Have you met CHARLIE? The **C**rown's **H**elpful **AI R**epresentative for all things pub**LI**c s**E**rvices

CHARLIE

The year is 2026. You awake to the sound of light rain outside your window. You pick up your phone and notice a new notification—a video message from CHARLIE. As you click on the notification, a full-screen image of King Charles fills the screen and begins to speak, "Good Morning, I noticed that your passport is set to expire at the end of this month. Let me know when you have a few free minutes, and we can fill out the renewal form together. I do wish you have the loveliest of days and look forward to conversing soon."

Of course, that was not actually King Charles. That was an AI-generated message from CHARLIE, the **C**rown's **H**elpful **AI R**epresentative for all things pub**LI**c s**E**rvices, your one-stop shop for government-citizen interactions. Advances in artificial intelligence (AI) technology have allowed for powerful models to be shrunk down so that they can be run locally through apps on smartphones, tablets, and computers. Through the CHARLIE app you can access the hundreds of public services provided by the UK that until only recently were hosted on the gov.uk website. If you need any assistance, CHARLIE, a personalized AI assistant, is available to answer questions, fill out forms, and help you keep track of all your needs. This is AI-powered public services for the 21st century.

AI is a productivity enhancer?

CHARLIE does not exist yet, but the potential for AI systems to improve public services and increase public sector capacity has been shown in a wide range of areas.[1,2] From predicting and preventing road collisions to enabling better policing through forecasting of criminal activity, and from automating border control crossings to monitoring the potential for natural disasters or financial collapse, AI systems have the potential to make public services cheaper, fairer, and more effective.

Many AI systems proposed within government have a strong productivity bent, with the aim being to increase efficiency and free up civil servants' time away from repetitive tasks and time-consuming bureaucracy so they can instead spend a larger portion of their time delivering services to citizens. Examples of these tools include a fraud detection algorithm used by the Department for Work and Pensions,[3] a newly proposed chatbot trained on the gov.uk website to answer user queries,[4] and use of Microsoft Copilot at a local authority to streamline administrative tasks.[5] Indeed, Viechnicki and Eggers found that the average civil servant spends up to 30% of their time documenting information

1 Margetts, H. Rethinking AI for good governance. 151(2):360–371. ISSN 0011-5266, 1548-6192. doi:10.1162/daed_a_01922. URL https://direct.mit.edu/daed/article/151/2/360/110613/Rethinking-AI-for-Good-Governance.

2 Margetts, H. and Dorobantu, C. Rethink government with AI. 568(7751):163–165. doi:10.1038/d41586-019-01099-5. URL https://www.nature.com/articles/d41586-019-01099-5

3 Booth, R. (2023) "AI use widened to assess universal credit applications and tackle fraud," *The Guardian*. 11 Jul. Available at: https://www.theguardian.com/society/2023/jul/11/use-of-artificial-intelligence-widened-to-assess-universal-credit-applications-and-tackle

4 Titcomb, J. and Field, M., "Sunak to launch AI chatbot for Britons to pay taxes and access pensions," *The Telegraph*, 28 Oct. Available at: https://www.telegraph.co.uk/business/2023/10/28/rishi-sunak-launch-ai-chatbot-pay-taxes-access-pensions/

5 Buckinghamshire Council. "Using Artificial Intelligence (AI) at Buckinghamshire Council," 8 Dec. Available at: https://www.buckinghamshire.gov.uk/news/using-artificial-intelligence-ai-at-buckinghamshire-council/

and on other basic administrative tasks,[6] and a more recent survey in the UK put this number at just over 45%.[7] Clearly AI assistance with administrative activities could augment the work of civil servants and potentially re-orient their efforts to tasks that require human intelligence, possibly also resulting in higher job satisfaction.[8] This is supported by research from Brynjolfsson et al., who found that generative AI systems such as ChatGPT can positively impact productivity while also reducing employee turnover.[9]

Integration of AI tools is also not a purely top-down government initiative. Civil servants themselves seem willing to proactively engage with this technology. A survey of the Canadian Federal Public Service found that 11.2% had used generative systems for work purposes,[10] while a more recent survey of UK public sector workers found that 22% had used generative AI in their work- this despite what they felt was a lack of clear guidance from their departments.[11] At a national level, the UK government published its first guidance to civil servants on their use of generative AI in June 2023,[12] noting some risks around use of sensitive data alongside the potential for bias and misinformation from generated content. While recently updated guidance provides more specifics,[13] the initial messaging was that workers "should be curious about this new technology" and "alive to the opportunities [generative AI tools] offer us".[14] Significant leeway was given to civil servants to explore how best generative AI could be integrated into their workflows, and it appears at least some are doing just that.

With these early experimentations, AI represents a new frontier in the UK government's adoption of technology. Yet despite numerous large-scale 'digital transformation' initiatives and policies over the past couple decades, according to a recent Office for National Statistics report, total public service productivity only "grew by an average of 0.2% per year between 1997 and 2019", with several service areas static or seeing negative growth.[15] A separate 2023 report from the Institute for Government found that the UK's performance on most services is "worse than before the pandemic – and much worse than in 2010".[16] In other words, the UK's public sector has not taken much advantage of the major advancements in digital technology that have emerged over the last two decades, or at least such changes do not appear to have translated into enhanced productivity.

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6 Viechnicki, P and Eggers, W. D., How much time and money can AI save government? Available at: https://www2.deloitte.com/content/dam/insights/ us/articles/3834_How-much-time-and-money-can-AI-save-government/DUP_ How-much-time-and-money-can-AI-save-government.pdf.

7 Bright, J., Enock, F. E., Esnaashari, S., Francis, J., Hashem, Y., & Morgan, D. (2024). Generative AI is already widespread in the public sector. arXiv preprint arXiv:2401.01291.

8 Berryhill, J., Heang, K. K., Clogher, R., & McBride, K. (2019). Hello, World: Artificial intelligence and its use in the public sector. Available at: https://www.oecd-ilibrary.org/content/paper/726fd39d-en

9 Brynjolfsson, E., Li, D., & Raymond, L. R. (2023). Generative AI at work (No. w31161). National Bureau of Economic Research.

10 Global Government Forum. Attitudes to AI in the Canada public service: Headline survey results. Available at: https://www.globalgovernmentforum.com/wp-content/uploads/Attitudes-to-AI-Canada-Public-Service-Survey-2023.pdf?swcfpc=1

11 Bright et al., 2024.

12 Cabinet Office and Central Digital and Data Office. (2023). Guidance to civil servants on use of generative AI. Available at: https://www.gov.uk/government/publications/guidance-to-civil-servants-on-use-of-generative-ai/guidance-to-civil-servants-on-use-of-generative-ai

13 Cabinet Office and Central Digital and Data Office. (2024). Generative AI Framework for HMG. Available at: https://www.gov.uk/government/publications/generative-ai-framework-for-hmg/generative-ai-framework-for-hmg-html

14 Cabinet Office and Central Digital and Data Office. (2023).

15 Office for National Statistics (ONS). (2023). Public service productivity, UK: 1997 to 2022. Available at: https://www.ons.gov.uk/economy/economicoutputandproductivity/publicservicesproductivity/articles/publicserviceproductivityuk/1997to2022

16 Hoddinott, S., Davies, N., Fright, M., Nye, P., Richards, G. (2023) Performance Tracker 2023. Institute for Government. Available at: https://www.instituteforgovernment.org.uk/sites/default/files/2023-10/performance-tracker-2023_0.pdf

But surely AI is different? Recent developments have resulted in AI that it is a general-purpose technology which some believe could spark a fourth industrial revolution.[17] These AI technologies are an innovation with the capacity to lead to a multiplicity of further innovations. While the potential for AI to increase productivity within the public sector appears astronomical, measuring the impact of AI on productivity will be difficult and at this point it remains simply theoretical.

Personalizing public services

Increasing productivity is great, but the average citizen does not measure their interactions with government based solely on how many outputs each department had last quarter. The UK government agrees, noting that for great public services, efficiency is but one of three essential elements, the other two elements being how user friendly and how accessible the service is.[18] For citizens, how annoying was it to fill out all the forms necessary for your clearly deserved benefits and were you able to complete your specific application without assistance? Productivity may well take care of itself as AI becomes embedded into everyday work software such as spreadsheets and word processing tools, but AI also has the potential to drastically reshape what it means to deliver public services through personalizing service delivery, which will drastically improve both the user experience and accessibility.

The idea of personalization within public services is not new. Professor Catherine Needham debated some of the opportunities and challenges of personalized public services back in 2010 before AI was a hot topic, labelling personalization 'a radical agenda' with implications for a new citizen-state contract.[19] What if as a citizen you felt like the government was an advocate watching out for your best interests instead of a business dealing with you through myriad transactions? What if AI can help realise Professor Needham's vision whereby "citizens become budget-holders, commissioners and co-producers of the services they use"?[20] This certainly sounds like a radically transformed welfare state. If government can effectively harness the expertise of its citizens in relation to their own needs, service delivery with AI can become less like wholesale manufacturing and more like a boutique retailer, crafting unique packages of services with delivery tailored to each citizen. So, what is necessary for this to happen?

For one, a high level of trust is needed. Despite their vast resources, and what you might read on some conspiracy sites, governments do not actually know what each citizen is thinking about and planning for. This information exists solely within individuals, and while some citizen needs and desires could likely be inferred through invasive surveillance programs, a healthier citizen-state relationship is one in which people choose to share information with their government because it is in their best interest. A personalized AI interface with each citizen could learn their individual needs, connect them with their optimal benefits and services, and perhaps eventually craft custom services based on some guaranteed entitlements, what some have labelled universal basic services.[21]

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17 Crafts, N. (2021). Artificial intelligence as a general-purpose technology: an historical perspective. Oxford Review of Economic Policy, 37(3).

18 Peart, J. (2023) "What makes a service 'Great'?" Central Digital and Data Office. Available at: https://cddo.blog.gov.uk/2023/09/01/what-makes-a-service-great/

19 Needham, C. (2010) Debate: Personalized public services—a new state/citizen contract?, Public Money and Management, 30:3, 136-138, DOI: 10.1080/09540961003794246

20 Ibid.

21 UCL Institute for Global Prosperity (IGP). (2017). Social Prosperity for the Future: a Proposal for Universal Basic Services. Available at: https://www.ucl.ac.uk/bartlett/igp/sites/bartlett/files/universal_basic_services_-_the_institute_for_global_prosperity_.pdf

Research into how users interact with personalized AI systems however has shown that trust of these systems is cultivated through more than just preference memorization and factual accuracy.[22]

Trust of personalized AI systems is built at least partially through transparency.[23] With many personalized algorithms, such as within social media or advertising, there is little to no transparency into why something is shown. The large quantity of data available to government allows for clear results tailored to individual user preferences and backed up by historical records and outcomes, allowing for more transparent processes, better justifications for decisions, and hopefully more positive interactions with citizens. With a larger bedrock of trust, citizens may feel more comfortable sharing the information necessary to allow for personalized public services to work best in their favour. Without citizen buy-in, an AI system would be unaware that you might be struggling with something or that some situation in your life has just changed, and it would be unable to help.

The potential efficacy of personalization is validated at least in part by research into AI-based self-service technology in China which found that positive user experiences were related to personalization and aesthetics.[24] A highly polished, neatly designed system tailored towards individual users goes a long way to reducing the cognitive workload required to smoothly interact with the system and reduces the amount of time needed to complete basic tasks. Additionally, more frequent, positive interactions with government allows for a relationship to develop that is less transactional and more intimate, strengthening the citizen-state relationship.

An app for that

Now, back to CHARLIE. How far away is it, and what does this vision for the future of public services consist of? The answer to the first question is not very far at all. Text, image, video, and audio generation are already being used by a wide array of professionals.[25] Examples of personalized AI already exist (e.g., Pi from inflection.ai), and advancements in model quantization, techniques which drastically reduce the size of AI, are progressing rapidly, which will eventually allow for powerful AI to run on mobile devices.[26,27] Today's AI requires access to either advanced computer hardware or to a cloud server, often run by a large technology company, for processing. Once AI can run directly on mobile devices, privacy can be better assured through local encryption, users can better control what information is shared with government, and users will not be reliant on an internet connection or expensive hardware to access CHARLIE. The rollout of large initiatives takes time, especially within government, but it is not inconceivable that a safe and effective AI-powered public services application personalized to each citizen could exist within the next couple years. In fact, Government Digital Services has already begun initial experiments with generative AI in this area.[28]

A recent survey of public attitudes towards AI in the UK found that while there is worry about AI being used in advanced robotics such as driverless cars or autonomous weapons, one of the main

22 Shin, D. (2020). User perceptions of algorithmic decisions in the personalized AI system: Perceptual evaluation of fairness, accountability, transparency, and explainability. Journal of Broadcasting & Electronic Media, 64(4), 541-565.
23 Ibid.
24 Chen, T., Guo, W., Gao, X., & Liang, Z. (2021). AI-based self-service technology in public service delivery: User experience and influencing factors. Government Information Quarterly, 38(4), 101520.
25 Sætra, H. S. (2023). Generative AI: Here to stay, but for good?. Technology in Society, 75, 102372.
26 Zhu, X., Li, J., Liu, Y., Ma, C., & Wang, W. (2023). A survey on model compression for large language models. arXiv preprint arXiv:2308.07633.
27 Gholami, A., Kim, S., Dong, Z., Yao, Z., Mahoney, M. W., & Keutzer, K. (2022). A survey of quantization methods for efficient neural network inference. In Low-Power Computer Vision (pp. 291-326). Chapman and Hall/CRC.
28 Bellamy, C. (2024). Experimenting with how generative AI could help GOV.UK users. Government Digital Service. Available at: https://insidegovuk.blog.gov.uk/2024/01/18/experimenting-with-how-generative-ai-could-help-gov-uk-users/

advantages of AI noted by the public was improved accessibility.[29] In many ways the vision of personalization through CHARLIE begets accessibility. Services become more accessible when an AI-powered assistant can have a conversation with citizens about their needs and navigate users through complicated processes. Even more so, accessibility is improved when an AI-powered assistant can communicate with each user in their native tongue, talk to users via audio if they have trouble reading or seeing, chat with users through text if they have trouble hearing, and help fill out forms and navigate service pages if they have trouble accessing information or using technology. For those without access to personal devices, stationary or mobile kiosks set up with tablets could help ensure near universal access to CHARLIE.

Assisting users with their needs is one thing, but there is a justifiable worry about AI using privacy invasive techniques to anticipate user needs and steer people, particularly vulnerable users, in the wrong direction. In their review of personalized public services, Maksimova et al., highlight user-defined life events as a bottom-up approach for enabling personalization.[30] Envisioning what this would be like for CHARLIE, a user might tell CHARLIE that they are expecting a child, which would lead to CHARLIE bundling and sorting out a set of necessary services, such as child health coverage, tax exemptions, support for child-care, and antenatal classes. Trust is one of the most important factors in building positive citizen-state interactions, so allowing users to define life events themselves, within the confines of a locally encrypted application, helps to avoid some of the potential pitfalls of increased data sharing between citizens and the state.

This vision of CHARLIE extends beyond the current paradigm of service delivery though. For instance, one proposal for the future of public services is Universal Basic Services (UBS).[31] With UBS, essential and sufficient levels of services such as food, shelter, transport, and information are provided to all. However, UBS runs counter to a popular free market alternative where a universal basic income (UBI) is provided to all, allowing citizens to use a set amount of money according to their individual needs.[32] With personalization via CHARLIE, the best of both worlds could be achieved. Some of the flexibility of UBI could be maintained whereby the needs of each individual is prioritized, but the money could be allocated along a set of services provided via UBS. For example, the sufficient level of transport services (i.e. free bus rides per month) provided to someone who primarily works from home could be different than the services for someone who commutes to work daily. Conversely, the amount of sufficient information services (i.e. internet bandwidth) provided at home could also be different for these citizens. Additionally, the ability to have open-ended conversations with users could allow CHARLIE to compile user desires and then feed these directly into policy. For example, if many people in a neighbourhood mention to CHARLIE that they all commute to a specific area lacking a direct transport connection, a new bus route could be prioritized.

While having CHARLIE assume the persona of King Charles may face resistance from some, this concept could easily be extended, allowing for further personalization. Some citizens might prefer interfacing with an AI imitation of the prime minister, their local MP, or another public figure (Sir David Attenborough, Dame Shirley Bassey, or Benjamin Zephaniah anyone?). Whatever persona CHARLIE takes, having a trustworthy and familiar interface for each citizen's interactions with

29 Modhvadia, R., Colom, A., Strait, A., Reeve, O., Peppin, A. (2023). How do people feel about AI? Ada Lovelace Institute and The Alan Turing Institute. Available at: https://www.adalovelaceinstitute.org/report/public-attitudes-ai/

30 Maksimova, M., Solvak, M., & Krimmer, R. (2021, August). Data-Driven Personalized E-Government Services: Literature Review and Case Study. In International Conference on Electronic Participation (pp. 151-165). Cham: Springer International Publishing.

31 IGP 2017.

32 Gough, I. (2019). Universal basic services: A theoretical and moral framework. The Political Quarterly, 90(3), 534-542.

government may help bridge the transition from a transactional citizen-state relationship to a more intimate and useful one.

AI will likely increase the productivity of public services, whether through the implementation of specifically tailored tools or simply through new software integrations. Where AI will most drastically be able to improve and reshape public services though, radically improving the user experience and accessibility, is through the implementation of personalized service delivery. While this starts by allowing AI assistance to ease the burden on how citizens access services, personalizing the citizen-state relationship can put us on a path towards radically altering what public service delivery looks like, and perhaps eventually allowing citizens to help shape public services to work best for their unique circumstances.