

Knowledge Work - A Wicked Problem

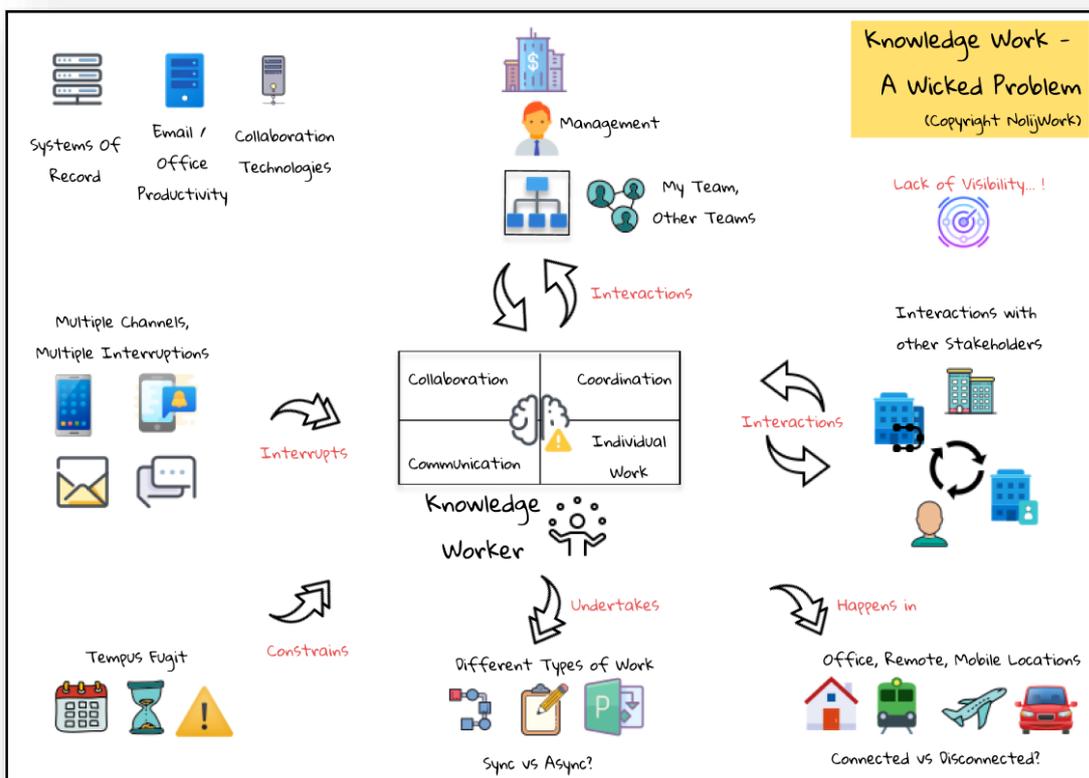
If you're new to "Wicked Problems", Wikipedia offers the following :-

- "a problem that is difficult or impossible to solve because of incomplete, contradictory, and changing requirements that are often difficult to recognize",
- "because of complex interdependencies, the effort to solve one aspect of a wicked problem may reveal or create other problems"

In this context, approaches such as Soft Systems Methodology (SSM) and in particular, the use of "Rich Pictures" may help to shed light on the various problem elements.

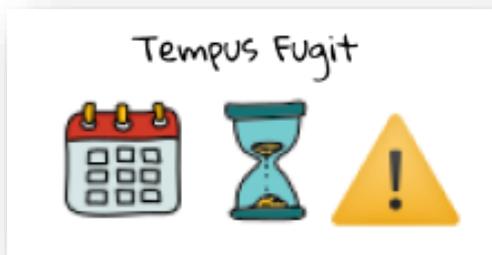
Towards A Rich Picture for Knowledge Work

Combining experiences with clients across various verticals, together with insightful published research papers, the following diagram is offered as a frame of reference.



Rich pictures are NOT intended to identify every aspect of a problem, rather to focus on key, high level elements of the situation. Each of the elements are explored in more detail below.

Time & Cognitive Capacity



The simple reason for starting here, is that these are key constraints which cannot readily be overcome, i.e. there is no practical way whereby an individual's cognitive capacity can be boosted in any significant way.

Nor is it feasible to significantly boost the number of working hours per day for the average person in a manner which is sustainable. Indeed, such excessive working time

situations are often the reason for employee departure, so that option can readily be discounted.

Finally, separate from the physical number of working hours per day, inevitably every piece of work undertaken is subject to some sort of deadline or other. The general direction of travel is to have work completed sooner rather than later, so deadlines typically continue to shorten over time.

In summary, if organisations are interested in improving the productivity of knowledge work, we should treat time and capacity as constraints, rather than as variables in any envisaged solution.

De-composing Knowledge Work



Knowledge work is not homogeneous, rather it consists of different types of activity.

Clearly there is, what is referred to in the diagram as "Individual Work" – i.e. where the individual knowledge worker undertakes activity without recourse to others. In this, the individual is largely unencumbered. Generally, **given the absence of any interruptions** (rarely guaranteed), the individual knowledge worker can make good progress towards completion.

The remaining 3 aspects are of significantly greater interest, given their reliance on other individuals and stakeholders. In other literature

these are referred to as Coordination, Collaboration and Communication so the same terminology is employed in this paper.

Coordination is the arrangement with other participants (individuals / stakeholders) in planning and organising of the completion of the necessary work. As the number of participants increases, the amount of time involved in co-ordination activities can grow somewhat exponentially. If in any doubt about how long this can take, just think back to the last time you tried to schedule a meeting with more than a few other participants!

Collaboration is where individuals are working together to complete a piece of work. This could be synchronously, either face-to-face or virtually (video conference, telephone), or asynchronously perhaps in a producer / reviewer / approver capacity.

Communication this might be a situation where information is being sourced from, or perhaps provided to others. Whilst there may be limited working effort contributed to this activity, often this can result in considerable delays or “waiting time”, e.g. days, if not weeks, just waiting for information to be delivered, thereby inducing delays on overall progress.

Equally, these requests for information and/or the related responses are sometimes missed (overlooked), inducing more delay. Such scenarios often result in “chasers” of various types to ascertain the status of the delivery by either party.

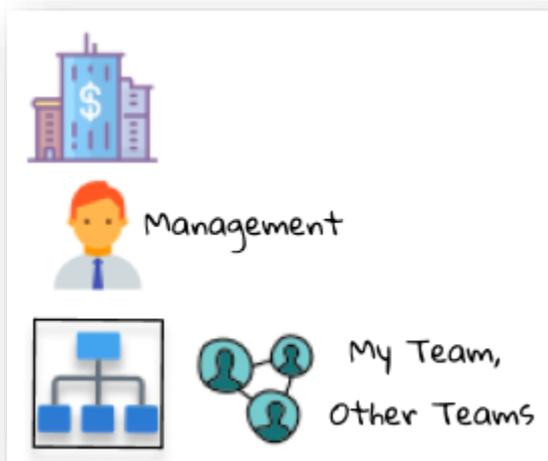
If in any doubt about the frailty inherent in such Communication – think back to the most recent time where you or your counterpart(s) either sent a chaser, or indeed received a chaser for information, particularly if the information had already been delivered!

In summary, knowledge workers are likely to be juggling all of these different types of activity, and juggling all of the different interactions with other stakeholders and systems.

As the number of participants or stakeholders increases – this actually multiplies the likelihood of such problems arising.

Finally remember that the knowledge worker is trying to perform all of this in the backdrop of limited time and cognitive capacity! So, any failures have to be identified and corrected by the knowledge workers themselves.

The Organisational Context



In quoting the words that “*No man is an island*” it is clear that work takes place in an organisational context.

Put simply, knowledge workers are likely to work with colleagues both within their relevant team, and across team boundaries to other parts of the organisation.

Finally, manager(s) retain responsibility for the work that is being completed by knowledge workers. As knowledge work can be somewhat lacking in “visibility” – this can make it difficult for managers to ensure progress is being made in a timely and efficient manner, without interfering

unduly in the work itself.

Clearly any organisation wishes to ensure that (expensive) resources are organised to work together as efficiently as possible, be it within teams or across multiple organisational siloes.

Mapping out these interactions and supporting their routine operation is a key goal to achieving a sustainable knowledge work environment.

Outside the Organisation



Knowledge work intensive sectors (engaged in “thinking for a living”), i.e. sectors such as finance, insurance, government/public sector, healthcare often entail interactions with external individuals and organisations.

For example, that might be with specialists, 3rd party providers, various agencies and the list can go on....

McKinsey explain this trend towards increasing interactions with 3rd parties as follows

“studies show that specialization, globalization, and technology are making interactions far more pervasive in developed economies. As Adam Smith predicted, specialization tends to atomize work and to increase the need to interact. Outsourcing, like the boom in global operations and marketing, has dramatically increased the need to interact with vendors and partners.” ... and ...

“The growth of interactions represents a broad shift in the

nature of economic activity.”

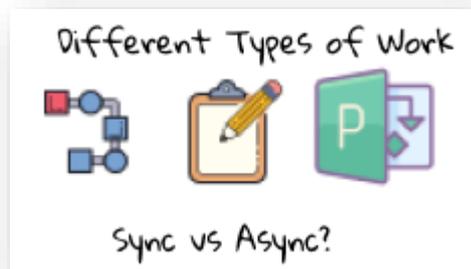
Not only might one be dealing with (hopefully) compliant partners who are sharing in a common goal, but in a legal context, or in a public sector context, some of those interactions may be with actors who have somewhat opposing objectives! External resources are often outside the control of the responsible organisation, so special attention is required in respect of ensuring engagement across the range of necessary stakeholders.

Let’s face it, just as “multi-tasking” has been shown to be a bad idea (if not a fallacy altogether), successfully juggling multiple interactions across multiple stake-holders is a non-trivial task for any individual to cope with. Further multiply that up across providing services for multiple concurrent customers (citizens, applicants, ...) – this leads to a considerable amount of “plate-spinning” which is a significant distraction from productive knowledge work.

Whilst workflow may be a potential help in an internal organisational context, i.e. where all employees are accountable to the same employer, clearly that will not work for external entities – whether individuals or corporates.

In summary – managing these constantly shifting interactions with external parties requires a different way of working, and likely represents an under-estimated part of any knowledge worker’s job.

The Continuum of Work



Even within knowledge work, there are various sub-categories at play.

A knowledge worker may engage in different types of activity, e.g. having “operational” responsibilities, whilst also having part of their time allocated to “project work”.

Particular disciplines, such as software development, have their own working methods, and indeed technologies to support that. We should be careful

about drawing parallels between endeavours such as software development, with its associated methodologies, versus the broader topic of knowledge work.

Over the past several years, support for project-style working has grown considerably from a technology perspective. In this space there have been a number of collaboration-type tools which combine aspects such as Gantt-style planning and tracking, combined with enhanced user experiences. With that said, these technologies are aimed squarely at project-working, and do not support more generalised “operational” knowledge work.

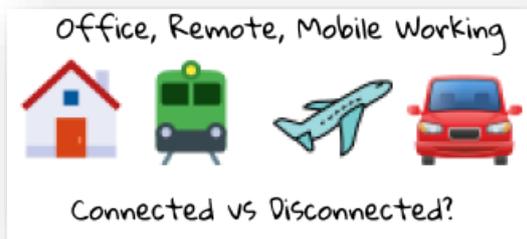
Moving away from project-working, this leaves approaches such as workflow and individual task management.

In considering task management, this is more focused at the individual worker experience, enabling tracking of performance of individual (potentially ad hoc) tasks. The reality could well be that these so-called “ad hoc” tasks are not genuinely ad hoc – but have become divorced from other larger initiatives which lack suitable tracking support.

This leaves workflow, which has traditionally meant highly prescriptive, low-level task performance edicts. Many knowledge workers dislike this “command and control” type approach to their work activities. Equally, as work evolves, these workflow definitions may not keep up with the actuality, hence leading to unnecessary workarounds just to “keep the system happy”.

Recent emergent collaboration technologies have focused significantly on supporting synchronous activity – i.e. when individuals are working together directly. The reality for most individuals is that they want to be able to work as independently as possible from one another (i.e. asynchronously) and only align with colleagues when necessary, this is simply a question of efficiency!

Location



One of the most significant changes in respect of work in the past couple of decades has been the movement towards mobility, and the ability to work wherever, whenever. Many employees now take this for granted, not realising that this was ever a significant challenge, when facilitating mobility attracted a considerable cost premium.

This movement began with the availability of laptop devices, however the advent of the smart phone, and tablet devices have driven mobile working to even greater levels within the last decade.

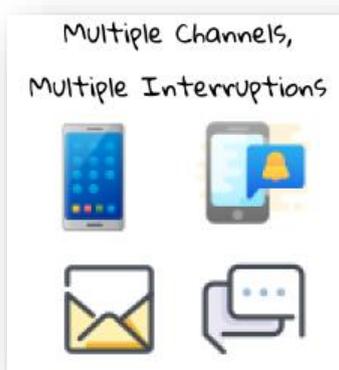
The debate around “working from home” has largely been swept aside given the reality that many offices have been shuttered. It is no longer a question of work-life balance preference, instead it has simply become economic necessity.

One consideration when mobile, is that even despite fairly ubiquitous connectivity (WIFI, Mobile Broadband), there are still times when workers may be disconnected. In such circumstances individual employees often want access to their information, without the need to prepare in advance for such an eventuality.

This is one of the unrecognised advantages of email (+attachments). Email clients will typically still provide access to email content if server access is not available. Whilst this requirement is often overlooked in respect of other (collaboration) technologies, this is a distinct benefit of email.

In conclusion, facilitating knowledge work is not restricted to corporate office locations, rather it happens when and where the knowledge worker wishes and expects to be able to do work!

Worker, Interrupted



According to Wikipedia “**Attention economics** is an approach to the management of information that treats human attention as a scarce commodity, and applies economic theory to solve various information management problems.

Put simply by Matthew Crawford, "Attention is a resource—a person has only so much of it."

It is hard to believe that Herbert A Simon first articulated this concept just under 50 years ago. Consider the explosion of technology and information (never mind the internet and WWW) that has taken place since then. Simon’s characterisation of information overload as an “economic” problem has now become increasingly popular.

Whilst the topic of finite cognitive capacity was raised earlier, are today’s organisations really reflecting that employees have a finite capacity?

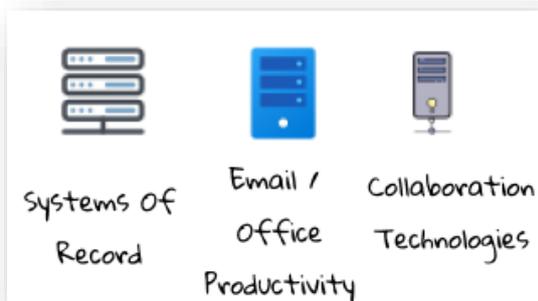
Employees are exposed to multiple channels of information and interaction (video, audio, telephone/mobile, SMS, chat, email), across multiple devices and platforms, including alerts and other notifications.

Each of these platforms “naively?” or perhaps selfishly assume that they have the undivided attention of the user, and that’s a big part of the problem experienced by knowledge workers.

There have been various studies which illustrate that following a single interruption it takes in excess of twenty minutes to revert back into the same mental state prior to the interruption.

Given all of these channels, interruptions and steady flow of email, interruption has become endemic in the workplace. This is one of the reasons that employees may elect to work from home, in the hope that it will allow them to focus better on important tasks which deserve their attention.

The Systems Perspective



Typical enterprises (small and large) consist of a diverse range of technologies. Irrespective of where these technologies reside, on-premise or cloud, they can be decomposed into some broad groupings.

“Systems of Record” can be thought of as transactional systems, such as ERP, CRM, ECM etc which enable the organisation to fulfil its business objectives – e.g. make, sell products to customers. Larger enterprises

will often have multiple Systems of Record – perhaps for different divisions, or specialist technologies to optimise their operations.

Email has become pervasive, with a daily average of over 120 emails per employee according to the Radicati Group (and still growing at 4% annually). Research by Bain identified that managers could save approximately 16 hours per week by eliminating emails that they either should not have responded to, or even received in the first place, together with meetings that they did not need to attend, or should even have been scheduled initially. Undoubtedly some of this will also hold true for all other knowledge workers.

One proposed solution to the email problem is to provide better, more efficient email clients. However, does this really stack up? To use the Henry Ford quote “If I had asked people what they wanted, they would have said faster horses.” Surely email is just another symptom, it is not a problem in itself. We need to consider why those emails arose in the first place, what could we change to make sure those emails never happened. So the goal should be to shrink email volume at its sources, and selectively diverting to better mechanisms, rather than encouraging an “arms race” of ever more powerful email clients.

Email technology is often complemented by office productivity software for word processing and spreadsheets – representing “standard fare” for the typical knowledge worker.

Finally, “collaboration technologies” are deployed to further support staff. Generic collaboration technologies provide capabilities such as video-meeting, VOIP communications, chat and similar synchronous facilities.

There are various specialist collaboration technologies, such as project management (planning, tracking etc) which have become increasingly popular, however these are directed at workers whose primary role relates to project management within an enterprise, rather than operational knowledge work.

In the never-ending ebb and flow of technologies, there is a constant turnover of products in use, indeed some only ever making it to shelf-ware stage after failing to live up to expectations, or perhaps knowledge workers having insufficient capacity to support engaging with another “beneficial” collaboration platform!

As organisations seek out that “mythically ideal” and all-encompassing solution to their knowledge workers’ needs, meanwhile knowledge workers just get on with the job as best they can.

Those proposing solutions to enhance knowledge worker productivity should first seek to understand how and why those solutions might help, or perhaps actually hinder knowledge workers in their quest for better productivity.

Furthering this quest is achieved through more nuanced approaches, which centre on the knowledge worker experience, and tackling the different aspects of the role, in particular where individuals are working with other stakeholders (i.e. Coordination, Communication, Collaboration).

“Air Traffic Control” for Knowledge Work



Given that knowledge workers’ more visible activities are typically comprised of interacting with devices such as computers, laptops, keyboards, VDUs, tablet/mobile devices, it is understandably challenging to ascertain exactly what knowledge workers are actually engaged in.

In an office setting, whilst it may appear reassuring that such workers are “working” on their computers, there is actually relatively little that can be ascertained from such

direct observations.

Knowledge work is often “scattered” across a range of platforms, possibly leaving “footprints” across each of those platforms – sometimes referred to as “data exhaust” or “digital exhaust”. Even if that information were to be analysed (which is a considerable challenge in its own right), it can only provide a very limited view of the purposeful activities in which staff were engaged.

In these circumstances it is practically impossible to “see the wood for the trees”, even if there was full access to all of the data available. Often progress can only be tracked through explicit mechanisms such as status meetings (physical / virtual), completion of separate tracking sheets, weekly reports etc. For self-managing knowledge workers, this can be an unwelcome intrusion and interruption. This represents an unnecessary overhead for all participants, putting managers in an

invidious position of “interfering unnecessarily” to ascertain status, or “flying blind” and having to trust to the professionalism of their staff. This is a “no win” situation for managers

This lack of insight into knowledge worker activity and thus productivity continues to hamper managers and the wider enterprise as a whole.

Ultimately improvements in this area should concentrate on tracking progress towards desired outcomes – rather than merely tracking “activity”, which provides no guarantee of a successful result. Given a shared view for employee and manager of the outcomes desired and the work-in-progress towards that, on a continuous basis, ensures that visibility can be maintained whilst eliminating unwarranted interference.

Achieving such a goal across all knowledge worker outcomes and related activities, provides an excellent baseline from which to drive further improvements.

Finally, in the new reality of working from home (or elsewhere), i.e. anywhere except the office, there is a growing need for visibility and transparency to ease the burden on knowledge workers and their managers. Collectively they now face the additional new challenge of being continuously remote from each other and other stakeholders, combined with a plethora of online video calls and meetings. An existing problem around visibility and transparency has now ratcheted up in intensity.

So What Does It All Mean?

Going back to the start of this paper, it is clear that the individual needs, problems and constraints outlined are all inter-dependent in varying degrees.

Knowledge Work readily fits the criteria to be considered a “Wicked Problem”.

To that end, it is not possible to tackle individual aspects in isolation, as many are symptoms of a tangled web of human, organisational and technological issues.

That said, in recognising that we are dealing with a “wicked problem”, we understand that resolution lies in unravelling this tangle piece-by-piece.

So in the next section, we consider how that resolution should be tackled.

Conclusions – How to Set About Addressing A Wicked Problem...

In summary – we set out some of the themes below around how we believe we begin to solve these inherent challenges...

1. **Focus on the Knowledge Worker**

The individual knowledge worker is the key constraint in terms of time and cognitive capacity. The individual needs to be at the centre of the solution, hence all other aspects must flex around that reality. If not, individual knowledge workers can become overwhelmed thereby resulting in further systemic detrimental effects.

2. **Help Knowledge Workers to Manage their Interactions with Others**

Managing the knowledge worker's interactions with others, both internally and externally, is a significant part of the puzzle. Facilitating this "plate spinning" would eliminate an unnecessary burden.

3. **"It's the (Attention) Economy Stupid"**

Minimise Distractions (Alerts, Notifications, ...)

Not only do employees need help with their interactions with others, they also need assistance to help them with the distractions from other systems. Eliminating the multitude of distractions across the variety of channels allows the knowledge worker to focus on work to be done, and to remain in a productive state for as long as possible.

4. **Different Types of Work**

Our focus is primarily on non-project work, since the majority of knowledge work exhibits patterns of repeatability. Individual tasks rarely exist in a vacuum, perhaps there is a need for re-design to avoid this fragmented experience. i.e. provide a unified experience to assist knowledge workers to manage all of their associated work activities.

Project work typically entails its' own methods and technologies so is largely irrelevant for the majority of knowledge workers.

5. **Asynchronous over Synchronous Work**

Workers are more productive working asynchronously, avoiding frequent synchronous "alignment" between participants.

6. **Less is More (Collaboration Technologies)**

It is often said that adding more resources to a late-running project will make it run even later. Perhaps it is the same with collaboration technologies, there is only so much time and capacity for collaboration activity (and its associated tooling).

7. **Location, Location, Location**

Work increasingly happens outside a "connected" office context. Staff expect to be able to function effectively at home, and when physically mobile, and even when connectivity may not be available.

8. Visibility, Transparency

One of the unique aspects of knowledge work is that it is largely “invisible”. Whilst the ability to watch staff type busily on keyboards in an office context may be very slightly re-assuring, this approach is even less effective in a distributed environment, or “work from anywhere” context.

Yet managers need to be able to “see” that work is progressing satisfactorily, ideally without needing to interrupt or distract individual knowledge workers, especially as managers are accountable in such circumstances.

Get in Touch...

If your organisation identifies with some or all of these challenges, we’d really love to hear more from you, to validate the impact of these problems on your business.

Equally we are continually evolving our ideas on how we will solve this wicked problem, and to sanity check those ideas against the reality of your individual situation.

Even if you just want to hear more about what we’re thinking, then please follow us on our blog and social media channels.