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► **To cite this version:**

Rosa Michaelson. Is Agile the Answer? The Case of UK Universal Credit. International Working Conference on Transfer and Diffusion of IT (TDIT), Jun 2013, Bangalore, India. pp.295-309, 10.1007/978-3-642-38862-0\_18 . hal-01467785

**HAL Id: hal-01467785**

**<https://inria.hal.science/hal-01467785>**

Submitted on 14 Feb 2017

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# Is Agile the answer? the case of UK Universal Credit

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**Abstract.** In 2010 the UK government responded to a catalogue of failing large-scale IT projects by cancelling most of them. In 2011 they announced the Universal Credit (UC) project, described as “the biggest single change to the system of benefits and tax credits since 1945, affecting some 6 million households and 19 million people”. UC will integrate a number of legacy databases with the Real Time Information (RTI) system, administered by Her Majesty’s Revenue and Customs (HMRC) and due to complete by October 2013. The coupling of these two large-scale IT projects will affect millions of UK citizens; it is crucial that both complete successfully and on time. Government has responded to criticisms by stating that the use of Agile methods will solve the failures of the past. This paper critically assesses the adoption of Agile methods for software development, project management and procurement in the case of Universal Credit.

**Keywords:** failure analysis, sociotechnical framework, Agile methods, large-scale systems

## 1 Introduction

Whilst investigating wide-reaching UK Taxation problems which came to light in 2010 and 2011, research into the limitations of the UK Pay-As-You-Earn system were overtaken by events. Firstly, despite the problems of under and over payment of tax associated with the delays in this large-scale public sector project, an announcement was made that instead of continuing with year-end reconciliations of employee data, HMRC (Her Majesty’s Revenue and Customs) was adopting a new system which would receive real-time information from employers throughout the year, on a monthly basis, so that tax collection was more frequent and employee tax status was kept up-to-date. What is more, this new system, known as RTI, was to be delivered in 18 months, a relatively short time-scale compared with the time for procurement and implementation associated with previous large-scale public sector IT projects. Within 6 months of this announcement, the basis and rationale for RTI was further expanded; the RTI system was now the enabling technology for a complete overhaul of the UK welfare system. The delivery of the simplified payment system of benefits called Universal Credit (UC) requires the integration of 6 separate legacy systems administered by the Department of Work and Pensions, and features data sharing with tax systems (administered by the separate government division of HMRC) via RTI. The deadline for this ambitious change was originally planned within the timescale for RTI completion, with the stated aim of both RTI and UC being live in October 2013.

The Universal Credit project is a messy one, as are many of the large-scale public sector projects of the last 20 years - messy in the sense that Law applies to social science case studies (Law, 2007). Law uses a number of sociotechnical case studies which deploy ethnographic methods to illustrate a range of ways to deal with “what happens when social science tries to describe things that are complex, diffuse and messy” (Law, 2007). Here, I use a socio-technical framework in order to make sense of the many factors and viewpoints that influence a real world problem, that of the histories of inter-linked large-scale public sector IT projects. In this paper, I present what Geertz called “a thick description” of policy and practise with respect to the Universal Credit project, where the process of amassing data and writing the case study forms part of the analysis (Geertz, 1975). This is similar to Beynon-Davies’ ‘web-based analysis’ of failure which focuses on the social and political contexts of software adoption as a way of improving our understanding of such examples (Beynon-Davies, 1999).

In 2010, the UK Coalition government responded to the legacy of disastrous public IT projects by cancelling most of them (DoH, 2010; NAOa, 2011; Tarr, 2012). Given this response, what makes government sure that the ambitious Universal Credit project will succeed? Their answer is a fundamental change in ICT development by the public sector, abandoning the overly bureaucratic processes of the past

by adopting Agile methods for software development, project management and procurement (CO, 2011; 2012). This paper assesses to what extent Agile is the solution to the historical problems of large-scale public sector IT failure by examining the case of Universal Credit. The structure is as follows: firstly, Agile methods are briefly discussed, and recent changes in government attitudes to software project design, development and acquisition are noted; secondly, the story of the HMRC RTI project is presented, with a description of PAYE, the organisational context, the technologies and history; thirdly, I describe the case of Universal Credit with responses from several different interested parties. Finally, I discuss to what extent Agile methods can or will ensure the successful outcome the government expects.

## **2 Agile Methods and UK Government ICT Development**

### **2.1 Agile Methods**

Agile methods were originally defined by programmers and software developers in the Agile Manifesto of 2001. The focus of Agile development is on (i) individuals and interactions rather than processes and tools; (ii) the production of working software rather than extensive documentation; (iii) collaboration with the customer not contract negotiation; and (iv) responding to change rather than following a plan (Agile Manifesto, 2001). Further, the methods requires developers and clients to work together on a daily basis and insists that face-to-face interactions are vital. Thus Agile development applies to projects which are: modular, iterative, responsive to change, and in which the users' needs are central to the delivery. Such projects are characterised by not having a fixed or detailed knowledge of the final solution at initiation, but must have clear business objectives. Agile has been of recent interest to many in Computer Science and Information Systems fields, with caveats concerning what type of organisation and scale of IT project are suitable for such methods (Nerur, 2005; Denning, 2008). In fact, the roots of Agile can be found in earlier software engineering methods of the 60s which deploy iteration and incremental processes, and eschew overly-bureaucratic documentation and project management techniques (Larman, 2003). Similar development techniques of more recent times include Prototyping, Rapid Application Development and Extreme Programming, amongst others (Larman, 2003).

In a footnote in the Cabinet Office report entitled *One Year On: Implementing the Government ICT Strategy*, we find this definition for agile:

Agile is an iterative development process where deliverables are submitted in stages allowing projects to respond to changing business requirements and releasing benefits earlier. (CO, 2012)

However, the way Agile is discussed in the government documents detailed below shows a difference between the Agile Manifesto objectives and how Agile is understood by managers and civil servants. For example, Agile is frequently presented as the opposite of the 'waterfall' method, but the definition above is not the opposite of a classic waterfall approach, rather it echoes some of the waterfall methodology – that is the iterative nature of development.

### **2.2 Changes in UK Government ICT Development**

Failure in software development and adoption has been analysed in several different ways over the last 30/40 years. There are those who differentiate between development failure and system failure, and classify project abandonment in terms of total, substantial and partial, as noted in (Beynon-Davies, 1999). In 2002 Wilson and Howcroft revisited and reconceptualised ideas of failure classification by noting that even after successful adoption software could be regarded as having failed at a later date, given the contextual changes and inherent uncertainties of system use over time (Wilson, 2002). Fincham goes so far as to suggest that we cannot use the labels of failure or success as those concerned modify their views as the project unfolds (Fincham, 2002). Goldfinch takes the pessimistic view that large-scale projects of this nature are so inherently driven by politics that they should not be attempted in the first place (Goldfinch, 2007). However, though it is difficult to distinguish between software projects that have a strong possibility of success and those that may succeed, but deliver incomplete solutions, it is self-evident that some software does actually fail to work, and much is not-fit-for purpose when implemented.

The UK has a history of large-scale public-sector IT failures which include (i) the e-Borders project; (ii) the UK ID central database project; (iii) the NHS for IT project in England and Wales; (iv) 5 shared services projects for central government departments; (v) the integrated Fire Services Management project; and (vi) the Rural Payments project (Anderson et al., 2009; NAO, 2011a). Several factors are regarded as contributing to each of these failures, namely size, spiralling costs and over-runs, the software acquisition process, political contexts, and so on (PAC, 2011). Major reviews of these failures have resulted in a change in government views about development and procurement of ICT. These are documented in several reports, namely (i) UK Government changes in ICT strategy (CO, 2011; 2012); and (ii) in responses from the National Audit Office to this change of strategy (NAO, 2011b; NAO, 2011c).

In particular, the idea that Agile methods might be preferable to previous overly-bureaucratic processes emerged in an important Public Administration Committee report in 2011 (PAC, 2011). Here, having recommended that departments look at alternative development methods, the report summary notes the tension between the need for in-house expertise in Agile methods, and the major outsourcing of such expertise because there is little or no in-house civil service knowledge of such matters. Others also suggested that Agile methods might solve the problems of failure (Magee, 2012); this idea was then taken up and expanded in the new government ICT strategy that emerged after the 2010 election: “Applying lean and agile methodologies that will reduce waste, be more responsive to changing requirements and reduce the risk of project failure and moving away from large projects that are slow to implement” (NAO, 2011c). This strategy included the aim that Agile would be used in 50% of all government IT projects by April 2013 (NAO, 2011b). In these and subsequent statements, Agile is presented as not only the answer to project failure and cost over-runs, but also a means to challenge the oligopoly of large software companies in large-scale IT procurement, allowing more SME (Small to Medium-sized Enterprise) involvement in public sector projects: “Government is consulting on new frameworks that will enable more agile procurement, and open the market to more SMEs” (NAO, 2011c).

### **3 The Real Time Information Project**

#### **3.1 PAYE**

Pay-as-you-earn (PAYE) was introduced in 1944 as a means of maximising revenue during the inter-war and post-war period (HMRC, 2011). PAYE is a method of collecting tax at source via employee payments, so that taxpayers pay their tax as they work. The employee pays in advance each month (or payment period) towards an estimated amount of tax which is then checked against actual employment and allowances at each year end. An employee is given a tax code by HMRC which consists of items which show the allowances for an individual. The employer is responsible for sending on the total tax owed by the employees of the organisation to HMRC in an annual payment. However, given the need for annual reconciliations of employee status, often the employer is in arrears for the overall tax burden to the state.

In September 2010, HMRC announced that due to errors in PAYE coding a total of 6M people in the UK had paid the wrong amount of tax in previous periods. It was estimated that 4.3M had paid too much and were due a refund, and 1.4M had underpaid (on average each had underpaid by £1,428.) A Treasury report into the administration and effectiveness of HMRC noted that “these over-and underpayments had arisen because the amounts of tax collected from individual taxpayer under the PAYE system in 2008-09 and 2009-10 had not been checked” (Treasury, 2011). Soon after, in October, more errors in payments of tax (of up to £24,000 in some cases) were announced by HMRC. Further details emerged at this point; in particular, it was said that the 2009 introduction of a computer system had produced the large number of anomalies in tax payment. Prior to the roll-out of 2009, the previous PAYE system was based on manual as well as computer-based processes. There were 12 different regional databases across the UK, and taxpayers' details were often cross-checked manually. HMRC stated that the old system led to mistakes which were then flushed out by the new system. With the previous system, HMRC manually reconciled between 16-17M cases at the year-end; once the 2009 system was fully embedded it was hoped that this would fall to around 3M cases, but this proved to be over optimistic (CIT, 2011).

The problems appeared to date to 2008, but were, in fact, an accumulated set of PAYE coding errors which had a far longer history. In 2010, it was estimated that 15 million taxpayers had not had their tax affairs settled since 2004. Previously in December 2009, it was suggested that 7M people had mispaid in

2008/09 as a result of coding anomalies. The problems of tackling these mis-payments was further compounded by additional disruption in January 2010, when HMRC issued nearly 26M new tax codes to taxpayers, almost twice as many as expected on an annual basis. It appeared that the annual reconciliation of PAYE codes based on the returns of data from employers compared with those held by HMRC had not happened for several years. In 2011 the Treasury noted that HMRC had committed to clearing the backlog of open cases, which stood at 17.9M in late 2010, by 2012 (Treasury, 2011).

### **3.2 Organisational Context**

The organisational context for RTI involves changes to the structure and role of HMRC over the last decade (Treasury, 2011). In 2005/6 the UK Tax and Inland Revenue departments were merged. In 2007, the department had to reduce its annual operational costs by five per cent each year over the period 2007/08 to 2010/11 (Kablenet, 2007). Between 2006 and 2011, it is estimated that 25,000 jobs were lost, many as a result of the merger in 2005/6, leaving HMRC with 74,000 posts in 2011. By 2009, it was claimed that staff morale at HMRC was at an all-time low. In 2010, the closure of 130 local offices was announced, and planned reductions in staffing levels with the loss of what managers at HMRC claimed was 3000 jobs over 5 years. However, it is estimated that the Comprehensive Spending Review of 2010 in reality threatens a further 10,000 jobs over the next 4 years (ICAEW, 2010).

A recent external report on employment issues at HMRC stated: "At the heart of the engagement challenge in HMRC is a disconnect between employees and the overall organisation. Many employees feel that the organisation as a whole neither values, listens to, nor respects them" (Clarke, 2012). Low levels of morale in HMRC have been reported over the last 10 years (Brookes, 2009). This is due to constant re-structuring, changes to conditions of services, job reductions and lack of resources (Clarke, 2012). Several internal surveys have shown that employees do not feel trusted by management and that there is a "strong blame culture". This low morale is reflected in the number of strikes that have occurred in recent years. Carter et al. argue that the impact of Lean management processes within HMRC has had "a detrimental effect on employees, their working lives, and the service that is provided to the public" (Carter et al., 2011).

2010 saw a major government review of HMRC in light of complaints from clients, and with regard to the loss of crucial tax income due to mistakes and errors in data handling, as noted above in 3.1. Perhaps it is no coincidence that over this period there have been issues with the suppliers of computing systems, and problems with the resulting processes and tax collections.

### **3.3 Technologies**

The main commercial supplier for the Inland Revenue's Tax and National Insurance system from 1994 to 2004 was EDS, then the second largest software company in the world (BBC, 2003). In 2003, the launch of a new tax credit system led to over-payments of £2B to over two million people and the contract with EDS was scrapped. After eight years, EDS paid £71.25M in compensation for this debacle (Oates, 2009). In 2004, the computing systems contract was awarded to Capgemini with Fujitsu and BT as minor partners (Oates, 2009). This contract, which was originally to run until 2014, was one of the biggest ever IT outsourcing contracts, with a value of £2.6B, and a lifetime value of £8.5B (Computer Weekly, 2009). Aspire (Acquiring Strategic Partners for the Inland Revenue) was set up to replace the contracts Inland Revenue had with EDS and Accenture for IT services respectively (Kablenet, 2007).

In 2009, HMRC revised the contract for the Aspire system with Capgemini and extended it until 2017 (Computer Weekly, 2009). This locking in of IT services for such a long period has been heavily criticised, and illustrates the issues associated with assessing the claims made for cost-savings as a result of Aspire:

The Aspire contract between HMRC and Capgemini covers a 13 year period and was originally valued at £2.8 billion. This contract is a case study of what is wrong with the present procurement culture. Such a large contract is too complex to manage. The assessment of costs and benefits is opaque and it commits too much power and money to a single supplier. (PAC, 2011)

Unfortunately the new computer systems implementation over ran, and software problems, which were estimated to cost £395M, delayed the processing of the 2008-2009 PAYE details for at least a year.

### 3.4 RTI

In 2010, further changes were proposed to the HMRC PAYE computing system in order to avoid the annual reconciliation process, which was producing large numbers of anomalies in tax-codes, and to obtain real-time data from organisations with regard to employee status. The argument was that in comparison to the early period of PAYE when an individual had the same job for many years, nowadays there are rapidly changing patterns of employment, which lead to increases in the under or overpayment of tax each year. To allow for these rapid changes in employment, an individual's details will be held in a large database known as the Real-Time Information (RTI) system (a data warehouse). The new system requires high levels of data quality (presumably because there is no plan for recovery from the errors that are present in the un-reconciled tax payments based on estimates), and all organisations have been briefed on the need for the provision of clean data. However, the current status of the quality of data held by HMRC is in doubt. As noted by the 2011 Treasury report: "Data quality has been a key weakness in the PAYE system to date. The success of both the National Insurance and PAYE Service and Real-time Information will depend to a large extent on how effectively HMRC can 'cleanse' the data it receives and holds" (Treasury, 2011).

In 2010, a one-off payment of £100M was given to HMRC to help fund RTI which was to be rolled out over a period of 18 months, starting with a pilot in spring 2011. The timetable slipped somewhat, and the pilot started in April 2012 using a selected number of partners, and then proceeding to a full engagement from all employers by October 2013, despite opposition from several interested parties (such as major employers, and professional tax bodies). By July 2012 the pilot involved 500 employers, with approximately 1.7m employees (Fuller, 2012). The pilot was widened further in November 2012.

RTI requires all employers to change their reporting systems to be compliant with HMRC software. Few of the software suppliers who support businesses in PAYE returns had developed appropriate packages in the early part of the project. The original specification also required employers to make payments to HMRC using BACS (Bankers' Automated Clearing Services) instead of EDI (Electronic Data Interchange), competing standards for electronic cash transfers. Since the majority of SME were using EDI there were objections from interested parties, and other problems arose with moving from EDI to BACS as a means of communicating employee records, by September 2011, HMRC had agreed to continue to use several channels for payment, including both EDI and BACS (Say, 2012).

This is but one of several changes made to specifications for RTI during the development phase. Other objectives that were changed due to stakeholder responses include the following examples. Firstly, 'end of work period' P45 forms were to be abolished. A P45 is the document which allows for continuity in the tax process as an individual changes work. However, this decision was reversed after extensive complaints from employers and accountants (Woods, 2012). Secondly, the pilot was originally planned to take under 12 months. The idea that employers should then use a system that had not been fully tested for a complete tax year in pilot form caused some concern:

We welcome the move to introduce Real-time Information (RTI). We agree with the professional bodies that the system must be tested thoroughly before full implementation, with full consultation with users and close co-operation with the Department for Work and Pensions at all stages. We note that large employers will be required to use the new system in January 2013, which is before the system has been tested through one complete tax year. (Treasury, 2011)

As a result of growing external pressure, in October 2012 it was announced that the pilot would continue until April 2013, at which point all employers would use RTI, though larger firms were given between April and October to join the new system.

This responsiveness might be seen as a positive way of developing a new system, if it were not for the impression that the scoping of requirements had been rushed and did not take account of stakeholder views. If anything, these reverses added to the mistrust of HMRC technologies.

The HMRC web-site is predicting that the complete RTI system will be in place for October 2013, or rather that this final date for completion cannot be changed due to the pressure from Ministers who are driving welfare reform. Given the history of over-run on previous HMRC projects, as noted above, and

UK public sector IT projects in general, this is a worrying stance. The Treasury has warned of the dangers of such inflexibility in the roll-out of RTI:

HMRC has committed to an ambitious timescale to deliver Real-time Information, driven in part by the importance of the project in delivering the Universal Credit. The history of large IT projects subject to policy-driven timescales has been littered with failure. The timetable is made more ambitious by the fact HMRC will still be resolving the legacy of open cases and stabilising the National Insurance and PAYE Service during the project's early stages. Introducing Real-time Information before HMRC and the Government can be sure it will work correctly would run unacceptable risks for the reputation of the Department and the tax system. (Treasury, 2011)

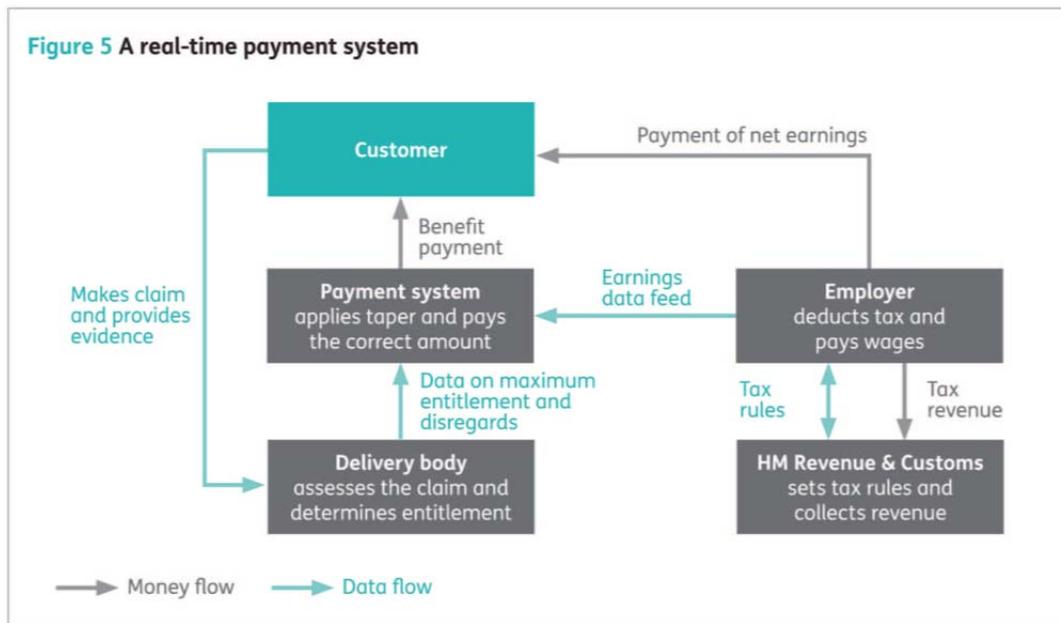
As of March 2013, though the pilot has been described as a success, the numbers of small businesses ready for the April change is as low as 32% (PAC, 2012). Not only does HMRC have no contingency plans in place if RTI fails, all remaining 281 tax advice centres will close during 2013-2014 during the period of the roll-out of Universal Credit (Wade, 2013; BBC, 2013).

#### **4 Universal Credit**

Universal Credit is a new benefit for people of working age which will be introduced over a four year period from 2013 to 2017. It will replace existing means-tested benefits and tax credits (including income-based Jobseekers; Allowance and Employment and Support Allowance; Income Support; Child Tax Credits; Working Tax Credits; and Housing Benefit). It is the Government's key reform to simplify the benefits systems and to promote work and personal responsibility. (CSC, 2012)

Mark Hoban, who became a minister at the Department for Work and Pensions (DWP) in September 2012, produced figures for the estimated cost of the UC project of £638M, which included IT development, associated integration with other systems and infrastructure requirements. The cost of design, development and software was estimated at £492M, with the remainder for changes to dependant systems and infrastructure (Work & Pensions, 2012). Accenture was awarded the £500M 7-year contract to manage the IT systems that support UC; IBM was awarded a £525M contract which runs until 2018, to provide computing systems across 60 services and will also be involved in the integrating UC project. They are providing a customer information system, resource management, and fraud referral and intervention management, some of which will be used in the delivery of Universal Credit. The DWP also signed a £100 million deal with HP for delivery of software covering the core benefits system and department application support (King, 2011). In addition DWP signed a contract with Capgemini for 7 years, of between £5M and £10M per year, for the provision and maintenance of business applications (Hall, 2011).

The effects of the roll-out of the Universal Credit project can be gauged by reading the transcripts of Select Committee reviews, the reports of various government bodies such as the National Audit Office and the Cabinet Office. In addition there are the reports and briefings which each public department makes about the management of IT and special projects, including the metrics and key performance indicators. All of these are in the public domain. There are over 70 organisations directly affected by changes to benefits and which have responded to consultation exercises. The Local Government Association (LGA) is one these and it has made several representations to the DWP and other committees asking that the Agile methodology for UC be revised as it is 'not grounded in reality' (Hitchcock, 2012).



**Fig. 1.** Proposed Real-Time Payment System (Source: DWP, 2010, p. 35)

In addition, UK Local Authorities have an interest in the change to Universal Credit, since there are various benefits which affect the holder's status with regard to local taxes, such as council tax, and the subsequent need to reconcile monies between central and local government. Local authorities also provide the face-to-face contact for those who receive many benefits. The locally managed Council Tax is not part of the overhaul of Universal Credit, but is part of the total benefit assessment. There are differences as to how benefit payments are made across the UK which directly affect the integration process (Tarr, 2012). Benefit payments have weekly cycles; RTI operates on a monthly cycle. As a result UC has also been planned as a monthly cycle of payment, thereby creating problems for the disadvantaged who are used to budgeting on a weekly basis. Benefits are to be calculated per household not for an individual which may lessen income for women.

Other sources of information concerning policy and practise are the publications of interested bodies including (i) public sector unions, such as Unison; (ii) Charities, such as the Joseph Rowntree Foundation; and (iii) representatives of professions, including accountants and tax professionals, such as the Institute of Chartered Accountants and the Chartered Institute of Taxation, amongst others. For example, the Chartered Institute of Taxation has a group called the Low Income Tax Reform Group (LITR) which is very worried by the possible effects of Universal Credit. They have warned of problems with the accumulation and transition of tax credit debt which may result as a result of linking benefits payments with taxation in this way, stating "HMRC and DWP need a clear and well thought-out strategy to ensure that the start of UC is not blighted by inheriting the £6.5 billion debt that may have accumulated in tax credits by 2014/15" (LITR, 2012).

Under the new system all claimants will be 'digital by default'. The plan is to have all communications from an individual about benefits on-line, and for payments to be made into an online account. 'Digital by Default' has been criticised for affecting the most vulnerable, who are those who are most likely to receive many of the benefits (Tarr, 2012). Many of those claiming benefits do not have bank accounts, and budget with cash set aside for specific items such as rent, debts and food. Community charity Citizens Advice warns that the Universal Credit system "risks causing difficulties to the 8.5 million people who have never used the internet and a further 14.5 million who have virtually no ICT skills" (WPC, 2012).

Unfortunately the DWP has not published the fuller details of the technology that will integrate the existing systems (See Figure 1 for a data-flow diagram of real-time payments for Universal Credit proposed in 2010 by DWP). The October 2012 Joseph Rowntree Foundation report discussed the problem of lack of details about the IT as follows:

However, there is still very limited publically available information on how the IT will operate and what will happen if things go wrong; DWP should address this and provide reassurance on how the system will operate, what training staff will undergo to understand it, and what processes will be in place in case IT systems fail. (Tarr, 2012)

Other information that is not in the public domain includes how Agile methods are actually being deployed in UC development (Slater, 2012). Is Agile regarded as a software development method, a project management process, at odds with the ‘waterfall’ method, or scalable? This is the main focus of the next section in which the efficacy of the adoption of Agile methods is discussed.

## 5 Is Agile the Answer?

In September 2012, in response to criticisms of timescale, the DWP claimed that “The IT is already mostly built. It is not a single IT system, but is being built part-by-part on an agile basis as well as bringing in existing systems. It is built and tested, on-time and on-budget” (Hall, 2011). Iain Duncan Smith, the government Work and Pensions Secretary, told the Commons Select Committee when it took evidence on Universal Credit in September 2012:

The thing about the agile process which I find frustrating at times, because we cannot quite get across to people, is that agile is about change. It is about allowing you to get to a certain point in the process, check it out, make sure it works, come up with something you can rectify, and make it more efficient. So you are constantly rolling forward, proving, and making more efficient. (CSC, 2012)

The Cabinet Office Major Projects Authority (MPA) issued the *Starting Gate Review of Universal Credit* in September 2011. This report notes some concerns about the take-up of agile methods as follows: “Overall, the use of an agile methodology remains unproven at this scale and within UK Government however, the challenging timescale does present DWP with few choices for delivery of such a radical programme.” Thus Agile was chosen not because it was a tried and tested methodology, but because of the short timescale (Collins, 2011). This report also shows that there are doubts about the scalability of the Agile process stating further that the programme is using conventional, multi-million pound contracts with large suppliers to deliver the system, with RTI being developed simultaneously using a conventional waterfall methodology (Ballard, 2011; Collins, 2011).

There is a lack of understanding in the government and civil service that adopting agile processes will require changes to organisational structures (Nerur, 2005). Commenting that government IT is not just a cost to be managed, Sir Ian Magee, who co-edited the ‘System Upgrade?’ report, questioned the ability of senior civil servants as follows:

Agile requires real changes in departmental procurement, policy development and operational management processes, and it is not clear that government IT leaders feel sufficiently confident or supported to challenge departmental board leaders and ministers to do things differently. Meanwhile, in my experience, many top level civil servants express discomfort about challenging IT leaders to deliver better, more responsive services, in part due to a shortage of knowledge but also due to a distinct shortage of information on chief information officer (CIO) performance. (Magee, 2012)

In the case of Universal Credit, Agile has become an answer to critics of the scale and speed of the process, a means by which SME can become part of the software solution, and is also regarded as a project management and procurement process, rather than a software development method.

Many questions are as yet unanswered with respect to this example of interlinked large-scale public sector IT projects. Will the use of Agile design in government departments mean that the ‘IT rip-offs’ of the past are no longer going to happen? How can Agile be used successfully if civil servants and managers appear to have little or no technical understanding in the first place? To what extent can such grandiose schemes be de-coupled from the political contexts in which they are conceived and driven? There is growing evidence that the use of Agile methods is not compatible with large-scale projects or organisations that are bureaucratic (Nerur, 2005). In 2011 the US Department of Defence had to impose an emergency reform of IT projects using Agile methods, after 11 major computer systems went \$6bn over budget and were estimated to be 31 years behind schedule (Ballard, 2012). As noted in section 2.1

above, Agile requires a daily commitment from clients to meet with developers. In large-scale projects it can be hard to identify appropriate clients for sub-projects, and for those clients to be available for daily meetings with small development teams. It is also difficult to imagine how the needs of public accountability can be met without some level of administrative control and documentation.

The DWP states in the *21<sup>st</sup> Century Welfare paper*: “In planning the transition to the new system, we would be guided by our principles of simplicity, fairness and affordability” (DWP, 2010). What is evident in the analysis presented above is that the addition of major IT change adds complexity to the process of simplification. Whether this grand project is affordable will only be determined at some point in the future. However, it seems likely that there will be losers in this roll-out – those with the most dependency on benefits and welfare. This is hardly fair.

It is unlikely that we can identify one factor in particular that is the main cause of systems failure, but given the complex nature of large-scale public sector projects it is also unlikely that relying on one factor alone, such as a change in software methodology, will guarantee success. The rationale of government entering on new large-scale complex IT projects after the experiences of the previous disasters discussed above was the use of Agile methods. In the cases of RTI and UC outlined above, I would argue that Agile has become a rhetorical device rather than the answer to large-scale public sector IT failure. Ian Watmore, who was Permanent Secretary of the Cabinet office in 2011, at the time of the major review, identified three main reasons for large-scale IT failure: “policy problems, business change problems or big-bang implementation” (PAC, 2011). The Universal Credit project has all of these features. It is unlikely that the adoption of a new method of software design and procurement will affect such major structural processes.

## 6 Glossary

ASPIRE	Acquiring Strategic Partners for the Inland Revenue
BACS	Bankers' Automated Clearing Services
DWP	Department of Work and Pensions
EDI	Electronic Data Interchange
HMRC	Her Majesties Revenue and Customs
IT	Information Technology
IS	Information Systems
LITR	Low Income Tax Reform Group
LGA	Local Government Association
MPA	Major Projects Authority
NPS	National Insurance and PAYE Service
PAYE	Pay As You Earn
RTI	Real Time Information
SME	Small to Medium-sized Enterprise
UC	Universal Credit

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