

The Case for PKM

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Abstract: Personal knowledge management (PKM) is the discipline of helping knowledge workers organize their thoughts, ideas and notes. This paper distinguishes PKM from personal information management (PIM) and motivates why PKM is needed from a cognitive psychology perspective. It concludes with identifying the following roles/requirements for PKM tools: helping recall as an aide-mémoire, interlinking content and representing its structure, aiding clustering and abstraction and finally doing all this with as little cognitive overhead as possible.

Motivation

Peter F. Drucker wrote “The most important contribution of management in the 20th century was to increase manual worker productivity fifty-fold. The most important contribution of management in the 21st century will be to increase knowledge worker productivity – hopefully by the same percentage. [...] The methods, however, are totally different from those that increased the productivity of manual workers.” [Dru99]

PKM \neq PIM

Most of the numerous distinctions between the terms “information” and “knowledge” define knowledge as something cognitive and subjective that resides in people’s minds as opposed to information as something more universal [Zin07], that can be formalized, processed and stored by IT (“*information* technology”) ¹. Personal information management (“PIM”) mainly deals with managing pre-existing information like documents, messages, contacts, personal tasks and events and the like [JT07]. While such pre-existing information is external to the user’s mind, personal *knowledge* management (“PKM”) takes the perspective of managing a user’s internal knowledge like capturing his ideas and structuring his thoughts.

The seeming paradox can be resolved as follows: We cannot manage knowledge itself, but we can manage knowledge cues. Anything can act as a knowledge cue: a knot in a

¹For a comprehensive overview of the various distinctions between data, information, knowledge and wisdom see <http://en.wikipedia.org/wiki/DIKW>

handkerchief, a symbol, a keyword, a scribbled note, a checklist or a mind-map. Anything that reminds a user of what it signifies. Of course, any external knowledge cue can also be seen as an *information* item. However, from a PKM perspective, it is less important that these items be intelligible by other people. What matters is, that the cue actually triggers or at least helps the reconstructions of the original thoughts in the user's mind.

Here, the close relation between PKM and PIM becomes obvious and there is a large overlap in interests, methods and tools. PKM and PIM need each other and, depending on whose definition of the two terms we choose, each could also be seen as a sub-topic of the other. However, the main difference is, that PKM takes a different viewpoint by targeting the long tail of heterogeneously structured knowledge cues and by laying more focus on cognitive aspects:

Why PKM?

While human long-term memory seems to be virtually unlimited in capacity, there are still some significant limitations that burden the knowledge worker (of which only the following two shall be mentioned here): 1) We “forget” things although they are still engraved in our memory – we simply cannot access them. When something is “remembered”, it is in fact being re-constructed from inter-related fragments [And05]. This is why in order to facilitate later recall, it is crucial to relate the learning matter to the learner's prior knowledge [Rei83]. 2) Short-term memory is very limited. In fact, a human mind cannot have more than around 4 - 7 items consciously present at the same time [Mil56, Cow01]. When dealing with complex subjects, this is a problem.

To be able to process higher amounts of items and grasp complex topics, the mind uses the techniques of chunking and abstraction [And05]. Also, literature on complex problem solving [Dör03, Ves02] identifies as a core difficulty to understand the interrelations and interactions between things.

These cognitive shortcomings can be partly relieved by the use of external knowledge media that have been given many names like “Memory Extension” [Bus45], “augmentation to human intellect” [Eng62] “cognitive tools” [LD93, KJM92] or “extra-cortical organizers of thought” (allegedly by Lev Vygotsky). Many such cognitive tools already exist. One nasty effect however comes especially with the more sophisticated ones, and it is the main reason why many people still prefer paper and pencil to support their thinking rather than computer based tools: Apart from helping the user in certain aspects of his knowledge work, the tools themselves also consume some of the precious limited cognitive capacities of their user. To reduce such *cognitive overhead* [Con87] must be of central concern to the PKM researcher.

Another problem is that every knowledge medium used to support a thinking process also has an influence on this process. Every knowledge tool should therefore be scrutinized in respect to *how it shapes* the knowledge processes it supports.

Conclusion

This leads to the following (incomplete) list of roles or requirements for PKM systems:

1. A PKM system should act as an aide-mémoire, supporting the reconstruction of its user's prior knowledge.
2. It should support the externalization of knowledge in an easy and flexible manner.
3. It should facilitate abstraction and clustering.
4. It should be able to represent the interconnections between knowledge items.
5. It should constrain its user's way of thinking either to the least possible extent or only in carefully considered ways.
6. In order to leave as much of the knowledge workers' cognitive capacity to the actual task at hand, cognitive tools specifically, like any software in general, should be diligently designed to avoid cognitive overhead.

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