, they maintain the web sites, etc. These people will from now on be called the *KALiF team*[3]. A KALiF application typically targets a clearly defined group of

[3] *Not to be confused with us, the authors, although we occasionally play that role as well.*

organisations or organisational units - the start-ups, the marketing departments, the research projects, etc. These we will call units from hereon. The group of units targeted in a KALiF application is called the *KALiF focal group*. The members of these units are collectively denoted as the *KALiF community*. Relations between the KALiF team and the KALiF focal group are channelled through *KALiF contacts,* community members that take the role of 'liaison officer'.

Events are facilitated (physical) meetings between KALiF community members[4]. The objectives of these events are twofold: the creation of community spirit and the focused exchange of ideas. KALiF distinguishes between different types of events: knowledge markets, for the identification of potential sharing themes, sharing days, for the focused exchange of experiences related to a particular theme and KALiF contact days, to establish ways of working within the particular KALiF application. We will discuss the nature of these events in chapter 5.

On-site services are visits of KALiF team members to the organisational units that are part of the focal group. We have debriefing visits, in which the KALiF team members perform structured interviews to collect lessons learned that might be relevant for others, and clinics. Clinics are consultancy sessions during which specific support is given to a project on specific sharing themes. Besides debriefings and clinics, all kinds of ad-hoc on-site services may be provided as part of a KALiF application. The on-site services are presented in chapter 6.

[4] *When the technology is ready, the KALiF methodology will probably be enhanced with on-line events. This requires widespread availability of high-quality real-time synchronous internet-based collaboration software and the high bandwidth to work smoothly.*

A variety of on-line services may be part of a KALiF application: a theme-based electronic library of knowledge documents, discussion facilities, a knowledge map in which community members present themselves to others, electronic newsletter to inform community members about KALiF activities etc. The on-line services complement the events and the on-site services. They allow for effective preparation and follow up of the events or on-site services and they make it easy to make the results of an event accessible to those who could not attend. You can read more about the KALiF on-line service package in chapter 7.

Although KALiF applications will differ in the exact mixture of services that are offered, only limited customisation is allowed. The power of KALiF lays in the way the different activities and services are geared to one another, and aberrations of the formula might disturb the balance. For example, the outputs of a knowledge market are used to define sharing themes. These are then used to schedule sharing days and to structure the electronic library. So if a particular KALiF application decides to skip the knowledge market these other services are at risk too. Debriefs are partially used to collect content for that library etc. If you stir too much in this delicate mixture, dependencies will break and the KALiF application will turn into a Babylonian confusion of uncoordinated actions - not unlike many other knowledge management projects we have seen. The KALiF methodology is not like an a-la-carte menu from which you can pick whatever service you like. Each part of the menu has been designed to inform and influence other parts to provide coherence and integration.

Together, the three types of services form the toolbox that a KALiF team has at its disposal to get knowledge sharing off the ground. As argued in the previous chapter, the keys to success are the creation of win-win situations and trust. When talking about win-win situations, we mean that each participating member of the

community gets more out than he or she puts in. The cost-benefit trade-off for each participant should come out positive. The KALiF methodology allows the KALiF team to influence these personal pay-off accounts by reducing the costs of sharing, and increasing the benefits. For example, the debriefs (see chapter 6) reduce the costs of making lessons learned available to others, because most of the work is done by KALiF team members. The knowledge map increases the benefits of sharing because it makes it easy to contact the source of a lesson learned to verify its applicability in some specific situation.

The issue of trust is more complicated than you might think. Trust is the absence of risk. In the case of the prisoners' dilemma, it simply refers to the risk that the other criminal might confess. But in knowledge sharing several types of risk are involved. Firstly, there is the risk that you put in more knowledge than others. These colleagues are now able to do a better job and get the associated credits leaving you empty-handed. To some extent KALiF tackles this situation by reducing the effort it takes to make knowledge available. But this is often not enough to restore the symmetry. The balance of the decision could swing the other way as a consequence of extraneous factors such as a bond of friendship between the two people in question and/or the fact that the other can be trusted to ensure that you get the credit for the input made. One important side effect of the events in the KALiF methodology is that they create circumstances in which such bonds of friendship may emerge. But there is more…

Lessons learned come in two forms: things that went wrong and should be avoided, and things that went extraordinary well and should be copied. Of course, you would like to get credit for the second type, but what about the first type? Would you like the whole community to know that your start-up almost went bankrupt because you made some erroneous cash flow projections? Probably not, we would think. In such cases lessons learned should be carefully generalised and depersonalised. The KALiF methodology provides guidelines for this process.

Another type of risk to be dealt with in a KALiF is that someone who makes a learned lesson available exposes him or herself to a lot of potential criticism. Knowledge shared is subject to the scrutiny of peers and there is the possibility that some inputs may not be thought of highly by the recipients. Imagine that you just found out how to do a particular operation with a complicated software tool. You know that many others do not know how to do this because you inquired, so you decide to make your lesson learned available. Only ten minutes later you receive a first response: "*You call that a lesson learned? Why haven't you read the manual?*" Not really an incentive to make the next lesson you learn available, is it? The KALiF way of dealing with such situations is to establish *Ways of Working (WoW)* - a sort of formal code of conduct that is agreed on by all community members. As part of the KALiF methodology a default WoW document is available, but we consider it essential that each KALiF application makes its own WoW. The WoW should be tailored to specific sensitivities in the organisational context, and community members should be able to contribute to the contents. WoWs are mutually created ground rules that cannot and should not be enforced in a top-down manner.

Several other types of risk are involved as well: giving away knowledge could reduce your power - knowledge is power, right? What if the others lessons learned are not valid? Seeking knowledge from others could be perceived as an admission of lack of competence, etc. Instead of explaining in detail how the KALiF methodology provides tools to reduce all these different types of risk, we will here set out our general approach to risk reduction. In the next chapters we will discuss how this approach is embedded in the different types of services that KALiF offers.

The KALiF approach to risk reduction is based on the work of the psychologist Cunningham[5] who has suggested that the perception of risk has two components: uncertainty and consequences. This relation between these components can be expressed using the following formula:

perceived risk = uncertainty x consequences

According to this rule, risk can be reduced by increasing the perceived certainty of a particular effect and by decreasing the severity of the (negative) consequences of a particular action. This insight forms the essence of how risk is reduced in a KALiF application. For example, the establishment of WoWs reduces the risk that community members make use of shared knowledge in unexpected and therefore unethical ways. The WoWs could also explicitly constitutionalise some of the consequences of sharing, e.g. regarding credit assignment. Or, to take our previous example of negative lessons learned, KALiF provides tools to decontextualise negative lessons learned, thus removing the negative consequences of being blamed or losing face.

So, to summarise the exposition of the KALiF methodology so far, a KALiF application provides three sets of interdependent services to the KALiF community: events, on-site services and on-line services. Each of these services contributes to knowledge sharing by influencing the cost-benefit trade-offs of community members concerning knowledge sharing and by decreasing the perceived risks of knowledge exchange. Theoretically, that is all there is! Isn't it beautifully simple? Three sets of services to achieve two objectives. But how do you make it work?

[5] *Cunningham, S.M in Cox (ed) "Risk Taking and Information Handling in Consumer Behavior" Division of Research, Harvard University, Boston, 1967.*

In order to make a KALiF application work, the KALiF team has to face a number of challenges. We will finalise this chapter with a discussion on those challenges and then proceed in the following chapters with a more detailed discussion of the individual KALiF activities and services.

The challenge of implementation

In the early stage of a KALiF application, the KALiF team should expect to encounter skepticism and reluctance to participate. The employees of the organisational units that form the focal group may not be familiar with the principles of sharing and learning for mutual benefit and do not know how to react to an initiative such as a KALiF. For example, from exit-interviews with project managers in the KALiF application described in chapter 4, we found out that in the beginning the project was seen as a tax, a burden and imposition - more work for no additional budget. Such early reactions to a KALiF could jeopardise its implementation. It was only when strong relationships had been developed, based on high quality services that community members began to realise that KALiF was adding value.

Any KALiF application should be prepared to face such initial lack of enthusiasm and have an action plan how to deal with it. One way to do this is to have some quick wins: services that will clearly be of benefit to the community members, even in the unlikely case that all other knowledge sharing services would not work. This quick-win service does not necessarily have to be a knowledge sharing service, although that would be nice. It is essential that it is perceived as useful and that this positive perception is carried over into a positive attitude towards the KALiF application. In the case of the starts-ups such a service could, for example, be the free access to some marketing channel, for R&D projects it could be support with the making of an IPR (Intellectual Property Rights) agreement within the project consortium, etc.

The challenge of profound change

A KALiF application aims at boosting knowledge sharing across boundaries, in particular across the boundaries of the organisational units that form the focal group. One could say that the KALiF application in some way tries to remove those boundaries by bringing about a profound change in the way the community members see their operational environments. The KALiF community should become a real *community* of practice. Of course this takes time. For example, the franchise market could be viewed differently by individual franchisees if they were part of a holistic exercise bringing franchisees together to share experiences in, for instance, attracting new customers or retaining old ones. Instead of viewing themselves as individual units with sales targets in a given locality their experience of the franchise would alter considerably through accepting a new view of themselves as part of larger community of people with similar aims, values and experiences.

The challenge of engagement

Success demands that a critical mass of community members understand what the initiative is attempting to achieve and accept its philosophies and practices. The challenge of engagement means that we must seek ways of explaining our activities and underlying concepts in a way that is meaningful and constructive to the target group. This requires a *regular, high quality communication* from the KALiF team to the community. Especially in the early stages of the KALiF application sufficient energy should be devoted to provide participants with a thorough understanding of the service package and the objectives of the project. You never get a second chance to make a first impression… It should be emphasised to the participants that, whereas the format of the KALiF application is outlined by the methodology, the themes and topics for knowledge sharing will be based on the actual needs of the community members.

The challenge of credibility

The challenge of credibility is to provide true services to the community members. Whilst a work plan is necessary it may become obsolete. Not every service envisaged when writing the work plan for the KALiF application will be appreciated by the community. On the other hand community members may require services that you had never considered. If this is the case the KALiF team should not adhere too strictly to the original plan: stop the services that do not work and include those services that have been demanded. If you do not do this, you may lose the credibility that is needed to get knowledge sharing off the ground. The KALiF methodology anticipates a six-monthly plan-act-evaluate cycle to stay tuned to the needs of the community. The first six months of a project should be used especially to identify user needs more precisely.

The challenge of measurement

Although we emphasised at many places that knowledge sharing - and therefore a KALiF – could save an organisation a lot of money the balance has another side as well of course. A KALiF application costs money too. In order to justify these expenses the effects of the KALiF application should be measured. The challenge of measurement is truly a challenge because we lack a norm reference base. We can measure the amount of shared knowledge, but it is hard to say whether this means we are performing well or not. You will need to establish your own evaluation system. The KALiF methodology prescribes that you include a dedicated evaluation work package in your KALiF application. This will allow you to create feedback loops into project management activities and review and refine instruments for measuring progress against objectives. This will also provide you with an insight into what works and what does not work in your specific environment. In chapter 8 we will discuss how a KALiF measurement system is constructed.

4 The case of the LTI programme

Today's version of the KALiF methodology is based on a culmination of experiences we gathered through our work as knowledge management and organisational learning consultants. Until three years ago, this was all we had: a set of loosely coupled ideas on how knowledge sharing could be enhanced in complex environments. Then we came into contact with Agnès Bradier, co-ordinator of a large research programme on 'Information Technology for Learning and Training in Industry' (IT for LTI, or even shorter LTI) part supported by the European Commission. She recognised the potential benefits of the KALiF concept and invited us to run a KALiF application for the LTI programme, allowing us to test our ideas and concepts in a full-scale environment. In the next three chapters we will illustrate the different KALiF services using examples and anecdotes that come from the application we ran for the LTI programme. In this chapter we will provide the necessary background information on LTI and EC funded research programmes in general to appreciate these examples.

To deal with the challenges of the upcoming 'knowledge economy', Europe's policy makers are investing heavily in research into technologies that are, or could be, instrumental in supporting Europe's ambition to become a leading knowledge economy. By co-sponsoring large numbers of research projects they aim to place Europe at the forefront of technological developments. These investments are channelled through 'framework' programmes. In 1994 the fourth framework programme was launched and the current fifth framework was launched in 1999. Framework programmes set the overall aims and priorities for the EC research and development activities and define the content of the work in broad terms. "Specific" work programmes define the more detailed basis for R&D in a particular technological area. One such work programme is Esprit, which is dedicated to Information Technology.

Esprit is a so-called 'rolling work-programme', adapted each year to take account of industry's changing priorities, and contains descriptions of the tasks to be undertaken. Calls for proposals invite consortia of interested parties to propose research projects within the scope of these tasks. Independent evaluators then assess the proposals against published criteria. The best proposals are selected for partial funding. To be eligible for funding, a proposal should satisfy a number of criteria. One of them is the quality of the proposal of course, but that is not all. There are also some conditions on composition of the consortium: the project should bring together companies and research institutions of at least two countries and it should bring together different types of organisations (research institutions, industry, universities, SMEs, etc.).

One theme within the Esprit call for proposals of 1997 was called "IT for Learning and Training in Industry. The objective of this thematic programme was to:

develop and experiment with IT-based tools, processes and infrastructural means that support and enhance the learning capability and the learning effectiveness of individuals and organisations.

Nearly a hundred proposals were submitted, of which 16 were selected for funding. These 16 projects were to become the focal group of our first full-scale KALiF application. To give you a picture of the types of projects that were part of the focal group, the following table briefly summarises the objective of each project:

Project	*Develops:*
ADVISOR	a toolkit that integrates learning technology with workflow technology, thus enabling a complete integration of work and learning;
AMPOS	a system that support feedback loops from aircraft maintenance engineers to the airplane manufacturers;
DISCOVER	virtual reality training tools for application in the off-shore industry;
ENRICH	tools that support knowledge-based intranet technology;
ETOILE	distributed virtual reality tools for training in emergency situations;
IMAT	technology for semi-automatic generation of instruction materials from technical manuals;
INTRASYS	intelligent tutoring technology to provide technical assistance;
KLEE&CO	a knowledge management system tailored to ill-structured creative environments
KNOW-WEB	a knowledge based intranet environment;
KNOWNET	tools and methods for creating an intranet based knowledge infrastructure;
LORE	technology to integrate intra and inter-company learning in the recycling industry;
MOST	on-line training tools for medical representatives;
SHE	virtual reality based training simulators for hydraulic excavators;
TQM-Online	knowledge enriched total quality management system for the automotive supply industry;
TRACE	light-weight virtual reality simulators;
TRAIMWE	multi-user, multi-site virtual reality training technology.

As you can see, there were plenty of opportunities for sharing. Although the selection process is designed to eliminate duplication and to provide a breadth and diversity of project activity sufficient to address the principal theme of the call, the objectives of the projects are sufficiently overlapping to guarantee that knowledge sharing will pay-off. One quick inspection of the table above already suggests that virtual reality, internet/intranet technology and text-analysis techniques could be fruitful sharing areas. At least that is what we thought. The next chapter will show how wrong we were…

The projects differ in consortium size, duration and budget. The smallest project had a consortium of only three partners and lasted for about 15 months; the largest had 12 partners and lasted for 30 months. Altogether 109 organisations were involved,

creating a 'community' of a few hundred people coming from 18 countries. But how might such a diverse set of organisations and people be readily called a community?

To get an idea of the challenge we were facing, picture yourself in the position of an average project member. You are working in an organisation somewhere in the European Union, and your first duty is of course to do well for your organisation. Amongst all the other things, you have to do some work in the LTI project that your organisation is involved in. You know about the objectives in the project, you know why your organisation is involved – organisations often participate in such projects for reasons other than delivering the final product – and you know what you are expected to deliver[6]. You do not know much about the other people involved in the project however. You have visited the kick-off meeting and had some opportunity to exchange your ideas with participants of other organisations, but lack of time and language barriers have prohibited the fruitful, in-depth discussions that you usually have in projects within your own organisation. The fact that your project is a part of some larger 'LTI programme', which in turn is part of Esprit and the fourth framework programme is not really on the top of your mind.

This is the situation we had to work in. Our objective was to facilitate a knowledge exchange process across boundaries. The primary boundaries in question were those between 16 research and development projects with the common theme *IT for Learning and Training in Industry.* However, even within these consortia the sense of community was quite weak. So our first real application of the KALiF concept was to take place in a very difficult environment indeed.

When we embarked on this endeavour we were fully aware of the size of the challenge we were facing and, fortunately, so were the EC, represented by Agnès Bradier, and our external reviewers Ciro Maddaloni and Una Murphy. Only one thing was certain: *a fortiori,* if KALiF can work in this environment, it can work everywhere. In the next chapters we will use our experiences with the LTI case to illustrate some features of the KALiF service package. In chapter 8 we will explain how we measured to what extent KALiF actually worked and in chapter 9 we will interpret the results of these measurements to reach some preliminary conclusions about the applicability of KALiF.

[6] *We have met many people who gain in competence through working in EU supported projects. The end products may not necessarily be aligned precisely with the organisation's needs, but staff gain invaluable new skills, not least of which are those related to working in diverse, multi-lingual and multi-cultural project consortia.*

5 KALiF events

Regular physical meetings provide the key to building and maintaining meaningful relationships with the focal group and the community. Therefore a series of events, where people from the target community can meet and discuss issues that are of mutual interest, form the backbone of the KALiF concept. These include:

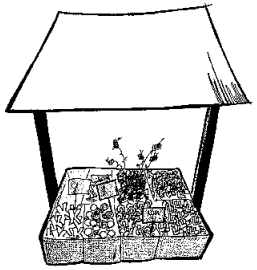
- a kick-off *knowledge market* to establish themes for sharing;
- a *contact meeting* between the KALiF team and the KALiF contacts (the liaison officers of the projects) to establish ways of working during the course of the project;
- facilitated *sharing days* where participants have focused discussions on specific sharing themes.

Although indispensable for effective knowledge sharing, there are some practical drawbacks attached to events, mainly related to the logistics and the costs. It is difficult to get all – or maybe even a majority of – the community members together at one location if the units of the focal group are widely dispersed geographically, which is usually the case. We therefore recommend organising KALiF events alongside existing events in the 'organisational environment'. This allows community members to combine visits to these events with KALiF events, and reduces the travelling costs and overheads.

Still, in particular in the case of larger communities, many community members will not show up at an event. This may be due to other obligations, because other members of their organisational unit already participate or – in the case of a sharing day – because of limited interest in the central topic of the event. Not everything is of equal interest to everybody. To allow people that could not attend an event to learn about the outcomes, KALiF events always produce reports that are published in the digital library of the KALiF application's web site.

The LTI case

On the whole, members of the LTI community have regarded the implementation of the KALiF events as adding value both to the programme and their project. As one project manager says: "KALiF events have helped to create new partnerships both for our academic and for our industrial partners".



Knowledge markets

A knowledge market is typically organised as the first event in a KALiF application. It is intended to identify sharing themes, i.e. knowledge areas that could be fruitful for sharing. When we talk about a market, we really mean a market: a marketplace with market booths and market vendors, customers walking around and bargaining for products and so on. However, the traded products are knowledge products: lessons learned, insights, theories, etc, put in some tradable form[7]. Can you imagine?

What actually happens is the following. Each organisational unit is invited to visit the knowledge market event with at least 3 or 4

[7] *We realise "knowledge product" is a vague concept. What we mean is a piece of knowledge, put in a form that could be traded. For example, a lesson learned about how to keep Microsoft windows up and running for more than 24 hours is a piece of knowledge, but you can only sell it if you make it available in some tradable form, such as a book, a training or perhaps consultancy service.*

people. These form a team in the market game, which consist of two phases: the knowledge production phase and the buying and selling phase. In the first phase, the teams are asked to think of knowledge, best practices and lessons learned that they have developed in their unit and that could be made available to others. These should be turned into knowledge products that can be traded on the knowledge market. They are also asked to make a sales pitch, some advertising materials and a price for each of the knowledge products. At the end of the production phase, teams are asked to create a market booth for selling the knowledge products they have created on the market. Teams also make arrangements for staffing the booth during the second phase.

During the buying and selling phase, the team members running the booth actively try to persuade potential customers of the usefulness and quality of the knowledge products they offer. When the shoppers – participants who are not manning a booth at that particular moment – are sufficiently convinced, they may decide to 'purchase' the product by adding it to their shopping list. At the end of this phase, the shopping lists are collected for analysis. On the shopping lists there is also room reserved for describing knowledge products that you have looked for but could not find on the market.

The analysis of the results of a knowledge market produces three types of results. It gives an overview of:

- the knowledge that is available in the community (the supply at the market);
- the knowledge for which there is a need in the community (the demand);
- knowledge products for which there is a demand but no supply (market opportunities).

These results can then be used to decide on themes for sharing days and to develop indexing schemes for the digital library.

Markets are social spaces and thus we have recognised that a knowledge market is an excellent tool for creating lively and focussed discussions between people from different organisational units, often resulting in long-lasting exchanges of ideas.

The LTI case

"…I was nicely surprised when I realised just after the first KALiF meeting that I was placed in just the right forum to be able to efficiently run my project and get the answers I was looking for. Given that one of the main objectives of my project is to promote the sharing of knowledge and training best practices on quality issues, KALIF has proved to be an essential tool to show the way and contribute to the achievements of these objectives…" (the account of a project manager of one of the LTI projects).

Knowledge markets play a pivotal role in cutting the costs and increasing the benefits of sharing. They cut the costs because they identify sharing themes, and thus let the community focus on those knowledge areas for which there is a known need for sharing. Community members are not asked to capture every lesson they learn – something pretty impossible anyway - but only those lessons related to the sharing themes. Knowledge markets increase the benefits because they provide the raw materials for creating an indexing scheme for the digital library (see chapter 7).

The LTI case

As indicated in the previous chapter, we hypothesised that technical themes such as virtual reality, internet/intranet technology and text-analysis technology would be the major sharing themes. To our surprise, the sharing themes resulting from the knowledge market were mostly non-technical:

- *evaluation methodology*
- *intellectual property rights issues*
- *intelligent agents*
- *knowledge management*
- *market information*
- *meta data and ontologies*
- *project management*
- *tooling*
- *user requirements analysis methods*
- *virtual reality*

This clearly illustrates how important it is to let the KALiF community decide on the sharing themes.

Knowledge markets also help to reduce the risk of knowledge sharing because they put faces to the other organisational units of the focal group. The markets can form a starting point for long-lasting friendly relations between community members and this often works like a snowball for other members of their units to form friendly relations.

The LTI case
Two project leaders who had not met before were sufficiently impressed by their complimentary skills and knowledge, which were evident following the knowledge market, that they submitted a new project proposal together, which was granted a substantial budget from the EC. As one of them said: "from our relationship with one project we started a new successful proposal and the project is going well".

We find the knowledge market an extremely useful tool for the KALiF methodology. It not only identifies sharing themes and boosts the formation and development of interpersonal relationships, but it also provides a useful metaphor for knowledge sharing in general. One could see a KALiF as a structured interference in the knowledge market to boost the internal knowledge economy in the focal group.

KALiF contact meetings
Relations between the KALiF team and the units that are part of the focal group are channelled through KALiF contacts. These intermediaries are indispensable to building relations with the community. The KALiF contacts pave the way for the KALiF team members to enter the community and help to promote KALiF services. The KALiF contact is crucial for the success of the KALiF application. If the contact is enthusiastic about the potential contributions of KALiF, his or her passion will infect all members of the unit concerned. Vice versa, if the contact is sceptical, no participation is to be expected from that unit. Besides kindling enthusiasm in the community, the contact is also responsible for some more administrative activities, mainly related to the maintenance of the web site. These activities are explained in chapter 7.

To turn the KALiF contacts into true allies, a contact meeting needs to be prepared at the beginning of the project. It is of prime importance that all contacts are present. The contact meeting is, more than anything else, a team building session. When they go home, the contacts should consider themselves as part of the larger community, and be willing to be apostles of the KALiF message[8]. You can realise this in a number of ways. Firstly, the KALiF team should have prepared a persuasive presentation about the potential merits of the KALiF application. If the presentation

[8] *Let us be very clear on this. KALiF is not a religion or something you should believe in. It is a methodology for knowledge sharing, nothing more, and nothing less. Still, a "we have seen the light" spirit at the end of the contact meeting could be a success factor for the KALiF application.*

is good, many contacts will be swayed. If not, you should use this opportunity to find out why, and adapt the presentation for future uses and establish what type of project might best suit this particular community. The presentation should be convincing because it is one of the tools the KALiF contacts will take home to spread the message within their organisational unit.

Secondly, the contact meeting is the moment for establishing the WoWs (Ways of Working). This is done in consultation with the contacts, so they have every opportunity to tune the WoWs to their own needs and those of the community they represent. The WoWs also stipulate a division of labour between the KALiF team and the contacts, which ensures that the contacts are not unwilling sufferers of additional burdens.

Thirdly, the contacts get some tools to help them do their part of the job. For example, if it is agreed in the WoW that the KALiF contacts will do an after-action review after each project in their unit, they will get the practical tools to do this. If necessary – and possible within the time constraints of the meeting – the contacts will also be trained in tool usage. In any case, they should be guaranteed that the KALiF team is there to offer any further support they need in using the tools.

It cannot be emphasised enough that the contacts are of crucial importance for the success of the KALiF application. They are the nuclei upon which the community should crystallise and prosper. Above all, the contact meeting should be a social event aimed at creating goodwill.

Looking at the contact meeting from the perspective of win-win situations, the purpose of this meeting is to ensure that the cost-benefit trade-offs of the contacts are positive. Remember that the contacts can influence the division of labour between the KALiF team and themselves in such a way that the perceived costs of participating are less than the perceived benefits. Further, the organisation(s) should be prepared to provide incentives to the contacts. They make an important contribution and should be rewarded for that, this is part of the price of a KALiF. We already discussed the role of the WoW in risk reduction, the other cornerstone of the KALiF methodology. By having an explicit code of conduct specifying how shared knowledge should be dealt with the risks of unethical or disrespectful usage are reduced.

The LTI case

In a session on making appointments a grid was presented to the participants in which they could indicate appointments between projects by means of post-it notes. The following results were obtained:

	ADVISOR	AMPOS	ENRICH	ETOILE	IMAT	INTRASYS	KLEE&CO	KNOWNET	LORE	MOST	TQM-ONLINE	TRACE	TRAIMWE	DISCOVER	KLIF	KNOWWEB
ADVISOR														X		
AMPOS							X	X			X	X	X			
ENRICH																
ETOILE						X						X		X		
IMAT			X													
INTRASYS	X		X	X				X		X	X			X	X	
KLEE&CO																
KNOWNET	X			X												X
LORE																
MOST				X		X						X	X			
TQM-ONLINE							X								X	
TRACE			X	X												
TRAIMWE		X			X							X				
DISCOVER	X			X	X	X										
KLIF																
KNOWWEB																

In the table, each **X** *represents an appointment between projects to share knowledge on a particular topic, related to one of the sharing themes.*

Thematic sharing days

Sharing days are the highlights of a KALiF application. At these meetings the themes identified at the knowledge market(s) are further explored for sharing potential. Whereas a KALiF team typically only organises one or two knowledge markets and contact meetings, thematic sharing days are organised on a regular base. The nature of these sharing days varies, depending on the theme. Sometimes the sharing days are like mini-conferences where the different participants present their insights into and experiences with a particular theme. At other times external specialists are invited to help the participants solve a common problem. To illustrate their diverse nature, let us look at some of the sharing days that were organised as part of the LTI KALiF:

The LTI case

The first sharing day was dedicated to Intellectual Property Right (IPR) issues. As explained in chapter 4, the focal group of the LTI KALiF application consisted of R&D projects executed by multi-organisational, multi-national consortia. Each of the consortia had to produce a consortium agreement, taking care of the intellectual property rights of the developed technology. The community consisted mainly of researchers, specialists in their own field but not in the legal issues surrounding IPR. Therefore, many of the projects were desperate to learn about the experiences of others. We organised this sharing day in such a way that each project could present the specific problems they were facing, and reserved sufficient time for discussion and suggestions by others. Further, we had invited a lawyer specialised in IPR issues to help out in issues beyond the comprehension of the community members. This sharing day could best be described as a sort of mini-conference. One participant of the sharing day gave us the following feedback:

"The IPR Sharing Day organised by KALiF stands out as a good learning experience. As a result of this event, I was able to gather relevant information and to pass it on to my working partners who two weeks later agreed on a common exploitation plan for the end products of the project."

Another sharing day was organised on ontologies. This highly technical subject is a hot research topic in the area of intelligent systems technology, a core technology in some of the projects. The KALiF community felt that there was a need for standardisation in this area, so we made this the main topic of the sharing day. Since standardisation only works if a majority adheres, we decided to open up the sharing day to people not belonging to the KALiF community and also invited some leading researchers in the field. During most of the meeting, the participants worked on specific issues in small groups. This sharing day resulted in a standards initiative, which is ongoing. Thus, the nature of this sharing day was more like a workshop.

The final sharing day in the LTI KALiF was on business planning. Unlike the IPR sharing day, which concentrated on real problems some of the projects were facing, or the ontologies sharing day, which concentrated on a real need identified by the projects, this sharing day concentrated on a less urgent theme. When this sharing day was organised most R&D projects were finishing and had produced their final prototypes. The logical next step would be to write a business plan and generate the finances (either internally or externally) to finalise the product and bring it to the market. However, most community members – the researchers – considered this to be someone else's job. So, although there was sufficient interest in the community to attend the sharing day, the input had to be provided by us. Therefore, we invited a specialist on business planning and raising

venture capital to lecture on these topics. This final sharing day mostly resembled a one-day course.

These descriptions of various sharing days serve to prove that the specific theme, its urgency and the diffusion of the relevant expertise should determine its shape. By the end of 2001, we hope to have produced a new book that extends the account of KALiF beyond the capacity of this book, in which we will present a number of archetypical formats and the situations in which they are applicable.

6 KALiF on-site services

Contrary to events, which aim at bringing the members of the community in direct contact with each other, the on-site services are bilateral meetings between KALiF team members and the units. In practice this usually means that the KALiF people visit the units. We distinguish two types: debriefing visits and clinics.

Debriefing visits

The prime objective of a debriefing visit is to distil lessons learned from the unit through so-called "after action reviews": reflective sessions capturing experiences gained within a particular activity or project. As discussed, it is really part of the job of the KALiF contact of the unit to get this organised, but, in reality, support from KALiF team members is highly appreciated. Further, the KALiF team member, having visited many other units, can act as a kind of broker. He or she does not only visit to collect lessons learned but also brings lessons learned from other units.

As already stressed before, the role of the KALiF contact is fundamental. The debriefing visits are excellent moments to provide additional support and leads, and to strengthen the relationship between the KALiF team and the contact. It is also an excellent moment for collecting feedback on the perceived added value of KALiF so far. What is appreciated and what could be improved? This information can then be used as input for the next re-planning cycle of the KALiF application. By showing genuine interest in the needs of the contacts and the community – and responding adequately – credibility is established (one of the challenges every KALiF application faces, see chapter 3).

To maximise the efficacy of the debriefing, timing is important. If possible, try to make the debriefing coincide with a 'natural moment for reflection'. This could be the end of a project or activity, the end of a work package in the case of larger projects, the beginning of a new planning period, etc.

So how do debriefing visits reduce costs or increase benefits? In the first place, of course, by taking work off the hands of the KALiF contacts. You do not have to harvest all the lessons learned yourselves, the KALiF team does (some of) it for you. Also, this creates a showcase for how the KALiF learning tools can contribute to the competence of at least your own organisational unit. If the lessons learned have already been captured, the next step, making it available to others, does not require much extra effort. Further, the KALiF team member does not only take away lessons learned, he or she also brings the lessons learned by others, which may be to your advantage too.

Debriefing sessions also reduce some of the risks that may be involved. The face-to-face contact between KALiF team members and contacts fortifies the bonds of trust. The contact and other community members of the unit can now experience how conscientiously KALiF team members handle lessons learned of others, which will reduce the perceived risks of sharing as well.

The LTI case

Lessons learned and other sharable knowledge items are captured using so-called sharing forms. Two examples of such sharing forms from the LTI programme are described below. Besides 'lessons learned' and 'sharing opportunities' there are also sharing forms for 'best practices', 'requests of the community' and 'requests of the KALiF team'.

type:	Lesson Learned
source:	<project name and project team member>
sharing theme:	User requirements
distribution:	LTI projects
one liner:	Users don't know what they want because they don't know what they can have
context:	
A project should first develop some prototypes to show to potential users of the software before the users are included in the process of capturing requirements. The reason is that users otherwise do not have a clear picture of the possibilities and start asking for things that are impossible.	

type:	Sharing opportunity
source:	IMAT, <project team member>
sharing theme:	Metadata and ontologies, tools
distribution:	ENRICH, INTRASYS
one liner:	Tools for Ontologies
context:	
In IMAT the tool KADS22 is used for modelling ontologies. To enable exchange of ontologies developed in the different projects it would be interesting to see if an interface could be developed between this tool and tools used in ENRICH and perhaps INTRASYS.	

Clinics

Clinics stand out in the KALiF suite of services, because they are not directly related to knowledge sharing. Although some element of sharing may occur, it is not the prime purpose of the intervention. A clinic is a customised support session to an individual unit or team within the community on a specific issue. The issue will often be related to one of the sharing themes but this is not necessarily so. Clinics were introduced in the methodology because we learned that occasionally a unit would

face a problem that could not be resolved through sharing days or by consulting the knowledge documents available in the digital library. In such a situation it could happen that a community member – or his or her KALiF contact – would turn to the KALiF team for further assistance. Of course, in many situations the KALiF team could not help out either: KALiF consultants are knowledge-sharing facilitators, not experts in everything. Since being perceived as engaged and helpful is vital for the success of the KALiF application, we decided that the KALiF methodology should cater for these situations as well.

Clinics are the KALiF answer to appeals for help from the community. Since it is hard to predict at project definition time which type of support is necessary, clinics are arranged on an ad-hoc base. It is important though that the need for clinics is anticipated when the project is delineated so that sufficient budgets are reserved to implement them when needed. Moreover, guidelines are needed to decide which requests for help should be awarded with a clinic. It is hard to give general rules for this, since it depends on many trade-offs. How much budget was reserved? How big is the problem really? What alternative support services could the unit turn to? What is the likelihood that some other unit would be confronted with the same problem in the near future?

Since they are ad-hoc, the KALiF methodology does not provide guidelines for setting up clinics. What you basically do is try to understand the problem, and then try to identify a specialist in the area – preferably from within the community – and arrange a session between the person who has raised the issue and the specialist.

As indicated, clinics are really at the edge of the KALiF service package – in essence it is free consultancy. Still, they have proven very useful. If a KALiF team wants to be perceived as helpful and useful, clinics are an excellent way to add value. The clinics service allows the team to offer a helping hand just when a unit or a community member needs it most. We have seen sceptics turn into fervent community members as a result of a clinic. In game-theoretical terms: the benefits of a clinic are perceived as so high that the community member concerned might feel a need to contribute more to the knowledge sharing to restore the balance.

The LTI case

Through the introduction of the concept of 'clinic' in which individual projects were provided with facilitated support on the key issues of evaluation and marketing plans, KALIF had a new mechanism for engaging with the projects. The resulting shifts in attitudes are the direct result of clear added benefits to individual projects. As one project manager said:

"At the start of the project, some partners were very sceptical after reading some of the KALiF papers (one or two had healthy doses of scepticism). My own opinion was that this was a tax on my project." (the words of an LTI project manager).

The day after the KALiF team organised a clinic for this project, the same project manager reported the following shift in attitude towards the KALiF methodology:

"After yesterday, they were convinced. Co-ordination is always a problem - you have to build up credibility, and this takes time (something the EC always forgets). I would like to thank you both very much for your help. It was an extremely useful meeting. Some of the partners were considerably impressed with your abilities to assess our issues and problems."

7 KALiF on-line services

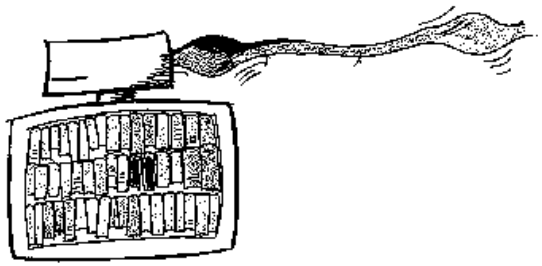
The on-line services are complimentary to the events and the on-site services. The 'depth' of knowledge sharing realised through events is not easily matched through on-line services, but these services can provide the continuity necessary to make the KALiF community a real 'community'. The on-line services are available 24 hours a day, turning what otherwise would only be a suite of events into a permanent organisational reality. It cannot be emphasised enough that the events, on-site and on-line services go hand in hand. If you leave one out, the framework collapses. Events without sufficient on-line follow-up have no impact, and on-line services without activating events are not used. In this chapter we will discuss on-line services that have been used in prior KALiF applications, outlining their specific role in the framework.

Knowledge map

The knowledge map is a database of all the people that are part of the KALiF community. It specifies the names and the personal data of the members, and all other relevant details. We call it a knowledge map because the members can also specify what their areas of interest and expertise are. This allows for queries such as "which community members have experience with X?" or "who is interested in Y". The knowledge map could be compared with a 'yellow pages' service. If you are looking for some specific kind of expertise in the community, the knowledge map will help you to identify potential providers of this expertise. From the perspective of the recipient the knowledge map reduces the cost of sharing considerably. With one single query it can be determined which other community members could be approached for support on a particular matter. In a sense, the costs of sharing for the knowledge donor are also reduced. Because community members have writer-access to their own profiles, they have control over the subjects on which they could be approached. So, although the total number of requests for support may increase – which is good – the amount of 'spam' will decrease – which is good as well.

Digital library

The digital library is a repository of documents that are somehow related to the prevailing sharing themes in the KALiF application. It contains the reports of the sharing days, the collected lessons learned documents, documents submitted by community members and any other relevant background information. The digital library acts as a sort of KALiF community memory. Like many other digital archives the KALiF digital library can be searched in a full-text manner and in the more traditional thematic way. Thematic searching is based on a tree of themes that is specific to the KALiF application. The first version of this tree is based on the results of the knowledge markets. In the course of the KALiF application it is then further elaborated, for example as a result of sharing days.



News and calendar services

Like many web sites, the web site of a KALiF application provides a news service where relevant news items are published. These will mainly be 'press releases' coming from within the community, but – if relevant – also other information may be published. Active collection of external news items is beyond the scope of a KALiF however and should have low priority. The calendar service provides an overview of upcoming events organised as part of the KALiF application (e.g. sharing days). Other events that are somehow related to the current sharing themes (conferences, exhibitions etc.) may be displayed as well.

The news and calendar services have a dual function within the KALiF framework. Most importantly, they provide a mechanism for the KALiF team to inform the community about upcoming activities. Secondly, they provide a reason for community members to check the web site on a regular base. Whereas the library and the knowledge map are relatively static information sources, the news service changes weekly.

Many of the news items and calendar entries that are published on the web site are also distributed to the community members in the form of a monthly – electronic – newsletter. We have found that this newsletter plays an important role in reminding the community of the KALiF application's existence. While checking out the web site requires at least one action that you could forget – mouse clicking on the bookmark of the KALiF application web site – the newsletter simply appears in the mailbox of every community member. Not surprisingly, the hit rate of the web site usually peaks when a new issue of the newsletter has just been released.

Discussion services

We have experimented with on-line discussion facilities. In such a facility community members can discuss issues related to the sharing themes. So far our experiences with such facilities have been disappointing. Very few people make use of such facilities to ask or denounce something and, if they do, the likelihood of a useful response is negligible. Notwithstanding efforts of facilitators to trigger more on-line discussion, few community members have engaged in active participation.

We are not entirely sure how to interpret these results. A straightforward conclusion could be that on-line discussions simply do not work – period. But this might be premature. We have seen examples of successful discussion sites on the web, although we have seen many more unsuccessful examples. Apparently it is possible to create circumstances that provide fertile soil for on-line discussions; we just have not figured out yet what these circumstances are. Since we do believe that on-line discussion services fit well in the total KALiF services package, we will continue our research on this topic and, once we have figured out what the right circumstances are, the KALiF methodology will be adapted accordingly.

The different on-line services in the KALiF methodology form a tightly integrated package, and much of the added value is derived from the synergy between the services. For example, the map adds value to the digital library because you can find information about the experiences and skills of the author of a particular document. The information in the map can also be used to decide on whom to invite for a sharing day or other event. The email addresses in the map are used to generate the distribution list for the electronic newsletter and we could give many more examples of such synergies. KALiF derives its power not from the individual services it provides, but from the harmonies that emerge when these services are orchestrated together.

8 Evaluation of KALiF applications

Evaluation serves two main purposes. Firstly, it is about accountability and justification. It is a measuring stick that can be used to justify the existence of a KALiF application – its work and its continuation - in the first place. The ethos is largely inspectorial and judgmental and the underpinning rationale is about value for money and quality standards and is, effectively, about ensuring a 'license to practice'.

Secondly, evaluation is about improvement. In this case it can be seen as a developmental process - a torch - that helps illuminate problems and recognise good practice. The ethos is diagnostic and interpretive and the underpinning rationale is about collective learning. It is a process that reduces the likelihood of repeating mistakes and of using mistakes, when they inevitably happen, as critical learning incidents by means of which improvements can be identified and implemented.

Both forms of evaluation are crucial for the successful implementation of a KALiF application. The stick variant allows the client organisation – which is paying for the provision of the KALiF services – to determine to what extent KALiF realises the objectives agreed upon. The torch variant allows the KALiF team to monitor progression in knowledge sharing and provides an early warning system for situations when the objectives are at risk.
The KALiF methodology provides its user with a framework for evaluation that serves both purposes. This framework helps to build an evaluation system that can be used to measure if and how effective knowledge sharing is helped through the application of KALiF in a particular case. We have chosen to provide a framework instead of a one-size-fits-all evaluation system, because the evaluation system is necessarily application specific. It specifies what the objectives are of the KALiF application, and how these will be measured. The evaluation system is a kind of contract between the KALiF team and the client –similar to how the WoWs are a contract between the KALiF team and the KALiF contacts – and should therefore be developed in collaboration with the client.

The point of departure for setting up a KALiF evaluation system is the observation that the KALiF methodology is based on the working hypotheses that:

- knowledge sharing will enhance added value in any complex environment;
- knowledge sharing can be animated through the deployment of KALiF services.

The testing and reviewing of this hypothesis is central to the evaluation of KALiF applications. Ultimately, the evaluation system should therefore answer questions as: "Has KALiF improved knowledge sharing?", "If yes, how much?", "Has this knowledge sharing provided added value?", "Is this more or less than we expected?" etc.

But how do you measure knowledge sharing? Traditional models of evaluation place much importance on quantifiable data. We could for example measure the number of captured lessons learned, the number of times they were inspected on the web site, etc. Although such information certainly provides some insight into the success of the KALiF application, it does not tell us what

we really want to know. Is the knowledge exchanged of sufficient quality to improve performance of the units? Are the boundaries between the units really disappearing? Are we being perceived as adding value? Such feedback can typically only be collected in a more qualitative form. Therefore the KALiF evaluation framework augments the traditional indices of success with new, more qualitative ways of assessing performance. With these considerations in mind, the remainder of this chapter will illustrate the KALiF evaluation framework and outline some of the issues involved.

In essence, setting up a KALiF evaluation system amounts to providing answers to 3 basic questions:

1.What are we looking for?
2.How do we look for it?
3.How do we make decisions based on the data?

What are we looking for?
Any application of KALiF will be subject to serving objectives concerning knowledge sharing. For example, one of the objectives for the KALiF for the LTI programme was 'to help projects to capture and capitalise on lessons learned within the projects'. To evaluate to what extent such an objective is realised, it needs to be translated into measurable indicators. We thereby distinguish between indicators at three levels.

Indicators at the *basic level* must ensure that the knowledge sharing objectives the KALiF application seeks to support are met. These indicators are established by linking the objectives to observable phenomena: Examples of indicators at this level could be 'the number of documents made available for sharing', 'the number of members of the KALiF community attending sharing days' or 'the number of members of the KALiF community using the on-line services'. Indicators at this basic level often have a quantitative nature.

Indicators at the *secondary level* are used to determine economic effectiveness. Are the objectives realised within budgets and is the KALiF application adding financial value to the KALiF community through assisting them to achieve their goals on time? These indicators link the effects of the KALiF services to their costs. This is a tricky business since it requires that the effects of the services are also expressed in financial terms. Indicators at this level can be used to determine the return on investment of the KALiF application. Such figures should be interpreted with caution however, since the effects of knowledge sharing are not always immediately visible.

Tertiary level indicators allow for assessment of whether a KALiF application has made a difference in how people see their world. Have the boundaries faded as a result of cross-boundary knowledge sharing? Indicators at this level may include the personal views that people have on the KALiF services, personal attitudes towards knowledge sharing, and so on.

How do we look for it?
After having determined what aspects of performance will be evaluated in the KALiF application, the next issue is to decide on the data to be collected, and the data collection methods. For basic level indicators this will often be quite straightforward. If the number of community members attending a sharing day is an indicator, the data to be collected are the number of participants and the data collection method is counting. Similarly, the number of captured lessons learned could simply be counted. However, if more 'quality' related indicators are used as well (the perceived added value of a sharing day, the applicability of a best practice, …) specific measuring tools should be introduced. The KALiF

methodology includes a catalogue of such instruments.

For secondary level indicators – the indicators used for measuring economic effectiveness – data collection is thorny. What data do you need to collect to determine the financial revenues of knowledge sharing? The link between knowledge sharing and better (financial) results is always indirect: it is mediated through reduced lead time, increased productivity, improved quality and so forth. In KALiF, we leave the decision how to determine the economic effectiveness to some extent to the community. At specific times – for example when a project finishes – the KALiF contacts are asked to assess the financial impact of the KALiF services for their unit. To help them make a realistic assessment a checklist with potentially relevant factors is provided.

Data for tertiary level indicators can also be measured both quantitatively and qualitatively. For example, in the LTI case the 'emergence of a community' was measured quantitatively through 'the number of new consortia that emerged'. Qualitative measures could for example include reports of changed perceptions on the European research environment during exit interviews at the end of a project.

How do we make decisions based on the data?
Once we know what we want to measure (the indicators) and how we will measure them (the data collection methods), we should decide on how to deal with the measurement results. If we have counted one hundred lessons learned captured in one year, what does this mean? Are we underachieving, are we right on track or are we doing extraordinarily well? What is good and what is bad? What we need here are performance standards.

Ideally, performance standards would be based on a sound reference base of prior KALiF applications. Unfortunately, this reference base does not exist. We only have experience in a few environments and we do not know to what extent the performance standards in those areas can be extrapolated to other environments. In the absence of objective norms, the performance standards should be determined in negotiation with the client. It is for this reason that the evaluation system needs to be application specific. If no external criteria are available, at least make sure that the client and the KALiF team agree on what is sufficient and what is insufficient performance.

The KALiF evaluation system should also specify when decisions should be made, based on the collected data. As discussed in chapter 3, the KALiF methodology anticipates a six-monthly plan-act-evaluate cycle. So every half year the collected data are compared with the performance standards to check if the project is still on course. If it is not, the team should analyse the causes of the deviation and plan remedial actions. Of course, when a KALiF application is set within a context of shorter spans of time, the evaluation intervals should be adapted accordingly.

The LTI case
At the end of chapter 4, we promised that we would explain how we determined to what extent KALiF actually worked in the LTI environment, and now we are in a position to do so. In the KALiF for LTI we set up an evaluation system of the kind described above. It was based on the 5 objectives that were outlined in our contract. For each of them a series of performance indicators, performance standards and data collection methods were identified, which were then presented to the project officer and our external reviewers. They agreed that these were indeed sensible indicators and standards. During the project, this evaluation system was used to monitor progress, and to re-allocate resources when we were not achieving enough on particular indicators. During the 6-monthly reviews, the external reviewers used the same system for a formal assessment.

9 To share is to multiply

In this book we have presented the KALiF methodology for knowledge sharing across boundaries. We have explained why we think knowledge sharing is important, especially for complex, dispersed organisations, why knowledge sharing is difficult, and how the KALiF methodology is designed to deal with these difficulties. We have illustrated the approach with examples from the LTI programme, the first full-scale KALiF application. Although applying the methodology in any real situation is quite an endeavour, the basic premises are straightforward:

- exploit the potential for win/win situations. Make sure that for every community member the cost/benefit trade-off for knowledge sharing will be positive;
- control the perceived risks of sharing by creating clarity about how shared knowledge will be handled;
- offer an attuned mixture of events, on-site services and on-line services. The three types of services mutually reinforce each other, and this synergy forms the heart of the methodology;
- measure success using a dedicated evaluation system that is agreed upon by both the KALiF team and the client.

Based on these principles we have built a methodology that we think would work in all of the scenarios discussed in chapter 1. Now imagine we could revisit the rich entrepreneur who had invested some of her fortune in a number of innovative start-up companies. Her interest in a regular exchange of ideas and experiences was shared by the entrepreneurs she supported, but they tended to focus more on getting their companies off the ground. However, when one of them reported an inability to find suitable software to overcome a specific production problem, she was able to introduce them to another start-up that had experienced similar problems. Our rich entrepreneur soon realised that she had a significant new role in brokering sharing and learning across her community of small businesses. She therefore invested time and money to implement a KALiF-like knowledge infrastructure. Over a period of two years her efforts added value to her financial investments and new potential investments were scrutinised in relation to the readiness of the owners for sharing and learning for mutual benefit.

The marketing director mentioned in chapter 1 employed similar strategies to overcome the perceived risks for knowledge exchange amongst the sales staff. Whilst they recognised the potential, they could not – or would not – relinquish the time it took to devote to knowledge sharing activities. The director, resolute to implement his vision, contacted a local consultancy specialising in KALiF services. They supported a small internal team that was freed from other activities and dedicated to facilitating knowledge sharing across sales teams.

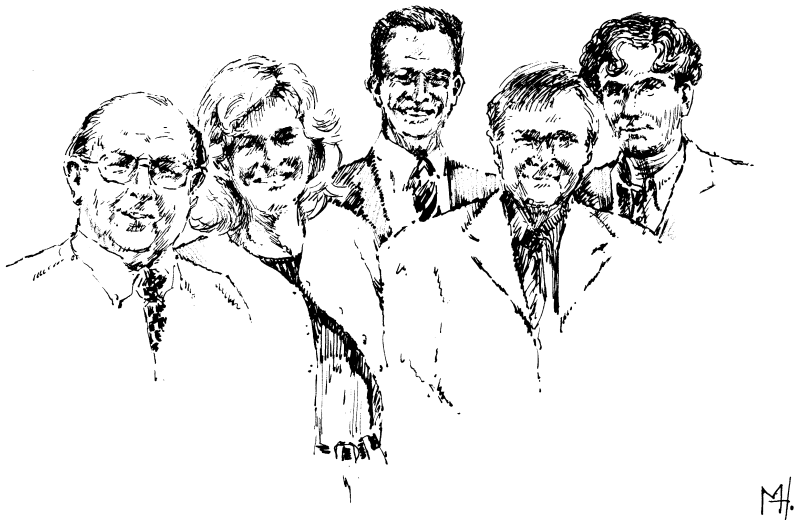
Imagine you are the entrepreneur, the marketing director, the development worker, the project manager or the EC research programme director. You have introduced KALiF initiatives and learned a great deal about the successes and bottlenecks. Yet you are sure that somewhere else in another community others have faced the same issues, have experienced the same frustrations, have managed to innovate in a way that could be of benefit to you if only you had access to their knowledge…

In this imaginary but viable world what is needed is a KALiF for KALiFs. A kind of KALiF^{n} whereby multiple KALiF applications share knowledge about knowledge sharing, combining their experience and know-how for the benefit of a growing community of practice. This would also enable us to create a KALiF reference base necessary to set up a more objective KALiF evaluation system. We – the authors – have the ambition to foster such a community of KALiF practitioners and if you – the reader – are interested in participating, we would like to invite you to

contact us. Thus, expanding communities could be exploited to develop KALiF further into a worldwide best practice of knowledge sharing.

Who could still deny that to share is to multiply?

About the authors



From left to right:

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Caroline van der Wal has an MA in English language and literature and worked as an English teacher/teacher trainer for VSO (Voluntary Service Overseas) in Thailand and Mozambique from 1993 - 1997. In this capacity she shared skills with local people in developing and providing English language as well as didactic courses. She has been working as content manager and co-ordinator of the KALiF LTI project since 1998.

Eelco Kruizinga, MSc, is involved in various projects in the Netherlands and abroad as a knowledge management consultant. His focus on the design of knowledge infrastructures for organisations has led him to embark on developing the KALiF methodology. Components of knowledge infrastructures that are of particular interest to him are communities of practice and corporate memories for sharing lessons learned.

Andrew Haldane, B. Tech, MSc (Mgt), is a former Chair of the British Association for Open Learning (1992-96) and former Director of SOLU, a Consultancy, Research and Services specialising in open/flexible learning, learning methods and technologies. Andrew has a wide experience of open learning and the use of telematics for learning and has acted as an external expert for the European Commission. His focus in the KALiF methodology is on linking the approach to business issues.

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This work has been undertaken in a consortium of CIBIT bv and ECLO, represented by Learning Futures Ltd.

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ECLO
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Andrew Haldane and Michael Kelleher, now directors of Learning Futures Ltd, were responsible for ECLO's work on KALiF. Learning Futures is a fast growing UK-based consultancy company. It was formed in 1998 to bring together expertise in 'e' learning, organisational learning and knowledge management to support those responsible for managing change. Learning Futures also has experience of initiatives to assist communities needing to improve the workforce skills base in response to change.

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