

Improving Engineering Competence by Knowledge Sharing

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Engineering Competence & Knowledge Sharing

In Engineering, competence means to make the right design decisions, to select the best supplier, to deal efficiently with unexpected technical challenges, and to reliably deliver results that meet and exceed expectations. In more general terms, competence can be described as **the effective application of knowledge and skills to perform a task**. In short:

competence = knowledge + skill.

When planning to improve an Engineering organisation's competence, a fundamental difference between skills and knowledge has to be considered. **Engineering skills** need to be developed and are linked to individuals or to specific groups of individuals who developed common skills. To transfer skills (such as the ability to create simple, efficient solutions) from a teacher to a pupil is nearly impossible. **Knowledge**, on the other hand, can be shared, and depends less on individuals – if appropriate means and a strategy for knowledge sharing are in place.

Knowledge Sharing in Engineering

The purpose of sharing knowledge is to improve overall engineering competence in an engineering organisation. In such organisations, knowledge exists in many forms, such as:

- **Examples:** Example solutions, such as reusable code, reusable drawings and documents, reusable engineering modules such as systems / subsystems in a plant etc. can serve as a starting point to solve many tasks more competently.
- **Working procedures, standard operating procedures, document templates:** These may not provide an out of the box solution, but describe best practices of how to solve a task.
- **Experts:** People who know exactly how to perform a certain task, or where to look for advice (such as „which existing solution can be used“)

The challenge is to make these diverse forms of knowledge available to potential users. These users may not even be aware of the fact that a solution to their current task exists, and even if they know it, they may not know how to find it.

Providing Access to Engineering Knowledge

In the majority of cases, providing access to engineering knowledge is not a technical issue. Technically, all users who could benefit from examples, working procedures, and experts, will have access to all of these. They can use planning tools and CAD systems, they may take the relevant documents or drawings from a shared drive, and they could use the phone or e-mail to contact any expert. However, what is missing is an easy way to find out which information is needed – i.e., to find the needle in the haystack of information that exists. Once this information has been identified, knowledge about where to look and how to look has been created – and this knowledge should be preserved and made available to other users.

Summarizing, what is needed is a possibility to provide „what to use / where to look“ type of information. **Wikis** provide the methodological foundation and the tools to do exactly this.

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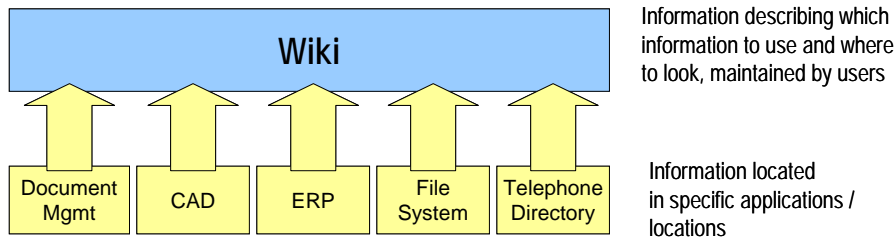
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Using Wikis to Share Engineering Knowledge

Named after the Hawaiian word for 'quick', a **Wiki** is a website that makes it easy for anyone to contribute and link pieces of information. As such, Wikis are simple, efficient tools for managing „what to use / where to look / whom to ask“ type of information in a collaborative environment.



Wikis do **not compete** against corporate document management systems or engineering tools. They augment a corporate information management infrastructure with possibilities to let users easily exchange „what to use / where to look / whom to ask“ type of information. Furthermore, Wikis can act as a portal and provide a central information retrieval facility and multi-application search capabilities.

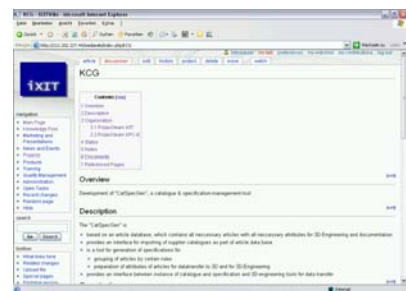
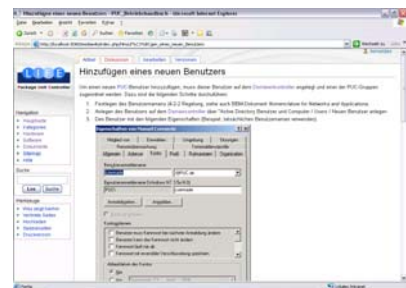
Wiki Examples

Wikis can be used in many applications scenarios. For example, a Wiki provides an excellent basis for a continuously improved **operations and maintenance manual**.

Based on existing supplier documentation, the operations and maintenance staff uses the Wiki to add their own best practice information, such as “in case this specific communication error between production unit X and the process control system occurs, follow the rules in trouble shooting guide ...” or “this unit often reports errors on startup. These errors can be ignored if ...”.

As **project rooms**, Wikis serve as an access point to all project-related knowledge, documents, and contact information. Wikis can provide structuring facilities in addition to those of the underlying source systems, i.e., to group documents, drawings, and technical data according to project milestones, suppliers, etc. In this context, Wikis can also serve as **expert finders** – they help to identify who knows what and who can decide upon which issue.

In such a virtual room, project members can also host open item lists as well as technical discussions.



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iXIT Services

To implement knowledge sharing in your organization and your processes, you can rely on iXIT Services, such as

- Identify specific processes and tasks that should benefit from knowledge sharing
- Analyse existing information sources and their contribution to the intended goal (e.g., existing work instructions, working procedures etc.)
- Choose and implement the best type of Wiki for current and foreseeable future tasks. While simplicity and ease of use for the intended users is of primary concern, other features must be taken care of as well, such as
 - Integration capabilities – to which information sources must the Wiki connect (e.g., COMOS PT)?
 - Integration requirements – in which environment must the Wiki be integrated (e.g. SAP Enterprise Portal)?
 - Access control requirements – to which extent access control needed, and is an existing access control infrastructure (e.g., Windows domain controller, SAP user management) to be used.
- Measure the benefits of knowledge sharing.
- Training and support

About iXIT

Our main **activities** are project management, process and technology consulting, and software and systems development.

Our **customers** are successful in pharmacy, power generation, and process technology. Our **projects and solutions** are deployed world-wide.

Our **mission** is to enable our customers to improve quality, efficiency and pay back of their business processes that are related to product development, manufacturing, operation, maintenance and service.

Our **competence** is based on business and process know-how that is relevant to our customers, and on detailed technical expertise in information technology and automation.

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