

A Simple Solution to Complex Problems

SOLVABLE

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Part I FRAME – Understand your problem



Remember you need the following components to solve your problem¹:

- The overarching question that summarises your problem the quest
- Various *alternatives* to answer that question
- *Criteria* that will help you identify which of these alternatives you prefer
- The *evaluations* of each alternative on each criterion.

Framing helps you get to that first piece, the quest. Developing a good frame is harder than it looks. It is usually best achieved as an iterative process. To guide you, Chapter 1 helps you identify an initial quest and contextualise it. Chapters 2 and 3 help you enhance the frame by fixing any misalignments and refining your quest.

Through this journey you will likely realise that, at the outset, you only have a superficial understanding of your problem. This is a common pitfall – and a dangerous one. Fixing a symptom is often much less effective than fixing the cause of the pain. To sidestep this trap, Chapter 3 will show you how to diagnose your problem – that is, identify its root causes – and use these insights to improve your quest.

By the end of Part I, you will know how to synthesise your problem in a clear and concise frame that includes a protagonist (the *hero*), a goal that the hero wants to achieve (the *treasure*), an obstacle between the two (the *dragon*) and the key question you want to address (the *quest*) (see below).

A good frame is clear and concise

Hero: Solveable Media provides marketing services to the US health care industry; its revenues have been constant for the last five years. I am the CEO of Solveable Media.

Treasure: I want to increase Solveable Media's revenues by 10% annually over the next five years.

Dragon: However, Solveable Media's current sales force doesn't have enough people.

Quest: How can I increase Solveable Media's revenues by 10% annually over the next five years, given that Solveable Media's current sales force doesn't have enough people?

Chapter One

Define your quest – Create an initial frame

Framing your problem means articulating what your problem is. To help you do so, a frame provides with three main parts: (1) a substance part; (2) an engagement part (with information on the stakeholders involved); and (3) a logistics part. Let's get started on the first part.

Borrowing from archetypical narratives in storytelling, you can capture the substance of the problem by summarising it in a single overarching question, the *quest*, that you contextualise with a clearly defined protagonist (the *hero*),



a goal that the hero wants to achieve (the *treasure*), and an obstacle between the two (the *dragon*).

The managers and executives we work with often start seeking solutions without having properly framed the challenge they face. 'We know what we want', they think, 'so let's not waste time on framing. *I* am in the business of getting things done'. Sensible approach! After all, nobody wants to get to a solution more slowly than needed.

Yet, like it or not, how a problem is framed matters (see below).² People tend to underappreciate what they don't know, and poor framing partly explains why a large proportion of strategic decisions fail.³ First, if you frame poorly, you risk addressing a symptom, or a perceived problem, rather than the underlying disease.⁴ Consider a patient who goes to the doctor because of a headache. The doctor might prescribe an aspirin, which will mask the pain. This is fine if the headache results from too much partying the night before, but if our patient's headache is only a symptom of a bigger problem, say, a tumour, treating the symptom might lead to disastrous results down the line. That's why physicians conduct proper diagnoses before prescribing, a practice that we recommend adopting for managerial problems.

Framing matters

Two monks, addicted to smoking, often debated whether it was sinful to smoke during prayers. Eventually they decided to independently approach the abbot to ask him and met afterwards to discuss the outcome.

The first monk reported a disastrous meeting: The abbot had refused his request and had given him extra penance to do. 'What did you ask the abbot?' asked monk #2. 'I asked him if it was OK to smoke while praying.'

'Funny', said monk #2, 'I had a great meeting: The abbot granted my request to smoke and commended me on my worthy attitude!' 'Good God', gasped monk #1, 'But, what did you ask?'

'I asked him if it was OK to pray while smoking.'5

Second, poor framing also creates problems when you ask your stakeholders to support your conclusions. If you haven't considered their perspectives in your framing, expect struggles when 'selling' them on the merits of your approach.

An effective frame is also critical because you know more than your stakeholders. Working on your problem for days, weeks or months, you will easily presume that they know more than they do. We often see this perception gap, called the *curse of knowledge*, between project teams and their stakeholders. In 1990, Elizabeth Newton, a psychology PhD student at Stanford, conducted an experiment where she separated a group of people into 'tappers' and 'listeners'. Tappers had to pick a well-known song, such as Let it be or Happy birthday, and tap out the rhythm with their fingers on the table, while the listeners had to guess the name of the song. The success rate was abysmally low: Only 2.5% of the 120 songs that were tapped out were guessed correctly. The twist is that prior to tapping out the song. Newton had asked the tappers what the probability was that the listeners would guess correctly. They predicted that 50% would get it right.⁶ You wonder why they were so overconfident? Well, try out the tapping game yourself. It's hard to imagine that someone else won't be able to identify a song when you hear it play in your head.

Of course, an intuitive response to the blank stare of our counterpart is to tap harder. Does this remind you of what happens in some team meetings when people don't manage to make themselves understood? Being aware of this curse is a good reminder that what appears obvious isn't necessarily so. Luckily a good frame can help.

So, how do we start framing? Research and our experience with hundreds of executives show that using stories can help.⁷ In particular, well-told stories are easy to comprehend, because events causally relate to one another; they are interesting, because of the tension they create and resolve; and they are easy to remember, because of their causal structure.⁸ You can frame your problem by summarising it in the form of a story that has a protagonist (the *hero*), an aspiration (the *treasure*), and an obstacle between the two (the *dragon*). Putting these three elements together creates a *quest*: how should [the hero] get [the treasure], given [the dragon]?

//////// FIND YOUR QUEST ////////

A good way to frame is to start from the end – with the quest. The quest is the *one* overarching question that your solution efforts aim to answer. Once you answer your quest, you have a clear strategy for moving forward, and 'all' that's left is to implement it.

Phrase your quest as an open question that starts with *how*. Closed questions can be answered in a binary yes/no manner; for instance: Should we invest in this IT project? In contrast, open questions help us consider more alternatives: How should we invest to improve our IT infrastructure? Every now and then, it might be judicious to start your quest with *what* but, in our experience, these cases are extremely rare. These *what* questions as well as other open questions – *who, where, when* – can usually be formulated as *how* questions (for instance, 'what is the best strategy to increase our revenues by 10%?' can be rephrased as 'how should we increase our revenues by 10%?').

The great thing about a well-phrased quest is that answering it provides a clear strategy.⁹ Answering the quest tells us what needs to be implemented – instead of yielding other questions that require further analysis. For instance, if you want to improve your company's profitability, 'how can we increase our profitability?' is an appropriate quest, but 'how do customers buy our products?' isn't, because answering it would only yield an intermediary step, not a solution.

Although this approach is extremely powerful, it hinges on the quest being 'well-phrased', which is why we devote much effort to phrasing our quest carefully.

Examples of quests from the executives we have worked with are wide ranging, including:

- How should we increase sales for product X, given that they have dropped over the past two years?
- How should we enter market Y, given that we would face wellentrenched competitors?
- How should I progress in my career, given that I have high costs to cover?

To help you write a good quest, focus on three key characteristics: its type, its scope, and its phrasing of the question.

- A good *type* means that answering the quest yields potential solutions; it doesn't just lead to more analysis. To help you do so, start your quest with a 'how' (instead of *why*, *who*, *what*, or *where*).
- A good *scope* means that the quest is neither too narrow nor too broad.
- Finally, good *phrasing* means that the quest is self-contained and easily understandable even by a novice when reading it once.

Out of these three characteristics, finding a good scope for your quest can be particularly challenging. Not convinced? Let's see. What quest do you think that our friend Charles, in the drawing below, has set for himself? You may want to pause for a minute and write it down. Writing it down is actually important, because it helps you be accountable, so we strongly advise you to take the extra seconds to do it!



When we ask this question in class, participants often answer, 'how do I make my door safe?' We agree. This is probably the quest that he has set for himself, but is this the quest that he should have set for himself? Clearly not, because the weak point in his house isn't the door, it's the floor. So maybe Charles should ask 'how do I make my house safe?' But why stop there? Why not ask 'how do I make my life safe?' or, for that matter, 'how do I make my life better?'

There are obvious implications to choosing the scope of your quest. Choose too narrow a scope and you risk being ineffective, missing the problem altogether. Choose too wide a scope and you risk being inefficient, dedicating limited resources to addressing issues that add little value. Your objective is to be somewhere in between these two extremes, with an appropriate scope.¹⁰



Taking into account Charles' challenges in scoping a quest, take a minute to think about a first quest for one of the complex challenges that you are facing. How broad or narrow should it be? Which elements should be included and which ones left out to make it comprehensive yet manageable? Take a first informed guess, and remember that you will be able to further refine your quest throughout the rest of the FrED process. In short, don't aim for perfection, but get things started. To help you, here are a few more ideas.

Be attentive to weak signals

Think of taking off for a long-distance flight, say from Mumbai to Rome. Any deviation in your heading during the first moments of the flight might lead you to Algiers or Moscow a few hours later. The same logic applies to your project: If you orient yourself poorly at the outset, you will probably not end up where you'd like. In other words, in a quest, every word counts (see box 'Framing matters' above).

Louis XIV is *really* thirsty – or why in framing the quest, every single word matters¹¹

In 1661, Louis XIV was 23 and eager to show his power. To do so, he ordered the construction of a magnificent palace in Versailles with lots of fountains. At its peak, Versailles and its gardens had an astonishing 2400 fountains.

The king enjoyed showing foreign ambassadors the *grandeur de la France* through the abundance of water in his fountains. Back then, access to water was a luxury. However, hydraulics hadn't improved since Roman times. To transport water, we only had gravity; the destination needed to be lower than the source. Herein lay the problem; Versailles was above nearby water sources and it needed lots of water. Three hours per day, during the *Grandes Eaux* spectacle, the palace consumed an astonishing 6300 m³ per hour (that is equivalent to draining more than two Olympic swimming pools every hour!).

So, in 1662, engineers installed a horse-activated pump that brought 600 m³/day. A good start, but not enough. A year later, they installed bigger horseactivated pumps. Then they built windmills and dug reservoirs. The capacity increased but remained nowhere near enough. Pushed by Louis, the engineers upped their game.

In 1668, they rerouted the Bièvre river and added more windmills. Seven years later, they built a 1500m-long aqueduct. Fountains could now operate several hours per day and Versailles was using more water than Paris. Yet, it was still not enough.

So, engineers proposed to pump water up from the Seine River. It was bold, considering that the river was ten kilometres away . . . and 140 m *below* Versailles. They created the gargantuan Machine de Marly, which entailed diverting part of the Seine with two dams and building the machine, a

complex system with 14 enormous wheels, each 11 metres in diameter, that powered 220 pumps taking water 165 metres high. The effort required 1800 workers, took three years, and cost an astonishing 5.5m livres (\in 750m in today's money). Dubbed the most complex machine of the seventeenth century, it required 60 people to operate. Its theoretical capacity was 3200 m³/ day, which was astonishing . . . but still not enough.

So, the quest for water continued. In 1680, the king's engineers dug lakes and interconnected them with a 34 km artificial river and in 1685, work started on an 80 km-long long canal. The project was pharaonic – 30,000 men worked on it! Alas, in 1689, France was at war against the League of Augsburg and was going bankrupt. Work on the aqueduct stopped; it would never resume.

Bringing water to Versailles ended up costing one third of building the palace. Despite their best efforts, engineers never brought enough water.

So, how did Versailles operate the fountains without enough water? What worked where 30,000 men and a pharaonic budget failed?

Whistling. Instead of operating fountains continuously, the king's fountaineers whistled. Upon hearing a colleague whistle, a fountaineer knew that the king was getting close to his fountain. He would then quickly open up the water flow, enabling the king to point out the beautiful waterworks to the mesmerised ambassadors accompanying him. All it took was for the fountaineers to warn his next colleague with a brief whistle and cut off the water in his own fountain the moment that the king's party was out of sight.

Getting enough water to Versailles was a problem that engineers never fully cracked as they focused on answering: *How should we bring sufficient water to the king's fountains*?

But what if, instead, they had asked: *How should we bring sufficient water for the king's fountains to achieve their desired effect?*

The two questions are nearly similar, yet they lead to vastly different solutions, illustrating that in a frame, every single word counts.

In practice, we shouldn't delegate framing to our autopilot (our System 1 thinking) but continuously check that we address what we *actually* want to achieve (System 2 thinking), which requires us to be attentive to weak signals.

Part I: FRAME – Understand your problem

Auto racing legend Juan Manuel Fangio mastered weak signal detection. Fangio qualified first in the 1950 Formula One Monaco Grand Prix and therefore started the race in pole position. Powering through the first curves, he didn't realise that nine cars behind him had crashed, creating a pileup that blocked the road. Soon he came around the track, fast approaching the crash site hidden by a blind corner, when he noticed yellow flags waving, a sign to be cautious. What really caught Fangio's attention though was a much subtler sign. 'I came to the harbour front and I could detect agitation among the spectators. They were not looking at me leading the race, but were looking the other way. I braked very hard' he said, instinctively raising his hand as a warning sign to following drivers.¹² Fangio went on to win that day and eventually collected five World Championship titles; an unprecedented feat at a time when Formula One accidents were often lethal and careers cut short by horrific accidents.

For Fangio, detecting weak signals while racing a Formula One car down the narrow streets of Monaco was a matter of life and death. Fortunately, most of us don't operate under such unforgiving conditions, and we don't need to be nearly as good. Still, detecting weak signals is useful when framing complex problems. Re-reading a quest, we might get a nagging feeling that something is odd. Maybe it's not saying exactly what we'd like it to say, even though we can't quite articulate what is off. This is a weak signal, and the tools that you will acquire in this chapter and the next will sharpen your ability to detect them.

All of this takes effort, so it is tempting to bypass developing a good quest. Don't. Because whatever efforts you invest early in the solution process can pay huge dividends.

Decision-making happens throughout the process

Your problem framing sets the stage for decision-making.^{13, 14} In theory, we get to deciding after framing the problem and exploring alternatives and criteria, in the form of a climax where the fundamental components of the process – the quest we're addressing, the alternatives we've created, the criteria that matter to us, and the evaluations of each alternative on each criterion – come together.¹⁵ Part III of the book covers this step of the

process, discussing in detail how to make thoughtful decisions. In practice, however, deciding doesn't just happen in the third step of FrED. Rather, deciding permeates the entire process.

When framing, you need to decide what your quest is and what it is not. You also need to contextualise it, deciding what belongs in that frame. At this stage, you already make critical decisions, including which stakeholders to onboard onto your problem-solving team, which to consult, which to inform, and which to leave out.

Then you need to decide how to deploy your limited resources during the problem-solving process. Should you conduct a full-blown diagnosis or take the risk to bypass it? How extensive should you make your search for alternatives? How many of these alternatives should you formally evaluate? What criteria should you include and how should you weigh them? What analysis is needed to evaluate the alternatives? How will you craft your recommendations? All these decisions profoundly affect your analysis, so let's look at how to be thoughtful about making them – particularly those affecting your frame.

DON'T AUTOMATICALLY USE THE FIRST QUEST THAT COMES TO MIND

Odysseus (or Ulysses in English), a legendary Greek king of Ithaca and the hero of Homer's epic poem, wanted to hear the sirens' songs, but he knew he wouldn't be able to resist them. So he ordered his men to tie him to the ship's mast to prevent him from jumping overboard, to put wax in their ears to protect them from the songs, and to keep the ship's course no matter what. Conscious of his limitations, Ulysses took pre-emptive measures.

To this day, a Ulysses contract enables the contractor to bind herself in the future to a pre-set course of action if she suspects she might be unwilling or unable to do so on her own volition.¹⁶ Ulysses' tale illustrates what research has shown: such commitment devices can be effective ways to

help us protect against our imperfect selves.¹⁷ Given how tempting it is to quickly jump into solving the problem before even understanding it, we need to tie ourselves to the ship's mast. Therefore, if, like Ulysses, you doubt that you can resist the lure of jumping to a solution prematurely, make your own Ulysses contract by considering various quests before committing to one, which you can do in a diverge–converge sequence:

- Step 1 Diverge: First, to consider various quests, you may want to ask colleagues co-solving the problem with you to each identify two to five possible quests *independently*. You may do so with brainwriting, which research has shown is often more effective than brainstorming.¹⁸ To do so, ask everyone to write at least two potential quests two because it's frequent for everyone to think about more or less the same quest by default; so if you only ask for one, you might get little diversity of ideas. Ask them to do their initial thinking independently, by writing down their answers, to avoid contaminating others' thinking (see the anchoring bias in Introduction). You may then collect the answers and circulate them for everyone to generate a second round of ideas. For the Odysseus contract part, commit to not progress before going through, say, at least three rounds or dedicating one hour to the exercise. In other words, give yourself licence to diverge in your thinking.
- Step 2 Converge: Second, to focus on the best quest, compare the potential quests: What are their benefits and drawbacks? Are there some that you can eliminate? Could you combine various into one? Once you are reasonably happy with your preferred quest, write it down and move to the next step contextualising it.

Identifying a quest is an important milestone, because you have reduced your problem to a single question. Now is a great time to take stock: Would answering that quest give you a strategy that, coupled with skilful execution, is likely to solve your problem? If so, fantastic, you're off to a great start! If not, you may want to invest a little more in this step.

//// CONTEXTUALISE YOUR QUEST ////

Now that you have identified a worthy quest, contextualise it by putting it into a concise frame, using the Hero-Treasure-Dragon-Quest sequence. The *hero* includes all the important information needed to introduce the part of the universe of interest, including the main protagonist, who might be a single individual – in fact, it's usually you! But the hero can also be a group of people – a team or an organisation. In movie parlance, the hero is the establishing shot. Strive to include as little information as possible but as much as needed. Let's see how that works in Louis' challenge of bringing water to his Versailles palace.

Hero: In the 1660s, King Louis XIV is building the palace of Versailles with hundreds of fountains, which he wants to use for his own entertainment and for impressing foreign dignitaries. I and five colleagues ('we') work for Louis XIV as water engineers.

In this example, the hero is the team of water engineers, *not* Louis (which, had he known, might have been devastating to him, being the Sun King and all).

Next, present the hero's aspiration, the one overriding goal that she wants to achieve, be it financial success, market expansion, world peace, or a happy life. That aspiration is the *treasure*. In our example, the treasure might be:

Treasure: We want to bring sufficient water for the king's fountains to produce their desired effect.

Note that at this stage all is well in your story. With the hero and treasure, you have only shown the part of the universe that you want to focus on. In screenwriter Robert McKee's words, a story 'begins with a situation in which life is relatively in balance'. Things are good, and daily activities occur more or less how the people of interest want them to.¹⁹

In other words, there is no problem yet! Equally important, there is nothing that reasonable people who are familiar with your issue would dispute. Everything is more or less as we would expect. One simple way to check that your [hero + treasure] is non-problematic is to validate that it doesn't contain any 'but' or 'however'. Another check is to envision yourself presenting it to your key stakeholders. Would everyone nod in agreement, or would there be pushback? If so, you probably need to iron out a few things.

Now, any good story with a hero and a treasure also needs a *dragon*. The dragon is the obstacle that prevents the hero from getting the treasure. In storytelling, a dragon is the inciting event that throws life out of balance. To clearly surface this tension, introduce your dragon with 'however'. All was well in the universe ([hero + treasure]); *however*, a dragon is throwing a wrench in the works, so to speak.

Dragon: However, it is difficult to bring sufficient water to Versailles.

The dragon creates the tension in the frame that will be the launch pad for your problem-solving efforts. If there is no dragon, there is no tension, and therefore no problem to solve!

For any problem, there are many potential dragons, so consider various ones before selecting the one that creates the most relevant tension for you and your key stakeholders.

Deal with multiple dragons

You will often find yourself in a position where you have more than one problem. Costs might be spiralling out of control, *and* the sales team might not be performing well, *and* your technology platform is outdated. In other words, you are facing multiple dragons; let's call those baby dragons (see below).

There are two ways of dealing with baby dragons. One is to find an umbrella problem that summarises all of the baby dragons – the big dragon. You can then write the frame with that big dragon. Solving your problem would take you one FrED process with that big dragon at the centre of the frame.

Alternatively, you can separate the problem into smaller ones. You would then write a frame for each baby dragon giving each its own FrED process. That means that you would have various quests, one for each baby dragon. Like movie sequels. But, just as sequels aren't released at the same time, this second approach typically means that you will address the baby dragons one at a time, in separate problem-solving efforts. Irrespective of the approach you choose, remember the unicity requirement: it's *one* hero, *one* treasure, and *one* dragon; otherwise it's more than one story.²⁰

Phil sorts out his baby dragons

Phil participated in one of our programs at IMD. He was unsure how to formulate his frame. 'The problem I would like to tackle is: Should I invest time, money, and energy in starting my own business and if so, what business should I start? This problem has two parts: Should I start a business and, if so, what type of business.' Phil is entirely correct, he is asking two questions, which violates our unicity requirement.

Phil's statement could be turned into a single question: 'How should I start my own business, given that I am concerned about the associated risk, money and time commitment?' However, this framing does not address whether Phil should be starting a business in the first place. As Phil pointed out: 'I'm not sure if this new framing captures the essence of the problem, especially the element of "should I do it in the first place?". Likewise, I'm not sure if my two-part challenge – should I do it and if so, how should I do it – can be combined effectively into one, or if it should be separated into two challenges.'

But it doesn't have to be that way. Upon further exploration, Phil found a quest that included both elements: 'How should I invest my next five to ten professional years, given that I'm not realising my life's dream in my current role?'

Summarising his dragons in a single statement – 'I'm not realising my life's dream in my current role' – enabled Phil to clean up his thinking while setting up the ground for evaluating the trade-offs of each potential path forward.

Summarise your problem in a single overarching question: your quest

Bringing together the hero, treasure, and dragon, we inevitably get back to our quest, which is best expressed as, 'How should [the hero] get [the treasure], given [the dragon]?' For Louis' engineers, the quest might be:

Quest: How can we deliver enough water to the king's fountains to keep him happy, given that it is difficult to bring water to Versailles?

Other examples of quests include:

• How should our business unit increase sales, given that our sales team is underperforming?

- How should we enter the Chinese market, given that we don't have any experience in international expansion?
- How should we stop our fiercest competitor from entering our core market, given that they are operating with a business model that is much more low cost?
- How should Dave Calhoun return Boeing to success as a leading aircraft manufacturer, given that the 737 Max crisis has drastically reduced trust in Boeing?
- How should I invest my next five to ten professional years, given that I'm not realising my life's dream in my current role?

The above quests span a wide range of topics that, on the surface, look unique. If you don't look beyond these surface features, addressing them requires starting your solution process from scratch each time, which increases the effort needed and decreases the probability that



you can adapt innovative ideas you've seen elsewhere to that new problem.

On the other hand, if you learn to recognise commonalities across problems – in their structure or in the solution process – you will drastically improve your abilities to solve even problems you know nothing about. So there is value in framing problems in a consistent manner to make similarities more noticeable. One way to do that is to formulate your quests with a consistent structure: 'How should [the hero] get [the treasure], given [the dragon]?'²¹

At this stage, you might want to take a crack at framing your problem. Below is a template to fill out your Hero-Treasure-Dragon-Quest (HTDQ) sequence. You can use it here, or head over to the Dragon Master[™] app (accessible at dragonmaster.imd.org) and frame your problem there.



/// COMPLETE THE FRAME: DEFINE /// ENGAGEMENT AND LOGISTICS

Recall that a good frame has three parts: substance, engagement, and logistics.



So far, we've focused on the Hero-Treasure-Dragon-Quest sequence, which constitutes the substance part. To complete the frame, we also need critical information about the stakeholders involved (engagement) and the logistics of our problem-solving efforts.

Identify the stakeholders

Flying planes used to be the business of the captain, assisted by the first officer and, in the old days, the flight engineer. Over the last five decades, however, the aviation industry has redefined what it considers a crew to account for the fact that, at times, flight attendants, dispatchers, fuellers, loaders, gate agents, and ground crews can all provide information that is unavailable in the cockpit. Although the captain remains in charge of decisions, one of her critical responsibilities is to decide *whom* to involve and *when* to do so to make the best possible decision.²²

But if engaging more and different people can help, more engagement isn't *necessarily* better as it can lead to wasted time.²³ As a leader, you simply can't consult everyone for every issue without paralysing the organisation. So, whom should you engage when?

To start, it's useful to identify two sets of stakeholders:

- **Core stakeholders** are the people co-solving the problem with you and those with formal decision power on the process or its outcome. They include the individual(s) responsible for making the decision, who 'own the problem'.²⁴
- Other key stakeholders are the people who aren't actively involved in the solution process but who are impacted by it or who can influence the success of the solution.

With limited resources, you might be inspired to engage these groups differently, being more active with core stakeholders. In our experience, it is useful to listen more than you speak, so that you can understand their perspectives, which might translate into new ideas. Also, when you are speaking, don't just share *what* you propose to do but also *why* you think so, to help them understand how you reached your conclusions.

It might be useful as well to assign roles to the people you engage judiciously, giving some a chance to opine, others an actual vote, others still a formal veto.²⁵

Who is your PM?²⁶

Airline captains are trained to create environments where crew members feel comfortable asking questions, stating opinions, and challenging authority when necessary. To promote these behaviours, captains learn to, as early as possible in the flight, create opportunities for crew members to provide information and use these opportunities to praise the person.

In addition, crew members are trained to speak up no matter what environment the captain creates. This behaviour goes hand-in-hand with a re-thinking of the role of the first officer. In the old days, the captain was king with full power of decision, the pilot flying (PF) and the co-pilot was the pilot not flying (PNF). This denomination has lately been replaced by PM, for 'pilot monitoring', implying that even if not flying the plane, the PM is an active participant in crew operations with a shared responsibility for the safe conduct of the flight. The PM has many responsibilities to support the pilot flying, but chief among those is to observe the PF's performance to detect any threat. To promote this sharing of responsibilities, pilots are evaluated as crew.

If you are the PF in your problem solving, who is the PM who has your back?

Sort out the logistics

The last part of the frame is to spell out the logistics of your effort, identifying how much time, money, and other resources you are ready to dedicate to it. Committing this information in writing forces you to think it through. It also helps document your position at the onset of the effort, knowing that it might evolve along the project but that it should evolve as the result of a conscious decision. Finally, it helps create shared understanding across the team – what psychologists call a shared mental model (SMM) – which has been shown to support team effectiveness.²⁷

Below is a template for capturing this information.

Engagement:

Core stakeholders The people co-solving the problem with you and those with formal decision power on the process or its outcome (e.g. your boss, your client)	[To be filled]	Example: XYZ's chief marketing officer (CMO) will co-solve.
Other key stakeholders The people not actively involved in the process but who are impacted by it or can influence the project	[To be filled]	Example: YZ's current sales team. XYZ's C-suite executives (beside the CMO).
Logistics:		

Time & budget The time and budget you are you willing to invest to solve the problem	[To be filled]	Example: We need a plan within two months. We will dedicate up to \$50k for developing the plan (to do market research, buy industry reports, etc.).
Other resources Other resources you will make available for the project	[To be filled]	Example: Kyle, a junior analyst, and Aymee, a project leader, will be assigned 100% to the project.

Daniel Kahneman and Dan Lovallo highlight the dangers of considering problems from the inside-out perspective, where we treat each as a one-off.²⁸ Instead, they suggest that we adopt an outside-in approach, where we treat the problem as an instance of a broader group.²⁹ Enlisting others might help you do that, as they will bring different perspectives. Others will also see your blind spots better than you can.

Seeking candid external opinions requires creating a space where people are encouraged to disagree, so that issues are vigorously debated. Research in how effective airline crews do so might be a good guide (see box below).

Create a safe space like an exemplary airline captain

Errors that are shared by some or all of the members of a team might stem from a failure to detect, a failure to indicate, or a failure to correct.³⁰

Airline crews sometimes meet for the first time only minutes before working together, and these pre-flight briefing sessions set the tone for the team interactions.³¹ Leadership specialist Robert Ginnett analysed how effective airline captains establish a safe space.

Effective captains demonstrate their adaptive leadership styles through three activities during pre-flights. They first establish competence, for instance, by judiciously organising the meeting.

Second, they acknowledge their own imperfection by addressing some of their vulnerabilities or shortcomings. For instance, Ginnett cites a captain's statement ahead of a crew session in a simulator, 'I just want you guys to understand that they assign the seats in this airplane based on seniority, not on the basis of competence. So anything you can see or do that will help out, I'd sure appreciate hearing about it.'

And third, effective captains engage the crew by modifying the meeting in real time to integrate elements that emerge during it. This enables them to show that their authority is flexible and dependent on the situation.³²

A good frame looks simple, which is immensely useful because you can present your problem to anybody – including people who know nothing about it – in just a few phrases. Getting to that simplicity, however, isn't trivial. You must think through the various aspects of your problem, pitching different perspectives against one another, and deciding which information belongs in your frame. Just like any craft, it takes hard work and experience to make a frame look easy. Chapter 2 gives additional guidelines to improve your craft.

/////// CHAPTER TAKEAWAYS ////////

We all have a tendency to go straight into solution mode, looking for great answers . . . but starting by asking better questions is a valuable investment. Before jumping to solutions, invest in framing your problem.

Any complex problem can be summarised into a single key question or *quest*. A good quest has an appropriate type, scope, and phrasing.

Furthermore, the quest is part of a broader structure that captures the substance of the problem clearly and succinctly: The Hero-Treasure-Dragon-Quest (HTDQ) sequence:

- **The hero** includes all the important information needed to introduce the part of the universe of interest, including the main protagonist, who might be a single individual, a team, or an organisation. Strive to include as little information as possible but as much as needed.
- The treasure is the hero's aspiration.
- **The dragon** is the one problem separating the hero from the treasure. Start it with 'however'.
- **The quest** contains the overarching question that your effort answers. It typically takes the form: How should [*the hero*] get [*the treasure*], given [*the dragon*]?

A project has *one* hero, *one* treasure, *one* dragon, and *one* quest. Nothing Nothing more – the unicity principle.

Don't be like Louis! Realise that, in a quest, a few words can mean the difference between 30,000 men digging a canal 80 km long and two dozens of fountaineers whistling.

Tie yourself to the mast. If, like Odysseus, you doubt that you will be able to resist the lure of flying to solutions, protect yourself by identifying various quests, comparing them, and selecting the best.

Like world champion Fangio, be attentive to weak signals; in the frame, make every word count. Read your Hero-Treasure-Dragon-Quest sequence out loud. If you feel that you need to deviate from what's written, maybe you're not quite there yet.

Don't fool yourself, it's easy to believe that one is the sole owner of the truth, but reality usually paints a different picture. Consulting actively with your stakeholders can provide a good reality check.

In short, be methodical, but don't overstress it either. The next chapter will give you more tools to finesse your Hero-Treasure-Dragon-Quest sequence.

//////// CHAPTER 1 NOTES /////////

- 1 The components of decisions. We focus on four key components: the quest, alternatives, criteria, and evaluations. For an alternative model, see p. 430 of Matheson, D. and J. E. Matheson (2007). From decision analysis to the decision organization. Advances in decision analysis From foundations to applications. W. Edwards, R. F. J. Miles and D. von Winterfeldt, Cambridge: 419–450; and p. 39 of Howard, R. A. and A. E. Abbas (2016). Foundations of decision analysis, Pearson Education Limited.
- **2** For a discussion, see Bach, D. and D. J. Blake (2016). 'Frame or get framed: The critical role of issue framing in nonmarket management.' *California Management Review* **58**(3): 66–87.
- 3 See Walters, D. J., P. M. Fernbach, C. R. Fox and S. A. Sloman (2017). 'Known unknowns: A critical determinant of confidence and calibration.' Management Science 63(12): 4298–4307. Poor framing partly explains . . . Paul Nutt (1999). 'Surprising but true: Half the decisions in organizations fail.' Academy of Management Perspectives **13**(4): 75–90) singled out three major reasons to explain why half of the decisions in organisations fail: managers pressure teams to limit the search for alternatives, imposing their solutions, and using power to implement plans. As for problem framing, Nutt observes: 'defining a problem is a familiar way for managers to initiate decision making. Managers want to find out what is wrong and fix it quickly. The all too frequent result is a hasty problem definition that proves to be misleading. Symptoms are analyzed while more important concerns are ignored.' For empirical evidence that better framing is associated with better results in entrepreneurial settings, see Camuffo, A., A. Cordova, A. Gambardella and C. Spina (2020). 'A scientific approach to entrepreneurial decision making: Evidence from a randomized control trial.' Management Science **66**(2): 564-586.
- **4** This is sometimes called a Type III error; see pp. 180–181 of Clemen, R. T. and T. Reilly (2014). *Making hard decisions with DecisionTools*, Cengage Learning.

- **5** Adapted from *Irish Times* (1997). Pope's fancy footwork may have saved the life of Galileo.
- 6 For more on the study, see Elisabeth Newton's dissertation with the description of the tapping game pp. 33–46 of Newton, E. L. (1990). *The rocky road from actions to intentions*. Stanford University. For more on the curse of knowledge/curse of expertise, see, for instance, Camerer, C., G. Loewenstein and M. Weber (1989). 'The curse of knowledge in economic settings: An experimental analysis.' *Journal of Political Economy* 97(5): 1232–1254; Hinds, P. J. (1999). 'The curse of expertise: The effects of expertise and debiasing methods on prediction of novice performance.' *Journal of Experimental Psychology: Applied* 5(2): 205; Keysar, B., L. E. Ginzel and M. H. Bazerman (1995). 'States of affairs and states of mind: The effect of knowledge of beliefs.' *Organizational Behavior and Human Decision Processes* 64: 283–293; Keysar, B. and A. S. Henly (2002). 'Speakers' overestimation of their effectiveness.' *Psychological Science* 13(3): 207–212; and Heath, C. and D. Heath (2006). 'The curse of knowledge.' *Harvard Business Review* 84(12): 20–23.
- **7** Gershon, N. and W. Page (2001). 'What storytelling can do for information visualization.' *Communications of the ACM* **44**(8): 31–37.
- 8 See P. 66–67 of Willingham, D. 'Why Don't Students Like School?: A Cognitive Scientist Answers Questions About How the Mind Works and What It Means for the Classroom' 2010, Jossey Bass.
- **9** Ask three strategy professors for their definition of strategy and you'll likely get five answers! So, for the sake of clarity, here's our definition: A strategy is a plan of action to achieve an overall objective.
- **10** For more on breadth of frames, see pp. 46–47 of Wedell-Wedellsborg, T. (2020). *What's your problem?*, Harvard Business Review Press.
- Bibliothèque Nationale de France. (2015). 'Le château de Versailles, 1661–1710 – Les fontainiers.' Retrieved 11 May, 2021, from http:// passerelles.bnf.fr/techniques/versailles_01_6.php.
- 12 Williamson, M. (2011). 'Fangio escapes the pile-up.' 2020 (June 7).
- 13 See also Bhardwaj, G., A. Crocker, J. Sims and R. D. Wang (2018). 'Alleviating the plunging-in bias, elevating strategic problem-solving.' *Academy of Management Learning & Education* 17(3): 279–301 and Chevallier (2019). 'A rock and a hard place at RWH.' *Case IMD-7-2186*.

- 14 Create an environment that supports participatory decision-making. Collaborative decision-making specialist Sam Kaner advises that you should encourage all to speak their mind; promote the understanding of one another's needs and goals and accept their legitimacy; find solutions that are inclusive of all, not just the most vocal stakeholders; and agree that all are responsible for designing and managing the process that results in the decision. See Kaner, S. (2014). *Facilitator's guide to participatory decision-making*, John Wiley & Sons, p. 24.
- 15 Keeney, R. L. (1992). Value-focused thinking: A path to creative decisionmaking. Cambridge, Massachusetts, Harvard University Press; Howard, R. A. and J. E. Matheson (2005). 'Influence diagrams.' Decision Analysis 2(3): 127–143.
- **16** Spellecy, R. (2003). 'Reviving Ulysses contracts.' *Kennedy Institute of Ethics Journal* **13**(4): 373–392. See also pp. 200–203 of *Duke, A. (2018). Thinking in bets: Making smarter decisions when you don't have all the facts*, Portfolio.
- **17** Ariely, D. and K. Wertenbroch (2002). 'Procrastination, deadlines, and performance: Self-control by precommitment.' *Psychological Science* **13**(3): 219–224.
- **18** Thinking independently: Brainwriting has been shown to yield better results than brainstorming. See, for instance, pp. 109–111 of Rogelberg, S. G. (2018). The surprising science of meetings: How you can lead your team to peak performance, Oxford University Press, USA. See also Heslin, P. A. (2009). 'Better than brainstorming? Potential contextual boundary conditions to brainwriting for idea generation in organizations.' Journal of Occupational and Organizational Psychology 82(1): 129–145; Linsey, J. S. and B. Becker (2011). Effectiveness of brainwriting techniques: comparing nominal groups to real teams. Design creativity 2010, Springer: 165–171; and Kavadias, S. and S. C. Sommer (2009). 'The effects of problem structure and team diversity on brainstorming effectiveness.' Management Science 55(12): 1899–1913. For a discussion of the comparative merits of brainstorming and brainwriting, and the Delphi method, see pp. 125–128 of Chevallier, A. (2016). Strategic thinking in complex problem solving. Oxford, UK, Oxford University Press. See also Keeney, R. L. (2012). 'Value-focused brainstorming.' Decision Analysis **9**(4): 303–313.

- **19** McKee, R. and B. Fryer (2003). 'Storytelling that moves people.' *Harvard Business Review* **81**(6): 51–55.
- 20 We deep dive into this important point in Chapter 7.
- **21** Another way is to learn to recognise similarities in problems that look nothing like one another. We'll discuss this technique, called analogical problem solving, in Chapter 4.
- **22** The captain assembles the team. See p. 53 of Tullo, F. J. (2019). Teamwork and organizational factors. *Crew resource management*, Third edition. London, Elsevier: 53–72.
- 23 See De Smet, A., G. Jost and L. Weiss (2019). 'Three keys to faster, better decisions.' *The McKinsey Quarterly*.
- 24 See pp. 11–12 of French, S., J. Maule and N. Papamichail (2009). *Decision behaviour, analysis and support*, Cambridge University Press.
- **25** See, for instance, the RAPID approach for assigning roles in Rogers, P. and M. Blenko (2006). 'Who has the D.' *Harvard Business Review* **84**(1): 52–61.
- **26** See pp. 54–58 of Tullo, F. J. (2019). Teamwork and organizational factors. *Crew resource management*, Third edition. London, Elsevier: 53–72.
- 27 Dijkstra, F. S., P. G. Renden, M. Meeter, L. J. Schoonmade, R. Krage, H. Van Schuppen and A. De La Croix (2021). 'Learning about stress from building, drilling and flying: a scoping review on team performance and stress in non-medical fields.' *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine* 29(1): 1–11.
- 28 Kahneman, D. and D. Lovallo (1993). 'Timid choices and bold forecasts: A cognitive perspective on risk taking.' *Management Science* 39(1): 17–31. See also p. 117–121 of Tetlock, P. E. and D. Gardner (2015). *Superforecasting: The art and science of prediction*, Random House.
- **29** Outside-in approach. Kahneman and Lovallo's suggestion (Kahneman, D. and D. Lovallo (1993). 'Timid choices and bold forecasts: A cognitive perspective on risk taking.' *Management Science* **39**(1): 17–31) echoes a comment by novelist Salman Rushdie: 'the only people who see the whole picture are the ones who step out of the frame.'

- **30** Sasou, K. and J. Reason (1999). 'Team errors: definition and taxonomy.' *Reliability Engineering & System Safety* **65**(1): 1–9.
- **31** See p. 171 of Orasanu, J. (2010). Flight crew decision-making. *Crew resource management*. B. G. Kanki, R. L. Helmreich and J. Anca. San Diego, CA, Elsevier: 147–180.
- 32 See pp. 100–102 of Ginnett, R. C. (2010). 'Crews as groups: Their formation and their leadership.' *Crew resource management*. B. Kanki, R. Helmreich and J. Anca: 79–110. See also Lingard, L., R. Reznick, S. Espin, G. Regehr and I. DeVito (2002). 'Team communications in the operating room: Talk patterns, sites of tension, and implications for novices.' *Academic Medicine* 77(3): 232–237. See also p. 307 of Rogers, D. G. (2010). 'Crew Resource Management: Spaceflight resource management.' *Crew resource management*. B. G. Kanki, R. L. Helmreich and J. Anca. San Diego, CA, Elsevier: 301–316.