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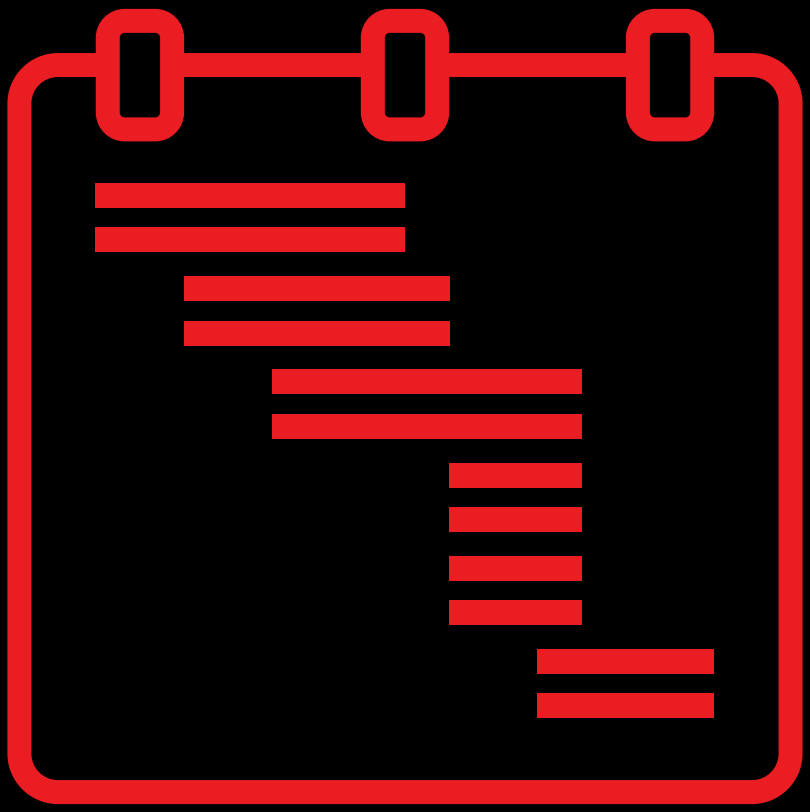

Planning

by emergn

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INTRODUCTION

> "The object of all work is production or accomplishment and to either of these ends there must be forethought, system, planning, intelligence, and honest purpose, as well as perspiration."
>
> **Thomas Edison**

Edison – the man who developed the lightbulb, the car battery, the motion picture camera and 1,090 other useful things (as well as founding a string of businesses) – surely deserves to be credited with knowing a great deal about both production and accomplishment.

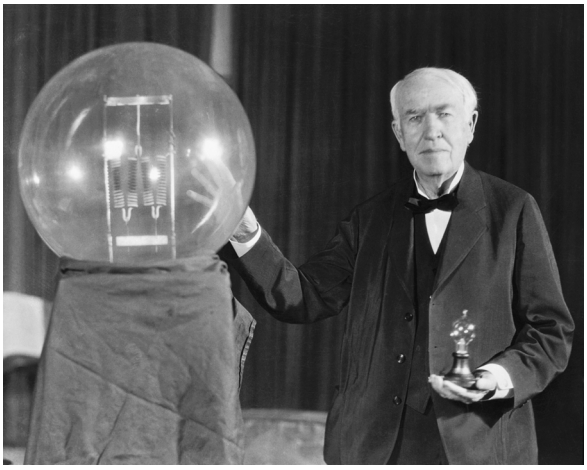


Figure 1. Thomas Edison exhibiting his first successful incandescent lamp in 1929

Most of us instinctively understand Edison's recipe for success. We set a goal or an objective, and in order to achieve it we need both to work hard and have some kind of idea of how to direct our work – a plan.

Planning happens all the time – from grand plans for our careers or family to miniature plans for how we're going to get to work today or what we should cook for dinner. And this tells us something about what a plan is normally made up of: some kind of goal or objective; some thought for the future in which this goal might be achieved, which may include possible risks and problems as well as possible benefits; and a series of activities and decisions that we think likely to get us there. The plan helps us coordinate activities, avoid or mitigate problems and make decisions.

We plan in different ways depending on the kind of people we are, the importance of the goal and how soon the event is or what our level of information is. Let's think, for example, of a big event that many of us may well have been involved in planning and which illustrates some of those points – a wedding.

Figure 2. A furious Bridezilla on her big day

The Bridezilla phenomenon makes entertaining TV – a woman who is so attached to the idea of planning her wedding that she will spend thousands of pounds and several years investing in creating a single perfect day. Anything that interferes with or deviates from the plan is enough to send her into the kind of meltdown beloved of reality TV show producers – tears, tantrums and tiaras. And the meltdown arrives on cue, every single time, because there is always something that can't be planned for – a shower of rain means the photographs can't be taken outside; a traffic accident means the groom is late to the church, or – this made great television – the bride's spectacular dress was so enormous it didn't fit down the aisle...

You don't have to be a Bridezilla to see that planning a big day matters. Even the most 'go-with-the-flow' of couples normally want to ensure that family and friends will be there on the day, that there's a venue to hold the ceremony at and some kind of fun party afterwards. All of this requires planning – bottles of champagne, food and registrars do not conveniently fall in to place without some kind of organisation in advance.

And because the goal matters, most brides try to deal with potential problems in their plans: bridal websites advise 'be sure that the plan for if it rains is completely prepared in advance'; the wedding etiquette guide insists the groom and best man should be in the church a full hour and a half before the ceremony is due to begin; and in our final example of wedding mishaps, the dressmaker lamented to the camera, 'I told her to measure the aisle'. Our natural response to a problem is to plan more and plan better.

The more we care about something, or the more crucial the outcome, the more extreme this is. On a normal day, we might not bother checking the weather forecast. If it starts raining then we'll buy an umbrella or just get wet. We don't need to plan because the outcome doesn't matter much. If we're checking the weather because we have a wedding that day, however, then we might hire marquees, have an alternative venue on standby or even – it really does exist – weather insurance for the wedding day. Things can still go wrong. The problem might not be rain but howling winds that blow away the marquees. Should the bride have had a plan C for windy conditions? A plan D for scorching heat? At what point should even a Bridezilla stop planning?

And when we stop thinking about weddings and start thinking about events such as natural disasters – we know how much thought goes into creating layers of contingency and multiple emergency response plans. These plans cost a great deal to make. Not only may they never be used, but it is impossible for the plans to be exhaustive because something will always happen which was not in the plan. Much planning therefore, can be characterised as waste.

Figure 3. A plan for most eventualities!

When developing new processes, products or services we see a mixture of these issues: a natural desire to plan every detail because we care about the result, over-planning that results in waste, and blindness to the partial, incomplete nature of our plans, resulting in panic or paralysis in the face of reality.

But we know that plans do matter – that the process is part of helping us succeed or minimising our losses. How then can we plan well? What steps will permit us to provide the planning we need without becoming over-attached to the plan itself? How much should we plan? Is planning 'more and better', as so often demanded in the wake of disasters, really the answer? How do we plan when the risks feel too enormous, the uncertainty too unknowable? This session explores these questions.

At the end of this session, you will be able to:

1. Appreciate why people naturally plan when they care about an outcome.
2. Recognise the impossibility of controlling uncertainty, the cost of planning and the impact of these on how we plan.
3. Understand and apply a planning model to evaluate which types of planning are valuable and how to combine them.
4. Appreciate the goals and limitations of multi-level planning.

1 THE FAILURE OF PLANNING

1.1. What is a plan?

A plan requires a goal or an objective. Once this is decided – whether it be winning the football match or increasing shareholder value – the next stage of planning is to consider the activities that will help us reach that goal.

The plan covers both the activities and some ideas about how we will cope with or control the uncertainties that are automatically part of dealing with the future. That is – we don't plan things that have happened, we only plan things that haven't happened – and since they haven't yet happened they are filled with uncertainty. Forgive us if this sounds obvious, but it is an absolutely essential point to understand, because in change projects, product development or service improvement environments we often act as if planning can remove uncertainty and do away with risk. And it can't.

1.2. The impossibility of control

In 2005, a Category 3 hurricane named Katrina devastated New Orleans. At an estimated $81 billion in property damage plus over 4,081 deaths, it was one of the worst natural disasters ever to hit the United States.

Figure 4. 4 days after Hurricane Katrina - many parts of New Orleans remain flooded

The response to this disaster was widely perceived as a 'national disgrace'. The media showed scenes that people were accustomed to seeing in less developed countries, not a world super power. In the aftermath, the blame flew freely; accusations of racism, deliberate neglect and official incompetence were made, while national, state and local authorities were criticised for their handling of the disaster, and angry attacks were made on prominent figures, from the President to the local mayor.

There's no question that much of the response was a mess: poorly coordinated and with numerous bad decisions. Lines of decision-making and communication were confused; the evacuation was not ordered until the day the hurricane hit; insufficient vehicles were available to evacuate those who needed help; supplies were not delivered to desperate refugees for days; those in charge had no knowledge of where problems were most acute...

There was a long list of wasted opportunities and embarrassing mistakes. Thousands of school buses were not pressed into service because 'they weren't air-conditioned'; volunteer firemen were kept in a hotel attending employment discrimination training instead of undertaking vital search and rescue work, and tankers carrying water and supplies were turned away by the Federal Emergency Management Agency... these kinds of stories fuelled a furious reaction. It seemed as if those in charge had made things worse, not better.

One local official claimed that the disaster was simply overwhelming. 'Mother Nature humbled us', he said, 'took us from the Jetsons to the Flintstones'. But in fact, Mother Nature's disaster had been foreseen. The House of Representatives Report on the disaster, picked up on a crucial factor – that there had been excellent forecasting: 'Katrina ... had been predicted in theory for many years, and forecast with startling accuracy for five days'.

Activity 1: Musical chairs

A classroom activity, this is also a good energiser for the start of a team meeting, since most people enjoy replaying a childhood game. It will take a few minutes to set up and play – about 20 minutes in total.

Begin by placing a number of chairs in the middle of the room. Use one less than the number playing (that is, if you have 10 people, place 9 chairs). On each chair place a numbered Post-it note – 1, 2, 3, 4, etc.

Remind everyone of the rule of musical chairs. While the music plays they must walk, skip or dance around the chairs (no lingering by a chair is permitted). When the music stops, everyone must sit on a chair. Whoever remains standing is out. For the next round, one chair will be removed and the music will begin again.

Before you begin playing, ask everyone to write down which number seat they think they will land on, during the first, second and third rounds. Note that they are not allowed to deliberately say 'no seat'. Put on some music and get started. Play the game for 3 rounds. Don't worry, the next activity lets you continue to find a winner!

Afterwards check how accurate people's plans for where they would sit during the first 3 rounds turned out to be.

Figure 5. Front pages from the front line – headlines reporting the devastation of Hurricane Katrina (© Fred Telegdy)

What went wrong? Media headlines around the world blamed the failures on poor planning, on a failure to properly identify and deal with entirely foreseeable risks.

But it wasn't as if nobody had created a plan! The very existence of the Federal Emergency Management Agency (FEMA) meant that there was a group intended to be in charge, whose sole purpose was to formulate and test plans. The agency, whose mission statement is, 'A nation prepared', had a huge budget ($6.6 billion), and a large number of project managers (all professionals holding PMP certifications). The Louisiana State University had run scenario planning to prepare for precisely such an emergency. Key preparations existed – from FEMA buying in ice for hospitals to pre-stocking the Superdome with what their calculations had predicted would be three day's supplies.

So was it just official incompetence?
The anger generated by the event carried its own aftermath. The Director of FEMA was relieved of responsibility and then resigned. Louisiana Governor Kathleen Blanco did not seek re-election, and while New Orleans Mayor Nagin scraped a second term, he faced unprecedented criticism for his handling of the crisis. Others, however, pointed out how all those during the crisis worked 24-hour days, from police officers and doctors to political aides and officials. Nobody wanted the disaster to occur; nobody set out to be negligent or make mistakes.

Figure 6. FEMA Preparedness Cycle

When things go wrong, there will always be plenty of blame to be shared out – no matter what the actual decision taken. If the Mayor had ordered an earlier evacuation and the hurricane had not hit, who knows what criticism for false alarms and wasting public money would have been levelled.

Such realities tend to get lost in the unnaturally perfect vision of hindsight. Forewarning does not mean we make good enough plans. Good plans do not imply good execution. Dedication does not ensure good decisions. Good decisions still cannot ensure good outcome.

But our response – naturally enough – is to plan more and in greater detail for the next time, adding more contingency to try and make our plans risk-proof. On its homepage, FEMA explicitly refers to how it acted to 'remedy gaps that became apparent in the response to Hurricane Katrina'. Mayor Nagin has since made a career out of public speaking events and advising governments about the lessons to be learned from Katrina.

Activity 2: Still planning

After the first 3 rounds of musical chairs (see Activity 1), point out that people now have better information. They know who is out and who is still in; they know which chairs have been removed, and they know what tempo the music plays at. Using this improved information, ask them to plan which chair they will land in for the next 3 rounds.

Begin the music again and play for another 3 rounds.

Feel free to continue until you have a final winner!

Afterwards, check whether people's accuracy of planning improved in the light of the additional information.

Commentary:

Given the number of variables – including other people's actions and plans and the music length, you would expect their predictions – even if they tried to meet them, to be valueless. In a complex environment, planning is difficult. And yet we continue to do it, hoping our success rate to improve – even when logic tells us that it is a waste of time.

This can feel very uncomfortable to many people – because there is a very real need for planning, we assume it must be possible to succeed at it. Sadly, this is not always the case.

The problem with our entirely common-sense desire to learn lessons from the failures in our plans is that the lessons from one complex situation are rarely applicable to another complex situation. Remember the Cynefin Model discussed in the Why Change session? Because the link between cause and effect is not discernible in advance, and may change, our learned responses may prove unhelpful. Even in a similar event – another hurricane – our new plans may prove equally fragile in the face of the complex, almost chaotic reality of a natural disaster. We are forced to return to the reality of 'probe-sense-respond' (complex) or even 'act-sense-respond' (chaotic).

We don't have to be in the world of extreme disasters for this to be true. Businesses and markets are complex systems that frequently verge upon the chaotic. You don't know how many users – if any – your new product will get; you don't know what development problems you may meet; you don't know how your competitors will respond… the list of things you don't know is almost endless and it is impossible to create a plan for how you might respond to every single scenario.

1.3. Planning costs

Planning is not a free activity. Some of FEMA's budget is spent on emergency provisions, but far more of it is spent on its staffing costs – the planners, project managers, liaison and communication officers. The more we plan and the more risk scenarios we investigate, the more time, effort and money we expend. These plans can actually slow us down because they need to be communicated to large numbers of people and updated frequently. They can even lead to a loss of initiative as people fear acting independently and being accused of incompetence for not following the plan.

All of these characteristics can be clearly seen in organisations trying to bring new ideas to market, running change initiatives or even just in day-to-day operations serving clients and customers. We can create detailed, responsible plans that examine vast numbers of risks – however, not only do we still have the potential to fail, but the planning itself may have increased our risk.

Activity 3: The marshmallow challenge

This group activity takes approximately 30 minutes; there's no real limit on the number of people that can participate but we'd suggest a minimum of 4. If you want to run the activity with more though, you can split into equal teams. Each team needs its own table/space.

Objective:

To place a marshmallow on top of the tallest free-standing structure you can build using the spaghetti, tape and string that has been provided.

The current world record is 1.89 metres but if you are able to build a structure taller than 1 metre in your first attempt you are doing well.

Preparation:

For each team, you will need to provide:

- Team space – a table will do just fine.
- 20 sticks of spaghetti.
- 1 metre of string.
- 1 metre of sticky tape.
- 1 marshmallow.
- 1 pair of scissors.

You will also need:

- A time keeping device.
- A tape measure.

Rules:

1. The entire marshmallow must be placed on the top.
2. The structure must be free-standing.
3. You can use all available materials as you wish, e.g. you can break the spaghetti up.

Play:

4. Distribute the materials among the team tables.
5. Tell the team they have 18 minutes – remind them of the world record – you may have a future marshmallow challenge champion in your midst!
6. Start the timer, pick your materials and begin building your structure.
7. When the time runs out, stop, step away from the structure, see if holds.
8. Measure your structure. Only structures that stand on their own can be considered for the record. Remember your marshmallow must be on top.

Commentary:

How much time did people spend talking or planning and how much time actually building? At what point did you test placing the marshmallow at the top of your structure?

In our experience, most people leave this until the end of the challenge – they might have prototyped a structure early on with the marshmallow on top – but ultimately didn't put it on to the actual structure until the end. For how many of your teams did this mean that the structure collapsed or the marshmallow fell off? Waiting until the very end means that while people feel they have the build under control, in fact this is merely an illusion.

The same happens in project-based environments – we are following a brilliant plan, but we often leave something crucial until the very last minute. Does it work? Does the customer like it? Will it integrate with existing systems?

We believe we are in full control right up until the structure collapses or the marshmallow falls off.

1.4. Not planning?

So what's the alternative? Should we just not bother planning?

Although we've said that planning comes naturally to human beings, in fact there are many times that we choose not to plan at all – in spite of something being foreseen and in spite of the stakes being high.

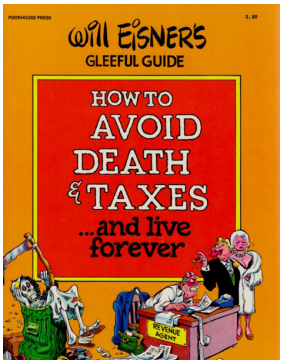


Figure 7. Some things we would rather not plan for

After all, every single person in the world knows that he or she will die. And yet, according to the Law Society, one in three people in the UK die without making a will, something that allows the government to pick up almost £70 million a year that it would not otherwise receive. In the US, a Harris Interactive 2007 study found that 55% of Americans die without a will. In fact, as soon as our fears of the future become sufficiently large we prefer to bury our heads in the sand rather than take action. Think about the near-paralysis of world government faced with concerns regarding climate change, depleted fish stocks, carbon emissions or population growth – these are all highly complex questions, requiring difficult and painful decisions. So we prefer not to think about them – in spite of the fact that they might be of crucial, life-and-death importance to us.

But hiding from the problem does not make it go away. Often, our inaction has made the problem worse. Is any plan – however partial, flawed and incompetent – better than no plan at all?

The Agile manifesto states:

THE AGILE MANIFESTO

We value...

Responding to change over following a plan

Figure 8. One of the values of the Agile Manifesto

Most Agile practitioners use planning in the light of uncertainty – based on their understanding that plans will need to change. This sounds incredibly easy and obvious, but it isn't in reality. Building trust, for example, often means committing to something, and yet commitment is dangerous because we know our plans are flawed and thus what we can deliver is uncertain. We wish to stay flexible and not increase our risk by investing in up-front planning work, and yet we need to consider some types of risk in order to minimise their potential impact on us.

Despite the potential pitfalls of striving to control cost and time on projects, it does not mean that managing projects should be an anarchic free-for-all. Criticisms of issues with the way most organisations plan, does not mean plans are completely useless. It depends on what elements of a project we try to plan; when we try to plan them and finally, how we use the plan.

As the 19th century German Field Marshal Moltke famously wrote;

> "Planning is everything. Plans are nothing."

Plans in the face of disaster

A combination of government, insurance and private enterprise was in charge of helping New Orleans recover as a city. Who was in charge of helping companies recover their data – the customer details and accounts stored in filing cabinets and on databases? No-one really. The US Department of Labor states that 40% of businesses never reopen following a disaster and that 25% of the remaining businesses close within two years.

A range of disasters, from natural to man-made ones and from deliberate virus attacks to self-inflicted glitches, can create undesirable consequences that disrupt mission critical applications or service. The cost of such events in terms of recovery can be staggering. What plans do businesses formulate to deal with these?

According to Information Week's study in 2011, a third of IT professionals who responded said there were no disaster recovery plans in place at their organisations. A study by the group Symantec Corp stated that after considering which things might constitute a 'disaster', only 33% of the companies surveyed agreed on plans which offered an acceptable level of risk for all those measures.

Whether those plans would actually deliver reduced risks is yet another question. George Ferguson from HP recommended, "organisations should test their plans regularly – preferably twice a year – and subject them to rigorous change management standards... An untested plan is barely worth the paper it's printed on."

So it is rather depressing to find that of the IT organisations which carried out full scenario testing of their disaster recovery plans, nearly 50% of the tests failed.

That is, the companies in question knew how critical disaster recovery could be to their business. They went to the extent of building a plan to deal with it – but when they tested the plan, it failed. Surely they would instantly overhaul the plan, introduce new fail-safes and test again?

That appeared not to be the case.

There are hundreds of firms, from giants such as Microsoft and Amazon to boutique consultancies, offering cloud storage, remote back up, server virtualisation and other tools as well as advice on developing policies. But despite the foreknowledge of the risk of disaster, despite all the help available, and in spite of understanding the problem – many companies choose not to create a plan, not to implement a plan, not to test the plan or not to act on the test results. If there's no intention of acting on it – why bother making the plan in the first place?

2 WHERE WE PLAN

In his foreword to the book Agile Estimating and Planning, Jim Highsmith writes:

> "Estimating and planning are critical to the success of any [...] development project of any size or consequence. Plans guide our investment decisions. We might initiate a specific project if we estimate it to take six months and 1 million but would reject the same project if we thought it would take two years and 4 million. Plans helps us know who needs to be available to work on a project during a given period."

Having accepted that we walk a path somewhere between the optimism of thinking we can control the future and the pessimism of deciding we control nothing, we need to set about answering some of the questions that are important when bringing new concepts to market:

- Is this idea really valuable to the customer? If so, how valuable?
- How much might we need to invest in delivering some of this value?
- Are we on track to deliver things that customers have asked of us and what are the key events that might blow us off course?
- How can we make commitments that will enable others to coordinate with us – a schedule for marketing to create a launch, information for technical writers to write training manuals or share resources such as mainframes with other teams?

2.1. Uncertainty and options

Not all uncertainty is the same, and that means our reaction to it will not always be the same. In Strategy Under Uncertainty, the authors argue that there are four basic levels of uncertainty, which affect the kinds of plans (strategy) it is possible to make.

Level 1: A clear enough future. Here, we know enough or can find out enough about the future to formulate a strategic plan and even though we don't know everything, the things we're uncertain about would still probably not change our direction.

Level 2: Alternate futures. There are several separate scenarios that might play out based on clearly observable variables. It may even be possible to predict which is more likely or offer a probability on each.

Level 3: A range of futures. Here we can probably work hard to identify what we believe the variables to be and what the range of possible outcomes is. Not only is there a risk that we don't identify all of the variables and outcomes, but it's also possible that they impact one another in ways we have not foreseen.

Level 4: True uncertainty. Here it is impossible to predict, not only the outcome, but even the variables which will create that outcome. The range of 'what might happen' is so large that predictions are mostly a waste of time.

Activity 4: How certain?

This activity can be done on your own, although it is a good idea to talk through your conclusions with your team to gather their feedback.

Consider the project you are working on at the moment. Think about how the various activities in the project fit into the levels of uncertainty above. Do your plans align with the conclusions of what type of planning is possible for each level?

Real options and deferring commitment

One of the best ways to deal with uncertainty is to remember the advice your mother used to give you – 'keep your options open'. A formalised, logical version of this advice is what we tend to call 'real options'. The idea is to ensure that you know the most likely options that will allow you to achieve your goal and have an understanding of how much these might cost, how much you value them and for how long they are available. The goal is the most important thing – we often have to work quite hard to ensure that we are looking at the real goal so that we can think about the many different options that might fulfil it, rather than a goal with a pre-packaged 'solution' as part of it.

Think about booking a holiday. Six months in advance, the potential options are limited only by budget, but as time progresses, some things will get booked up or the lead time to book flights and get vaccinations for exotic destinations will become impossible. Real options would advocate knowing what those cut-off dates were, as well as having a default 'staycation' option. Because the real goal is not 'go on holiday', it is 'relax and have fun with family'. Because the goal matters to us we might pay a premium to keep our options open longer – perhaps reserve a seat that we know we might not be able to use; or use a last-minute booking agent even if the price is higher.

This is essentially the idea behind financial options – paying for the right to buy something at a future date, or for a contract to be fulfilled at a certain price. Just like with holiday tickets or anything else, options expire after a certain time or under certain conditions (oil options might expire when the market rises above a given price, for example). Real Options Theory urges us to keep these in mind so that we can make informed decisions about when to make a commitment or which option to exercise. This is as true in planning as in investment. In practical terms it often means employing a less efficient solution while we test out ideas or prove demand, ready to switch to a more permanent solution later on.

When speaking about options for design, this is sometimes called 'set-based design'. Rather like concurrent engineering practices, the idea is to permit several design options to develop at the same time, only choosing between them when one seems to clearly win against the others. This can range from a small-scale series of investigative 'spikes' to design ideas with dedicated teams that are actually in competition to see which will move forwards first.

Companies that have adopted this type of design include Toyota and Boeing. They begin with a broad set of design parameters within which concurrent designs will be developed. These are kept open much longer than in traditional design thinking (which narrows to one preferred route in order to concentrate investment).
The idea is to allow trade-offs in complex system interactions (like a car or an aeroplane) to be more fully developed. The sets are gradually narrowed until one design is revealed and refined, with more detail emerging as the sets narrow.

For example, car manufacturers often have to lay down decisions in order to allow complex subsystems, which have a long lead time, to be developed. A way around this early decision might be to offer a broader set of parameters. Consider a car's radio system and heating system. Both need space under the dashboard. How much should the overall design allocate to each subsystem? Rather than making the decision up-front, which might result in a lower quality result, the designers can create a range of options which allow them to think about trade-offs in performance between the two subsystems. It helps break down the dependencies in complex systems so that each subsystem can still explore design possibilities more independently. Delaying design decisions helps delay committed costs until we have established feasibility, which in turn improves our designs because we are better informed at the point we make our decisions.

It sounds sensible, but often people want a decision – any decision – in order to get rid of the uncertainty. Resisting this is actually quite difficult. Most of us only manage it because we provide a framework through real options that makes it clear at what point the decision will be made. By understanding the conditions under which it will be made, it becomes possible for people to defer the decision.

Real option choices apply not only to tasks and solutions, but even to people. For example, those who follow the Real Options Theory assign the least experienced or most narrowly specialised people to tasks first, the most experienced and generalist staff stay free to help with sudden problems, blockages or to train and mentor staff. Not only does this add extra resource wherever the constraint is, but it means the team builds its investment in ensuring more people are able to help in the different work phases, whether that's analysis, development or testing. After all, not having the skills to be able to complete a piece of work is a key risk and one that should be managed.

Activity 5: The skills matrix

This activity involves talking to the whole team, either individually or all together.

Begin by listing all the skills or functions on the left hand column of a matrix. Place your team members on the top row. Now ask people to rate their skill level in each function: 0 means no ability at all; 1 means they could perform the basics; 2 means they are competent; 3 means they are an expert. This is an example of a completed matrix:

Skills	Matt	Emily	Paul	Sarah
Programming	3	2	0	2
UX design	1	0	3	2
Engineering	3	0	0	1
Testing	2	1	1	2
Communications	0	1	3	0

Look at your skills matrix. Where are your key risks? Where do you lack options of people who can cover a function? What plans could you form to offer people more experience and allow them to build skill levels?

Commentary:

Many teams talk about being 'cross-functional' and say they are committed to broadening skills. But when it comes down to it, they prefer keeping people in their area of expertise, where they are most productive and efficient. The long term risk, however, is that a constraint can upset this perceived efficiency and leave the team with few options. Remember that recruiting someone new has a long lead time, as does getting even an 'expert' up to speed with the project. A disciplined approach to the skill matrix means you are more likely to really build a cross-functional team instead of just talking about it.

You've undoubtedly worked out the problem with this. Real Options Theory risks becoming a new form of up-front planning and analysis – looking at all the possibilities, processing vast quantities of information (much of it with large assumptions), needing to constantly update this in order to make decisions...

The key is to be selective about which elements we decide are worth keeping as options and which decisions are low risk. Anything that involves spending lots of money or creating a big dependency is probably a decision we want to defer. On the other hand, sometimes we just have to make a decision – as long as it's good enough, we can live without perfection or accept that we might be wrong and we'll need to redo things.

Don't get trapped into trying to come up with an exact probability or a precise financial value for an option. Think about a new company selling goods online, considering the risk that it might be overwhelmed with demand. The company would be crazy to buy masses of servers – it might have no demand! But if their launch is staggeringly successful then it will need the ability to scale fast – which might be expensive. How much is it worth to the company to not have to buy servers in advance? The cost of getting 14 servers in a massive hurry is x, while the cost of getting them in advance is y. Perhaps the company could arrange to have an option on those servers for which it pays a bit more, but mitigates the risk of having to acquire them at all out speed. You're not a trader, the rough and ready calculation is good enough.

Questions to help you with real options:

1. What are the most important or valuable outcomes?
2. What decisions need to be made as part of realising these?
3. What different options are there for achieving each valuable outcome?
4. How costly is each option?
5. When is the latest point in time and under what conditions must a final choice be made?
6. What is the impact of delaying that choice?

2.2. A planning model

The levels of uncertainty offer some insight to how we think about the future, and Real Options Theory is a way of thinking about how we cope with facing or carrying the uncertainty with us. But neither offers guidance on how to plan. The following model is designed to show how the situation we are in (what we know) and what we face (uncertainty) can be combined to offer specific types of planning. When we think about the future (or even about the present) we use

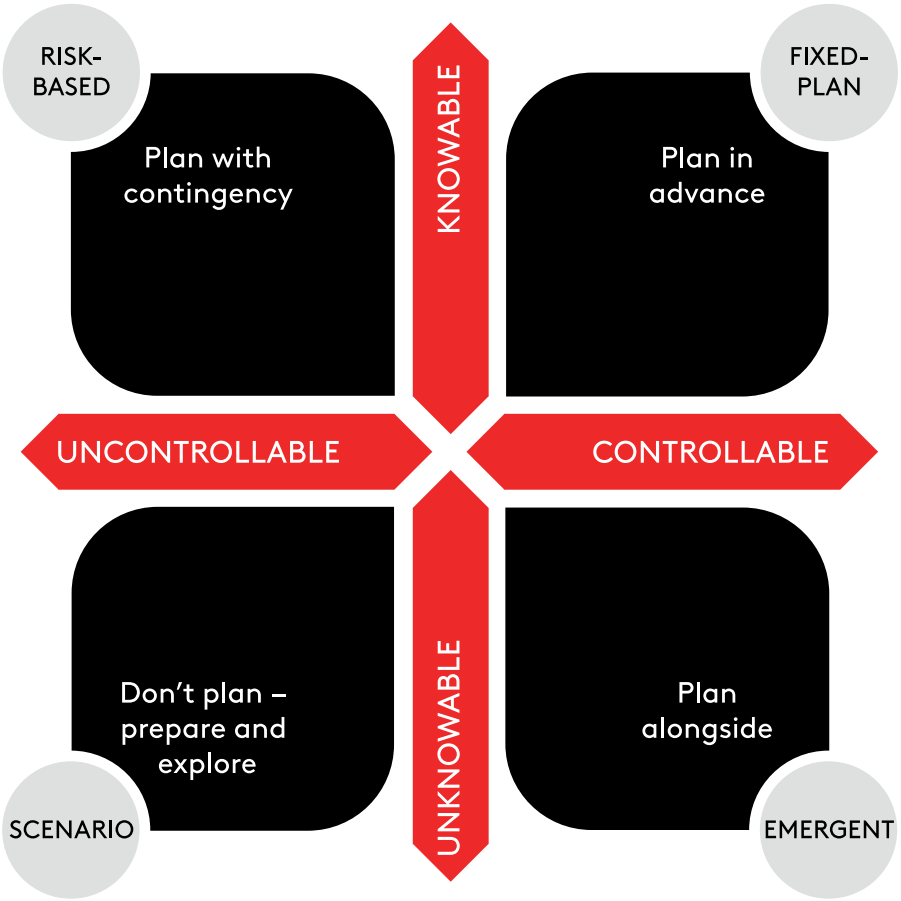


Figure 9. Planning model

the information we have to try to guide our decisions and actions – a process we describe as planning. The information contains gaps and uncertainties. Some of the problems, risks or occurrences that might happen to us are 'knowable' – that is, if we look hard enough we will find some evidence that will give us an answer. Others are 'unknowable' – that is, we can't predict or guess what will occur with any accuracy, even if we can create a probable range. The risk may be 'controllable' (we can do something about it), or 'uncontrollable' (we're limited in how we can change it). Note that we are not helpless in the face of the unknowable or the uncontrollable – far from it. We can affect the impact of anything that happens and this is precisely what we hope to manage through our planning.

Let's consider an aeroplane, about to take off.

Some elements of the journey are knowable and controllable. For example, how

Figure 10. A plane prepared and ready for take off (by Kenneth Iwelumo)

much fuel the plane needs will depend upon the route, the weight of the plane and pre-existing calculations on fuel usage. We can calculate and plan this in advance – ensuring that we have a 'fixed plan' to put the right amount of fuel into the plane ready for take off. There's even an app for that!

Other elements will be planned in a much more immediate fashion – which exact route the plane will take depends upon information coming in from the control tower, for example. This is unknowable information, but with effects which are controllable. Many of a pilot's decisions work within this 'emergent' planning framework. They do not know what exact weather they will meet, although they have instruments and forecasts designed to help provide more accurate information. If a pilot does meet severe turbulence, they can control the situation by changing altitude and thus flying above or below the turbulence.

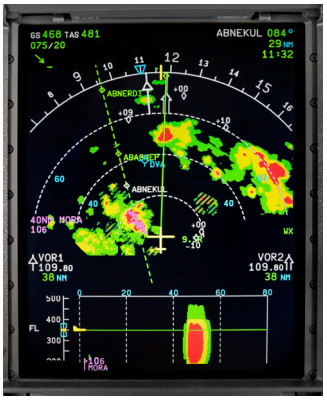


Figure 11. There may be trouble ahead...

Then there are the uncontrollable events. Remember that this does not mean that the pilot will not be able to control their impact – just that there is no set, foreseeable pattern that will help the pilot in advance. Those which are knowable might include key failures of instruments or mechanical problems, extreme weather patterns or even hostage situations. A responsible airline will have run scenario 'risk planning' to deal with some of these – pilots will have trained in flight simulators to improve the speed of their responses in terms of flying, and will have various manual back-ups to deal with instrument failure and suggested ways of dealing with emergency landings or hi-jackings, for example.

None of these are foolproof. The pilot Captain Chesley Sullenburger successfully landed an Airbus A320 onto the Hudson River without the loss of a single life

Figure 12. A flight simulator

when both engines failed after birds were sucked into the engines shortly after take-off. Interestingly, the eventual lengthy report on the incident revealed that in simulations run after the event, pilots succeeded in turning the plane around and landing it safely back in the airport. Does this mean that this is what the pilot should have done rather than crash-landing on the Hudson?

Absolutely not. Had the pilot decided to try for the airport, he had no certainty that he would clear the Manhattan skyline. As a safety consultant pointed out, 'The downside risk of being wrong was catastrophic'. The difference, as the report clearly stated, was that the pilots in the simulator knew the precise nature of the emergency they would confront and therefore made for the airport instantly – and made it. Any delay – in trying to decide what the best plan might be, for example – would have ended in failure. Captain Sullenberger weighed up the risks of two differing courses of action and made an instant decision. He was using years of experience to inform his choice since, although this particular scenario had not been run before, he had trained on how to deal with dual engine failure and to think about the risk of those on the ground as well as those in the plane.

Finally, there are the unknowable and uncontrollable events. These are the ones where what could happen is completely unpredictable and we have not thought of the risk in advance. There's absolutely nothing that can be done about these except trying to handle them as best we can when they strike, trusting to luck and our instincts. Airlines used to train their pilots using the Federal Aviation Authority's 'Common Strategy' to combat hi-jacking. This strategy advised pilots and cabin crew to comply with demands, keep passengers quiet and not make any 'heroic' moves. This entirely sensible plan failed when the terrorists changed strategy with the 9/11 attacks. Scenario planning proved useless in the face of an entirely new uncontrollable risk.

Knowable controllable – fixed-plan planning in advance

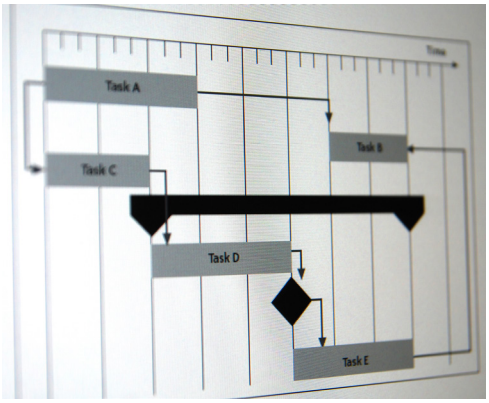


Figure 13. Tasks on a Gantt chart

Traditional fixed planning is based around activities. This results in the well-known Gantt charts displayed on the walls, showing the work breakdown structure of a project schedule. For knowable and controllable risks or events, this makes perfect sense.

There are many things we do know in a project and planning for them in this way is helpful. Consider our staffing costs, for example. We know how much it costs to hire a full-time employee. We can decide whether we can afford more staff or fewer. We can know when these costs will occur and how that will impact on our cash flow. All this is useful information. It is not necessarily simple – it might be complicated. When considering a complicated series of events, it may be necessary to set the options out in a decision tree to explain what action should occur in different situations.

The danger is if we assume that we can apply this type of planning to everything within business. If we begin to imagine that with enough charts or analysis we could also control how much work all staff will do and how much value this work will have for customers, then we are dooming ourselves to risk and disappointment. In fact, both what creative work we produce and how valuable it is represent different types of uncertainty, requiring different types of planning.

For the knowable and controllable we can use techniques such as day and iteration planning, or milestone planning that highlight key dependencies to create progressive plans. Events can typically remain knowable and controllable when we are planning within short time horizons – it's when they occur over a longer period of time that the number of variables and potential risks start to rise. In these cases, we can incorporate other approaches – such as release and product planning to prepare for changing outcomes. We discuss all of these techniques in more detail in our Building Plans session.

Kahneman and Tversky proposed the idea of the planning fallacy, which suggests that we systematically underestimate the time needed to complete future tasks. Even if we have completed a similar task in the past, we are still more optimistic when we estimate a repetition of this same task.

Activity 6: Knowable and controllable – part 1

This activity works best if 2 teams agree to swap plans. You should ask to be allowed to spend an hour looking at their plan, while they spend an hour looking at your plan. Sometimes this will be a traditional Gantt chart on the wall or on a spreadsheet, sometimes it may be less formal, but most teams will normally have some kind of overview of expected milestones and events within a project.

The reason for swapping plans between teams is that we find it very hard to critique our own plans. The planning fallacy gets in the way and assures us that we have thought about risks and have made due allowance for any problems. It's often easier to be much clearer-eyed with someone else's plan.

Begin by making a copy of their plan. If you are going to play with a physical plan, take a photo of how it was before and put it back as you found it afterwards!

Look at each stage, task, activity or milestone on the plan. You are looking for the ones which can be genuinely said to be knowable and controllable.

Whenever you reach an activity you're not quite sure about, write a little Post-it note containing all the things that might possibly go wrong with it. Ask yourselves whether you can cope with these potential problems and what impact they could have. Now sort the activities into knowable controllable and knowable uncontrollable piles. Use the table below to help you. We have included a couple of examples as a guide.

Be aware that by definition you are dealing with 'knowable' tasks. If they were unknown then they wouldn't be on the plan in the first place! Any missing activities that you highlight will be part of making previously unknowable issues knowable.

For example:

Activity	Risks	New tactic	Impact	Category
Hardware delivery	Not delivered on time	Order from alternative supplier	Takes a bit longer and could cost more, but not critical	Knowable Controllable
Recruit specialist	Can't find one; cost high	Start recruit now	Cost; slack capacity	Knowable Controllable
Load testing	Our assumptions on concurrent usage could be wrong	Test as early as possible	Outage	Knowable Uncontrollable
Integrate with new enterprise service bus	Enterprise service bus not ready – don't get access to required data	Use a pre-existing direct interface	Rework	Knowable Uncontrollable

Discuss:

When you went back to your own team space, what did you find the other team had decided? How many of the activities and events turned out to be less controllable than was originally thought? Did they highlight risks you hadn't thought about? Were there any steps that you had missed which they pointed out?

This can prove a useful exercise to take a fresh look at how 'certain' or realistic your plan really is.

Unknowable controllable – emergent planning alongside

Modern planning has tended to plan, not by activity, but by feature, or indeed – by timeframe. This is partly because we have become more aware of what we don't know and the uncertainty of results, and that we want to limit the amount of risk exposure throughout the process. When we build unique propositions for our customers and users, we are entering into a process of learning and discovery. We just want to deliver something that our users want to use and our customers want to buy. Typically we don't know how we are going to build that solution, but we gain more information as we build. We don't know whether a customer will like it or not, but through feedback we can invest more in valuable solutions and stop developing unpopular features. We have, in other words, a measure of control – even if the control is to stop because there is no solution.

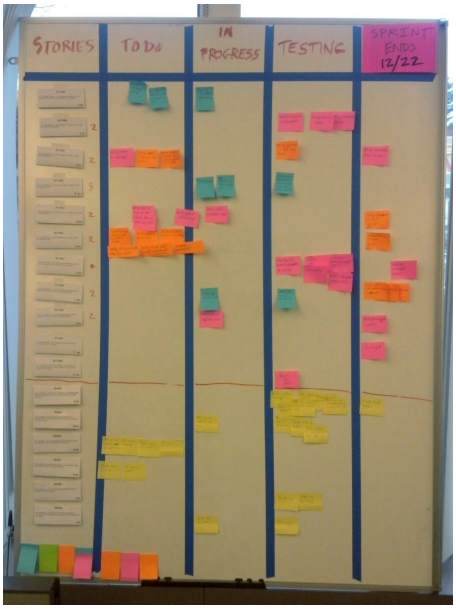


Figure 14. Another type of a plan – using a Kanban board (© Logan Ingalls)

We can also build up our knowledge, using our measure of control to gather improved information, to narrow down the range of possibilities. Things can become closer to knowable through a combination of analysis and fast testing. Market demographics, or analysis of existing patterns in capacity, performance or demand can offer us clues. Today we often use methods like the Minimum Viable Product (MVP) that we cover in the Requirements session – or experimentation through means such as the Build-Measure-Learn feedback loop. Through testing a hypothesis based on this information we gain greater knowledge and thus improve the plan. The aim of any development process is to minimise the downside of investment whilst maximising our chance of a large payoff. Don Reinertsen refers to this as the Asymmetric Payoff.

Here we plan as we go, 'just-in-time', using short planning horizons, responding quickly to information and reprioritising frequently. This is incremental plan improvement, firming up our plans hand-in-hand with firming up our ideas about product development.

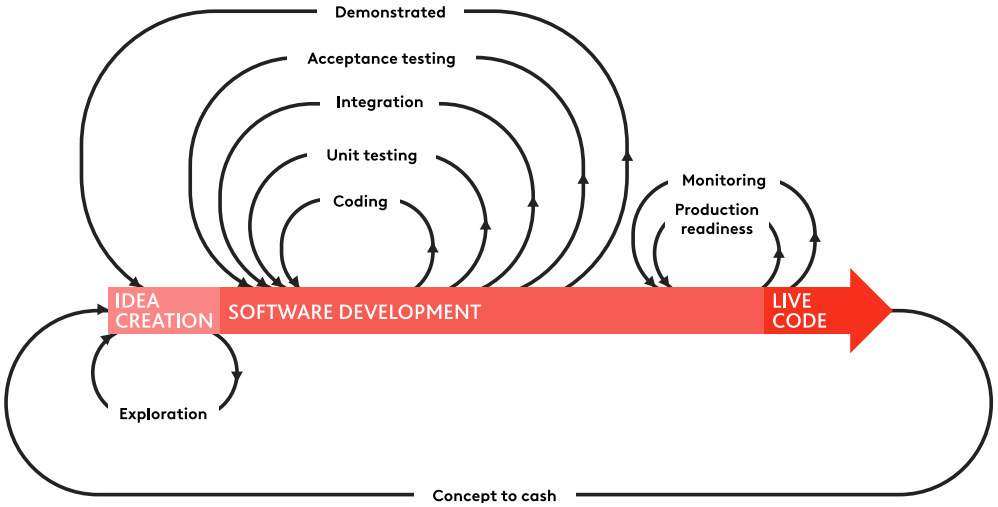
We will cover in more detail, techniques to help plan an emergent environment in the Building Plans session – such as release planning and product planning.

Activity 7: Unknowable and controllable

Using the same team as Activity 6, but this time examining your own plan, look at where you can input feedback loops and short planning horizons to help you check on the things which are not yet known.

Just asking the other team to look over your plan, as you did previously, is one kind of feedback loop, for example. With any luck they will have discovered a couple of previously unknown points. There will be MORE unknowns. You don't want to spend weeks discussing what these might be and coming up with fail safe plans! Instead, you need to make sure that you pick up on changing circumstances quickly to allow you to respond to them. This means introducing feedback loops.

Now look along the entire plan and draw the feedback loops that will help to dissipate some of the uncertainty. If there is any part of the plan with a long feedback loop (for example, with more than 1 month without feedback), then look at what you can do to shorten it. If you need some help with this, read the Feedback session. The following diagram offers a basic guide.



What is needed to put these feedback loops in place and to make them happen? Will you need users, customers, technical checks? Start taking the steps required, including talking to any stakeholders.

Consider the advice from the Delivering Early and Often session – we should identify increments through different prisms to test and validate our ideas or to best eradicate the key risks around our initiative.

Knowable uncontrollable – risk-based planning with contingency

Just as in disaster planning, there are some risks that we know about, or have a high probability that they will occur. Therefore, we plan in advance even though we know our plans may not be directly applicable at the time. We are aiming to cut down our response times because we have practised dealing with similar (not identical) situations in simulations or through our plans. For example, we might have a plan for what to do if the server goes down. Perhaps we have staff on stand-by or a single individual on call, with reaction times dependent upon a pre-set severity designation.

The real issue with this type of planning is that it is expensive – it entails holding contingency and doing up-front work that may never be used. In order to work out how much of this planning expense we take on, we need to analyse the probability of something happening and its potential cost or damage to us. As we've already said, people can make mistakes in either direction – investing too much in plans that quickly get out of date or burying their heads in the sand and refusing to face risks thundering towards them like a herd of wildebeest. We combat these sorts of events by running drills and dry runs. The key is to prepare, and prepare well so that people know what to do in the case of emergency.

Activity 8: Knowable and controllable – part 2

Still working in your team, take the activities selected by the other team in Activity 6 as being knowable and controllable. They should have attached a Post-it note to each one listing out all the things they believed could go wrong, their sense of the impact and workarounds.

Do you agree with them? This is your project and so you probably know much better whether there is a backup in place and how risky any problems would be and their impact on the project. The other team's pessimism should prove a useful guide though.

Now rank the cards in order of importance, most damaging at the top. Develop backup plans for the top 3.

What steps do your backup plans require? Do you need involvement or permission to implement them? If so, then set up meetings to present your findings to the relevant people within the next few days. Some, of course, may be deemed not worth the expenditure considering the low risk – that's fine – but remember why it's worth considering the issues up front.

The real problems arise when what you thought was knowable – suddenly becomes an unknowable scenario. For instance: you have a plan for dealing with a scenario that reduces your ability to trade and you have tested it out. Then one day a lightning strike hits your whole server farm. To make matters worse it also hits the backup – and you now have no way for your fail-over and redundancy processes to kick in. This unfortunate series of events is exactly what happened to Amazon, as you may well have heard. The obstruction hit Amazon's cloud data centre and knocked the entire service offline. How could they prepare for, or deal with this? Maybe the backup grid should be separate from the primary power grid – to stop both being obliterated in one go. Or perhaps this is such an isolated incident that it is not worth the investment – welcome to the domain of the unknowable and uncontrollable.

Unknowable uncontrollable – don't plan, prepare and explore – scenario planning

There's lots of stuff we don't know and that we can't do anything about in advance. Who predicted the riots that brought London to a near standstill in the summer of 2011? Certainly not Sony, whose main warehouse was burned down in the disturbance. How many mainstream economists predicted the global financial crisis of 2008? Not many – or more might have made money from hedging their b**ets – as Nassim Nicholas Taleb did. The danger, as Taleb has pointed out in his book The Black Swan, is** that extreme events come along more often than we think they will, and wreak disproportionate damage.

Figure 15. A rare black swan – less rare in business

The answer to unknowable uncontrollable risks and events is not to pray for luck, but it does involve accepting the role of luck and risk. This might mean investing small amounts in several, competing ideas or plans, or occasionally it might mean accepting – as many start-ups do, for example – that the risk may end in complete failure and bankruptcy. Much of the work involves limiting our exposure to the negative black swan, while maximising our exposure to the positive black swans. Other planning involves ensuring we are flexible and agile, so that we can make quick decisions and carry them out in a crisis – able to follow the Cynefin Model for dealing with chaotic systems – Act-Sense-Respond.

A black swan situation requires us to act quickly and draw from everything we know about planning. Continuous careful planning throughout a process will alleviate the pressure when these unpredictable circumstances do occur.

With all of the planning scenarios we've discussed, timeframe has an enormous impact on how we might deal with a situation. There are times when a series of disastrous events can occur, leaving us unable to respond in any planned way. We just need to roll up our sleeves and get on with it. Sometimes, if we're lucky – highly positive events can crop up and happen to coincide, leaving us in a much more desirable position. However, once we start looking into the future we enter the world of unknowable and potentially, uncontrollable. This doesn't mean that we can't prepare ourselves to take advantage of serendipitous events or small sparks of opportunity. In his book Synchronicity: The Inner Path of Leadership, Joseph Jaworski explores the idea of creating your own circumstances rather than becoming the victim of events.

Time is critical in all of these planning decisions. If something unknown and uncontrollable hits us today, we just have to get on and deal with it. If it's something unknown and uncontrollable in the future, then scenario planning is our best hope of being prepared.

CASE STUDY: Shell's scenario planning process

In the 1970's, Shell developed their scenario planning process in order to prepare their managers globally for potential futures in energy. Now they are able to design flexible long-term plans. They study trends in economics, energy supply and demand, political shifts and social change as well as motivating factors that drive change. They then write predictions of what the world might look like as these factors evolve. Some of these could turn into dystopian or utopian stories – the key point is that they are all possible. The managers come up with strategies for the business to thrive in these outcomes. In this way the theory goes – managers watch out for signs of change and prepare their responses. Of course, none of these futures will be completely accurate, but that's not the point – they are still preparing themselves by shifting their mindset, giving themselves every chance to influence things along the way.

Summary

What the model should make clear is that projects and situations require several different types of planning – a multi-layered approach. We combine and balance the differing types depending on many variables, including our appetite to risk. Developing these skills and capability within your teams is a good approach.

All types of planning depend upon our ability to read the system that we are in correctly, examining the system through different lenses and gaining information quickly. In order to gain information quickly, we follow a fast development cycle with fast customer feedback, designed to make our decisions better and validate our plans or reveal how we should adapt them.

Finally it is worth noting that the planning model we suggest has one extra element that we haven't represented – time. Given that for three quarters of the model we are working without a fixed plan, and through our development efforts we hope to increase our knowledge and control of the outcome, we must pursue an incremental approach not only to delivery, but to planning too. We must take into account that at any point in time, we can be anywhere on the model, and that although desirable, not everything can be reduced to a fixed plan, no matter how short our horizon may be.

2.3. Planning horizons

Agile teams plan throughout a project's lifecycle, using different types of planning to help at differing points depending on what information is known and what types of control are possible. Mike Cohn puts it as, 'Many project management approaches appear to be "plan, plan, plan-do". Agile approaches are "plan-do-adapt", "plan-do-adapt".'

This connects most obviously to the emergent style of planning described in the model. The idea is to plan only as required – planning 'just-in-time' as the next feature or idea is selected for development, rather than planning in advance when the plan may never be used. As mentioned previously, it helps us to discover and learn over time so we can respond to changing customer feedback, the marketplace or even just understanding more about a specific requirement or implementation approach.

As part of iterative design and incremental delivery, Agile working aims to break projects down into smaller parts, reserving detailed planning for the next increment or iteration only, while an overall plan exists at a much less detailed 'vision' or 'roadmap' state.

Let's imagine that we know we want to go on holiday some time in the summer holidays as the kids will be off school. Although the kids are desperate to go abroad, we decide not to book because there's a big project due to launch in May, and last year an overrun meant we had to cancel the holiday at the last minute. When the project launches as planned at the end of May we decide to book a self-drive, camping holiday in a famous National Park. We don't take the discounted pre-book deal because we don't want to be stuck in one hostel if we don't like it. We don't bother deciding which route we'll take until the night before we're leaving (because we want to take account of traffic reports). We haven't bothered deciding on activities either because we want to know what the weather will be like. We're not sure whether we'll do lots of cycling and hiking or visiting museums – although our plans had made sure that there would be plenty of both.

Note something very important: our short planning horizon had some major advantages – we stayed flexible and could take account of late-arriving information; but it also had a big disadvantage. By keeping decisions to the last minute we made some things more expensive and other decisions impossible. We couldn't book flights because they required too much advance notice, and our camping trip was more expensive than it needed to be.

That's why Agile planning methods talk a great deal about 'just-in-time'. They aim to balance the advantages of flexibility with the advantages of making decisions that offer certainty of cost and choice. We discuss the impact this has on how we flow work (very closely connected to how we plan) in the Trade-offs session. But of course, just-in-time implies up-front planning. We have to decide in advance when critical decisions can be made. What is just-in-time and what is too late? Sometimes we get it wrong and make our decisions too late, or too early. What 'just-in-time' means will be different for every product, team or individual. To us, booking a hotel the night before we leave might be just-in-time; to our spouse it might be infuriating.

In general, when developing new processes, services and products, because the process and outcome are uncertain, a short planning horizon provides opportunities to take account of new information. This offers benefits that outweigh the efficiencies possible from making decisions and plans far in advance.

A short planning horizon specifically embraces its own limitation of vision. Mike Cohn writes, 'Suppose you are standing on a small boat and that your eyes are nine feet above the water. The distance to the horizon in this case is slightly over four miles. If you are planning a twenty-mile trip, you should plan on looking ahead at least five times, once every four miles.'

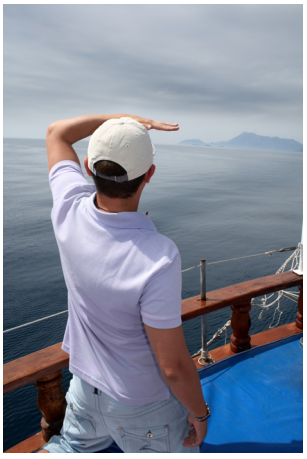


Figure 16. A short horizon

Activity 9: Shrinking-horizon planning

This activity should be done partly on your own and partly in consultation with your team. It works best if you take this on for real – normally everyone will be only too glad to devolve responsibility for the entertainment to a volunteer!

If it is October or later then your task is to plan the team's summer party. If it is March or later, then your task is to plan the team's Christmas celebration.

Your first task is to decide on the items with a long lead time; date and venue. To do this you need to make several suggestions, gather feedback and find out what is feasible depending on budget and availability.

Phew – that's that done, now you can relax for a couple of months.

Next you need to plan food, menus and drinks. Once again this will involve consulting with your colleagues to discover what people like and what people are prepared to pay. You might also consider an entertainer or a theme for the night (fancy dress anyone?).

A week before you should pre-book some transport and gather people's food choices as well as sending out reminders of the evening's plans.

Finally on the day itself, confirm who is coming (there will always be someone who drops out due to illness or an unexpected work problem) and finalise menus, transport and any other details.

Reflect on the activity. What was gained by planning at different points throughout the time period rather than all in one go?

2.4. Multi-level planning

There is an entirely reasonable concern that if we spend all our time worrying over the detail of where we are going for the next week, then we could lose sight of the bigger picture – where we're going for the next year – and veer off course. Multi-level planning marries the concept of a short planning horizon to the idea that we need a general direction in which to move and an understanding of key decision points or milestones.

The idea is simple: at the highest level and for more distant activities we need only a vague outline; whereas we need to know exactly what we're going to do today. Everything in between exists on a continuum. For example, if building a product we probably know that we need to launch something within 6 months. We might not know exactly what it will look like and thus what will be required to build it, but we know very clearly that tomorrow we need to begin creating a prototype and thus by next week we need to have persuaded a few customers to test our product.

It's easy to see how this idea meshes with other concepts from Agile. Our initial plan might involve a high-level vision for the product with features or outcomes that we believe our customers value. We keep the requirements at this higher level and only break them down to user stories with estimates attached just before we plan to begin working on them. Selecting which feature we think is the most important happens just before we begin breaking that feature down into tasks.

It is very important that our awareness of the need for high-level planning does not become an excuse to plunge back into highly detailed plans. We need a goal and a direction, and at least a vague sense that getting there is within the bounds of possibility, but not a detailed step-by-step plan for how to get there.

CASE STUDY: Branson and planning-lite

Figure 17. Richard Branson

Richard Branson was already something of a start-up legend when he travelled from the Virgin Islands to Puerto Rico. As the owner of several record shops and a studio, Branson was an entrepreneur, but not yet especially wealthy. A problem with the plane meant that the flight was cancelled. There was not another flight that evening, and the small airport on Beef Island was filled with frustrated passengers.

Branson began to ring round firms hiring out planes. He eventually chartered one for $2,000. This was in spite of the fact that he knew he did not have enough money to pay for it. He found a notepad (the type held up by drivers meeting passengers) and wrote: 'Virgin Airways $39 – a single flight to Puerto Rico' on it and then began walking around the airport asking who would like a seat. Within a short time Branson had filled every seat on the plane. As the plane landed, a passenger turned to him and said: "Virgin Airways isn't too bad – smarten up the services a little and you could be in business."

The idea for Virgin Atlantic Airways – now turning over £2.74 billion – was born.

The point of the story is not really about the genesis of an idea, but more about how Branson combined the right level of planning (recognising that a customer need existed, and then ringing around and finding a plane that was within the bounds of possibility) with action in the face of uncertainty (booking it even though he did not yet have the means to pay for it). The same pattern can be seen throughout his business ventures – he learned through doing, making mistakes along the way and then adapting. In fact, Branson has distilled his philosophy in an aptly named book: 'Screw it. Let's do it'.

3 CONCLUSION

The vast majority of organisations will relate to the issues we have covered in this book and luckily there are some effective techniques we can use to combat them – emergent or adaptive planning, as well as just-in-time decisions, planning horizons and multi-level planning discussed in this session. These are a major improvement on traditional up-front techniques and they help an organisation stay flexible – we cover all of these in detail in our Building Plans session, but for now lets distinguish what types of organisations fit the various planning styles. It is helpful to identify your own organisation among these.

For those who embrace uncertainty and are prepared to move quickly in the face of change, the tools we go on to discuss will serve them well. Such organisations invest in optimising workflow, keeping teams ready for the impact of change (with spare and flexible capacity) and in carefully balancing disaggregation against central control so as to ensure faster decisions that take advantage of the skills and knowledge of those doing the work as well as fast customer feedback. These organisations are expert at splitting problems up so that small teams have a great deal of independence.

The other kind of organisation that takes to Agile methods like ducks to water are those who embrace uncertainty through default – unphased by revolutionary initiatives and who chase every new opportunity. Such organisations start with roadmaps, but may diverge from these on a regular basis. What happens at a tactical level bears no relation to larger strategic plans. For these kinds of organisations, Agile planning introduces a new and necessary level of discipline. In software, this can help teams produce longer-term value and reduce technical debt, while it also connects management more effectively to the customer.

Organisations that are good at traditional planning will find it the hardest to make a change to their process. Here, individuals have extensive training in traditional planning methods and stakeholders demand levels of certainty. The whole organisation is set up around such methods, with bonuses and success measures all set around on time, on scope and on budget delivery. Painful misses against milestones or spend only seem to point to the need for more planning, in ever-greater detail.

Often only repeated failures that are damaging to confidence and the bottom line will convince such organisations that something has to change. The real difficulty is to change enough, to remove the many self-reinforcing policies that try to push back to up-front planning and design. A key stage in the acceptance of different planning methods is to appreciate the high cost that the organisation is paying for certainty in both time and money. For more details on the impact of such flow choices, see the Trade-offs session.

The difficulties experienced by such organisations in changing the way they plan has led to a tendency in Agile circles whereby those who continue to have problems with planning are berated for not doing it right. The view is that they have a stubborn devotion to out-dated estimation techniques and unrealistic plans – all would be well if they would only 'go with the Agile flow'.

This view can be frustrating, as it ignores context and meaning. At times it may begin to sound like managers are berating teams for seemingly low productivity or creativity. When faced with the very real need of a customer to make decisions about training operators to use a system, a development team that dismisses their concern with 'we don't do estimating', is unlikely to win backing. Trying to persuade the customer to attempt to train staff in an iterative manner may lead to an apoplexy when considering the training budget.

Finally, there are also projects where we continue to see significant failures of planning – even when done in the most textbook Agile manner. The realities of highly complex projects at scale with multiple interlocking dependencies are such that even the tools and techniques that we go on to describe may be insufficient in preventing failure.

Of course organisations must try to break problems down so that elements can be worked on by independent small teams, but some products and ideas genuinely require scale solutions. In such cases, multi-level planning can occasionally disguise or obscure problems.

In situations where decision-makers are distant from those doing the actual work, multi-level planning can actually strengthen, rather than break down, a hierarchy. The original idea of a multi-level plan is that the planning is done by the same people but according to differing horizons. Yet at scale it turns into a series of levels – senior managers consider strategic plans, middle management work on product and release plans, and development teams work on iterative and day plans. Everyone feels as if they are working in an Agile manner and that each plan is 'aligned' to the level above it (although the very description of alignment between levels of plan should act as a warning signal).

In fact, just like any hierarchy, the multi-level planning approach introduces multiple opportunities for communication and collaboration failure. Information decays as it goes up and down the hierarchy and decisions or changes become slower. The classic result is a situation where senior management remain unaware of technical problems or blocks, or the teams make decisions without being aware of the likely impact on the customer or on other teams.

Such coordination problems are common at scale, but planning in itself is unlikely to resolve them. When our tools or techniques fail to help us, the most common and most obvious reaction is to try to plan more and perhaps to overlay traditional planning milestones as a 'common' framework, which all teams can then work within. Naturally, they are no more successful than they ever were and continue to have the problems we exhaustively described above. The Building Plans session suggests how to evaluate and apply techniques to make the troublesome task of planning as manageable as possible.

The Scaled Agile Framework (SAFe) is an attempt to offer a multi-level plan that collates a number of techniques – including prioritisation, metrics and work flow – all of which help with a disciplined approach to managing how new product or service ideas get to customers. As you work through VFQ you will gain all of the tools and techniques required which are all mutually reinforcing. The realities of your context, however, mean it is almost certain that you will need to come up with unique solutions, adaptations and new techniques to deal with complex projects with high dependencies at scale. The key is to come up with approaches that allow larger teams to coordinate, collaborate and communicate. Any organisation, for example, needs to manage a difficult balance between the efficiency benefits of centralising planning and the flexibility and effectiveness that results from disaggregating decision-making and power to individual teams. Remember that regardless of the method or framework you choose – you must decide which techniques and tools help you to increase Value, improve Flow and enhance Quality in your organisation.

Activity 10: Different planning styles

This activity requires several people – ideally 5 to 10 – and a pack of cards. It takes about 15 minutes.

Round 1:

Explain that you want the cards returned you in numerical and suit order.

Throw the cards in the air and start the timer. Finish it when the pack is returned to you in the correct order required.

Round 2:

Appoint an individual who is in charge of returning the cards to you in the same order. It will be up to that individual how the task is carried out.

Throw the cards in the air and start the timer. Finish it when the pack is returned to you in the correct order required.

Round 3:

Say the team as a whole is responsible for deciding how the task is carried out.

Throw the cards in the air and start the timer. Finish it when the pack is returned to you in the correct order required.

Commentary:

Normally each round gets faster. This is not because we get any faster in the task itself of ordering cards. Most people expect that having a single point of decision and instruction will make the task faster. Actually, however, in most cases the third round is the fastest. This is because one individual is rarely able to think of everything while planning that will improve the task. Usually, teams self-organise more effectively – even when planning time is included.

Learning outcomes

Now that you have completed this session, you will be able to:

Appreciate why people naturally plan when they care about an outcome:

- The more important the outcome, the more detailed or multi-layered our plans tend to be
- Articulate the questions planning tries to help answer
- Problems with the planning process does not mean advocating no plans. It does mean choosing when, where and how we plan

Recognise the impossibility of control, the cost of planning and the impact of these on how we plan

- No level of planning can remove uncertainty
- Planning is not a free activity – in time or money
- Since many plans are unused or turn out to be wrong, much of our planning process is waste
- Planning can even be actively damaging when it blinds us to change

Understand and apply a planning model to evaluate which type of planning is valuable and how to combine them

- Fixed-plan planning (plan in advance): knowable and controllable events
- Emergent planning (plan alongside): unknowable but controllable events
- Risk-based planning (plan with contingency): knowable but uncontrollable events
- Scenario planning (don't plan – prepare and explore): unknowable and uncontrollable events

Appreciate the goal and limitations of multi-level planning

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