Received: 22 January 2024 | Revised: 9 June 2024 | Accepted: 11 June 2024

DOI: 10.1111/spol.13053

ORIGINAL ARTICLE

WILEY

An 'interface first' bureaucracy: Interface design, universal credit and the digital welfare state

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Abstract

The front-line of the welfare state is increasingly not a letter, phone call or face-to-face visit, but an online user-interface. This 'interface first' bureaucracy is a fundamental reshaping of social security administration, but the design and operation of these interfaces is poorly understood. Drawing on interview data from senior civil servants, welfare benefits advisors and claimants on the UK's flagship Universal Credit working-age benefit, this paper is a detailed analysis of the role played by interfaces in the modern welfare state. Providing examples from across the Universal Credit system, it sets out a five-fold typology of user-interface design elements in the social security context: (i) structuring data input, (ii) interaction architecture, (iii) operative controls, (iv) prompting and priming, and (v) integrations. The paper concludes by considering the implications of an 'interface first' welfare bureaucracy for future research.

KEYWORDS
digital welfare state, digitalisation, universal credit, user interfaces, welfare bureaucracy

1 | INTRODUCTION

Social security support used to reply on paper, phone calls and face-to-face meetings. Hard-copy application forms, journeys to a welfare benefits office and calling civil servants were all necessary to make and sustain a benefit claim.

However, the increasing digitalisation of welfare bureaucracy means that the face of the state is now increasingly not a bureaucrat, letter or phone call, but an online user interface. Welfare states across the world are increasingly 'interface first' bureaucracies: apps, platforms and websites mediate access to services and manage interactions between citizens and the state (see Considine et al., 2022; Koca, 2023; Noureen, 2023; Schou & Pors, 2019). Such is the proliferation of interface-based access to public services that Raso argues we are already in a world of 'interface governance', where 'glitches' in these seemingly anodyne platforms can lead to widespread consequences for their users (Raso, 2023).

Although there is an extensive literature on the digitalisation of welfare bureaucracy and front-line interactions—much of it within the pages of this journal (for example, see Ball et al., 2023)—the design and operation of these interfaces remains heavily underexplored. Studies of the digital welfare state refer to the importance of 'interfaces' in the abstract, but rarely explore their design or operation (with some notable exceptions, see Bennett, 2023). This leads Raso to call for empirical studies to address these questions of 'technical design and functioning' in order to reveal how 'interfaces (re)form administrative governance' (Raso, 2023). Drawing on 50 interviews with senior civil servants in the UK Department for Work & Pensions (DWP), welfare benefits advisors and claimants, this paper undertakes this detailed examination of the interface for UK's flagship working-age benefit, 'Universal Credit' (UC).

In doing-so, this paper explores the following question: what is distinct about the design of interfaces compared to the design of other front-line processes in the welfare state? Interfaces are not simply an online equivalent of paper-based administration: they offer far broader-ranging functionality and present different design challenges to prior channels of welfare bureaucracy. To date, research has identified both the accessibility problems that can follow from this reliance on online interfaces when accessing and sustaining entitlement (e.g., see Sheldrick, 2023) and the impact on claimants of 'glitches' and other interface design problems (e.g. see Raso, 2023; Griffiths, 2024). These are important issues that warrant interrogation. However, we suggest that this comprehensive re-shaping of the welfare state front-line poses more fundamental questions about what matters in interface design both for the end-user and the developers tasked with designing these systems. Drawing on our data, this paper sets out a typology of interface design elements: (i) structuring data input, (ii) interaction architecture, (iii) operative controls, (iv) prompting and priming, and (v) integrations. The argument is put in two sections. The first introduces the concept of an 'interface first' welfare state. The second draws on our data to set out the five-fold typology of interface design elements. In doing-so, we seek to both provide a framework to interrogate the design and operation of interfaces in welfare bureaucracies, and illustrate their role in influencing user behaviour and re-shaping claimant interactions with front-line officials.

2 | AN 'INTERFACE FIRST' WELFARE STATE

'Digitalisation' of the welfare state is not synonymous with 'automation' of the welfare state. Automating process, through the use of algorithms and increasingly 'artificial intelligence' technologies, is an important and widely studied component of the move to digital public services (Ranchordás, 2022, p.1359–1360). However, this 'algorithmic factory floor' sibehind the scenes—algorithms automatically deciding entitlement, identifying fraud, or profiling claimant data—sits alongside an equally fundamental transformation to the front-line of public services. The platformisation of other strands of life has been mirrored in welfare state administration, with apps and website-based services increasingly supplanting face-to-face, telephone and paper-based contact. Users—from the claimant themselves to the front-line workers operating the system—must 'by default interact (or struggle) with' these systems 'before they access a human being' (Raso, 2021, p. 526). Accessing welfare support is therefore increasingly 'interface first': a claimant's first point of contact is with an online user-interface, either through a web browser or an app.

This 'interface first' approach is built into the DNA of UC. Characterised variously as a 'digital by default', 'digital first' and 'digital by design' system (Griffiths, 2024; Sheldrick, 2023), UC's 'conceptual framework' falls into two camps (Pope, 2020). The first relates to social security policy: simplifying the benefits system by merging the largest

four working-age benefits and two tax credits; creating a 'hyper-means-tested benefit' that is more responsive to changes in income and circumstances; and introducing broader ranging activity requirements and sanctions (Pope, 2020; Griffiths, 2024). The second—which is equally fundamental to the UC vision—is its delivery through a digital account 'designed and operated' by the DWP (Pope, 2020). For the vast majority of claimants, accessing UC means signing into an online account on a web browser or smartphone and managing their claim through the online interface.

The UC system can be treated as one inter-linked interface, with users accessing the service through a single online account available through the Gov.uk platform. A new claimant signs-up and manages their ongoing claim—from interacting with DWP staff to logging changes of circumstances—through this same online account interface: they do not need to move between services on the platform (but, as discussed in more detail below in respect of 'integrations', the interface is not always interoperable with all elements of the social security or tax system). However, the interface is not the entirety of the UC system; there remains a considerable face-to-face and telephone component. On the former, many claimants subject to work search requirements have regular face-to-face meetings with work coaches at physical job centres (staff whom they also remain in contact with via the UC interface) and, at the point of application, some ID checks are still managed via a face-to-face appointment. On the latter, there remains a route for claiming UC over the telephone where claimants' circumstances require it (for instance, because they do not have a digital device or internet access). In these cases, the claimant 'still has an online UC account on the DWP system, but they do not have online access to it' - instead their claim is managed through phone calls with civil servants (Child Poverty Action Group, 2023, p.49). Since the introduction of UC, telephone claims have represented a very small element of the overall case load—approximately 7% of claims in the early roll-out of UC (see DWP, 2013), and significantly less in the current case load, not least due to the reluctance of the DWP to facilitate offline claims (ibid). The system is therefore 'interface first': led by a flagship digital interface, but still retaining significant offline elements.

This 'interface first' approach is important for four reasons. First, digital interfaces are not simply online equivalents of paper-based, telephone or face-to-face processes. Online applications forms are not merely digital renderings of their paper counterparts; a chat messaging function is distinct from a letter or phone call; and accessing an app is different to walking to a benefits office. There is a wide range of additional functionality and a distinct set of front-line interactions that can be facilitated by digital interfaces which remain under-interrogated in existing research on the digital welfare state (see Sela (2019)). Interface design is therefore not only about delivering the same service via a different mechanism (for an exploration of public attitudes to this, see Prokop & Tepe, 2022), but instead offers a range of functionality that is distinct from a paper, phone or face-to-face front-line.

Second, the literature on human computer interaction and the sub-field of 'digital choice architecture' in particular, demonstrates the behavioural impacts of interface design. As Sela's work across a range of online judicial systems demonstrates, 'no choice environment is neutral: every interface design shapes behaviour' (Sela, 2019). A wide range of interface design elements influence users: some more 'transparent' (such as a pop-up box to prompt a user prior to an action), others 'non-transparent' (such as information placement, where items on the interface are re-ordered to influence a choice) (for a comprehensive review, see Bhatt and Seetharaman (2023)). However, as Sela argues, even decisions as seemingly anodyne as font size and colour can influence users' behaviour and therefore—in the context of a public service—their experience or even the outcome of their interaction with the state (Sela, 2019, p. 152).

Third, interfaces are distinct from but related to the use of algorithms and artificial intelligence in welfare bureaucracies. Interfaces make the use of automated processing of data easier. Data inputted in an interface can be subject to profiling or automatic computation—processes characterised elsewhere in this journal as 'digital triaging' (Ball et al., 2023, p. 1174)—and online text-based chat interfaces can be more easily augmented with natural language processing and AI-based tools than telephone or face-to-face contact (Henman, 2022, pp. 270–271). By structuring the digital entry of data, interfaces feed the processes of datafication, digital automation, and other forms of algorithmic systems that Yeung characterises as the 'new public analytics' (Yeung, 2022. However, interfaces do

more than this: they digitise front-line interactions. Users interact with civil servants, provide information and submit evidence through an interface—regardless of whether that data is then subject to forms of algorithmic processing.

Finally, interface design can positively or negatively impact on users with protected characteristics or other groups. As with all forms of digital technology, there are fundamental questions of digital exclusion that cut across EDI characteristics: both in terms of access to hardware (such as a smartphone) and in the ability to use or willingness to explore an unfamiliar digital interface (for an analysis rooted in gerontology, see Goodman-Deane et al., 2021). However, accessibility is not the only issue; poor interface design can lead to discriminatory effects. Even seemingly small changes—such as categories in a drop-down form—can lead to minority groups being disproportionately negatively affected (see Meers, 2023).

These four issues underscore the importance of understanding interface design in the modern welfare state and raise a number of questions. How are interfaces distinct from traditional forms of welfare state bureaucracy? What positive and negative consequences can result from their design for different users of a system? How can the developers tasked with their design improve the equitable and effective functioning of welfare services? In advancing a typology of interface design in the welfare state, the next section explores these issues in the context of UC.

3 | HOW INTERFACES DIFFER: A TYPOLOGY OF INTERFACE DESIGN

This section sets out a five-fold typology of interface design in a welfare bureaucracy. To understand the role played by interfaces and how they compare to more 'traditional' forms of administration, it is necessary to explore the constituent elements of their construction. Drawing on data from 50 interviews with senior civil servants in the DWP, welfare benefits advisors, and claimants, we argue that there are five key design choices facing interface developers: (i) structuring data input, (ii) interaction architecture, (iii) operative controls, (iv) prompting and priming, and (v) integrations. Before turning to each in turn, this section first sets out the underpinning data.

The dataset we draw on below is comprised of 50 semi-structured interviews undertaken between January and June 2023: 12 senior civil servants in the DWP, 19 welfare benefits advisors, and 19 UC claimants, all in the UK. The civil servant participants occupied senior roles within the UC team at the DWP, and their roles covered a spectrum of functions, including policymaking, operations leadership, and research and analytics. Participants were recruited via internal calls for participants within the DWP, coupled with 'snowball' sampling.

During March and April 2023 we conducted semi-structured interviews with 19 welfare rights advisors who were experienced in assisting UC claimants, both in supporting initial claims and resolving problems arising out of broader UC processes. Invitations to participate in the project were issued through RightsNet, an online forum for welfare rights advisors. Prospective participants were directed to a screener questionnaire (appended below), to capture information about the geographical area in which they work, gender, the organisation they work at, and their years of experience—the final sample was constructed to achieve diversity across these factors. Participants were offered a £40 voucher as an incentive. The length of experience in welfare advice work ranged from one to 28 years, with the average length of experience being 12 years. The interviews explored the nature of UC problems advisors encountered in advice work, and their perceptions of what elements of UC were most important in shaping the claimant experience.

Finally, we conducted 19 semi-structured interviews with current UC claimants. In order to secure as broad a range of experiences on UC as possible, we recruited the participants via public advertisements on social media, chiefly Facebook. This avoided recruiting only participants who had sought advice with their claim, as may have been the case if recruiting solely via third-sector organisations. Participants who expressed an interest in the study completed a screener questionnaire (appended below). Out of 308 people who completed the screener questionnaire, we invited 38 to interview: these participants were selected to achieve a diverse sample across their age, gender, ethnicity, and engagement with UC (in particular, whether or not they had received a deduction, sanction, or third sector assistance with their claim). Nineteen claimants took up the offer—11 women and 8 men, 6 of whom we

BAME and 13 white—with an average age of 39, ranging from 26 to 57 (other descriptors from the screening survey are appended below). The interviews explored claimants' experiences of UC with open-ended questions about what aspects of the system they felt were most important in shaping their experiences.

To ensure the robustness and trustworthiness of our conclusions, we employed a detailed and rigorous approach to thematic analysis, integrating both deductive and inductive elements (for example, see Thomas, 2006). Our deductive framework was informed by existing literature on digital interfaces and the Universal Credit system (as identified above), particularly focusing on the application process, managing interactions with civil servants (such as mentions of the UC journal) and the uploading of evidence. This provided an initial coding frame, which was then iteratively refined throughout the analysis process. Inductively, we also allowed themes to emerge from the data itself, paying close attention to where participants mentioned aspects of interface design specifically that were not otherwise part of our coding frame. We looked for patterns in how participants described their interactions with the interface, the specific design elements they found problematic or beneficial, and their overall satisfaction with the digital system. It is these data that form the focus of the discussion below.

3.1 | Structuring data input

Structuring the input of content is nothing new in the social security system. Forms—from initial applications through to the ongoing management of a claim—have long been the 'compulsory interface between citizens and their social rights' (Meers, 2023, p. 221). Their design shapes both the bureaucratic decisions they rely upon and is central to the experiences of citizens in their interactions with the state (Ryan, 2023, pp. 709–710). Paper-based forms have been increasingly replaced by digital equivalents: indeed, so-much-so that elsewhere in this journal, Ball et al.'s participants saw this as 'old news'; an inevitable (and for some, welcome) consequence of a shift to a more digital welfare state (Ball et al., 2023, p. 1174).

However, digital interfaces are not simply online versions of paper-based forms. Interface designers have far more tools at their disposal to structure the input of content than is possible on a paper-based application. Three distinct design choices emerged from our data. First, 'branching': where a user's access to later sections of a form is conditional on their responses to earlier sections. In contrast to paper-based applications, interfaces allow for the enforcement of branching—users can be prevented from seeing later questions. The functionality is perhaps best illustrated by the Government Digital Service's off-the-shelf tools for civil servants looking to digitise paper-based processes, which illustrates the centrality of branching using the 'training scenario' of applying for a (fictional) 'juggling licence' (Figure 1).

The use of branching brings benefits. It can ensure that users only see questions relevant to their own circumstances (an important efficiency when dealing with the complicated underpinning regulations governing social security entitlement), they can be 'off-boarded' part-way through an application (for instance, because their answers suggest they are ineligible), and users are prevented from advancing to later pages without answering earlier questions (therefore improving the quality of data collected).

However, in the context of our study of UC, branching had significant consequences for claimants. On a paper-based form, a claimant cannot be prevented from accessing later questions if they fail to answer (or answer 'incorrectly') earlier ones. However, the UC application mandates that users respond to all input fields on the interface before being able to submit their application. A welfare benefits advisor raised particular concerns about the way in which the UC application process handles the input of rent and service charges:

> ….sometimes you put something in and it won't let you go to the next page. With your rent and your service charge you've got to put all four digits in, so it's got however many pounds and however many pence, and you have to fill the whole lot in. If you only put in that your service charge is 79p it won't access it. So it's that kind of—just people who are digitally comfortable will just fiddle around with it, if they're not they just can't do it. (Welfare Benefits Advisor #1).

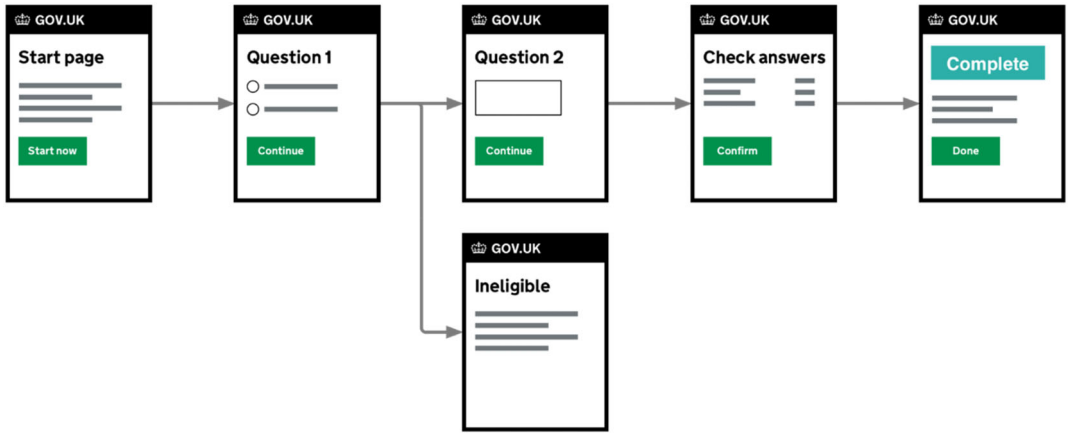


FIGURE 1 Prototype form for civil servants provided by the Government Digital Service (retrieved from: https://prototype-kit.service.gov.uk/docs/make-first-prototype/start). [Colour figure can be viewed at wileyonlinelibrary.com]

Put simply, a claimant cannot leave fields blank or make formatting mistakes. Here, the interface is imposing a significant 'administrative burden' on the form-filler; there is a 'compliance' burden to satisfy before they are able to proceed with their application (see Brown et al., 2021). This is significant in the UC context because it prevents the submission of a 'defective claim' (see Child Poverty Action Group, 2023, pp. 42–45). In a paper-based application, a welfare benefit claimant can submit a form with errors or missing information and rectify it after being contacted by the benefits agency. The date of their claim—and therefore the backdating of payments—is the date the defective paper application is made. However, for the digital form, no such 'defective claim' is possible: the claimant is prevented from accessing later forms if they fail to satisfy the interface. This problem echoes Yeung's arguments on the 'logic of responsibilisation' that often characterises digital forms of public sector administration; here the interface design is shifting responsibility onto the individual claimant for rectification of mistakes (Yeung, 2022, p. 22).

The second key design choice concerns 'input controls': the interface elements that shape or constrain how a user enters content onto the interface, from free text entry and drop-down menus, to ratio-buttons and checkboxes (for a comprehensive assessment of the elements available to developers, see Tidwell et al., 2020, pp. 471–531). Again, the functionality provided by an interface differs to that of a paper-based application. For example, a claimant may think two categories within a drop-down menu apply to their circumstances, but the interface may limit them to choosing only one. The feeling of being able to express one's circumstances adequately within an online form—an issue highlighted by Ryan as the power of providing 'scope for personal narrative' (Ryan, 2023)—was underscored by participants. On an interface, a form-filler cannot write in the margins or tick multiple categories, as is the case with printed forms:

> I think if there was some kind of form or something that you could fill in online and basically explain your whole situation, put in the evidence, write any notes, and just put your case forward. Rather than just having to enter like a few little boxes and just put your new rent on and your old rent and the date when it started, and that's it, keeping it so vague. But instead having a platform where you can completely explain yourself, explain your point, put the supporting evidence and then it goes to someone who can actually deal with it… (UC Recipient #2).

Within our sample, the detailed design elements of these input controls was particularly important for self-employed participants, where their ongoing entitlement to UC is dependent on manually entering data about their

earnings each month. When talking about their experience of the UC system, UC Recipient #3 raised a change in the interface design. Between 2022 and 2023 the interface had been re-designed from a free-text box—where you could 'just type that in a paragraph and they don't tend to question it'—to a more structured set of 'individual lines where you have item, and then the next one has to be the price and pounds by pence' (UC Recipient #3).

UC Recipient #3 thought this had impacted both on how they inputted their own earnings and expenses from self-employment and, in particular, reduced the potential for error in their data input. They recounted an annual review of their claim where they had been overclaiming by a small amount each month; a mistake they attributed to the unstructured nature of the data entry prior to the interface change:

> I feel like it's made more of a difference in terms of what people are claiming, but it just takes a little bit longer… I did think when I was doing it, this is too easy. This is far too easy and when I went into [a review of my claim] they are very much, did you know you've been claiming £49 instead of the £41, and I would be like, no. They're like, oh you've been doing that all year, don't do that again, and that would be the end of that. So, I think they were maybe missing a lot of that, they changed it quite soon after that. (UC Recipient #3).

The final design choice that emerged in our data is the 'user flow': the way in which the claimant navigates through the structured data input. Within most social security contexts, this looks similar to a paper-based application. A claimant accesses an online form (with branching and input controls as above), but completes it in a linear fashion; following one page to the next. However, interfaces also provide opportunities to structure data input in a non-linear way. For example, civil servants in our sample underscored the significance of the 'to do' list on the UC platform: a tab which displays a tailored set of data input tasks tailored to the individual claimant (see Figure 2). This format has been used both to structure data input when a claimant initially applies for UC and in the ongoing management of their claim (Griffiths, 2024, p.6).

Civil servants underscored how 'atypical' and 'quite untraditional' this approach to data structuring was (Civil Servant #2). It is more responsive both to the needs of the end-user and allows data to be inputted non-sequentially. As Civil Servant #1 put it:

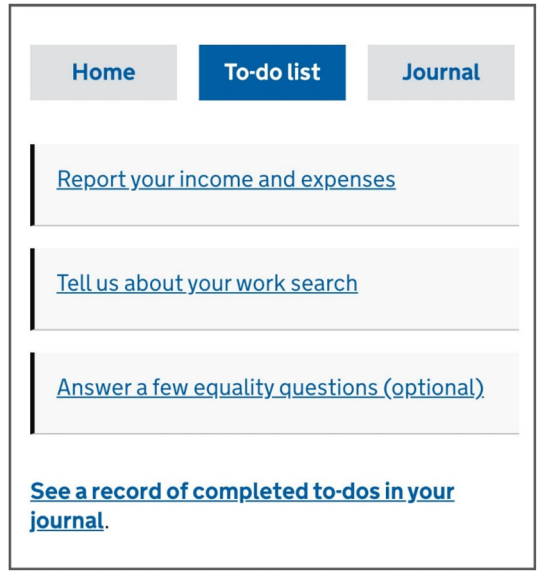


FIGURE 2 A 'To-do list' in the UC interface. [Colour figure can be viewed at wileyonlinelibrary.com]

> So instead of us just basically sending—giving you just a heap of questions and you work your way through it, it breaks it into sections. So you go in and you can do it at your leisure, you can do it in any order you like, and it will tell you what you haven't done. It will then repeat it back to you so you can check that it's right before you sign it online… (Civil servant #1).

Of course, in the context of social security provision, the design choices for 'user flow', 'input controls' and 'branching' are in-turn constrained by the (often detailed and complex) information and evidence required to prove eligibility for support under social security legislation. User-testing of the 'to-do list' in the UC interface still led to users feeling 'quite overwhelmed by [its] length', with 'most of them ma[king] faces or comment[ing] on the list' (Savarit, 2018, p. 190). Likewise, 'user flow' is particularly dependent on effective interface integration (on which more below).

3.2 | Interaction architecture

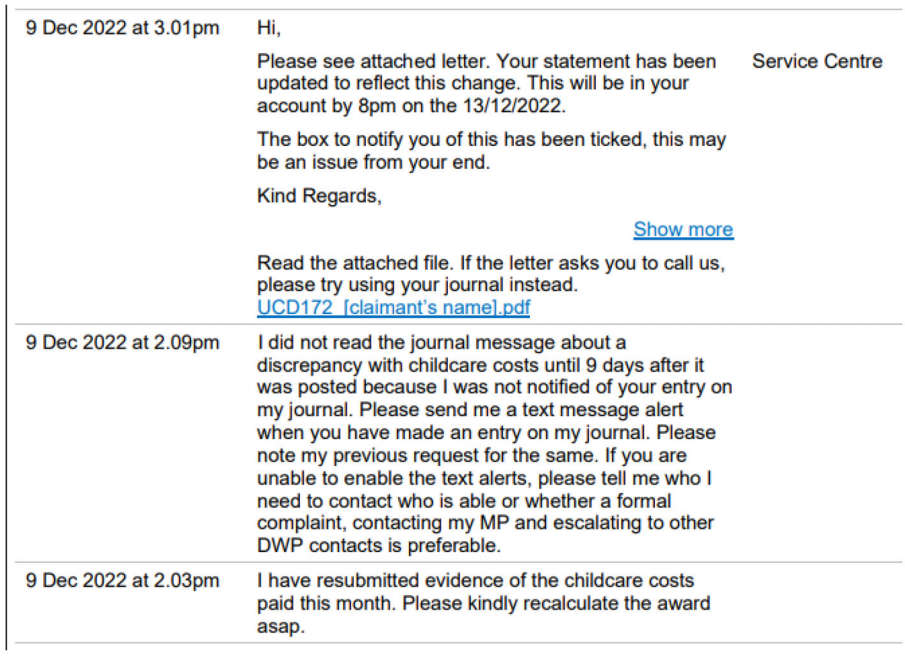
Alongside the 'to-do list' discussed above, the 'journal' is one of the core 'high-level concepts' within the UC system (Pope, 2020). The journal is the 'two-way communication conduit between DWP staff and claimants': a messaging interface that allows respondents to post information and ask questions of the DWP, and vice versa (Griffiths, 2024, p. 3). It is an asynchronous system, as opposed to a 'live' chat, where users can post a message 24/7 and await a reply from a member of DWP staff (as one civil servant participant put it, it is not an 'instant messaging service', however much users' 'perceptions' of it may suggest otherwise (Civil Servant #3). Although telephone contact and face-to-face interactions are still available for certain kinds of queries within the UC system, this digital interface is the 'primary means of…engaging with staff' and is central to the ongoing management of claims (Griffiths, 2024, p. 3).

Civil servants in the sample underscored two key design choices in the construction of the journal interface. First, the journal provided a streamlined messaging function allowing two-way communication between the DWP and the claimant. The journal interface is a stripped down text-based design, divided into a table format with no graphical elements and with replies limited to plain-text entry. Figure 3 shows the claimant-view of the UC journal interface with a message from a DWP staff member, followed by a reply from a claimant.

Civil servants underscored the importance of this 'very much person to person' design in giving the UC service 'quite a different feel' compared to HMRC or tax free childcare systems that lack a named messaging function and can 'feel so remote' (Civil Servant #4). In the interface design, the 'added by' column 'normally' displays the role and first name of the staff member within the DWP who has sent the message (Pope, 2020). However, often messages are just listed as being from 'an agent' with no further information about who posted it or from where within the DWP it has been sent (ibid, 2020). This issue was raised as a frustrating experience by participants. For instance, UC Recipient #4 notes this distinction between named and unnamed messages:

> I'm just looking at my journal now, sometimes you don't know who you're talking to, because you get a message and it'll just say from an agent. And sometimes it'll say, you know, Charlie from the jobcentre. And then I got a message that just says, from an agent. So sometimes you don't know who you're talking to, which is a bit weird. They could improve that… (UC Recipient #4).

Failing to specify who is sending the message is particularly significant for interface-based interactions in comparison to face-to-face and telephone counterparts. As argued by Raso, without careful attention being paid to the interface's design, the UC digital account (and other similar platforms such as Canada's customs and immigration 'ArriveCAN' platform) can 'obscure who or what is hearing the data on the other side of the interface' (Raso, 2023, p. 170).



9 Dec 2022 at 3.01pm	Hi, Please see attached letter. Your statement has been updated to reflect this change. This will be in your account by 8pm on the 13/12/2022. The box to notify you of this has been ticked, this may be an issue from your end. Kind Regards, Show more Read the attached file. If the letter asks you to call us, please try using your journal instead. UCD172_[claimant's name].pdf	Service Centre
9 Dec 2022 at 2.09pm	I did not read the journal message about a discrepancy with childcare costs until 9 days after it was posted because I was not notified of your entry on my journal. Please send me a text message alert when you have made an entry on my journal. Please note my previous request for the same. If you are unable to enable the text alerts, please tell me who I need to contact who is able or whether a formal complaint, contacting my MP and escalating to other DWP contacts is preferable.	
9 Dec 2022 at 2.03pm	I have resubmitted evidence of the childcare costs paid this month. Please kindly recalculate the award asap.	

FIGURE 3 Mock-up of an excerpt from the UC journal interface (retrieved from Child Poverty Action Group, 2023, p.115). [Colour figure can be viewed at wileyonlinelibrary.com]

The second element of the journal design that civil servants underscored was 'transparency': the journal displays all messages received and sent, providing a record of the claimant's interaction with the DWP (Pope, 2020). Civil servants underscored how this design choice is 'quite revolutionary' when compared to what came before; 'actually we are being far more transparent with you than you've ever had before' (Civil Servant #7). Telephone and face-to-face contact is not recorded transparently and the onus is on the individual to keep records of prior correspondence (for instance, once submitted to the DWP, a hard-copy application form or letter is no longer available). When working well, the record provided by the journal was appreciated by claimants across the sample. For instance, UC Recipient #5 highlighted the benefit of being able to 'reference back' to the journal and having all communications 'in one place':

> I quite like that they have the journal, because everyone has got like a chat box now if you go to a website or if you go to someone providing a service. So, it's more like a chat box that you can keep up or you can reference back with as well. It keeps everything in one place for you. (UC recipient #5).

This transparent record was also useful for the welfare benefits advisors in our sample, giving them access to the full history of their clients' communications with the DWP:

> The journal itself is just like a rolling document, that's all it is. So for us it's really useful, because we can tell the history of the claim. We often ask them to print them off or screenshot them. Then we can tell what's gone on and the documents are put on it. So for us it's a really good history of the claim. (Welfare benefits advisor #2).

In our sample, frustrations with the journal were rarely due to the interface design elements, but instead 'glitches' (Raso, 2023) in the system—where messages would be 'deleted, which isn't supposed to happen' (Welfare Benefits Advisor #3)—or long delays and failures to respond to messages sent, where 'sometimes you get fast responses but sometimes you don't get any response at all' (Welfare Benefits Advisor #4).

3.3 | Operative controls

There are a range of functions that an interface can provide for its users beyond structuring the input of data and user-to-user interactions. Operative controls refer to the parts of an interface the user can interact with to perform a function or action, such as buttons, toolbars, keyboard shortcuts and so-on (Galitz, 2007, pp. 445–461). This functionality can be simple—such as the use of scrollbars to navigate across content or a button to print the data on the page—through to more complex functionality—such as toggling the platform's language or interactive data visualisations.

Two examples emerged in our data. First, the UC interface provides tabs and buttons to navigate across various functions in the system: reporting a change of circumstance, recording job applications, accessing the journal, and so on. A claimant view of the UC homepage demonstrating this functionality is set out in Figure 4.

However, there is no separate button that allows claimants to submit an appeal to a decision they have received. This was a source of frustration for welfare benefits advisors within our sample, who thought that this lack of a clear 'appeal' functionality was a problem for claimants:

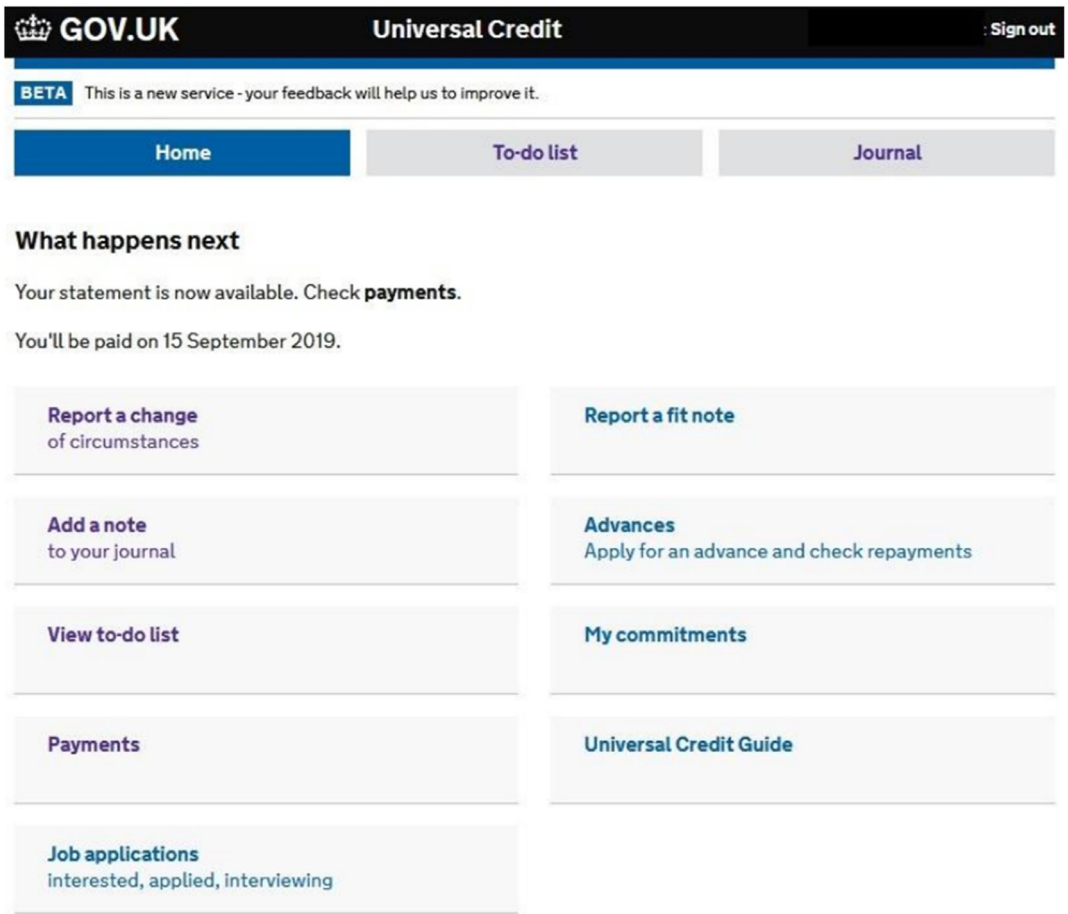


FIGURE 4 The UC 'home' page (retrieved from Hillhead Housing Association, 2021, p.11). [Colour figure can be viewed at wileyonlinelibrary.com]

> The payment statement award letters carry appeal rights but they are not made clear enough to claimants. You have to open the 'If you think we've made a mistake or want to appeal' link to understand how long you have to appeal. People I speak to do not seem to be aware of this and it leads to difficulties. This fundamental stuff needs to be clearly accessible, obvious. (Welfare benefits advisor #5).

When prompted on what change could be made, the welfare benefits advisor suggested adding 'another one of them buttons they have on there…so you go to the top and it goes like, change of circumstances, your guide, payments, journal, MR [Mandatory Reconsideration]' (Welfare Benefits Advisor #3). They thought this change to the operative controls available to a claimant would help make the option of appealing more intuitive (and therefore easier and more likely to happen) than the current approach of requesting a review through the UC journal. Here, the design of operative controls could have considerable administrative justice implications—interfaces, like other forms of digital technology, have the potential to change how (and if) decision-makers are held to account.

The second key operative control raised by participants was the (in)ability to upload files into the interface. This process is heavily constrained within the UC system. Claimants can only add plain-text into the interface, until they are provided with a dedicated link by a member of DWP staff. As one UC recipient in our sample described it, 'if they need some documents' DWP staff on the UC journal 'will create a portal for you to upload the supporting documents' (UC Recipient #7). UC Recipient #6 attributed being sanctioned to this lack of operative control, as they were unable to upload timely evidence of reasons for a missed work coach appointment:

> Things like, you know, on your journal when you're not event able to upload unless you ask them for a link, like they've got to send you a link before you're even able to upload anything. And in the case of being sanctioned, if they don't send you that, you're still getting sanctioned for that time even though it's their failure that they've not sent you something to upload that documentation on. So just simple things like not being able to upload of your own accord is frustrating. (UC recipient #6).

This limitation to plain-text entry is particularly constraining in a service that relies on the evidence submitted by its users. Unrestricted file upload could clearly pose compatibility (or even security) challenges, but the portal process always specifies file type and size regardless; 'they tell you what type of file you can upload, pdf, jpeg and stuff like that' (UC Recipient #7). Likewise, access to the secure file-upload portal could be provided automatically in response to a claimant's request, rather than only manually. To restrict the ability to upload evidence within the UC interface without a member of DWP staff providing permission, is itself a design choice that impacts on claimants' management of their claims.

3.4 | Prompting and priming

User-interfaces can carry a series of alerts, notifications and pop-up boxes, intended to 'prompt and prime' the user at specified points in time. Analysis of these mechanisms is particularly widespread in the platform economy, where they can be a significant factor in shaping users' behaviour on a platform (such as when posting a listing on a rental platform or dating website) (see Levy & Barocas, 2017, pp. 1203–1205).

The UC interface carries a range of prompts and primes, designed to shape users' behaviour. For example, ordinarily—depending on their user settings—a UC recipient will receive a two-pronged alert whenever they receive a new message via their UC journal: a text message and an email to alert them to log into their journal, but without relaying the content of the message. For UC Recipient #7, the volume and tone of these messages was interpreted as 'pushy':

> …so I have a few opinions about how they go about it, because I think they're quite pushy, from eight o clock in the morning on the 20th, you'll get a text, you'll get an email and you'll get something on your journal saying, you need to fill out your income report otherwise your payment is going to stop. (UC recipient #7).

However, the 'prompting and priming' function can be softer than alerts. For instance, civil servants referred to the use of a pop-up 'banner' at the top of the interface that allows for ad-hoc updates. This was particularly useful during the COVID-19 pandemic, where rapid changes were made to UC processing and entitlement:

> We do have a banner that we can use, that we used in Covid and things like that, so we can alert claimants to changes. But we do try to make it so that it's obvious as you come into the service. (Civil servant #5).

Civil servants in our sample were concerned about overloading claimants with too much information about their claim at once, balanced against providing sufficient information for individuals to engage with their claim. This led to the use of prompts and priming to 'hide the detail' until it was necessary, or until a user hovered their cursor over elements of the interface. For instance, Civil Servant #6 referred to the use of 'hover text' (text that displays in a box when users move their cursor over an operative control, such as a link or button) to display information in context:

> …it was about making it easy for the customer, that was a real principle I've mentioned earlier. Clear language. Hide the detail, so you know, hover text, in context guidance, that kind of thing. (Civil servant #6).

When done well, the use of prompting and priming can reduce error in administrative systems and achieve other beneficial outcomes. Research is particularly advanced in 'appointment reminder systems' in the healthcare context, where SMS reminders and so-called 'reminder plus' systems (where reminders are accompanied with other forms of health-messaging) have been found to be effective at reducing missed appointments (for a comprehensive review, see McLean et al., 2016).

3.5 | Integrations

Finally, the extent to which user-interfaces are linked to and able to retrieve information from other systems can have significant impacts on end-users in the public sector context. Our participants raised two issues in particular: assessment of health needs, and information about deductions.

On the former, although UC is claimed via an online application process, claimants with health needs which may affect their entitlement are subject to an additional 'work capability assessment' process (see Day & Shaw, 2022). However, when a claimant declares health problems, the online interface process switches to a paper-based application: the claimant, midway through the online data input, is sent a form in the post. The lack of integration between the UC assessment and the collection of health data was a frustration for civil servants in the sample. As Civil Servant #7 explained, there is a 'really lovely digital service that we created' but it is still reliant on having to 'send out a paper form' in these circumstances:

> So you've already told us about your partner, your children, where you live, what you earn or don't earn, capital savings, all the other elements like that. But then at the point where you say that you've got a health condition, you could say that as part of the data gather on the online journey but it then partially stops because you get this paper form in the post … (Civil servant #7).

Similar problems of integration were raised by other participants. For instance, certain queries (such as those tied to the work capability assessment) can only be dealt with through particular gateways, not through the UC interface (such as via other sections of the UK Government's web platform, Gov.uk). This was a source of frustration to claimants who consequently had to navigate between services:

> … you've gone through forms and forms and forms online and it suddenly goes oh, you have to go to our website now after you've spent 15 minutes on the app going through it. And you think, you shouldn't have put this form up there if you can't answer it. It's those sort of things where everybody wants you to get on the apps nowadays, all the time, and then when you suddenly do it all and they go, you have to be on our website to do this, that's a bit more than annoying. (UC recipient #8).

The UC interface is well integrated into DWP systems, but is far less well integrated across other areas of Government. This causes particular problems in the context of UC deductions: money that is taken from UC payments to pay for historic overpayments, advance loans or to service third party debts (see Griffiths & Cain, 2022). For recipients who have a deduction made to their UC award for an historic overpayment of another benefit (for instance, tax credits) the interface does not display the total amount owed or the reason for a deduction. This can cause confusion for UC recipients seeking to understand why a payment is being deducted and for how long:

> You go onto your payments and it says how much you're getting and you click on it and it gives a breakdown, and at the end it's anything they're taking off, but there's no… you into your journal and nothing is saying why. It doesn't come in a description of what they're taking off, it just says, deductions or something, and there's no explanation to what it is or why they're taking it off. (UC recipient #9).

This lack of integration was also raised by Welfare Benefits Advisors across the sample. For instance, **Welfare Benefits Advisor #6** raises the specific issue of deductions for historic overpayment of tax credits:

> … people who've got Tax Credit debts and they're tracing now back to up to ten years these Tax Credit overpayments. And it'll just suddenly appear on a claimant's monthly assessment period statement that they're having £50 a month taken off for deductions. But they won't say, they won't say where or why or whatever… And it'll just—a line on the statement will say, deductions. (Welfare benefits advisor #6).

These two integration issues demonstrate how linking interfaces across systems—the ability to display and interact with data in one interface that draws on data from another system—is a key design consideration that can impact on claimants. This is particularly important in the context of social security, where the administration of claims remains intractably complex and cuts across a number of Government systems (see Harris, 2013, pp. 34–75; pp.117–141).

4 | CONCLUSION

The 'interface first' bureaucracy emerging in welfare states across the world is a fundamental reshaping of front-line administration that warrants far greater empirical and theoretical examination. The increasing—and important—focus on the deployment of algorithms and AI-based technologies in social security systems should not come at the expensive of interrogating the user-interfaces that have become the compulsory mediator between citizens and their social entitlement. As Raso argues, there is a danger in face of a rapidly evolving digitalisation of welfare state

administration that the 'growing importance of a phenomenon like interfaces evades analysis' (Raso, 2023, p. 173). In setting out a five-fold typology of the elements of interface design that matter in the welfare context, we have sought to both identify what is distinct about an interface front-line compared to its face-to-face, telephone and paper counterparts, and to demonstrate the impact of these design elements on claimants in the UC system. These interface elements are not unique to UC, but instead cut across other 'interface first' systems in both the digital welfare state and in other areas of Government.

This reshaping of the front-line calls for research examining the design, deployment, and end-experience of these interfaces. Raso identifies a key plank of this agenda: interrogating the 'socio-technical design' of interfaces, understanding both their mechanics and their glitches (Raso, 2023, p. 174). In the UK, the Service Standard requires that Government Departments publish the source code for digital public services 'unless there's a good reason not to do so' (UK Government, 2024)—the DWP maintains an open source directory with over 500 repositories available, including the interface for re-assessment of Pension Credit and elements of Personal Independence Payment assessment processes (Github, 2024). Cross-disciplinary analysis of these technologies would be fruitful in understanding better the functioning and limitations of these systems.

However, away from these socio-technical details of their design, an 'interface first' bureaucracy calls for a broader empirical agenda to understand how interfaces re-shape interactions with the front-line. For instance, research has found that being treated in a dignified way is important to welfare claimants (Halliday et al., 2024). What does dignified treatment look like—if it is possible at all—via an interface? How do text-based chat interfaces impact on a claimant's satisfaction and ongoing engagement with a social security claim? Given the design of application forms are central to an individual's ability to access social entitlement (Meers, 2023; Ryan, 2023), how can the additional functionality provided by interfaces help to improve the collection of administrative data and improve user perceptions of the process? Answering these questions will involve system designers and developers expanding beyond their usual focus with 'user centric design' principles, rooted in the literature on human computer interaction (see Clarke, 2020, p. 369) and well-established forms of public service policy making (such as 'agile' and 'design-thinking' approaches (see Tomlinson, 2019, pp. 64–66). Instead, methods from across both social sciences and human-computer interaction are needed to more fundamentally examine the challenges and realise the opportunities presented by interfaces for welfare bureaucracies. The move to 'interface first' welfare bureaucracies is a significant re-shaping of the front-line of the state, and the literature on the digital welfare state is only beginning to explore its broad-ranging implications.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Meers, J., Halliday, S., & Tomlinson, J. (2024). An 'interface first' bureaucracy: Interface design, universal credit and the digital welfare state. *Social Policy & Administration*, 1–16. https://doi.org/10.1111/spol.13053