

## ITIL® 4: what does it mean for problem management?

itSMF UK Problem Management SIG

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*ITIL® 4 represents a paradigm shift for the best practices in IT service management. The service value system, the service value chain, guiding principles... the list of the 'new' is impressive and practical. It leaves us with the age-old question of "Why and how do we transition to this new way of working?"*

*The itSMF UK London and South East regional meeting held at Waitrose HQ in Bracknell in October 2019 focused on that very issue from the perspective of the problem management practice. The goal of the day was to decide:*

***How might problem management operate in a digital environment, utilising the latest best practice guidance contained within ITIL 4?***

*During the day we looked at problem management through the lens of:*

- *The four dimensions of service management*
- *The seven guiding principles*
- *ITIL 4 practice interfaces*
- *A minimal viable practice.*

*What follows is a view of the output. Is it fully formed and thought through? No. It represents the gut reaction of a group of experienced problem practitioners to the questions posed by and opportunities presented by ITIL 4.*

### The four dimensions of service management

The four dimensions of service management help us to both think and work holistically. That means that every practice, and every aspect of service management for services, needs to be considered in light of these four dimensions:

- Organisations and people;
- Information and technology;
- Partners and suppliers;
- Value streams and processes.

With this in mind our question to the group was:

**What are the key elements of a holistic problem management practice?**

We saw this as our checklist to baseline the current problem management practice/roles before we move to an ITIL 4 aligned practice.

Organisations and people

The people aspects of problem management have long been overlooked (at your peril as it happens). The key elements needed are:

- **Clearly defined roles with management sponsorship.** Problem Manager and Problem Analyst have always been the most popular roles but they've generally been defined in terms of a substantive role (i.e. a full-time employee). It now makes sense in the age of the T-shaped knowledge worker to define the role(s) for individual problem investigations. Add the role of the Problem Management Practice Owner which arguably has a broader remit than the traditional Problem Manager. There is perhaps a role of Problem Coach (similar to an agile coach) to be investigated... more of that later. Of course, sponsorship of the roles is vital to their recognition. This approach saves 'problem solving' from just being one of those skills that everybody miraculously develops without direction.
- **A role 'governor'.** In modern digital organisations where roles can change very quickly, it is important that somebody owns the monitoring, review, development and sharing of good practices. The role of supporting or leading a problem analysis ought to be one that any individual may be called on to perform. Best practices or supporting information may emerge from just about anywhere. This must be co-ordinated.
- **Consulting in all areas.** In an ideal world problem solving skills would be universal... the typical business is not ideal and the skills are not widespread. Specialist problem technique coaches being embedded into product or other small teams to foster problem solving skills is an approach that has found favour in many larger organisations already.
- **Effective performance systems.** How do we measure problem solving skills and the results? It is certain that whatever approach we choose needs to extend beyond the staid old measures such as 'how quickly we find a root cause'. The answer isn't clear. T-shaped individuals and how we measure their performance is an evolving science in many organisations. How we evaluate the success of teams in agile and DevOps environments will need to include the ability to 'find answers to problems'.
- **No blame culture.** There is an argument that the modern penchant for multi-skilled, autonomous teams focused around products are the ideal breeding ground for both problem solving as a team and a no-blame culture. Certainly, this approach to problem solving within teams is a far better environment than previously existed. Many problem investigations struggle to get past the "it wasn't me" stage as traditional teams embedded in silo cultures go to war with each other.

### Information and technology

Supporting problem identification, investigation and diagnosis relies heavily on both inspiration and perspiration. The perspiration element tends to revolve around the sifting of copious amounts of data to either identify a problem; diagnose a complex cause; or validate a potential solution. A number of technology solutions, both traditional and emerging, can support this. They include:

- **Integrated CMS.** A configuration management system offers the bare minimum to help understand complexity and interdependence of systems. It provides both base information to aid investigation and modelling capabilities to support investigations and solutioning.
- **Passive and active monitoring and alerting.** Traditional problem management relied on incidents being the fuel that fired problem identification. That still stands true but, in a world of self-healing systems and automation, it is now essential to include the trending and utilisation of event data to identify potential problems and monitor problem resolution. Indeed, there is an argument for suggesting that this 'events first, early warning' approach should be prioritised ahead of incidents.
- **Trend analysis (linked to AI capability).** Trend analysis is the absolute basic capability for problem identification. The same occurrence happening multiple times needs to be spotted

and alerts raised, based on whatever rules an organisation decides to employ. The on-going benefit is the ability for systems to learn and start to ask questions such as ‘what if?’ This can lead to the identification of events, leading to incidents, leading to potential problems with full impact analysis thrown into the mix for good measure.

- **Knowledge management ‘library’.** The ITIL 3 principle of the Service Knowledge Management System (SKMS) was never one that really got much beyond the theory of the Service Transition volume. The principle was sound but the diversity of systems requiring integration to provide end-to-end knowledge of a service was beyond the capability of many organisations, particularly when one considered the functional structure of many IT operations. The change to product focus and a ‘you build it, you run it’ DevOps-type philosophy now makes this approach much more viable, and with the ownership of an end-to-end knowledge management library far more manageable. This is a massive positive for problem investigation.
- **Known Error Database (KEDB).** Problem management’s headline output has traditionally been the KEDB. Made available to the service desk and support teams to aid incident resolution, the KEDB has been a key to value from problem management. We are moving towards a world where known errors and workarounds may only be valid for as long as the next sprint takes to correct a cause. Realistically, many known errors and workarounds are still likely to exist for some time, depending how they are prioritised in backlogs or as technical debt. This means the principle of the KEDB will remain key to problem management.
- **Reporting.** Artificial intelligence (AI), better monitoring of systems, and instant measurement in Continuous Integration / Continuous Delivery (CI/CD) environments should improve reporting of problems and their consequences. The extra available data requires a more selective approach to reporting and automating this capability.

### Partners and suppliers

It is conceivable that partners and suppliers could be involved in every aspect of problem identification, problem diagnosis and problem resolution. How to integrate contractual conformity into our complex and often abstract world has remained a perennial issue for problem management. Service Integration and Management (SIAM) has given us many great ideas. The key areas we considered at the regional meeting included:

- **Clear, named communication channels.** The skills required to diagnose problems are rare and complex enough without having to fight your way through multiple levels of partner support. This doesn’t mean we have no respect for partner support hierarchies but mechanisms that allow us to access those levels quickly and with the minimum of fuss, armed with a previously agreed minimum data set, must surely be the answer to expedited support. Equally, partners need to understand who to contact within the organisation in any given situation and how internal communication channels operate.
- **Roles and responsibilities (not just contractual).** The ability to bring suppliers to the party with information that extends beyond their basic contractual requirements means maintaining good relationships with those vital to your investigations. Trust and mutual respect engendered between *partner* organisations can make a huge difference – with the emphasis on ‘partner’ and shared ownership of the problem. The minimum responsibility can include making information about their products and services available. A supplier that goes beyond the call of duty with extra information and effort can make the difference between a basic incident resolution, the answer to a long-standing problem or, at the other extreme, highly valuable preventative problem management information.

- **How do you measure ‘value’?** The issue of measuring value from a supplier is clouded by the complex world of problem management which often lies on the periphery of areas measured contractually. Part of the equation is the ability to focus on total costs rather than simply on contract price. How quickly a service is restored or improved through problem management activity is always balanced by the amount of effort the team (customer, service provider and supplier) expend in getting to that point. To that end the service provider (and by association problem management) must have an accurate understanding of what their customers value, and would value.

### Value streams and processes

The overarching problem management process is relatively simple and well understood. Problem identification, diagnosis and resolution seems straightforward enough until one considers all the other practices that are potentially involved at each stage. Understanding a wider problem value stream is essential, with particular focus on these elements:

- **Prioritisation matrix.** A consistent prioritisation matrix is key where a given problem is measured side-by-side with other problems, incidents, enhancements and new features in a backlog. Such a matrix needs to take account of impact, urgency, benefits, costs, risk, and business strategy.
- **Workflows, dataflows.** Process documents need to be enhanced to include more abstract workflows associated with areas such as problem identification. Workflows should include RACI matrices that reflect a more collaborative approach to problem resolution, with consideration given to the RASCI approach, where the S indicates a supportive role (help when needed). Added significance should be given to dataflows. Data flow diagrams will allow the problem to be analysed with minimal effort, further increasing the productivity of the practice.
- **Communications portal.** Visibility of problem management practices and successes are important. Peer recognition through the practice sharing information reinforces feedback received by product groups, and helps people feel valued in the workplace. When people receive feedback on time and effort invested, this boosts their self-esteem and supports improved performance overall.
- **Rules for declaring problems.** The fluid nature of the value of resolving a particular problem means that the rationale for identifying and conducting the analysis in the first instance can be equally fluid. Just as ITIL 4 has its guiding principles, it may be that guidelines for declaring problems or initiating investigations should be less rigid. The idea that a rounded and equally balanced product team will ‘just know’ when something needs to be investigated is not as crazy as it might sound. This might mean that guidance for starting problem investigation is non-specific or a principle that provides direction to action while old-style rules are less rigorously followed.

### Seven guiding principles

The seven guiding principles of ITIL 4 are now the key messages of ITIL. They are designed to guide decisions and actions so the people who are responsible for managing and operating the organisation’s service portfolio can benefit from these high-level best practices.

These principles aren’t new. They’re influenced by ideas born in disciplines outside of service management (such as manufacturing and software development) but have now been proven in the

service context. Adopting the guiding principles where possible is the safest way to start to transition to a more agile, digital, product-focussed way of working. This led us to ask the question:

### **How can we change problem management to follow the seven guiding principles?**

Our goal was to offer suggestions for the organisation and NOT to create a paint-by-numbers guide to becoming more 'ITIL 4'.

#### 1. Focus on value

Focus on value ensures that every action creates value for customers, users, and the other stakeholders. It advocates thinking about the customer and user journey and designing a great experience for them. For this to happen effectively requires the problem management team to:

- **Identify what 'quality' means to the organisation (all stakeholders).** There are many aspects of quality in any organisational context. The primary idea is that a product or service delivers value to users and customers. These products and/or services and how they are produced all fall under the quality umbrella. Understanding both value and quality in your organisation helps to focus efforts to improve.
- **Understand the difference between cost, price and value.** Part of understanding the rationale for completing a problem investigation or implementing a resolution is being able to distinguish between cost, price and value. The **cost** of the problem resolution is the amount you spend to produce and implement it. The **price** is the financial reward for providing the resolution to the product or service with the **value** being what the user/customer believes the product or service is worth to them. For example, the cost to an external service provider to fix a minor security problem may be £1000. However, the value of the service to the customer is far greater than the £1000 cost. The fix may have prevented a damaging reputational risk caused by a publicly announced security breach. The service provider may decide to base their price on value, rather than cost, and charge a total of £5000. It is key for problem management to therefore assess the value of its offering. The value of the problem management practice should be in line with the value of the benefits that the wider business provides for its customers.
- **Understand the value of service stability.** The desire to change, to improve and stay one step ahead can often consume an organisation at the expense of stability. Stability in an organisational sense comes from social and technological systems remaining in equilibrium. Thus any significant change on one side will tend to disturb this equilibrium. This highlights the link between organisational change management and problem management, something that must be remembered when looking at the value of a fix that involves both technological and organisational changes.

#### 2. Start where you are

It may seem common sense to say it but it bears repeating: try not to start from scratch and build something new without considering what you already have. It's almost always better to improve what you currently have than to throw it all away and start again. From a problem management perspective this provides several opportunities to re-use or re-factor existing practices.

- **Start where you actually are, not where your aspirations believe you are.** Be honest with yourself in your problem management starting point and manage expectations accordingly. Your data probably isn't as good as you believe, your problem-solving skills won't be where you imagine they are, and you will likely not get anywhere near the resource you need to launch your practice.

- **Concentrate on your practice interfaces.** To allow you to quickly mature a problem management practice it is advisable to prioritise investigation of some of the major interfaces with other practices. Change enablement, monitoring and event management, continual improvement, incident management and service configuration management are five good areas to start with but quickly follow up with some key resource practices like software development and infrastructure & platform management.
- **Review a line from data to service.** Performing a value stream analysis on the line from data indicating a potential problem through to the actual improvement makes absolute sense because it will indicate where the gaps are, particularly if you are looking to establish new interfaces and promote automation.

### 3. Optimise and automate

Resources need to be utilised as effectively and efficiently as possible. Automation is certainly a means to this end, freeing up people only for tasks that can't be automated. It also means that you need to choose carefully and think about simplifying those activities you do decide to automate to eliminate waste and inefficiency. From problem management's perspective good starting points might be:

- **Trending and AI.** We have covered automation of trend analysis earlier in this paper. The link with the monitoring and event management practice is a vital one to forge for both identification and diagnosis of problems.
- **Rules based reporting.** Automation of reporting based on rules can be a useful tool for problem management. Reports can be written that follow a set of rules and used for distributing information and data. For example, if you are monitoring development of potential issues and may want a weekly report that summarises a certain category of events triggered against an outstanding problem.

### 4. Progress iteratively with feedback

This guiding principle encourages us not to try to do everything at once. It's much better to organise work into small, manageable chunks that can be executed and completed swiftly. Key to this strategy is then to seek feedback before, during, and after each iteration and use it to help focus the next effort. For problem management this can mean:

- **Post-problem reviews.** When entering into long and drawn out investigations of more complex problems (often major ones), it might make more sense to have more regular mini reviews. Mini reviews give us the opportunity to implement a staged response to multiple causes that reduces the chance of recurrence or limits the impact of a problem before arriving at a more permanent structural solution.
- **Review the process/ways of working regularly.** Much in the same way that a sprint might involve a retrospective to analyse ways of working, reviewing our use of problem solving techniques can be embedded into such events or even justify sessions of their own.
- **More end-user feedback.** This is vital particularly where workarounds or solutions involve changes to working practices or processes.

### 5. Think and work holistically

No service, practice, process, technology, department or supplier stands alone. They all interact in complex ways to create value. You need to think about the bigger picture whenever you're making a decision or planning an improvement. This can have a number of ramifications for problem management including:

- **Implications of a solution and service interdependencies.** The widest possible view of the implications of solutions should be taken. This may require access to the service catalogue or CMS but also potential input from users where a solution may affect the user interface or user experience. This information is vital for change enablement.
- **Root cause and trigger.** A bigger picture view is helpful in understanding all the contributing causes to problems as well as isolating a trigger for a particular event. For example, it is not uncommon for capacity issues to be triggered by a single file or transaction but it may have been a combination failure of monitoring, scripting or technology that are contributory causes. It always makes sense to ask 'why?' one more time when investigating problems.

#### 6. Keep it simple and practical

Focus on the simple things that create value, rather than on following complex processes just because they have been in use for a long time. Complex steps should be eradicated unless there is a value adding reason not to. One implication of this principle is that your processes need to cover the basics and shouldn't be designed to cover every possible situation. Problem management may utilise this principle by:

- **Asking the question, 'what are we trying to accomplish?'** When looking at problem resolution it is easy to over investigate and to try to resolve more than just the current issue. Utilising one of the other guiding principles and focusing on value should enable us to eradicate any unnecessary processing.
- **Finding simple ways of retaining engagement.** Keeping the problem processes relatively simple and easy-to-follow has two major benefits. The first is the ease with which you retain engagement of those using the processes. The second is that the benefits of simple processes are much easier to show.

#### 7. Collaborate and promote visibility

Collaboration involves the service provider, customers, users, suppliers, and anyone else who is involved in delivering services. The implication of this is that problems with services may need collaboration or input from any of those stakeholders. Collaboration as a guiding principle can be used by problem management in the following ways:

- **Different levels of reporting to stakeholders.** Reporting on problem management activity should be tailored to the audience. Notwithstanding the various stakeholder groups, just recognising the existence of strategic, tactical and operational reporting levels will aid focus on the information that is passed.
- **Communication co-ordination to be added to the role.** Communication should be an implicit part of any role within problem management.
- **PM dashboard.** Your problem management dashboard will allow you to know exactly what's going on in your practice. You know what's working and what's not working. For instance, your dashboard could show you how the latest workaround is performing. How many people have adopted it? How much operational value has it delivered? Such answers can automatically appear on your dashboard. Compare this with most problem managers who have to log in to their system or ask someone else to do it.
- **Collaboration tools.** One of the biggest roadblocks to close collaboration in problem investigations is proximity of the teams. With the increasing availability of collaborative tools, it is no longer necessary to bring colleagues together at the same location for things like major problem investigations. Conferencing tools make it possible to have audio-video interactions with a range of features like desktop sharing and whiteboards to expedite investigations.

- **Common language.** Good problem management requires a culture focused on resolution and not blame. A common language is a driver of culture within any organisation. The language often derives from the organisation’s culture. Teams will create their own mantras that express the principles they want to follow towards achieving goals - for example, crying ‘time out’ as an intervention if a meeting strays from the point or stops adding value. Common language to aid understanding is useful for refocusing, decision-making and identifying the next course of action.

## Practice interfaces

As ITIL 4 practices are designed to be holistic and incorporate all of the four dimensions, it follows that we must think equally widely about the interfaces between them. It’s helpful to understand the types of interface to consider when planning how practices should work together. They may be:

- Organisational – information exchanged between processes and procedures
- Knowledge – general information exchanged between the practices
- Contractual – interactions between external service providers
- Physical – tools or components shared between practices
- Resource – dependencies between practices in areas such as labour.

At our event, we asked the question:

### **What are they key dependencies between the ITIL 4 practices?**

The answers tended to revolve around organisational and knowledge interfaces so care must be taken to explore the other areas. The implication is that this list is not exhaustive!

| Practice                        | Input to problem from practice                                                                                                                  | Output from problem to practice                                                                                                                          |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Monitoring and event management | <ul style="list-style-type: none"> <li>• Events, data, alerts, thresholds</li> </ul>                                                            | <ul style="list-style-type: none"> <li>• Alerting improvements</li> </ul>                                                                                |
| Incident/service desk           | <ul style="list-style-type: none"> <li>• Incident, major incident data</li> <li>• Usage data from known errors</li> </ul>                       | <ul style="list-style-type: none"> <li>• Known errors</li> <li>• Training on implementing known errors</li> </ul>                                        |
| Change Enablement               | <ul style="list-style-type: none"> <li>• Change implementation feedback</li> </ul>                                                              | <ul style="list-style-type: none"> <li>• Change requests to fix problems or workarounds</li> <li>• Involvement in pre- or post-change reviews</li> </ul> |
| SLM                             | <ul style="list-style-type: none"> <li>• Potential source of problems from service reviews</li> <li>• Feedback on problem activities</li> </ul> | <ul style="list-style-type: none"> <li>• Major problem reports + commentary</li> <li>• Progress reports versus on-going investigations</li> </ul>        |
| Relationship management         | <ul style="list-style-type: none"> <li>• Potential source of problems</li> <li>• Feedback on problem activities</li> </ul>                      | <ul style="list-style-type: none"> <li>• Major problem reports + commentary</li> <li>• Progress reports versus on-going investigations</li> </ul>        |



|                                  |                                                                                                                                   |                                                                                                                                            |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Knowledge management             | <ul style="list-style-type: none"> <li>• Structure for knowledge recording, Feedback on knowledge up take</li> </ul>              | <ul style="list-style-type: none"> <li>• Knowledge articles (including KEs where appropriate)</li> </ul>                                   |
| Service configuration management | <ul style="list-style-type: none"> <li>• CI data to enable investigations</li> </ul>                                              | <ul style="list-style-type: none"> <li>• Updates to out of date configuration data</li> </ul>                                              |
| Risk management                  | <ul style="list-style-type: none"> <li>• Risk analysis to aid prioritisation</li> </ul>                                           | <ul style="list-style-type: none"> <li>• Identification of risks / vulnerabilities / impact or likelihood arising from problems</li> </ul> |
| Workforce and talent management  | <ul style="list-style-type: none"> <li>• Problem management skills penetration</li> <li>• Feedback on new skill uptake</li> </ul> | <ul style="list-style-type: none"> <li>• Skill requirements or training courses</li> </ul>                                                 |
| Service financial management     | <ul style="list-style-type: none"> <li>• Input to business cases for resolutions / workarounds</li> </ul>                         | <ul style="list-style-type: none"> <li>• Actual spend on resolutions / workarounds</li> </ul>                                              |
| Service catalogue management     | <ul style="list-style-type: none"> <li>• Service structure for impact analysis or problem investigation</li> </ul>                | <ul style="list-style-type: none"> <li>• Potential identification of gaps in Service Catalogue?</li> </ul>                                 |
| Supplier management              | <ul style="list-style-type: none"> <li>• Resource and data for investigations</li> </ul>                                          | <ul style="list-style-type: none"> <li>• Potential changes to contracts</li> </ul>                                                         |
| Continual improvement            | <ul style="list-style-type: none"> <li>• Problem identification from CI register</li> </ul>                                       | <ul style="list-style-type: none"> <li>• Additions to CI register,</li> <li>• Lesson learned</li> </ul>                                    |
| Business analysis                | <ul style="list-style-type: none"> <li>• Impact analysis particularly around functionality</li> </ul>                             | <ul style="list-style-type: none"> <li>• Clear prioritisation and focus on value</li> </ul>                                                |
| Service design                   | <ul style="list-style-type: none"> <li>• Design docs (blue prints, etc.) to aid investigations</li> </ul>                         | <ul style="list-style-type: none"> <li>• Techniques to identify SPOF or vulnerabilities</li> </ul>                                         |
| Availability management          | <ul style="list-style-type: none"> <li>• Trending and other data</li> </ul>                                                       | <ul style="list-style-type: none"> <li>• Workshops to aid investigations</li> </ul>                                                        |
| Service validation and testing   | <ul style="list-style-type: none"> <li>• Test results to aid investigations</li> </ul>                                            | <ul style="list-style-type: none"> <li>• Advice for extra testing</li> </ul>                                                               |
| Infrastructure & platform        | <ul style="list-style-type: none"> <li>• Resource and data for investigations</li> </ul>                                          | <ul style="list-style-type: none"> <li>• Known errors</li> </ul>                                                                           |
| Enterprise architecture          | <ul style="list-style-type: none"> <li>• Service diagrams, structures, interfaces and interdependencies</li> </ul>                | <ul style="list-style-type: none"> <li>• Techniques to identify SPOF or vulnerabilities</li> </ul>                                         |

What is striking about this list is the number of possible interactions a truly holistic problem management practice should have.

### What does a minimum viable problem management practice look like?

The day looked at extending the idea of a minimum viable product (MVP) from a lean start-up to an ITIL 4 practice to create what we thought might be a minimum viable practice (MVPrac). Our definition of an MVPrac is a version of the problem management practice which allows us to collect the maximum amount of validated learning about its usage with the least effort. This validated learning comes in the form of when and how people engage with the practice.

To do this you must launch a practice that you can use, and observe users' actual behaviour with it. Seeing what people actually do with respect to a practice is much more reliable than asking them.

Our practice needs:

- **Role 1:** A practice head role should be specified to lead, record, co-ordinate and evaluate feedback from activity. Ideally, the role would be filled by an experienced problem management practitioner.
- **Role 2:** A problem analyst role needs to be specified. This is unlikely to be full time in a MVPrac but more a role that can be stepped into by anybody conducting a problem investigation.
- **Value stream/process:** A basic process needs to be specified to allow for identification, investigation, diagnosis, resolution and review. The key interface with change enablement needs to be specified or no results will follow. Prioritisation should be considered against other work in progress as opposed to coming up with a prioritisation matrix that is unique to problem management.
- **Principles:** Activity for a new practice is, by definition, fluid and experimental. Guiding principles should be specified around providing value, thinking holistically etc. with activities flowing from this.
- **Tool:** A tool to record activity should be available. Typically, an organisation ITSM toolset should be more than sufficient.

## Five key takeaways

With so much advice in this paper it proved difficult to choose five key takeaways. Rather than specifics we have chosen five areas that could be considered guidelines.

1. Investment in education should ensure that 'Problem Analyst' is a micro role that everybody should learn
2. A problem management practice should take a much more proactive role in promoting its activities
3. Problem management is more than a process and its influence can extend way beyond finding the root cause
4. Problem management cannot exist alone. Interfaces are key and they need to be specified quickly
5. Understanding value is key to directing the investment in activity for the practice as a whole and for individual problems.

***This paper was kindly prepared by itsMF UK Problem Management SIG Chair Barry Corless (Global Knowledge), with additional contributions from Claire Drake (Fujitsu), John Ashplant (Vysiion), Rosie Dalton and Stephen Conway (Department for Work and Pensions).***