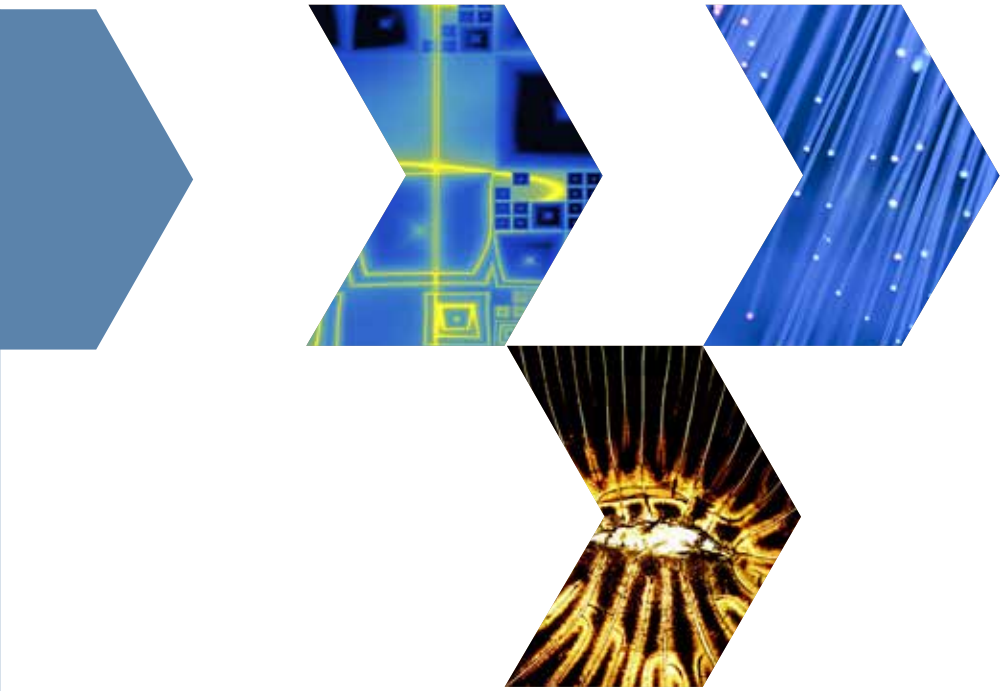
COMMUNICATING TECHNOLOGY INTELLIGENCE

A PRACTICE GUIDE



UNIVERSITY OF CAMBRIDGE

IfM MANAGEMENT TECHNOLOGY POLICY

Published by the University of Cambridge Institute for Manufacturing
17 Charles Babbage Road
Cambridge CB3 0FS
United Kingdom
www.ifm.eng.cam.ac.uk

CTM Practice Guides

CTM Practice Guides are a series of short practical guides on a range of topics aimed at technology management practitioners. These guides derive from work undertaken by the Centre for Technology Management at the IfM, including work done in collaboration with industrial practitioners involved in the Strategic Technology and Innovation Management (STIM) consortium. This consortium brings together researchers and practitioners to develop new approaches to some of the key the challenges facing manufacturing and technology-intensive companies.

Title: *Communicating technology intelligence: a practice guide*

ISBN: 978-1-902546-49-0

First published in Great Britain in 2015

Contents

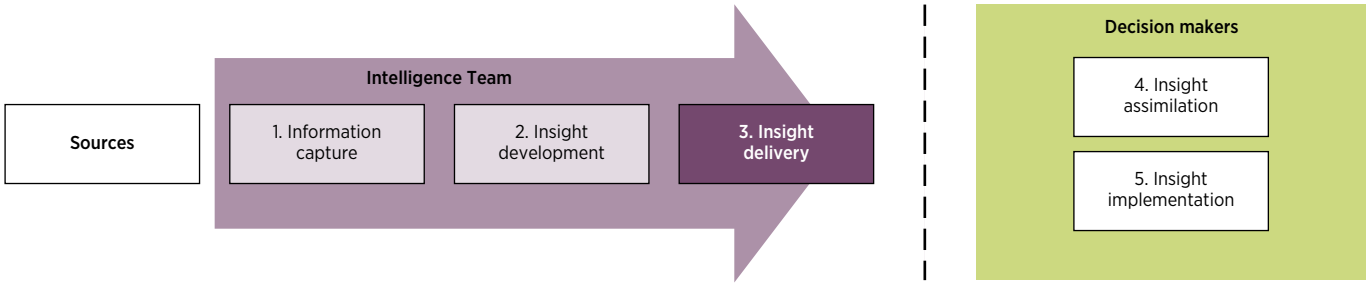
Introduction: the technology intelligence process

Technology Intelligence (TI) is the term used to describe how companies capture and deliver the information they need to understand technology threats and opportunities. However, if that information is to be useful, it needs to be presented to corporate decision-makers in a way that helps them both assimilate it and act upon it. This Practice Guide examines some of the barriers to effective TI communication and explores the ways in which intelligence can be better communicated and hence transferred to decision-makers.

Companies design TI systems specifically to provide their decision-makers with analysed, contextualised and purposeful knowledge about technology threats and opportunities to support the task of taking decisions.

As firms come under increasing pressure to maintain a rapid pace of innovation, they are dedicating more resources to developing TI systems which can efficiently 'capture information' from the environment in order to develop insight. But these insights will be of no value to the firm if they cannot be readily assimilated by the decision-makers and used to inform their decisions. This transfer of knowledge is by no means seamless; it often proves problematic at best and, in the most extreme cases, can be wholly unsuccessful. These difficulties arise from the ways in which all human beings think. We all experience issues relating to decision-making which are caused by our cognitive limitations.

This guide aims to improve the understanding of 'insight delivery' or how intelligence can be better communicated to decision-makers by exploring the cognitive barriers affecting decision-making and proposing practical approaches to minimise their impact.

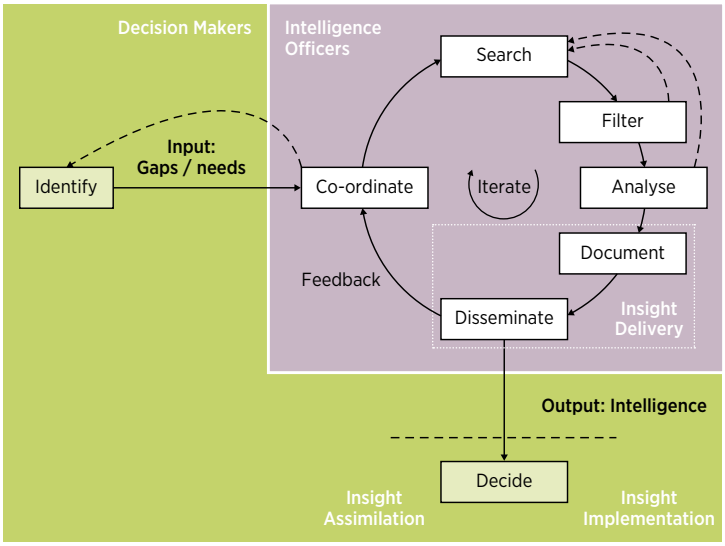


'Insight delivery' relates to the transfer of knowledge between the intelligence team and the decision-makers

The process of intelligence

The intelligence model developed by Kerr et al.[1] (right) shows how there are six phases leading to the capture and delivery of information. The 'Co-ordination' phase assigns tasks, generates ideas for sources and refines the search goals with the decision-makers. The 'Search', 'Filter' and 'Analyse' phases then form a cycle within the process that is repeated until a satisfactory level of information is acquired. Finally, the delivery is carried out by investigators who 'Document' their findings and 'Disseminate' intelligence to those who need to take decisions.

This guide focuses on these two latter phases, 'Document' and 'Disseminate', and how they can be carried out more successfully and result in 'Insight Delivery'.



The intelligence process[1]

Technology intelligence: understanding the issues

Interviews with intelligence officers about the challenges and issues they experience when delivering their insights demonstrated that the communication of intelligence is not straightforward. Five key issues were identified, of which three relate to the recipient (the decision-maker) and two to the messenger (the intelligence analyst). The issues are described in this section using real examples to illustrate them.

	Issue	Situations when the issue may arise
Recipient	**Cognitive distance**: the recipient is not receptive to the message for a range of reasons such as low attention span or preconceived ideas.	The decision-maker may be busy or the content is different to what is considered relevant. Situations which can exacerbate this issue include: communicating unexpected intelligence, lack of sponsor for the intelligence, or when the decision-maker is expecting a different type of analysis.
	Anchoring and adjustment: undue influence of initial information which affects the absorption of subsequent information.	This may occur when interim (and therefore incomplete) findings are requested by the decision-maker.
	Intelligence distortion: insights from intelligence are interpreted and fed into the firm through a chain of decision-makers.	This may occur when the message has to go through many levels before it reaches the decision-maker.
Messenger	**Lack of kudos**: the messenger has low credibility.	An example of this is when intelligence from an external source is given more credibility than intelligence presented by internal analysts.
	Repercussions for the messenger	This might happen when intelligence officers feel 'involved' with the consequences of what they have to communicate. Hired consultants can lose a client's trust when bearing bad news. Internal officers might fear the reaction to, or repercussions of communicating their findings.

Summary of problems observed in insight delivery

Issues with the decision-maker

1) The 'cognitive distance' between intelligence messengers and decision-makers

Many of the interviewees complained that the intelligence they provide often falls on deaf ears. While there are many reasons for this, the overall explanation could be ascribed to 'cognitive distance'. This is a concept widely used in management literature[2] to describe how the recipients of a message are 'distant in terms of mindset' as they have developed a set of reference points and interpretive schemes which are different from those of the messenger and their message.

Researchers suggest there is an optimal distance (not too close, but not too far) between two communicating parties. Some cognitive distance is necessary so that the message is novel enough to get attention but if the message is too novel, or alien, the recipient may not be able to 'understand' or 'pay attention' to it and hence learn from it.

EXAMPLES
Cognitive distance

1. Cognitive distance can manifest itself in distraction, short attention span, inertia and the use of thought patterns developed in the past.

As a result of the latest financial crisis, a new unit was established to provide analyses on a continuous basis to the CEO of a financial institution and other senior managers on how the financial sector was evolving, what types of business opportunities might arise and what types of disruptions might affect both it and the firm. The director of this intelligence unit lamented that although the CEO championed the work of the analysts and appreciated the analyses he received, the time he could spend engaging with the intelligence was limited. The other top managers were even less sensitive to intelligence messages and did not appear proactively to seek information or read reports. The feeling was that for certain scenarios the analyses were not believed as they look too threatening and different from past experience.

2. Cognitive distance issues often emerge when intelligence is unexpected, outside the scope of the initial requirements of the day-to-day business or comes from the unprompted initiative of the intelligence team.

One of the interviewees initiated a project to forecast the optimal operating conditions for a manufacturing plant taking account of the major economic drivers. Broadening the analysis during the project, he noted that some drastic changes in operational and logistic tactics would most likely yield improved outcomes, not just for the plant to run more efficiently, but for the firm to increase its business and achieve a significant return on its investment. This analysis went beyond the scope of the original task. However, the decision-makers had already committed strongly to the original plan and were unable to understand or make use of this important intelligence.

2) Anchoring of decision-makers' opinions on incomplete intelligence

Sometimes the communication difficulty results from the fact that decisions are unjustifiably influenced by prior information which is then used as a reference point for subsequent information. This can happen when, for example, intelligence exercises are carried out over a long period of time and interim results are periodically fed to the decision-makers. It can be very difficult for the decision-maker to wait until a more substantiated analysis is performed and the tendency is to use the first insight as the most significant finding.

EXAMPLE
Decisions based on incomplete intelligence

Corporate intelligence analysts in the oil and gas sector were asked to research trends, identify future opportunities and develop a number of scenarios for the long term (over 10 years). The analysts needed to review and compile large quantities of data across multiple sources to generate substantiated scenarios. As this was a long-term project, the decision-makers required progressive updates about the outcome of the analysis.

The need to deliver interim presentations of the results was a problem for the intelligence team, who noted that the opinion of the decision-makers after the first presentation (where only one of the possible analyses could be reported) was impossible to change. Even after presenting subsequent abundant and contradictory evidence, decision-makers were of the opinion that the first scenario presented was the most credible and likely, although there was no evidence to support this. The intelligence analysts found that it was impossible to 'unskew' the decision-makers' opinions and noted that many decisions had already been taken on the basis of the initial findings.

3) Distortion of messages through indirect communication

Often organisations' decision-making systems are complex and the intelligence message needs to travel across many levels before getting to the final decision-maker. In some cases the decision-making process is 'social', rather than in the hands of a single person, and the acceptance or otherwise of new knowledge becomes more of a political matter. Sometimes intelligence officers are several levels removed from the final decision-maker and cannot deliver their analysis in person to the ultimate recipient. Individual managers are both the 'interpreters' and the 'translators' of messages and can transmit the message to sway, consciously or unconsciously, others' opinions towards their own. In these cases, messages become distorted.

EXAMPLE
Intelligence messages distorted through indirect communication

An intelligence officer in a large multinational was asked to deliver insights on some focused topics relating to key projects. He found that these insights were being used to make strategic decisions by many people across multiple divisions, often not those who had originally authorised and sponsored the research.

Insights from the intelligence were interpreted and fed into the firm through the management hierarchy eventually ending up distorted, used to support individual agendas and deprived of some or all of their original meaning. The decision-making became diluted and with it, its associated responsibilities. The final decision-making ended up being a 'rubber stamp' on a decision taken collectively in several repeated rounds of consultation when the intelligence analyst could not be present to guarantee the authenticity and integrity of the analyses.

Issues with the messenger

4) Lack of kudos

Credibility of the sources is one of the key elements for the acceptance of a message[3]. When delivering their message to the decision-makers, intelligence teams are 'the source' of the knowledge and their credibility affects the knowledge transfer. Credibility could be split into two further dimensions, related to expertise and to trust[4].

EXAMPLES
Lack of kudos

Expertise
An intelligence officer in a large company was asked to provide analyses to support strategic planning. This task is part of his routine, and reports are continuously drafted based on sound and rigorous analysis of large quantities of data, and deep insight into company needs. However, the officer has noted that the analyses are often overlooked in favour of studies externally outsourced to 'big name' consultants, even when the results of such reports are sometimes less deep, less customised and less relevant for the firm.

Trust
Another intelligence officer was working within a corporate outpost on another continent and found it difficult to identify the correct recipient for her messages. She observed that it was hard but necessary to establish trust with the decision-maker and decided that in order to be successful and efficient she needed to prioritise the development of her internal network of recipients and gain their trust.

5) Repercussions for the messenger

The intelligence team is not always totally neutral to the message it conveys, particularly if the message's contents will have a direct impact on the team's role.

EXAMPLE
Repercussions for the messenger

The example which best illustrated this issue was observed when an external intelligence consultant was hired by the CTO of a firm in the medical sector. The consultant's task was to analyse the commercial opportunities for a new technology project and the market channels which could be activated to commercialise the technology. The client was already far advanced in the development of the technology and strongly believed in its potential.

During the analysis, the consultant broadened the search to identify key trends in the medical device market and realised that disruptive technologies were looming and new entrants were appearing with the potential to challenge his client's dominance. The consultant was faced with the difficult task of challenging the client, if necessary reaching out to the CTO's superiors and potentially putting the person who had sought their services in the first place in a bad light with his company. Doing so, would also put at risk the future of their relationship with that client.

This cognitive bias also applies when the intelligence officer becomes too involved with the development of the technology he/she is monitoring. Having spent several years on a project, a technology officer was so taken by the idea of developing a particular product that he positively skewed the analysis in its favour without thoroughly testing the evidence prior to investment.

How we make decisions

To understand better why communicating intelligence can be problematic, it is helpful to review some of the key psychological factors which affect people's decision-making capabilities.

Human decision-making 'software'

Current studies of applied psychology conclude that humans make decisions in two complementary ways[5]:

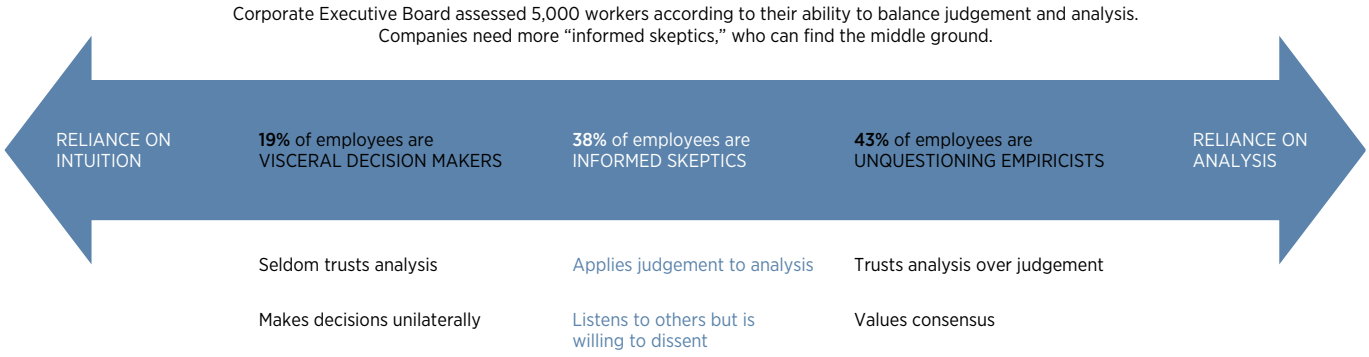
System 1: instinctive, gut feel, impulsive, unconscious
System 2: logical, rational, calculating, conscious

System 1 is our default decision-making system, is 'lightweight' and always active, whereas System 2 takes a great effort to be activated. In everyday life, most decisions are taken relying on System 1, even when careful planning and decision-making exercises are organised to stimulate the most rational decision-making process.

System 2 impartially evaluates pros and cons, second guesses the instinctive and impulsive decisions of System 1 thinking, carries out complex calculations, and moderates urges and instinctive behaviours such as anger. However, it requires great cognitive effort which humans are naturally averse to give. There are times when people can experience long spells of intensive activity using System 2 without necessarily feeling the strain. This is known as 'flow'. In most cases, however, it requires will to fully maintain attention. This is demanding, not instinctive and is harder when people are already 'depleted' of energy – when hungry, for example. Conversely, when System 2 is engaged, for instance, in making calculations it is harder to perform other demanding tasks such as controlling urges and instinctive responses and behaviours. Everyone has a different ability to engage System 2 and this ability will also vary according to external circumstances.

A recent review of decision-makers shows that 19% of top executives admit to relying preferentially on intuition and 43% on the results of analytical tools/results to support data analyses. However, the study also suggests that these analyses are only 'rational' when taken at face value and that the technical data received is often not subjected to critical analysis. Taking an ostensibly more analytical approach does not necessarily mean, therefore, that decision-makers have engaged System 2.

The authors recommend that firms develop individuals with better skills at combining the two types of decision-making styles[6].



Adapted from Shah et al.[6]

What this means in practice

Although managers often use decision tools or cognitive mapping techniques to support rational decision-making[7], on a day-to-day basis the micro decisions are often taken more instinctively, relying on System 1.

Hence, System 1 provides the default decision-making system which tries quickly to make sense of any situation and to arrive at conclusions. It does so by assessing each situation in relation to what is already known, and what is considered to be the norm. 'The norm' is established progressively by adding experiences to the memory, so that the second time a situation is experienced, it becomes progressively less unusual.

A considerable body of research[8] supports the view that System 1 is the source of many cognitive biases and systematic errors in decision-making. When engaged, System 2 acts as the 'controller' of System 1. But to override System 1's natural inclinations, humans feel under strain and can give up if this becomes overwhelming. This is why, in order to improve insight delivery, it is important to keep in mind how the most unconscious part of human decision-making works so that, when possible, messages can be delivered in a way which takes account of System 1's natural inclinations.

12 characteristics of System 1 thinking

Applied psychologists have made huge strides in understanding how System 1 works. It has been described as 'a machine for jumping to conclusions'[5], typified by these key characteristics:

1. System 1 uses ONLY the information available to create a 'plausible' story (in relation to 'the norm'), without challenging whether this is a partial account of reality. In doing so, System 1 looks for causes and intentions even when there are none. This is exemplified by the way we tend to anthropomorphise objects, giving them characters and personalities. There was a famous experiment which neatly illustrates this characteristics in which viewers of a cartoon about triangles and a circle attributed personalities and intentions to the objects involved[9]. In other words, System 1 uses only the data available without questioning its completeness.

2. System 1 searches for patterns and is therefore more sensitive to content than to probability. There is a tendency to generalise from small numbers and specific incidents and to be less sensitive to evidence about large samples. In particular, there is a predisposition to treat personal problems as unique and ignore historical statistics (the 'Inside view'[5]).

3. System 1 uses attractiveness to evaluate sources' (peoples') credibility. This is linked to the ability to distinguish friends from foes (see also the 'halo' effect in point 7.)

4. System 1 substitutes difficult questions with easier ones. For example, answering the question 'are you happy?' is quite hard. If prompted in advance with easier, more specific questions – about one's family or financial circumstances, for example – the response to the first question is easier to give as the results will correlate with the answers given to the more specific questions. This means that it possible to 'prime' (influence) the answer to difficult questions using other cues.

5. System 1 suppresses doubt and neglects ambiguity.

6. System 1 uses heuristics (shortcuts) to estimate frequencies of occurrences. In particular:

- Things that are easier to remember are considered to be more common[10]. However, this assumption is often not correct. For example, we remember more easily striking news about rare causes of death (such as fires, aeroplane crashes) and could be tempted to think they are more common than they are because they appear in the news, despite these being far less common than many other causes of death.

- "Stereotyping" or "representativeness" is when you assume that characteristics which represent a class are more likely to occur[11,12]. This is not necessarily the case. Using System 1, we may guess that someone who is quiet and methodical is a librarian, without considering other more relevant data such as the percentage of people in any particular job and hence the probability of that person being a librarian.

7. System 1 uses 'anchors' (retrievable data points or starting points) to adjust judgment and is susceptible to 'halo effects' (exaggerating emotional consistencies). Estimations are unduly influenced by numbers previously heard (anchors) even in other contexts. Also, if you make a judgment about someone, that first judgement will affect your judgment of them in the future. For example, the first set of marks given to a student is much more significant in the mind of an assessor than subsequent ones. Similarly, warm feelings about a new acquaintance makes people inclined to judge positively other characteristics of these acquaintances about whom they know nothing.

8. System 1 makes parallels across different scales, such as equating suffering with punishment.

9. System 1 is overly optimistic and downplays the risk of failure. This characteristic helps when undertaking new, enterprising ventures and provides resilience against setbacks, but blinds people to the risks and difficulties concerning these tasks and exposes people to the risk of failure.

10. System 1 is more sensitive to changes than it is to 'states'. In other words it is more sensitive to the increase and decrease of a variable than to its actual value. In particular, System 1 is more sensitive to losses than to gains. The variations in values (steeper for losses than for gains) are perceived differently depending on the reference point. For example, if we own an object, its sales value is often higher in our estimation than it would be to a neutral third party.

11. System 1 lives in the now.

12. System 1 is influenced by physical reactions (frowning or smiling, for example) and associates these with real emotions.

How to communicate technology intelligence

Understanding some of the key barriers to successful communication allows us to develop a useful framework for thinking about how we can better deliver insights. The framework illustrated below describes the elements involved in intelligence delivery.

1. The messenger

On one side are the intelligence team (or 'the messengers') who can be internal to the firm or external consultants. In either case, messengers can suffer from cognitive issues related to credibility (kudos) and ethics and at the same time they may also be biased and constrained by the resources available to them, such as the time to complete their insight development or the opportunities to access the recipients. They might also feel 'drawn' to the technology they are researching in which case they could become totally involved with the consequences of the message they are delivering.

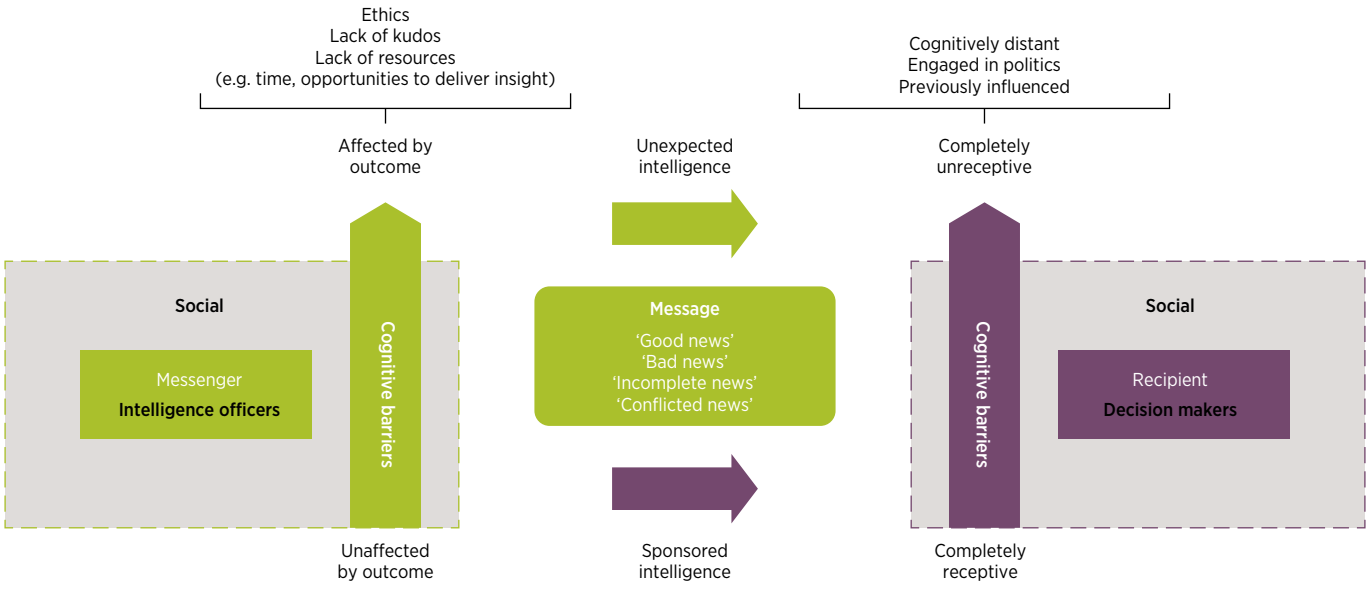
2. The recipient

On the other side are the insight recipients (or the 'decision-makers'), individuals living in a social environment with which they interact and from which they receive multiple influences and cues. The way in which human decision-making works means that cognitive barriers will, to some extent, prevent decision-makers from absorbing intelligence messages. The type of barrier depends on circumstances, but it is likely to be shaped by their prior knowledge and mental models, and by their political and social attitudes. From time to time, they might be at one or other end of the spectrum – either completely receptive to the message, or completely unreceptive.

3. The message

The insight (or the 'intelligence message') could vary along the spectrum from:
'good news' – which highlights a 'gain' or a positive outlook and draws a positive emotional response
to '**bad news**' – which highlights a threat or challenge, and elicits a potentially negative response
to '**neutral news**' – for example, reporting contrasting views on the same problem.
Further, the message could be incomplete, such as when an interim update is given.

The communication of intelligence could occur in response to a request for information by the decision-makers and hence be expected (sometimes both in content and timing) and have a sponsor[1]. On the other hand, the decision-makers might not be expecting the intelligence if it is the result of independent research or analyses carried out by the intelligence team[1].



A framework for insight delivery

Communication tactics

The ways in which intelligence can be packaged and disseminated to the recipients ('communication tactics') are key to the successful transfer of knowledge[1]. Communication tactics should aim to get the insight past the cognitive barriers of the receivers so it can be absorbed and eventually used. These tactics are often described as 'persuasion' techniques by communication experts. However, this term is not perhaps entirely appropriate in this context, as intelligence teams are not supposed to make the decisions but to provide the decision-makers with the evidence they need to form their own judgments.

Assessing the recipient

As discussed earlier, several of the issues in intelligence communication derive from the cognitive distance between the messenger/message and the recipient[2,13]. The cognitive distance depends to a small extent on the recipient's nature (whether they have, for example, intelligence, self-esteem, prior involvement with the issue and their demographics – gender, age, etc). For example, it has been shown that the most receptive recipients are those with an intermediate level of self-esteem[14]. However, so far, there is very little conclusive evidence that any of the natural characteristics of the recipient would make individuals more receptive or otherwise. More relevant seem to be the environment the recipient finds him/herself and their history. It is particularly important to know if:

1) there have been any **prior decisions** to accept/take on board other messages. This principle of **consistency** – whereby people are more likely to try to behave consistently with their prior decisions – will play a significant role particularly when the prior decisions are public knowledge. This is a factor that obviously plays in two ways. It will be harder to completely sway the opinion of people who have publicly subscribed to a particular decision. On the other hand, if the message is conveyed in a way that reminds the recipient of an aligned 'prior' message, the chances are that it is more likely be absorbed.

2) there is **consensus** around the message. What decision-makers feel others think of the message is another important factor. In particular, it has been shown that an audience's reaction to a message is more important when people decide with low elaboration processes (in other words, System 1)[15]. Further, the messages are more persuasive when they come from a range of different sources[16]. People are also more likely to accept messages from people they know, even if they are not present[17].

3) **a decision-maker is experienced**. The less experienced they are, the more likely they are to be biased by negative framing of outcomes (e.g. 'profits less than XXX', 'decreasing profits', 'reduction of profits', etc.) than experienced ones[7].

Managing the recipient-messenger relationship

Research shows that many of the tactics for communicative persuasion have to work on the basis of the relationship between the messenger and the recipient. In particular, the most important cue for a recipient is **liking the messenger**[18]. Liked communicators are known to be more effective in delivering their messages[19]. Self-presentation is therefore an important part of communication tactics[20]. Because of the 'halo effect', in many cases likeability is associated with trustworthiness[4]. People are evolutionarily drawn to physically attractive people[4]. However, beyond this, whether we like another individual is also determined by other indications such as their similarity to us[21], and the cooperativeness and kindness of their comments[22]. Recently, researchers concluded that similarity increases the effects on communication only in relation to whether the receiver recognises messenger's relevance to the message[4]. Another element which makes messengers more likeable is friendliness: people who make others feel good are able to transfer this reaction to their messages[23].

Liking is also linked to other characteristics such as:

- The reception of the message increases if the **recipient** feels in 'debt' to the messenger. This is the principle of **reciprocity**[22] which occurs when people feel under social obligation to return favours to those who deliver a message. Many marketing techniques have been based on this principle. A good example is when a waiter brings a small present, such as sweets, to their customers with the restaurant bill. This simple act significantly increases the tips received, particularly when the gifts are delivered by the waiter themselves, making the gesture feel particularly personal. Transferring this principle to communication means that, for example, caring for the recipient's interests (by listening in advance to their needs and opinions) could be another example of reciprocity[22].

- The credibility of the source of the message ('the messenger') has, predictably, a great influence on the believability of the content delivered. The perception of credibility is linked to the authority that the receivers consider the messengers to have. Symbols of authority (such as uniforms, impressive jobs, titles and degrees) substantiate the perception of credibility, as does dressing well and appropriately[24].

Constructing the message

The way in which the message is constructed and delivered also affects its successful delivery.

1) How to order the messages

Messages reported first are more convincing if the recipients are more rational (System 2) while a message presented last tends to be more effective for people who decide instinctively, using System 1[25]. An explanation for this is that messages delivered at the beginning produce an effect on people who are highly involved with the theme and tune in if they feel that the message is familiar and interesting. Messages presented last work better for those who are less involved with the topic as they will remain longer in their audience's memories.

2) Sense-making vs. sense-giving

These two strategies correspond to different ways of interpreting past events and induce different reactions in audiences. Through sense-making, past events are intertwined to explain a possible history (cause and effect) and to allow the audience to interpret the data and draw their own conclusions. Sense-making is used to convey a sense of control over the future and it is achieved with the use of future perfect tenses (X *will have* delivered Y by Z) and the absence of speculation about the future.

With sense-giving, the intention is to provide the lenses through which the recipients can make sense of and analyse events. Sense-giving is 'directed towards affecting the other's attention and understanding of the issue'[26]. Sense-giving is achieved, for instance, by portraying the past as an unpredictable set of events in order to create a sense of uncertainty and thereby demonstrate the inadequacies of current systems to predict change. This could be a useful tactic to cause a shift in the decision-makers' mental frameworks, helping them absorb information that would otherwise be blocked by cognitive biases[27].

Developing the content of the message

1) The credibility of the message itself is a characteristic of great relevance in forecasting. Researchers have suggested[28] that the types of scenario-changing events which should be of most concern are the ones with high probability and high impact but low credibility outside the community of specialists, as these will be most naturally overlooked. All other events, including the so-called 'black swans' (which often catch the popular attention and which would have a radical impact but a very low probability of occuring) should be of a lesser concern. The argument is that there are so many of these potentially life-changing events that it would be impossible to prepare for them all. The identification and persuasion of key people is pivotal in increasing the credibility of messages. These key influencers are tracked, for example, by marketing agencies using tools and services which are being developed specifically for this purpose. The company Traackr (http://traackr.com) provides just such a service for the identification and persuasion of the key influencers in every field in the social media.

2) Specificity of recommendations

More specific recommendations are generally more effective than generic ones[29].

3) Explicit conclusions or open messages? (See sense-making or sense-giving)

In general, the former are considered to be more effective (sense-giving)[29] but these results are not clear-cut. Some researchers think there are circumstances when allowing an audience to draw its own conclusion is more effective. This approach has worked well, for example, in some advertising campaigns[30].

4) One-sided or two-sided arguments?

One-sided messages are better for recipients who do not need to be strongly convinced of an argument as they are already in agreement in principle but are not well-informed about the issue. Two-sided messages (on the one hand, on the other) are more effective when the audiences hold opposing views or are knowledgeable about both sides of the argument[31].

Delivering the message

1) Timing of delivery

There is some evidence that messages delivered close to the time when the decision will be taken, have a higher chance of being absorbed[4].

2) Repetition helps in improving persuasion, in particular when the content is complex[32].

However, 'Innoculation theory'[33] shows that people can build up 'resistance to arguments'. If an argument is brought forward repeatedly but weakly at first and more strongly later, people are more likely to build up resistance and refute it. In fact, forewarning the recipient about the messenger's main argument might limit the capability of the receiver to be convinced by it. This is particularly the case when the message hits on some issues about which the receiver holds strong (and opposing to that of the messenger) views. If, instead, the recipients are not previously involved with the topic, studies show that early notice about the content of an argument may be unimportant or may even motivate them to change their beliefs[34].

3) The communication channels

Although evidence on this is still controversial, communication media (channels) seem to partly affect the delivery of messages[35]. This effect is secondary compared to the importance of the perception of the messenger's credibility and likeability. So, richer media, such as videotapes and audiotapes, which can carry more cues about the messenger and those which allow feedback and can be personalised (such as forums) are better for conveying complex topics[36]. However, written messages are better when the impact of the message content has to be enhanced over that of the communicator's characteristics[4].

4) Inducing fear or using humour are considered effective techniques in persuasion[4, 37]

Generating conflict (arguments and debates) seems also to be a tactic which can promote the absorption of intelligence[38].

5) Selling strategies

Two types of strategies have long been studied as commercially successful selling techniques, hence their door-to-door sales terminology:

- The 'foot-in-the-door' strategy which entails making a small request which is easy to agree to, followed by a larger one;
- The 'door-in-the-face strategy' which entails making a huge request, which is almost impossible to accept, followed by a more modest request, which is the one carrying the message. Both strategies seem to induce a higher rate of compliance than making a request alone[4].

Putting this knowledge into practice

Building on the research in this area and the results of a workshop carried out with experienced intelligence officers, some techniques and approaches have been developed (below) to address each of the various issues highlighted on pages 18 to 22. It is clear that the experienced TI officers use a variety of techniques which resonate with the findings of the literature to date.

	BARRIERS TO COMMUNICATING INTELLIGENCE	SUMMARY OF TACTICS SUGGESTED BY INTELLIGENCE OFFICERS
Recipient	Cognitive distance	• Give a sense of urgency • Develop coalitions
	Anchoring and adjustment	• In interim communications, only talk about the process not the content • Formalise the process so you can always refer to it • Minimise shock by pre-emptive networking • Take care to set the right expectations • Remain agnostic • Show always an even number of scenarios
	Intelligence distortion	• Identify key translators (coalitions) • Develop a short and clear executive summary • Use case studies/examples
Messenger	Lack of kudos	• Get access to external messages and challenge the findings • Leverage on the internal knowledge • 'Externalise' internal system (put it to work for external people too) • Promote value of services
	Repercussions for the messenger	• Establish trust – understand the audience, provide regular updates • Richness of data (case studies) • Lobbying • Face-to-face communication

Results from the workshop

Understand the context before delivering the message

To develop a successful strategy for communicating the insight, it is important to carry out an in-depth review of the organisation's context. Below is a checklist of the key questions which could be asked. This helps build an understanding of the relative positions of – and cognitive distance between – the messenger and the recipient. Another useful technique for exploring context is cognitive mapping. Cognitive mapping techniques can help identify subjective beliefs and visualise them externally. It does this by eliciting individual's statements about a particular concept, drawing out the links with other concepts and then representing these relationships as a 'map' on a single page. A good introduction to cognitive mapping is the article by Jacky Swan included in the Recommended Reading section on page 22.

TYPE OF KNOWLEDGE	QUESTIONS
People	Who will be affected by the issue? Who has experience of the issue? Who cares about the issue? Which groups can help with advocating for this issue? Which groups might object to this issue? Does this issue threaten anyone or any group? Who has decision-making authority in relation to the issue? Who has the power to promote or to hinder this issue? When will people be ready to hear about this issue?
Organisational culture	What kinds of data do people use? (In particular, what kinds of data do important people use?) How are data normally presented? How are arguments made against an issue? What kinds of protocols are followed? What kinds of meetings or social gatherings are considered legitimate decision forums? How much time does it usually take to 'sell' an issue? Have similar issues been 'sold' (or failed) before?
Strategic	What are the organisation's goals? How does the organisation plan to achieve these goals? What are the critical strategic issues for top management? What is our broader competitive asset?

Adapted from Dutton et al [39]

Reducing cognitive distance

Two examples of cognitive distance were described earlier:

- Short attention span as the decision-makers were too busy or felt threatened by the scenarios brought forward by intelligence officers, in particular those which would require a radical change in decision-making patterns.
- Unexpected intelligence, brought forward on the initiative of the intelligence officers and which is outside the scope of their requirements.

Tactics to reduce cognitive distance are shown below:

RECIPIENT	RECIPIENT-MESSENGER RELATIONSHIP	MESSAGE STRUCTURE	MESSAGE CONTENT	MESSAGE DELIVERY APPROACHES
Highlight similarities with more familiar scenarios and refer to any of their prior decisions which are consistent with the analysis.	Work on building a relationship with the recipient, using the tactics highlighted on page 13.	If the decision-maker is not yet involved with the issue, leave the key message until last. It will remain in the memory for longer.	Be specific on potential outcomes rather than leaving the consequences of the scenarios generic.	Deliver the message close to the time when the decision will be made.
Show that there is consensus about this issue, particularly within their trusted entourage.	Build your own credibility (see page 21).	Present an argument by showing how the analysis has been done in a way, with causal links and implications for the future, to give a sense of control over the future and minimise any feeling of powerlessness.	Show both sides of an issue (the outcome if X happens vs. the outcome if it does not happen) to indicate a balanced analysis.	Be careful with repetition and do not bring an argument forward until there is a strong case for it. Do not forewarn: "I am working on X."
Phrase the issues in a negative way showing the potential losses if the scenario is not given due consideration.	Increase the credibility of the scenario by identifying the key thought leaders in the firm and persuade them first.	Reduce the time distance (make the future present), for example by using 'time-travel techniques' such as war-gaming* and premortem techniques**.	Use vivid case studies rather than statistics on their own.	Discussions increase familiarity with an issue. Once the decision-making process has started promote them (for example, by organising roundtables on the issue) to allow both sides of the argument to be brought forward.
Do not show your opinions (remain agnostic).				

*War-gaming is when you role-play your competitors' strategies.
**Premortem techniques: when on the brink of a major decision, ask the key stakeholders to imagine that a year has passed since the decision was implemented and it has been a disaster. Explore the possible scenarios, and why they would have been such a disaster in order to challenge preconceived ideas.

Addressing anchoring and adjustment issues

The second issue which emerged in the case studies related to the undue influence which interim results can have on the perception of their relevance. Tactics to address these issues are shown below:

RECIPIENT	RECIPIENT-MESSENGER RELATIONSHIP	MESSAGE STRUCTURE	MESSAGE CONTENT	MESSAGE DELIVERY APPROACHES
Formalise the process of intelligence acquisition at the start and inform the decision maker about it. Refer to it during all interim communications.	Work on building a relationship with the recipient, using the tactics highlighted on page 13.	Convey the sense of uncertainty. In other words, provide a framework for the decision maker to understand the data showing that there is still confusion and no clear answer – and do not attempt to give an answer until the analysis is complete.	Be generic on potential outcomes.	Deliver the message close to the time when the decision will be made.
Do not give the decision-maker information to decide until the full picture is needed. Talk about the process followed to arrive at the full picture rather than the results until the process is complete.	Build your own credibility (see page 21).	Use an even number of scenarios. Be aware that things said first and last can be perceived as more relevant so consider reshuffling the order in the recap. Do not use numbers or letters to mark each scenario – symbols might be better as no hierarchy is implicit.	Show an even number of scenarios and frame them in the same way – for example, all in terms of opportunities.	Promote discussions (organise roundtables) on the issue to allow both sides of the argument to be brought forward.
Get the decision maker in the same room as people with similar seniority but who back different scenarios. Possibly distribute different versions of the same results to the decision-makers.		Refer to equally authoritative sources for each scenario.	Show the two sides of the argument (if it happens/if it does not happen) to indicate a balanced analysis. Shuffle the order: 1. If it happens/does not 2. If it does not happen/does happen	
Do not show your opinions (remain agnostic).			Use open messages to allow each individual to make their own inferences	

Intelligence distortion

The third issue to emerge from the case studies related to the distortion of intelligence messages when communicated indirectly to the ultimate decision-maker via other people's networks. Tactics to reduce this problem are shown below:

RECIPIENT	RECIPIENT-MESSENGER RELATIONSHIP	MESSAGE STRUCTURE	MESSAGE CONTENT	MESSAGE DELIVERY APPROACHES
Analyse the stakeholder landscape (influence vs. interest) to identify the key dissemination paths with which will reduce the risk of distortion.	Work on building a relationship with the final recipient, using the tactics highlighted on page 13.	• Develop a short, clear executive summary. • Use bullet points. • Clear branding and acronyms are easily transmitted to other people and thereby gain acceptance.	Use 'counterfeiting' techniques such as branding, acronyms and slogans which are easy to remember.	Avoid delivery via means which could be easily tampered with/copied outside the context (such as slides) in favour of others which would need a great effort to change, such as short audio-visual outputs illustrating key points.
Identify the people who would be best placed to communicate the message to other parts of the organisation.	Build your own credibility (see page 21).		Be specific about the implications, leaving out the most generic and speculative issues which could be used to support a variety of messages.	Use repetition to reinforce the key story.
Identify the consensus network and build on it.			Show causality and link facts into a story. Only deliver one message at a time.	

Lack of kudos

The lack of credibility of the messenger was another key issue to emerge from the case studies. Tactics to help overcome this barrier are show below:

RECIPIENT	RECIPIENT-MESSENGER RELATIONSHIP	MESSAGE STRUCTURE	MESSAGE CONTENT	MESSAGE DELIVERY APPROACHES
Analyse the stakeholder landscape (influence power vs interest) to identify the key similarities or recipients with messengers	Be as pleasant as possible by always being accurate in personal presentation, show concern and understanding of recipients' personal issues.	Show both sides of the argument to increase trustworthiness.	Refer to authoritative sources.	Deliver in person, or using media (such as audio-visual) which shows the person delivering the message.
Identify the trusted network of the recipients and work on building credibility with them.	The decision-maker will always feel hierarchically superior, hence use as many symbols of authority as possible, both related to past achievements, other people's acknowledgements of your work, ethical behaviour and personal status.		Be specific in the recommendations and link them to what you know of the decision-maker (make it special and personal).	Meet as often as possible.
	Listen first. For the principle of reciprocity they will feel obliged to listen back. Increase interaction with the recipient and 'listen in' to their issues		Leverage the internal knowledge.	Make careful use of humour.

Repercussions for the messenger

Possible repercussions for the messenger was the final issue to emerge from the case studies. Tactics to address this issue are shown below:

RECIPIENT	RECIPIENT-MESSENGER RELATIONSHIP	MESSAGE STRUCTURE	MESSAGE CONTENT	MESSAGE DELIVERY APPROACHES
Identify/build consensus in the decision-maker's network.	Work on building a relationship with the final recipient, using the tactics shown on page 13.	Show both sides of the argument to increase trustworthiness.	Make reference to authoritative and complete sources.	Regularly update the decision maker on progress.
Understand the recipient's point of view.	Build your credibility (see page 21.)	Pre-mortem exercises could be used to anticipate the consequences of a decision and reach agreement on it as a group.	Use sense-giving to provide the lens for the decision-maker to make their own conclusions – show, don't tell.	
	Ask credible external sources to act as the messenger. For example, ask a consultant to deliver the news.		Don't use the first person – it is the data doing the talking.	

Conclusion

Communicating technology intelligence to decision-makers is not a straightforward task. As human beings, we are all predisposed to behave in ways which are likely to create barriers between messengers and recipients. The aim of this practice guide is to help practitioners understand some of the reasons for the difficulties they face so that they can be more alert to potential challenges and adopt some practical steps to help overcome them.

The research for this guide was carried out as part of a project for the IfM's Strategic Technology and Innovation Management (STIM) consortium and was based on interviews with experienced intelligence officers and a thorough review of the academic literature in the field.

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Published by the University of Cambridge Institute for Manufacturing
17 Charles Babbage Road
Cambridge CB3 0FS
United Kingdom
www.ifm.eng.cam.ac.uk

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Title: *Communicating technology intelligence: a practice guide*

ISBN: 978-1-902546-49-0

First published in Great Britain in 2015

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ISBN 9781902546490