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KEWE APPLICATIONS & RESULTS: KNOWLEDGE SHARING GUIDELINES

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Abstract

This document contains guidelines for the support of knowledge exchange in the context of a supply chain environment. The guidelines are general good practice aids, allowing adaptation of processes, behaviours and organizations to enable knowledge management.

The guidelines focus on three topics. They are

- Relationship Management
- Lessons Learned
- Collaboration and the role of Collaborative Knowledge Sharing Platforms

It is the intention of the Knowledge Enabled Wing Engineer (KEWE) team that the users of this document will be able to refer to and apply part of or all of the guidelines in the support of knowledge capture, sharing and reuse across the supply chain.

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This document is classified as Public**Approval Process**

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This document is classified as Public**1.0 EXECUTIVE SUMMARY**

This deliverable presents work carried out by the Knowledge Enabled Wing Engineer (KEWE) team in VIVACE. The partners contributing to the deliverable are Airbus UK, Assystem UK, BAE SYSTEMS and Warwick University.

The purpose of this document is to present the user with a set of guidelines that can be easily applied to help improve knowledge capture, sharing and reuse in the context of wing engineering and in the supply chain.

The sections introduce the guidelines, give some background on the topic areas selected and consider the benefits of their use.

The guideline documents themselves are embedded in the appendices. They are presented separately making it easier for the reader to reference.

2.0 INTRODUCTION

The KEWE Guidelines, contained in this deliverable, are good practice techniques, aiming to provide benefit by solving some of the methodological and behavioural knowledge challenges faced in the wing engineering supply chain. They were developed using research techniques, knowledge management practitioner's experiences, wing engineer's experiences and lessons learned through some trial applications of the techniques.

The KEWE team decided to focus on three 'non technological' knowledge-enabled solutions (KES), from the range of potential solutions presented by the Knowledge Enabled Engineering (KEE) team. They are

- Collaboration and the role of Collaborative Knowledge Sharing Platforms
- Support and use of a Lessons Learned process, and
- Relationship Management between two organisation entities

Time and budgetary constraints prevented development of guidelines for all the KES.

Although presented as three different subjects, we appreciate that in the 'real world' these subjects complement each other. For example, following a relationship management initiative lessons learned will be captured and shared across the supply chain team. These lessons can then be accessed using a knowledge-sharing platform. It is recommended that Users should select and adapt those methods that best suit their knowledge sharing needs.

3.0 BACKGROUND INFORMATION

This is the fourth deliverable document from the KEWE team. It follows the Use Case Definition (D1.2.6_1), the 'Sharing Knowledge across a Supply Chain' scenario research (D1.2.6_2) and 1st version KEWE Applications & Results (D1.2.6_3 V1) documents. The previous documents present our use case, the research undertaken to understand the enablers and inhibitors to knowledge exchange in the supply chain and the knowledge enabled solution choices that we took to help the knowledge enabled engineer to address these challenges.

The step-by-step VIVACE methodology required the KEWE team to uncover the knowledge challenges in our selected scenario, *Sharing Knowledge Across the Supply Chain*. These challenges were shared with the KEE group, who then had the task of providing the KES. The knowledge challenges could not be solved solely by the development or application of a technological solution. With this in mind, the KEE team proposed a series of potential 'non technological' solutions (refer to figure 1).

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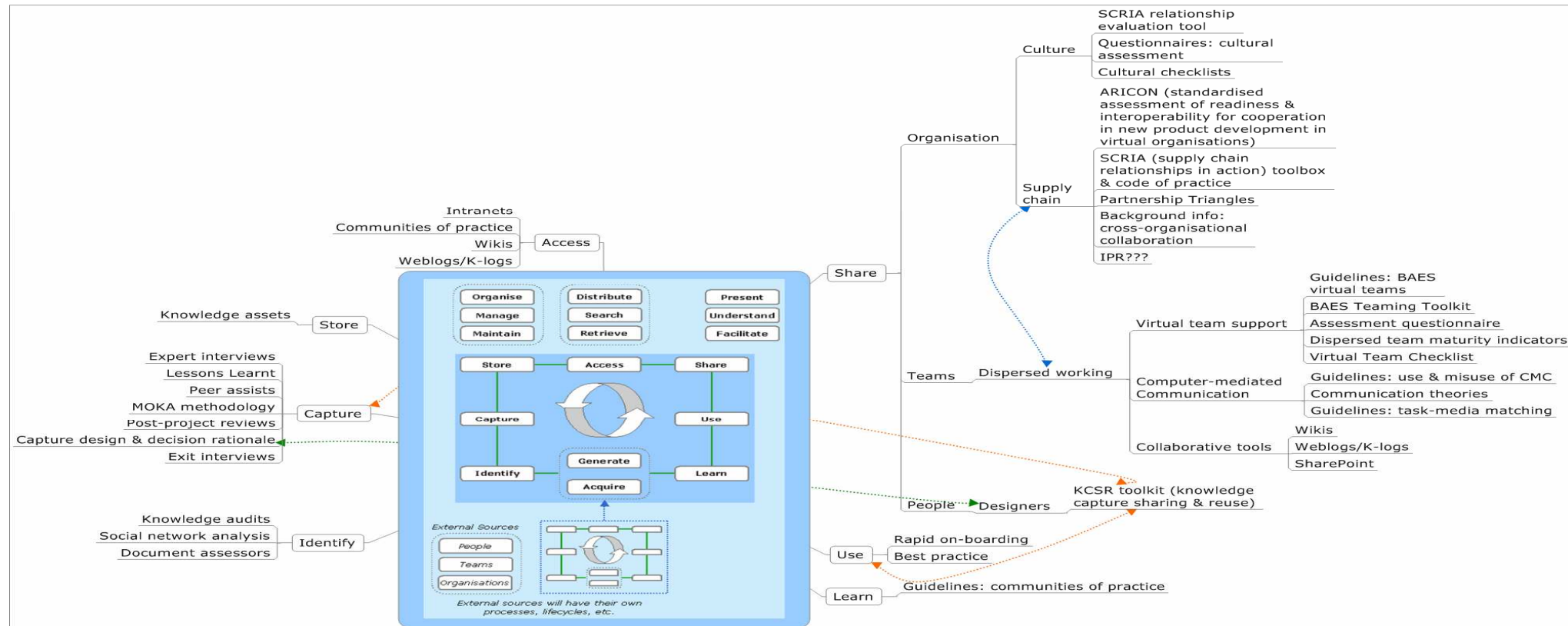


Figure 1: Knowledge Enabled Solutions and the Knowledge Lifecycle

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The KES were proposed within the framework of the knowledge lifecycle.

The selected guideline topics cover many of the KES. Collaboration and knowledge sharing platforms includes consideration of dispersed working, culture, knowledge storage and knowledge access. Relationship management includes cultural issues, rationale capture and network analysis. Lessons learned touches on cultural issues, knowledge capture, knowledge storage and knowledge re-use.

Next step was to evaluate the solutions in the context of the knowledge challenges (refer to functional requirements in the table below)

Functional Requirements	KEWE Guidelines			
	Relationship Management		Knowledge Sharing	Lessons learnt
<i>Knowledge capture</i>	Relationship scores and rationale are captured		Promote method for lessons capture	Supply chain team/individual experiences are captured
<i>Knowledge re-use</i>	Rationale can be used in the supply chain measurement process		Advise on lesson re-use with reference to culture, avoiding info overload	Teams have access to the lessons learnt tool. A LL network role is defined to push lessons for re-use
<i>Knowledge sharing</i>	It is a joint process which requires knowledge sharing		Advise on knowledge sharing through a raised awareness of info availability	Lessons learnt are re used to help avoid recurrence of problems
<i>Trust in people and information</i>	Trust is an important component of the relationship evaluation tool		Promote a more transparent knowledge sharing culture	Team members need to trust in the information provided A metric could be applied to measure time invested in capturing lessons (unlikely to happen)
<i>Measure the value of time spent to manage knowledge</i>	N/A		NA	
<i>Improve team performance through the development of the knowledge worker</i>	Proposed joint training course to introduce the process		Good practice of a knowledge sharing platform for supply chain KM. Increase individual KM development	Proposed joint training course to introduce the process. Jointly agree topics for lessons through after action reviews.
<i>Integrate KM activities into the project plan</i>	The relationship management process and interventions are included in project plans		NA	The LL process is applied at project milestones
<i>Connect knowledge workers in the supply chain</i>	Include in the supply chain way of working. Aircraft manufacturer and supplier members participate. Personal networks are managed		Make information available to all using a shared data environment	LL process to be agreed in the way of working between the customer and supplier. Arrange workshop/event to capture LL.
<i>Capture lessons learnt</i>	Relationship rationale can help define lessons learnt		Advise on sharing and searching for lessons	Capture relevant and useful lessons
<i>Introduce commercial guidelines into KM activities</i>	Agree to share knowledge selectively		NA	Agree to share knowledge selectively

Table 1 - Knowledge Challenges and Guideline Selection

Table 1 shows an evaluation using a RAG (Red, Amber, Green) approach. It indicates how the guidelines satisfy (or not) the knowledge challenges. The result of the analysis shows that our guidelines satisfy 8/10 challenges and to varying degrees.

- Green = meets the knowledge challenge
- Amber = partially meets the knowledge challenge
- Red = Knowledge challenge is not met.

4.0 RATIONALE FOR GUIDELINES

The rationale for selecting these guidelines were that they

- Satisfied to a greater extent the knowledge challenges
- Relate to many elements of the knowledge lifecycle in the supply chain
- Are scalable and flexible enough to be deployed in a supply chain context
- Consider operational day- to-day knowledge management topics that engineers will readily recognise
- Are complementary to the use of a Knowledge Enabled Solution Platform (KESP)

5.0 PROPOSED BENEFITS

The benefits accrued to partners from using the guidelines include

- Improved information capture, sharing and reuse across the extended enterprise
- Relatively low capital investment to implement
- Promotion of a more transparent, proactive sharing culture
- Enable access of shared information within the team as required
- To enable teams to set up spaces to share work and to initiate computer supported methods to replicate the sort of interactions that they may enjoy in co-located teams
- To support virtual teams within an extended enterprise
- To mitigate the risks of working in a dispersed way

6.0 CONCLUSION

The guidelines presented as part of this deliverable are ready to be used and applied. They provide good practice advice, techniques, proposed processes and models to support the wing engineer in sharing knowledge across the supply chain. The user of the guidelines can select from these 'tools' and apply to their particular work context.

The guidelines were generated following interviews with engineers across the supply chain, reference to previous research in these areas, anecdotal evidence of the use of knowledge management systems in wing engineering environments and through trial application of some of the methods.

The KES in this work are not IT solutions, although the role of collaborative knowledge sharing platforms is considered. We recognise the important role that IT solutions play in knowledge-enabled engineering but we opt to focus on the 'other side of the coin' i.e. non technological support of the engineer in capturing, sharing and reusing the knowledge.

Refer to the appendices for the guidelines.

7.0 APPENDICES

7.1 Relationship Management Guidelines

The relationship management guidelines provide a framework for raising the awareness of and for discussing relationship topics that enable or inhibit knowledge flow. The objective is to maintain good relationships or to improve poor relationships to enable better information creation, capture and sharing between teams or individuals.

Knowledge management literature describes how the majority of information sharing occurs through people interacting. It follows that effective knowledge sharing, can only happen where relationships exist that enable it to do so. These guidelines provide a methodology around which relationship issues that impact knowledge exchange can be discussed and managed.



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Annex-1 Relationship

7.2 Lessons Learned Guidelines

The tacit knowledge acquired by engineers in the context of their work is a valuable asset. This knowledge remains stored in people's heads and is rarely written down anywhere. When it is captured it is done in an ad-hoc- way and not always in a way that is understandable for other engineers.

These guidelines present a lessons learned process, discuss the re-use of lessons and considers storing and managing lessons. Cultural barriers to implementing such a process are discussed. All of this is complemented with a pro forma for structuring a lesson learned and a specification for a lessons database.



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Annex-2 LL_Guideline

7.3 Collaboration and the role of Collaborative Knowledge Sharing Platform Guidelines

Collaboration across a supply chain represents a scenario where many dispersed and co-located teams are required to work together, share data and knowledge, and coordinate their efforts both within and across partner organisations. This work covers issues within collaboration and knowledge sharing, and indicate how this may differ when occurring within the context of an extended enterprise. From the sourcing of materials to the delivery of items to the customer, the need for effective collaboration and knowledge sharing in the supply chain is critical to success.

It is anticipated that the introduction of such guidelines will result in improved access to essential information, knowledge, resources, and expertise. In turn, creating better informed

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teams, and savings to the supply chain as a whole due to improved retrieval and reuse of knowledge.



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