Knowledge Management is more than Information Management

The term 'knowledge management' involves two interlinked functions that together can help organisations grow and succeed. However, if an organisation chooses to ignore either part of the knowledge system, you end up with a very small return on your investment.

People know things, knowledge is organic, adaptive and created – it exists in the minds of people. Each person's store of knowledge is built from their life experiences and their formal and informal learning – what anyone 'knows' will be different to what everyone else knows. Some of each person's knowledge is explicit, they can explain the 'rules' that apply to it. Much is tacit: intuition, gut feelings, and other ill-defined but invaluable insights, grounded in the person's experience. Therefore, managing knowledge means managing people!

Information is recorded, it is held in systems and made accessible to people. Good information management systems contain verified information in a useful format but the information is of no value unless it is accessed and used. This requires people to know that the information exists.

In short, knowledge management systems require the active involvement of people to contribute anything of value back to the organisation that has invested in setting up the system. Every step in the DIKW[1] chain requires input from people.

Data

Data is the starting point. Data is a set of observations or measurements of some aspect of 'the world'. If nothing changes in 'the world' another person can perform the same measurement or observation at another time and gather the same set of data. Data may not be accurate or reliable but it is based on 'observed facts' about something, the potential for error lies in the way the observations or measurements were made and recorded.

A classic example of precise data was the standard 'meter' represented by a platinum-iridium bar at the melting point of ice, which was used from 1889 to 1960 to define this measurement. In 1889, the London firm of Johnson Matthey produced thirty bars to the required specification. One of these, No. 6, was determined to be identical in length to the original mètre des Archives in Paris, and was declared the international prototype metre. The other 29 bars, duly calibrated against the international prototype, were distributed to the signatory nations of the Metre Convention for use as national standards. The United States received bar number 27 with a calibrated length of 0.999 9984 m ± 0.2 µm (1.6 µm short of the international prototype) and used this standard through to the 1960s. For more than 70 years, spanning two world wars, almost every measurement taken in the world was based on this piece of data.

[1] ***DIKW*** stands for Data, Information, Knowledge, Wisdom. It represents the simple hierarchy at the centre of any knowledge management system.

By the 1960s, an accuracy of ± 2 millionths of a meter was seen as insufficient and the standard was changed to a measurement of 1650763.73 wavelengths in a vacuum of the radiation emitted at one frequency by a krypton-86 atom. This improved the accuracy of the measurement to ± 4 billionths of a meter. In 2002, the same measurement was redefined to the length of the path travelled by light in a vacuum in 1/299,792,458 of a second. This definition is accurate to 1nm (nanometre or 1 billionth of a meter).

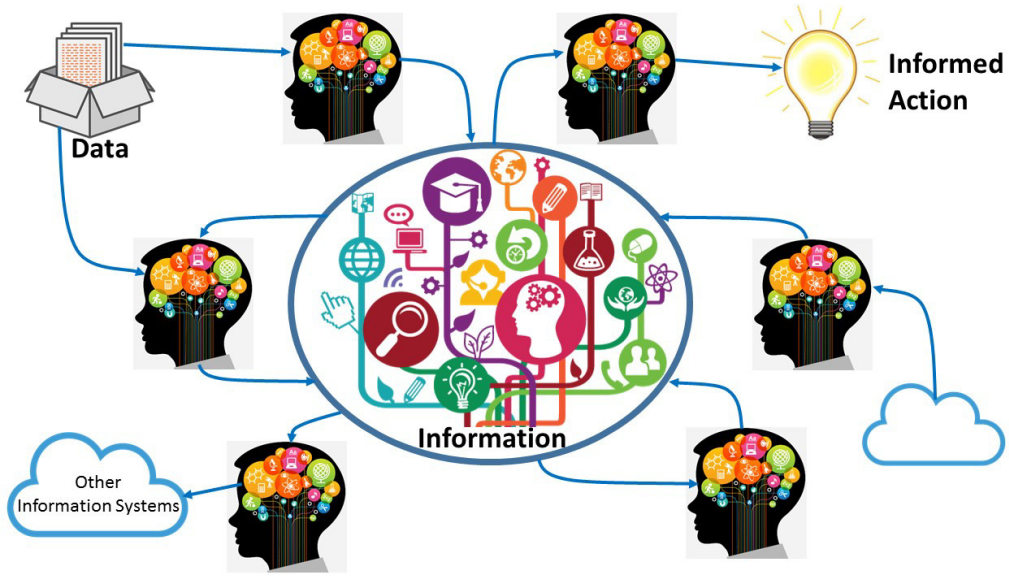
The same bit of data that baselines every other measurement has gradually been refined, however, the concept of 'a meter' has remained constant from the time of the French Revolution[2].

Information management systems

Changing data into information is the first application of knowledge in a system. Information is organised data. It provides the answer to a question of some kind or resolves an uncertainty. Information is the bridge between data and knowledge:

- The raw data represents values attributed to the parameters of something,
- Information represents the data in an organised format, and
- Knowledge signifies understanding of real things or abstract concepts.

However, transposing data into information is not automatic, it requires the input of knowledge. Someone has to look at the data and observe patterns that indicate something of significance, or make decisions on what is important in a particular context. Information is refined data in context that is designed to communicate a message to the receiver of the information.



Information Management System

The problem with transposing data into information is different people with different knowledge frameworks in their minds will interpret the same set of data in different ways. You only need to listen to politicians arguing about the state of the economy to see how different the interpretation of the same set of data can become – lies, damn lies, and statistics.

[2] The French National Assembly approved the original definition of a meter on the 8th May 1790. See: https://en.wikipedia.org/wiki/Metre

Each expert will take in the data, add their tacit and explicit knowledge to the mix and create new knowledge in their mind. When they reduce this knowledge to some form of writing, it becomes information and can be managed in an information management system.

A typical information management system has many different users:

- Some people process data and add new information to the system
- Some people connect this system to other systems allowing the wider use of information
- Some people obtain information from other systems and sources and import the information to 'this system'
- Others process information into more refined forms, and
- Many fulfil several of these roles.

Ultimately some of the information is used to make informed decisions or take informed actions.

The journey from data to useful information may need several passes through the information management system. The *PMBOK® Guide* (Figure 1-7) identifies:

- Work performance data (gathered by someone during the course of doing project work)
- Work performance information (the data processes by discipline experts into basic information)
- Work performance reports (the basic information selected, compiled, and placed in context to be used by stakeholders).

The concept of a lessons learned database has similar processing:

- The basic lesson is recorded by a project team based on their interpretation of their experiences and the data they have related to the 'learning experience'
- A subject matter expert verifies the lesson and may combine the learning with other similar lessons to create a generically useful 'lesson'
- The lesson is indexed and coded and added to the lessons learned database for others to access and use.

At each step in these flows, a person applies their tacit and explicit knowledge to the information they have received to enhance their knowledge and then codifies their 'new knowledge' to create information ready for use by others.

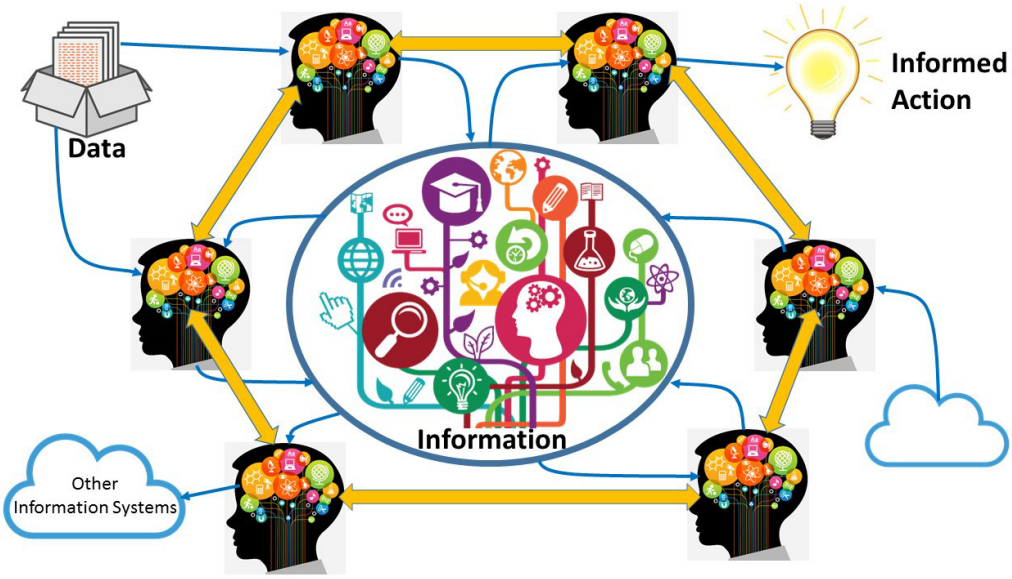
When I reduce my knowledge to a codified/written format it becomes available to someone else as information. The problem with this process in isolation is that it is asynchronous and based on individual transactions. I have no way of knowing how you will use or change the information I have created! This is suboptimal and potentially dangerous.

The 'Rogers Report' into the Space Shuttle Challenger disaster[3] maps one disaster where a clearly understood set of data at one level of NASA was slowly transformed from 'critical' into something that was 'important but not too significant' as the information was processed and moved up the management chain. This graphically highlights the difference between data, information, knowledge and wisdom at different places in a complex management system.

The model of the information management system above is very common and spans global systems such as Wikipedia down to simple knowledge repositories in project web portals. What's missing in this type of system is the knowledge management element.

[3] See: https://spaceflight.nasa.gov/outreach/SignificantIncidents/assets/rogers_commission_report.pdf

Knowledge Management Systems



Knowledge Management System

Knowledge management systems work in conjunction with an effective information management system to enhance the transfer of knowledge between people. The fact knowledge exists in people's minds does not preclude joint activities to create knowledge, share knowledge and refine knowledge; but the people involved need to be in communication with each other. Some of the structured ways this can be accomplished include:

- Various forms of meeting. Creativity is often enhanced by people working together to debate or 'brainstorm' a challenge and build on each other's inputs.
- Mentoring and coaching to help transfer tacit and explicit knowledge from the coach or mentor to the trainee/mentee.

Structured approaches work well if the information that needs to be transferred or created is understood, and the people involved focus on creating or acquiring the required 'new knowledge'.

Less formal approaches are better for generating completely new information or insights that people did not know they were about to create. Spontaneity and serendipity are encouraged through social interactions:

- Communities of practice where people with a common interest interact – good communities draw members from a diverse range of workplaces, backgrounds, and knowledge levels
- Member associations such as PMI
- Other social networks and the activity of networking by an individual
- Creating an organisational culture of open communication that allows and encourages both the asking of questions and the provision of advice. People cannot know what they don't know and a small piece of friendly advice at an opportune moment can save a painful learning experience.

Knowledge will never be uniform in its distribution or in the way people interpret what they know. The function of a creative knowledge management system is to smooth out the differences as much as is practical and to facilitate the creation of new knowledge through the synthesis of different people's ideas and insights.

Effective knowledge management within an organisation requires three factors:

1. The availability of usable information.
2. Ways to trigger learning activity before problems occur. This may be as simple as a social media platform attached to the KM system designed to enable conversation about the content and generate

debate. 'Real learning' is a social process and needs coaching, advice and debate to reinforce the learning process.

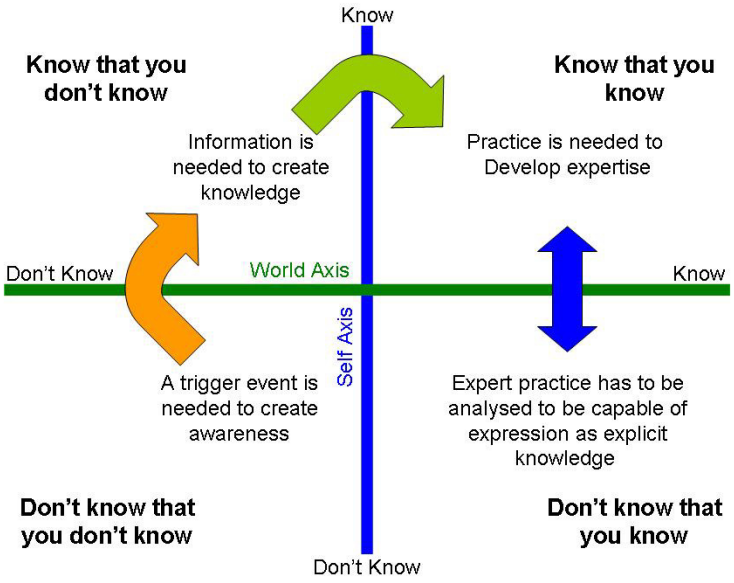
3. Ways to ensure tacit expertise is available to know what knowledge is applicable, and what knowledge needs to be adapted for use in the current situation (ie, in the 'new world').

Without the last two elements organisations are left with masses of data, but their people have no idea what to do differently to improve performance.

Acquiring knowledge

The learning journey needs to be understood and supported for an organisation to manage its knowledge. To succeed, it requires each person to have an explicit understanding of both of themselves and the 'world' in which they are operating and then move from:

1. Don't know you don't know (ignorance is bliss)
2. Know you don't know (seeking knowledge)
3. Know that you know (marginally competent practitioner)
4. Don't know that you know (tacit expertise)



This simple map is based on the four stages of competence developed at Gordon Training International by its employee Noel Burch in the 1970s.

From a learning perspective, the four stages of competence are complicated by four additional factors:

- **Personal bias and prejudice**[4] (we are all biased and have preferences).
- **Errors in existing knowledge** - what you know to be correct is actually wrong.

[4] For more on the ***effects of bias*** see: https://www.mosaicprojects.com.au/WhitePapers/WP1069_Bias.pdf

- **Taboos** that forbid or prevent the seeking of specific new knowledge. Things you are not allowed to know. Many taboos are socially desirable and reflect ethical standards but others can be very limiting if the new knowledge contradicts current orthodoxy.
- **Denial** where seeking or accepting new knowledge is too painful to be contemplated; frequently aligned to deeply held beliefs.

In addition, knowledge gained in a *'different world'* can easily cause problems in changed circumstances, particularly if you are unaware of the differences between the *'old world'* the knowledge was formulated in and the *'new world'* you are about to apply it in. Your skills and knowledge may not be as relevant as you think (but you don't know this…).

Gaining Wisdom

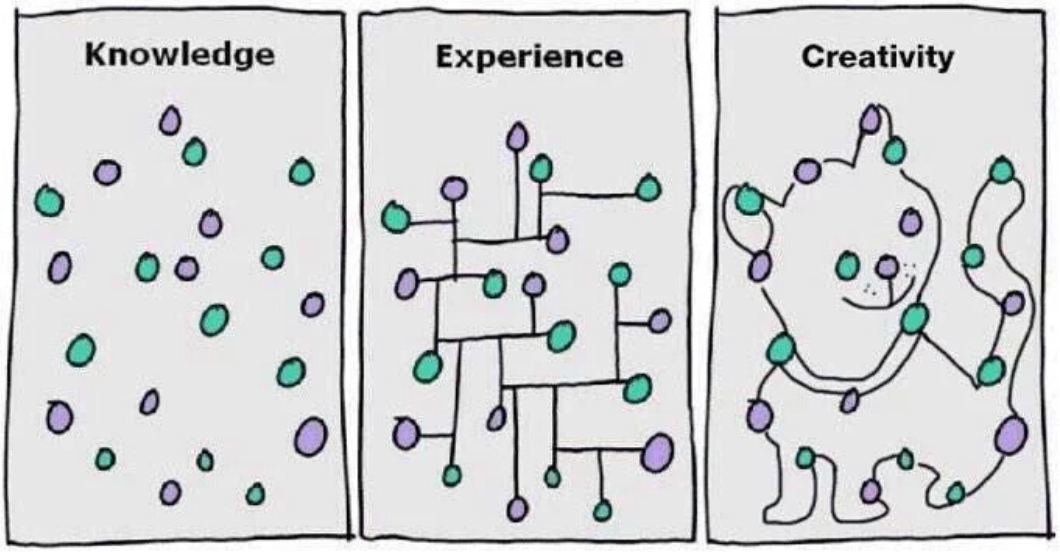
Practical wisdom (or phronesis) is the key to making sound decisions in a complicated *'new world'*. Phronesis (Ancient Greek: φρόνησις, phronēsis) is a type of wisdom described by Aristotle in his classic book *Nicomachean Ethics*. It is focused on working out the right way to do the right thing in a particular circumstance[5].

The problem is the tacit knowledge required to recognise the need and adapt existing knowledge to the current *'new world'* situation wisely resides in peoples' minds, is contextual, and as a consequence is difficult to transfer to another person by means of writing it down or simply verbalising it. The creation of wisdom to improve organisational performance needs personal interaction:

- First subject matter experts need help to translate their tacit 'know how' gathered over years into usable explicit knowledge; this is very often a difficult process: the experts literally don't know all of the factors they use in formulating a course of action. Much of their intuitive processing is subconscious (teaching at this level is a skilled art):
  - In some situations, this may be usefully recorded as information
  - In others the ability to work with others is more important.
- Second, less expert people need a friendly advisor oversighting their work to provide effective early warning of impending issues. Confucius is quoted as saying: "By three methods we may learn wisdom: First, by reflection, which is noblest; second, by imitation, which is easiest; and third by experience, which is the bitterest." But imitation needs a helping hand. The less experienced need to be made aware of the fact that they need to learn something new. 'Trigger events' don't have to be painful if the right advice is heeded at the right time.
- Third, learning is rarely accomplished simply by reading a 'lesson learned' or other source of information. Access to effective coaching and mentoring is important to ensure the full richness of the lesson is passed on and the learning is adapted to the circumstances of the 'new world' in which it is to be applied. Every project is unique and consequently every 'lesson learned' from the past will need to be nuanced or adapted to work optimally in the new situation. In addition, some aspects of 'knowing' can only be learned by doing. This requires trust and encouraging people through relationships and networks so they will share knowledge and help each other learn.

The steps from knowledge to experience ('joining the dots'), to creatively applying the knowledge to create something new cannot happen in a vacuum. Consistent performance needs an organisation that embraces and actively supports the social aspects of knowledge development and creativity:

[5] For more on ***phronesis*** see: https://mosaicprojects.wordpress.com/2017/05/21/phronesis-a-key-attribute-for-project-managers/



'Connecting the Dots' by Richard Busfield
A&E@Cobham

Summary

An effective knowledge management system is built on a symbiotic relationship between an effective information system and a culture that encourages and facilitates the open exchange of knowledge and ideas between people.

An information system on its own will at best simply make useful information available to people, there is no control over how, or if, the information is accessed or used appropriately.

A knowledge system on its own may create brilliant insights but the information is organic and transient; everything is in people's minds and their knowledge leaves the room when they do.

A knowledge management system combines these two elements and provides governance and oversight from knowledgeable people to extract the maximum value from the information and knowledge held within the organisation through personal interaction, conversation, and other social processes.

The final step to encouraging wisdom is based entirely in culture. Less knowledgeable people need to be willing to learn, open to assistance and feel they are allowed 'not to know'. The culture of the organisation needs to be actively opposed to the '*Dunning-Kruger* effect[6]'. Wise and knowledgeable people need to have time in their schedule to help others, and be actively encouraged to participate in knowledge exchange activities.

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[6] The *Dunning–Kruger* studies reinforce age old perception neatly summarised by Charles Darwin that: *"Ignorance more frequently begets confidence than does knowledge"*. For more see: https://mosaicprojects.com.au/Mag_Articles/SA1045_KM_and_learning_lessons.pdf

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