Bots4Good: Intelligent automation in the public sector

UKAuthority's March of the Bots conference produced valuable lessons on the practicalities of applying RPA and bots to public services

A UKAuthority Event Briefing Note

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1. Introduction

There is increasing momentum for the use of cognitive technologies in public services, with a widespread acknowledgement of their capacity to process a huge volume of information at speed, and to learn from what they process.

Cognitive technologies have been on the horizon for some time, with digital leaders marking the potential for robotic process automation (RPA), machine learning and artificial intelligence in the sector, and the Government has launched a series of initiatives – encapsulated in the AI Sector Deal[1] – to promote the development of the sector in the UK.

Now public sector pioneers are implementing solutions that harness this potential. Early efforts are focused largely on automation and the use of bots for citizen contact, and are providing important lessons in the application of the technologies. Some are showing further ambition and we can all learn from these early efforts.

UKAuthority's March of the Bots conference in November 2018, supported by Microsoft Enterprise Services, Blue Prism, Deloitte and UiPath, brought together some of these early adopters, informed observers of AI's emergence, and representatives of central and local government, the NHS and emergency services who were eager to learn more and share their own thoughts.

There was a strong emphasis on what has been done so far, what has worked and not worked, and the practicalities of implementing these technologies for the public good. The following pages highlight the key elements of practical experience that emerged from the day.

2. A lead from the Cabinet Office

Perhaps the most high-profile development of the past couple of years has been the launch of the RPA Centre of Excellence by the Cabinet Office.

James Merrick-Potter, head of the Cabinet Office's Robotic Automation Unit, acknowledged the precedent set by HM Revenue & Customs in setting up an automation centre that has provided 13,500 robots for almost 80 solutions and handled over 15 million transactions and rising.

He said that the Centre of Excellence had begun to talk with other departments about automation late in 2017, run a few discovery projects early in 2018, and in the second half of the year found a surge in demand for its services. This has led to it engaging with over forty departments and arm's length bodies, running a number of live projects and identifying the steps to making an implementation work.

It begins with getting the right people on board at the right time. The demand has come largely from business rather than IT teams, as they have seen the opportunities to ease the burden on their

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[1] AI Sector Deal – DCMS : https://www.gov.uk/government/publications/artificial-intelligence-sector-deal/ai-sector-deal

operations, but it is necessary to include the technology teams and suppliers at an early stage to ensure everyone is aware of what they want to achieve.

This is followed by a series of steps:

- Set the infrastructure and architecture, not just with the choice of RPA technology but the infrastructure to house the robots and a decision on whether it should be physical or virtual.

- It is important to note that providing robotic automation should be seen as a digital service provided to the business, as it runs within the organisation's digital infrastructure; but it needs a firm understanding between the two sides.

- Secure the funding for at least 12 months, preferably longer, and there is a point at which an organisation has to take a leap of faith. Merrick-Potter said that a clear view of the potential savings only emerges when an automation team is in place, but that it needs money to build the capability and requires some trust to justify the investment.

- Align the pipeline of work to the demand from the business, optimising the delivery schedules to the best effect.

- Validate the pipeline by choosing the right processes for RPA and a continuous revalidation of benefits.

- Reduce the risk in the delivery by educating stakeholders about RPA and controlling the implementation so you can build confidence in the system then scale up.

As an implementation proceeds some problems are bound to emerge. In some cases this will be on completely new ground, but Merrick-Potter pointed out that other organisations may well have already run into the issues and that talking with them can provide the solutions. This has been behind the recent creation of a community of interest for RPA as part of the Centre of Excellence, which can help teams over the "technical humps".

3. Starting points

Other speakers provided details of implementations that have offered valuable lessons on how to go about using the technology. Some of these focused on the early steps of an automation programme.

Hackney Council has been among the leaders in local government in developing the use of RPA. Its head of digital and data, Matthew Cain, described it as an important tool in the armoury for reducing costs and improving the customer experience.

He pointed to two major constraints on how local government does things: around flexibility in developing processes rather than responding to what is mandated by central government; and the appetite for risk. Bots can be most appropriate for the services for which there is little flexibility but the risks of getting them wrong are high. He cited council tax as an example, with its clearly defined processes and potential for a lot of damage if things go wrong.

"In that kind of context bots are incredibly helpful for us," he said. "It's in that low flexibility, high risk space where technology can reduce costs and improve the customer experience, where

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organisations' dynamics and funding may not be as well suited to service redesign and more radical innovation."

The application of bots involves identifying the needs of different users: managers need to ensure a process is being followed; auditors want a clear audit trail; applications managers need to know how they work to support them in a live environment; and staff who may fear for their jobs.

There has a been a spurt of activity based on building the internal capability in the Orbis partnership which provides shared services for Surrey and East Sussex County councils and Brighton and Hove City Council. Its assistant director of business operations, Simon Pollock, described how he looked for people to become involved in a robot team, with an eye on those who enjoyed coding and writing macro programmes, got them together in an office and set an objective of building a working robot within three months, and aim towards producing two a week within a year.

They took advantage of a free trial of UiPath RPA software and drew on Google searches to build their knowledge, which provided the opportunity to build a proof of concept within the deadline. This involved the creation of a robot christened Nibbler to reduce the backlog of a process, which it was able to handle in six seconds compared with 20 minutes for a human. Pollock pointed out that it can also work longer hours which helps to clear a backlog quickly. This provided a successful proof of concept for further work.

While Orbis concentrated on building an internal capability, City of Edinburgh Council focused on finding an automation partner. Its head of intelligent automation Gus Niven said a good partner can help to set up the organisation infrastructure and provide access to the majority of business applications. Despite having some self-sufficiency in its IT development with its own centre of expertise, Edinburgh also has a deal with EY that includes staff training.

But he also emphasised the importance of making sure the internal stakeholders understand the initiative. Business application providers may not know much about process automation, and those that do may not know much about the capabilities and limitations of the software. Some are happy to make use of virtual workers, some are concerned about licence implications, and a minority are highly resistant.

Niven said there is a need to have the conversations with all of them as early as possible, and make sure it is between the people who understand the connections. This also involves ensuring that contracting and procurement teams fully understand the scope of the programme, and that IT providers and application providers are in sync.

4. Taking it forward

As an example of the ramping up of a programme, Hackney has implemented bots through an agile approach. It moved quickly in its first implementations, using the Digital Outcomes and Specialists[2]

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[2] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities

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procurement channel on the Digital Marketplace to find support for an RPA pilot, which in turn taught it a lot about the propositions in the market. It also followed the Technology Code of Practice[3], developed by the Government Digital Service, in buying software.

This was followed by getting working software into the hands of users in weeks, not months, prioritising this over comprehensive documentation.

It began by showing business users what the technology could do, with a test process for council tax. This compared the performance of a council tax officer, who took four minutes 58 seconds, with a bot that took 27 seconds. It then sold the results of this to the managers of other services, asking how the technology could support them. Cain said this emphasis on practicalities provided for a much better introduction to the potential of RPA than using vendor demos: it opened up some structured conversations that helped to build a compelling business case.

This has been followed by a series of implementations of RPA around the council, in areas including direct debit processing and temporary event notices.

The team at the Orbis Partnership took the proof of concept forward with a series of workshops with staff to ask which processes they found frustrating, then assessed these to see which ones could be automated. Some had to be discarded but it led to the creation of a pipeline for developing robots.

It stirred up further interest with internal and external communications involving demonstrations of the proof of concept, which helped to raise money for a further investment to fulfil the pipeline. This was backed up by the projection that a significant spend on the robotics team for the first year, leading to the production of a large number of robots, would provide savings from an early stage and enable a reduction in the budget for the second year.

Gus Niven said the experience of Edinburgh is that there has to be prioritisation, based on a clear criteria, in building a pipeline for the development of bots. There should also be an established framework for development, agreed with the automation partner.

When it comes to individual developments, they can usually produce a minimum viable product in three weeks, with a further week for clean-up and improvements. This is followed by user-acceptance testing, a privacy impact assessment and sign-off from the business teams. Niven said it usually takes six weeks minimum to take automation from start of development to goal line.

The whole effort is subject to governance arrangements, with a board to support progress and provide escalation to deal with the blockers. He said that problems can usually be dealt with through simple, honest conversations.

The significance of a minimum viable product was also emphasised by Simon Clifford, director for technology and digital transformation for the Northamptonshire Office of the Police and Crime Commissioner, in outlining its development of a police chatbot for reporting crime. He said this reflects a paradigm shift in IT development and can be followed up rapid with iterations to improve the product.

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[3] https://www.gov.uk/government/publications/technology-code-of-practice/technology-code-of-practice

Wiltshire Council is into a two-year programme in which the use of RPA is being stepped up. Paul Day, its interim director of digital transformation, said it is building a platform using Dynamics 365 to hold all of the data and is automating a number of back office systems. It has been explaining to business managers how RPA works and asking them to sign a recognition that it will involve changes to their part of the organisation.

At a working level it has run presentations for staff and asked the audience which parts of their business areas could benefit from RPA. This has brought a positive response from people keen to remove routine elements of their work and is laying the ground for significant savings.

The issue of bringing stakeholders along with a project emerged continually at the conference. Nicola Murphy, head of the firearms and explosives branch of the Police Service of Northern Ireland (PSNI), described the automation of its firearms licensing process, making it the first police force to do so.

She said the mechanics of redesigning and automating was the easy part, but it demanded a different approach from the IT team to support the evolution of a product rather than the one-time delivery of software. And an initial vision for a quick online process was quickly quashed by not being given access to a core system to verify applications for firearms licences; although a solution was developed through the temporary storage of details on an external platform.

It was also harder than expected to bring along the range of stakeholders – gun lobby groups, dealers and politicians – and there was a big issue in convincing older people in rural areas, many of whom were not IT literate, that going online was the way forward. In response, PSNI put in a number of initiatives such as providing laptops to dealers and gun clubs, working with local libraries, placing guidelines on its website and opening a helpdesk. This has gradually won acceptance and the system has been fully online since July 2018.

5. Cautionary points

While the attitude at the conference was predominantly positive, a few warnings were sounded about potential pitfalls.

Matthew Cain made the point that the successful application of RPA and bots involves giving people as good an experience as they would get face-to-face, and that it should not be done without looking at the process itself. Just applying a bot to a poor process will only create a poor bot. Applying bots to a live business environment can also throw up challenges, notably in dealing with business software applications, that will lead people to find ways of working around them that could undermine the process. It needs a clear-eyed analysis of which business applications are most appropriate to the new approach.

This reflects a general acknowledgement of the risks involved in an adoption of the technology. On a basic level, if things go wrong in a financial process that uses RPA it will create problems for individuals and reputational damage for the organisation. While there is a growing confidence in the use of RPA and bots, any organisation has to manage the transition carefully and there is usually a strong case for an incremental approach to their implementation.

Organisations also need to maintain a focus on aligning the efforts with the business need. Simon Pollock of Orbis commented: "If you get a team of robotics engineers in a room and give them a list of 400 robots to build, human nature says they will build those that are most fun. But to make the business case work you have to aim for the people doing not just one but maybe five processes. You tend to aim at areas that are overworked or have vacancies for hard to fill positions."

There is also the issue of being aware of when one is dealing with a bot. While the public awareness is growing, there is still a sense that it could cause problems to give the people the impression they are dealing with a human when the process has been automated. There was a divergence of opinions during the conference discussions, but the majority view was that people should be informed when they are transacting with a bot, and that as AI becomes more widely used the public should be made aware of where and how the technology is being applied in a public service.

Some organisations are also being careful over their choice of language, feeling that the word 'robots' has negative connotations liable to provoke resistance among colleagues. Gus Niven of Edinburgh said it prefers the term 'virtual workers', reinforcing the idea that they are part of an existing team brought in to do the heavy lifting.

Similarly, Paul Day of Wiltshire said the council prefers the term 'virtual assistant' to emphasise that it is freeing people from mundane tasks. He acknowledged that over time the technology will help to reduce headcount, but said this will happen as people leave rather than through direct job losses. It points to the need to combine honesty about the long term effect on jobs with assurance over the roles of existing staff.

6. Other lessons

A stand-out among the early lessons from Hackney has been that the performance of the bot depends heavily on the quality of the process, and that planning for a bot can help to improve a process. This comes partly from the fact that people learn how to work around shortcomings in line of business applications while bots cannot; it needs a reassessment of that process to ensure the bot can be applied.

In addition, projects have worked better when the communications have been effective. RPA works at a speed that demands frontline staff and IT work closely together, so they have to be fully aware of what they aiming to achieve. Hackney has had a product owner for the implementation of bots with clear reporting lines to fix issues quickly.

It is also about effective team working, and Hackney has found that any automation can only go at the speed of the slowest part of the function within the council. This reiterates the need for the different teams to work effectively together.

Information governance is an important factor. Gus Niven said that Edinburgh's automation team had worked closely with the council's specialists and ensured that privacy impact assessments are carried out for each development.

He also emphasised that not all the aims – savings, unlocking capacity, improving the customer experience – may be achievable for every process. Organisations have to take a realistic approach to

this, acknowledging that automation is not a panacea for their problems, and set out a way to measure success.

7. The need to move forward

While the barriers are visible, there was a sense of gathering momentum in the adoption of the technology.

James Merrick-Potter made a point that: "People are realising that automation is not the future but happening, it is everywhere, but not as everywhere as it should be in government." In other words, government has been slow off the mark and needs to accelerate its deployment.

The key argument emerged during the discussions at the conference. They included an acknowledgement of the risks involved in implementing the technology – for most organisations it takes them onto unfamiliar ground that they have little knowledge of navigating – but also the trend towards RPA, machine learning and AI in the wider world has already gathered steam. If the public sector does not begin to harness the technology it will have little chance of coping with the increasing pressures around needing to do more with less.

There is a much larger risk in not pressing ahead. It is time for public authorities to respond.

8. Partner comment: Microsoft

Prajakt Deotale, industry sponsor for local & regional government at Microsoft

Advances in technology are opening up new possibilities for the automation of government services, looking beyond the management of simple administrative tasks to more complex processes in support of citizens.

It is an imperative for public authorities to take advantage of the potential. They face demands in terms of citizen engagement, efficiency and the pressures on social care – the biggest drain on local authorities' financial resources – that require radical new solutions in their use of technology.

There is immense potential here for robotic process automation, machine learning and artificial intelligence. It is early days and it will take time to obtain the big prizes, but we can see progress as organisations develop solutions for more routine operations, and learn valuable lessons that can be applied to more ambitious projects.

The March of the Bots event provided an excellent showcase for some of the existing projects, with a series of insights into how to produce positive results from the application of bots and intelligent automation. It showed that many of the lessons learned from the earlier stages of digital transformation still apply, and that the cultural barriers can be as daunting as any technical issue. But they also showed that clear benefits are emerging, with organisations reporting significant improvements in productivity and customer interactions. It became obvious that this is a potential the public sector cannot ignore.

Microsoft has contributed to the potential with the development of CitizenBot, a chatbot designed to manage the demands of local government in the UK, both in dealing with citizens and internally. And the possibilities are expanding as other technologies – such as natural language programming, optical character recognition (OCR) and those for interacting with social media – become more mature.

Public authorities are riding the first wave of intelligent automation in their services, but they should be looking beyond to this to the much wider range of possibilities from cognitive technology.

9. Speakers and their presentations

(Visit the UKAuthority March of the Bots event hub)

	Artificial intelligence, data capitalism and the tech giants: The good, the bad and the ugly? Professor Birgitte Andersen, CEO & Co-Creator, Big Innovation Centre (Presentation slides 6mb)
	Accelerating RPA in government - One year on James Merrick-Potter, Head of Robotic Automation, Cabinet Office (Presentation slides 1.5mb)
	Bots, service redesign and services so good, people prefer to use them Matthew Cain, Head of Digital and Data, London Borough of Hackney (Presentation slides 800kb)
	The route to AI, the promise of RPA delivered and 2.3 billion additional workers! Rick Crosby, Pre-Sales Manager, UiPath | Simon Lill, Public Sector Director, UiPath (Presentation slides 11mb)
	Joint presentation from: Andy Willmer, Government and Public Services RPA Director, Deloitte - **The robots are waiting… and,** Nichola Murphy, Head of PSNI Firearms and Explosives Branch, Police Service Northern Ireland - **Embarking on the robotic journey**

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	The realities of delivering sustainable change through intelligent automation Gus Niven, Intelligent Automation Lead (Head of the Intelligent Automation Centre of Expertise), City of Edinburgh Council ([Presentation slides](#) 600kb)
	Enabling digital workers for public sector, "The one question to ask suppliers" Tom Sagal, Director, Public Sector EMEA, Blue Prism ([Presentation slides](#) 2.5mb)
	Digital government – building next-generation public service organisations Richard Potter, Chief Technology Officer, Microsoft Services ([Presentation slides](#)10.5mb)
	The Wiltshire Council digital transformation Paul Day, Interim Director for Digital Transformation and IT, Wiltshire Council ([Presentation slides](#) 2mb)
	You can do it! DIY public sector robotics Simon Pollock, Assistant Director of Business Operations, Orbis ([Presentation slides](#) 12mb)
	ONS - applying data science, machine learning and AI to cross-government challenges Tom Smith, Managing Director, Data Science Campus, Office for National Statistics ([Presentation slides](#) 4.3mb)
	Digital 101 – Voice, AI and smartphones, the emerging paradigm for police contact, crime and intelligence reporting Simon Clifford, Director for Technology and Digital Transformation, Northamptonshire Office of the Police Crime Commissioner (OPCC) ([Presentation slides](#) 2mb)

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10. March of the Bots 2018 – Our partners

Gold partner

 Microsoft

At Microsoft, we believe that when designed with people at the centre, artificial intelligence (AI) can extend your capabilities, free you up for more creative and strategic endeavours, and help you and your organisation achieve more. The public sector of the future will be one driven by citizen trust, always-innovating to deliver services that are increasingly efficient and engaging.

Microsoft's deep investments in the field are advancing in state-of-the-art machine intelligence and perception, enabling computers that understand what they see, communicate in natural language, answer complex questions and interact with their environment. Organisations of all sizes across the UK are leveraging the capabilities of AI and the cloud to accelerate performance, including a collaboration with Great Ormond Street Hospital to develop AI tools that will transform child healthcare, and a partnership with Wiltshire Council to improve how they work across the council and deliver citizen services.

AI has the power to transform public services and we are working together with public sector organisations across the country to help tackle key challenges, taking digital transformation to the next level with reimagined services driven by AI, bots and RPA.

To find out more visit: http://aka.ms/citengagement or contact us via: msukservices@microsoft.com

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- Easy to Control – An API integration platform enables 'plug and play' AI capabilities and allows business leaders to auto-scale digital workers on demand to meet peaks and valleys in production demand

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To find out more visit: http://www.blueprism.com

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UiPath

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To find out more visit: https://www.uipath.com

11. Participants at March of the Bots

11.1 Where they came from

Barnsley Council x2, Big Innovation Fund, Breckland / South Holland Council, Brighton and Hove City Council, Cabinet Office, Cambridgeshire County Council x2, City of Edinburgh Council, Colchester Borough Council, Confederation of British Industry, Coventry City Council, Devon County Council, Dudley Metropolitan Borough Council, East Sussex County Council, Essex Police, Government Internal Audit Agency, Hertfordshire County Council, HM Land Registry x8, Information Commissioner's Office x2, Kent County Council, Kent Police x3, King's College London x3, Knowsley Metropolitan Borough Council, Leeds City Council, Lincolnshire County Council, Local Government Shared Services, London Borough of Brent x3, London Borough of Enfield, London Borough of Hackney x2, London Borough of Hammersmith and Fulham, London Borough of Haringey, London Borough of Harrow, London Borough of Hounslow x3, London Borough of Lewisham, London Borough of Tower Hamlets, Milton Keynes Council, Monmouthshire County Council x2, Mount Green

Housing Association, National Crime Agency, Newcastle City Council, North Hertfordshire District Council x2, Northamptonshire Police, Office for National Statistics x2, Ofgem, Optivo Housing x4, Orbis Partnership, Oxfordshire County Council x2, Rhondda Cynon Taf County Borough Council x2, Royal Borough of Kensington & Chelsea, Royal Borough of Kingston upon Thames x2, South Hams District Council and West Devon Borough Council, Stevenage Borough Council, Surrey County Council x4, Thrive Homes, Thurrock Council, Torbay and South Devon Health Care Trust, United Colleges Group, University of Birmingham, University of Portsmouth, Warwickshire County Council x2, Wealden District Council, West Suffolk Hospital, Westminster City Council x3, Wiltshire Council

11.2 What they do

Analyst, Assistant Director of Business Operations, Assistant Product Manager, Assistive Technology Coordinator, Associate Product Manager, Bids and Proposals Manager, Business Analyst x2, Business Process Analyst, Chief Operating Officer, Commissioning and Transformation Lead, Communication & Information Team Leader, Contact Centre Manager, CSM Improvement and Development, Customer Insight & Information, Customer Service & Information Manager, Customer Service Manager, Delivery Director, Deputy Director, Development Manager, Digital Development Manager, Digital Development Manager, Digital Experience Specialist, Digital Programme Lead, Digital Programme Manager, Digital Project Manager, Digital Transformation Lead, Director of Technology & Digital Transformation, Dynamics 365 Development Manager, e-Learning Manager, Head of Business Change, Head of Customer Experience, Head of Customer Service, Head of Department, Head of Digital & Agile, Head of Digital & Data x2, Head of Digital Change, Head of ICT, Head of Innovation and Change, Head of Robotic Automation, Head of Transformation, Informatics Manager, Information Systems Manager, Integration Specialist, Intelligent Automation Lead, Interim Director for Digital Transformation, IT Business Relationship Manager, IT Community of Practice Lead, IT Exploitation Manager, Lecturer in Ed Tech and Director of iTEL Hub, Manager - UK International Crime Bureau – NCA, Managing Director, Data Science Campus, Midwife, Operations Director, PA to CEO, Planning & Policy Support Manager, Policy Officer, Principal Researcher, Product Administrator, Product Administrator, Product Manager x2, Product Support Officer, Professor of IT in Education, Professor, CEO & Co-Creator, Programme Support Manager, Project Manager, Project Support Officer, Public Access Project Manager, QA Manager, Research and Innovation Lead, Research and Innovation Lead – Digital, Senior Advisor, Senior Communications Officer, Senior Digital Business Analyst, Senior Lecturer, Senior Policy Officer, Senior Product Manager, Senior Project Manager, Senior Sector Advisor, Senior Transformation Advisor, Service Delivery Manager, Service Design Officer, Service Transformation Manager, Strategic Commercial & Performance Manager, Strategic Housing Lead, Systems Thinking Analyst, Technical Architect, Technical Development Officer, Technical Solutions Architect, Technical Support Service Manager, Technology and Information Manager, TECHS Development Officer, Transformation & Project Manager, Web & Digital Lead, Web Content Editor

12. Forthcoming UKAuthority events

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UKAuthority Smart Places, Smart People
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UKAuthority Data4Good
11 October 2019 | London

UKAuthority Bots4Good
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London | 22 November 2019

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