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AI, AUTOMATION, AND PUBLIC AUTHORITY

BEYOND THE HYPE OF ALGORITHMIC DECISION-MAKING IN THE NORDIC WELFARE STATE

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TABLE OF CONTENTS

GLOSSARY 6

KEY LEARNINGS AND RECOMMENDATIONS AT A GLANCE 9

1. INTRODUCTION 12

2. CASES OF AUTOMATED DECISION-MAKING AND AI IN THE NORDIC PUBLIC SECTOR 16

2.1 Case #1: ADM in NAV 17

2.2 Case #2: ADM in Migri 21

2.3 Case #3: Statistical profiling tool of the Swedish PES 26

3. CROSS-CASE LEARNINGS 32

4. POLICY IMPLICATIONS AND RECOMMENDATIONS 37

4.1 GOVERNANCE CHALLENGES BEYOND TECHNOLOGY 38

4.2 POLICY IMPLICATIONS OF THE LEARNINGS 38

4.3 Recommendations for public administrations and policymakers 40

5. CONCLUSIONS 44

ENDNOTES & FURTHER READINGS 46

APPENDIX 51

ABOUT THE AUTHORS, FEPS & PARTNERS 58

GLOSSARY

Key concepts

Automated decision-making (ADM)

The use of technological systems to make or structure administrative decisions. ADM is used in this policy study as a broader concept than AI and includes both rule-based automation and AI-based systems.

Rule-based automation

Automation based on predefined legal, administrative or procedural rules. Unlike machine learning systems, rule-based systems do not learn decision logic from data.

Machine learning (ML)

A form of AI in which models identify patterns and relationships in data and use them to generate predictions, classifications or recommendations.

Fully automated decision-making

Decision-making in which a technological system processes a case and produces the final administrative decision without direct human intervention in the individual case.

Semi-automated decision-making

Decision-making in which a technological system performs part of the assessment or provides an output that informs the decision, while a civil servant remains involved in reviewing, verifying or making the final decision.

Acronyms and abbreviations

ADM: Automated decision-making

AI: Artificial intelligence

EU: European Union

GDPR: General Data Protection Regulation

Migri: Finnish Immigration Service

ML: Machine learning

NAV: Norwegian Labour and Welfare Administration

PES: Swedish Public Employment Service (Arbetsförmedlingen)

RRF: Recovery and Resilience Facility

KEY LEARNINGS AND RECOMMENDATIONS AT A GLANCE

The analysis of artificial intelligence (AI) and automated decision-making (ADM) in Nordic public administrations shows that the main challenges of public-sector automation are rarely technological. Rather, they are related to how public administrations organise work and exercise public authority. They also have an impact on how public organisations preserve fairness, accountability and public trust. While automation can sometimes improve efficiency and consistency, it also changes how discretion is experienced, creates new organisational demands and changes the role of individual civil servants.

The following learnings and recommendations summarise the main findings of the policy study.

Key learnings

1) Automation improves efficiency but creates new forms of complexity

Automation can reduce routine work in some administrative processes but, at the same time, creates new work related to, for example, system supervision, exception handling, quality assurance and coordination.

2) Automation does not remove discretion but relocates it

Human professional judgment and discretion are crucial parts of the public sector. Automation embeds it increasingly in system design, legal interpretation, organisational procedures and human oversight rather than individual case handling.

3) Automation fits standard cases better than complex human lives

High-volume decisions that can follow clear legal rules are generally suited to automation. However, decisions that require contextual professional understanding or the assessment of complex life situations still require human involvement.

4) Automation reshapes public-sector organisations and work

Automation changes organisational structures, workflows and professional roles. Civil servants increasingly supervise automated processes, resolve exceptions and coordinate systems rather than processing cases from beginning to end.

5) Trust depends less on technology and more on fairness, accountability and human access

To increase and maintain public trust, automated public services and processes should be understandable, contestable and supported by human access.

6) Automation transforms professional identity and the meaning of civil-service work

Automation not only changes how civil servants work, but also how they experience their professional role. Maintaining professional expertise requires continuous learning, employee participation, and close collaboration between developers and frontline staff.

7) Outsourcing may create new governance dependencies

Outsourcing technological solutions creates dependency, in which civil servants must answer for normative choices encoded in algorithms by private developers, who may lack the legal and other expertise and training to perform administrative tasks. Without strong internal governance, technical system design may become disconnected from frontline administrative realities.

8) The gap between policy ambitions and practical implementation is systemic

Many public-sector AI and ADM initiatives do not advance beyond the pilot phase, remain confined to relatively simple automation or encounter operational difficulties. The potential of new technologies may easily be overstated when policymakers ignore the institutional realities of public administration.

Key recommendations

For public administrations:

1. **Ensure meaningful human oversight** by enabling civil servants to review, question and override automated decisions when appropriate.

2. **Invest in organisational capability not just technology**, including legal expertise, staff training, and cross-sectoral and -functional and collaboration.

3. **Involve frontline civil servants throughout design and implementation** so that systems reflect organisation realities, professional knowledge and everyday practices.

4. **Safeguard accessibility and fair treatment in public service**: discretion is needed, especially in complex and vulnerable cases, to avoid discriminatory or unfair outcomes.

5. **Evaluate automation through public value, not economic efficiency alone**: long-term efficiency is not achieved if service quality, fairness, accountability and working conditions are not taken into account.

6. **Build automation incrementally and learn continuously** through piloting, continuous evaluation, employee participation and co-determination, and iterative improvement.

For policymakers:

1. **Move beyond technical compliance towards organisational accountability**, recognising that good public governance depends on organisational practices as well as legal requirements.

2. **Recognise automation as organisational change, not just technological change**: successful automation requires the assessment of workforce impact, organisational structures and service quality alongside technical risks.

3. **Protect discretion where public administration requires interpretation**: administrative decisions require contextual interpretation and human judgement.

4. **Strengthen data governance without undermining fundamental rights**: efficient data governance is needed while safeguarding privacy, data protection, non-discrimination and due process.

5. **Strengthen public-sector capability in procurement and vendor governance** to reduce strategic dependence on external vendors and retain public ownership of governance decisions.

6. **Support systematic learning between European public administrations** by facilitating the exchange of implementation experiences, governance models and organisational practices across member states.

7. **Consider public-sector work within future AI-at-work regulation**, reflecting the distinct legal responsibilities and accountability of civil servants exercising public authority.

1. INTRODUCTION

1.1 High expectations, new tensions: AI and ADM in public administration

AI and ADM are increasingly reshaping the operation of public administration across Europe. Nordic welfare states, often regarded as global leaders in both digitalisation and institutional trust, have become important testing grounds for these technologies in welfare services, migration governance and labour-market administration.

Countries like Norway and Denmark rank among the most digitalised in the world.[1] Nordic governments frequently exhibit strong optimism about utilising these technologies in public services, and systems are integrated into routine administration on the assumption that they will align with public values and yield cost savings.[2]

At the European level, EU funding mechanisms drive the integration of ADM across member states' public administrations. Financial instruments such as the Recovery and Resilience Facility mandate that member states allocate a significant share of their spending to digital objectives, in line with the EU's core priority of digital transformation.[3] In addition, new legislation establishes new governance requirements for the digitalisation of the public sector. The EU Artificial Intelligence Act introduces mandatory provisions for public authorities deploying systems categorised as high risk, including many algorithms used in welfare, law enforcement and migration.[4] As the Digital Decade reports demonstrate, European public administrations start from very different levels of digital maturity. The Nordic cases, therefore, offer insights not only into the opportunities of advanced digitalisation, but also into the institutional capacities required to implement automation successfully.

Yet, despite growing investment and political enthusiasm, relatively little is known about how these systems reshape public authority, civil-servant work and democratic accountability in everyday administrative practice. Implementation of ADM in public administration raises questions that extend far beyond technological efficiency. Automation reshapes the exercise of public authority itself: it changes how decisions are made, how discretion is exercised, and how accountability is distributed between civil servants and technical systems.[5]

System development raises concerns about the outsourcing of public authority and public decision-making, while shifts in the roles of civil servants may reflect broader transformations within public organisations. Previous research within the FEPS Nordic Digital Programme has also highlighted how public institutions in Nordic countries can develop "blind faith" in algorithmic systems, choosing not to scrutinise results, even when warnings are raised.[6]

Several examples demonstrate how these tensions can materialise into systemic harms when automated systems operate without adequate safeguards. In the Netherlands, a system designed to detect childcare benefits fraud relied on discriminatory indicators, wrongfully penalising vulnerable families with severe debt. An automated UK system assigned A-level grades based on historical school performance, downgrading students regardless of individual merit.[7] In Sweden, investigations by Svenska Dagbladet and Lighthouse Reports revealed that Försäkringskassan used a machine-learning system that disproportionately flagged certain groups, including women, people with foreign backgrounds and lower-income individuals, for fraud investigations.[8] Following regulatory scrutiny, the system was discontinued.[9]

Rather than asking whether AI or automation "works" in the public sector, this policy study examines how it reshapes the exercise of public authority in practice. It provides empirically grounded insights into how ADM reshapes civil-servant roles and public authority within Nordic welfare states. The scope encompasses three distinct case studies across the region: a machine-learning profiling tool used by the Swedish Public Employment Service (PES); a rules-based system for processing sickness benefits at the Norwegian Labour and Welfare Administration (NAV); and the automation of residence permits at the Finnish Immigration Service (Migri).

Distinguishing between AI and ADM provides important context for the study. ADM is used here

as the broader concept, referring to administrative decisions or decision processes that are materially structured by technological systems. AI is treated as a narrower category involving systems that infer outputs from data and operate with varying levels of autonomy.[10] This distinction is relevant because only one of the cases, the PES profiling tool, uses machine-learning-based AI.

In contrast, both Migri's residence-permit automation and NAV's sickness-benefit automation are rule-based ADM systems. It means the applications are automated based on predefined legal and administrative rules. Therefore, this policy study examines both ADM and AI as forms of automation, while still distinguishing between them where the difference matters.

In the next section, we present three case studies from Norway, Finland and Sweden. Section 2 synthesises the findings into eight cross-cutting learnings, while Section 3 translates them into policy recommendations for policymakers, public organisations and other stakeholders.

By analysing how automation systems are designed, implemented and governed, this study aims to conduct transferable lessons for different public organisations as well as for national and European policymakers. While in public debate AI is often framed in terms of technological capability, our analyses suggest that the most important issues in public-sector ADM and AI are organisational, legal and institutional. Public-sector automation – across the cases – redistributes discretion; reshapes civil-servant work; and creates new tensions between efficiency, fairness, accountability and democratic oversight.

The central finding of this policy study is that public-sector AI is ultimately a question of governance rather than technology. The most significant questions in public-sector automation concern discretion, accountability, organisational capacity, professional roles and democratic legitimacy. Automation, therefore, represents not only a technological transformation, but also an institutional transformation of public authority. We argue that the future of digital government depends a lot on whether public institutions remain able to exercise fair, accountable and contestable public authority in increasingly automated environments.

1.2 Methodology and implementation of the study

The study combines desk research, semi-structured interviews and cross-case comparative analysis across three Nordic cases. A desk study was conducted to map existing cases of automation and AI use in the Nordic public sector. The results of this mapping are presented in Appendix 1.

Based on the mapping, we selected one case study from Norway, one from Sweden and one from Finland to capture variation across administrative sectors, governance models and approaches to automation. The study excluded pilot schemes, systems under planning or systems that had just recently been designed. The cases include both internally developed and vendor-supported systems. The cases were also selected to have different forms of automation, including machine-learning-based decision support (PES) and rule-based ADM systems (NAV and Migri).

This selection aimed to enable a cross-case comparison of governance arrangements, accountability mechanisms and organisational impacts, while reflecting both the operational benefits and structural challenges associated with algorithmic governance.

The analysis integrated desk study with semi-structured interviews conducted with frontline civil servants, managers, developers and stakeholders involved in the systems. Within this, we were able to combine formal organisational policies with the experiences and perceptions of those working with the systems in practice.

Data collection included seven interviews with NAV; five interviews with Migri; and a combination of an interview, survey responses and document analysis related to PES. In addition, we conducted interviews with representatives from the City of

Helsinki and the Municipality of Trelleborg regarding their use of automation as supplementary cases. These supplementary cases are not part of the core analysis but are used to illustrate and validate the cross-case findings.

Interviews were analysed qualitatively through thematic analysis focusing on discretion, accountability, organisational change, fairness, and the relationship between human decision-making and automated systems.

1.3 Limitations and ethical considerations

The study relies on a small number of qualitative case studies and does not aim to provide a representative assessment of automation across the Nordic public sector. Instead, the selected cases are intended to generate analytical insights into how automation is implemented and experienced in practice.

Access to empirical material varied across the cases. The NAV and Migri cases are based on multiple interviews with civil servants, managers and staff involved in the development and operation of the systems. In contrast, the Swedish PES case relies more heavily on desk research, publicly available documentation, survey responses and a more limited number of interviews.

In the case of PES, considerable efforts were made to recruit interview participants, including contacting more than 40 civil servants across different parts of the organisation. Several individuals initially expressed interest in participating in the interview but later declined. PES has also been under significant public scrutiny and media attention.[11] While it is not possible to determine whether this influenced participation in this study, such visibility may have led to a more cautious environment for discussing the system.

The cases differ also in their technological maturity, legal frameworks and organisational contexts. While only the Swedish case involves a machine-learning-based AI system, the Finnish and Norwegian cases demonstrate that many of the governance challenges associated with AI also emerge in rule-based ADM systems. The study, therefore, focuses on automation more broadly, rather than on narrowly defined AI.

In this study, we focused on the insights of the civil servants, especially caseworkers. For future research, it would also be valuable to interview the external service providers responsible for developing the technological systems. That could provide insights into how legal, technical and organisational requirements are translated into system design and implementation, as well as how developers perceive their role in shaping public administration processes. For the future, it would also be valuable to better understand the experiences of citizens affected by ADM.

Research on automated public decision-making raises questions about accountability, legal rights, fairness and the working conditions of civil servants. Given the sensitivity of these topics, interviewees were informed about the purpose of the study, participation was voluntary and quotations have been anonymised to prevent identification.

Particular attention was paid to avoiding harm to participants, especially frontline civil servants discussing organisational practices and perceived shortcomings of existing systems. The study does not aim to evaluate individual performance or institutional legality, but rather to understand how automation reshapes administrative work, discretion and governance practices.

The findings should therefore be understood as analytically transferable rather than statistically generalisable. The value of the cases lies in identifying recurring organisational and governance dynamics that may also emerge in other public-sector contexts.

2. CASES OF AUTOMATED DECISION-MAKING AND AI IN THE NORDIC PUBLIC SECTOR

2.1 Case #1: ADM in NAV

NAV is the largest public agency in the country[12] and a central institution in the country's social security system. As part of Norway's long-term digitalisation agenda, NAV has introduced rules-based ADM into several welfare processes, particularly in sickness-benefit administration. The reforms were driven by ambitions to improve efficiency, reduce processing times and standardise decision-making.

This case focuses on the automated processing of sickness benefits through the Speil system, which began development in 2018. While the system has significantly accelerated routine case handling, its implementation has also generated organisational, legal and accountability challenges, including a formal investigation by the Norwegian Parliamentary Ombud (Sivilombudet) in 2025.

The system in practice

To be eligible for sick benefits, three documents must be submitted to NAV: a doctor's note specifying the diagnosis, sick-leave period and degree of reduced work capacity; the applicant's form; and the employer's income statement. Rules-based algorithms are then used to assess eligibility, the number of days and the amount to be paid out, based on submitted documents and other sources, such as the tax authority (Skatteetaten) and other NAV benefit systems.

In parallel, a warning system is in place to trigger human review when inconsistencies, irregularities or possible fraud in the facts presented in the application require further review. If no warnings are triggered and the risk module clears the case, it is approved automatically and paid out. If warnings are triggered, the case becomes semi-automatic: a caseworker receives the system's draft decision, along with a list of all warnings, and they must review and resolve each one before approving the decision. Changes in semi-automatic cases are subject to a mandatory two-stage check by a second caseworker. Once a case is processed, a formal decision letter is sent out to the applicant.

There is an important conceptual distinction to be made here regarding which cases lend themselves to automation and which continue to demand human judgment. Cases that are considered administratively routine, namely, those with complete registry data and clear statutory criteria, can be automated, whereas less clear cases, where life circumstances or legal criteria require interpretation, cannot.[13]

The system effectively creates three tracks of decision-making: fully automated processing for routine cases; semi-automated processing, in which a caseworker reviews and resolves issues that the system flags before approving them; and manual processing for complex or exceptional situations. The Sivilombudet findings highlight that most legal and accountability problems do not arise within any single track but are to be found at the intersections between them.[14] These are points where a case is handed off between automated processing and human handling. These are discussed in more detail in the legal considerations and accountability sections.

Who took part in the development of the system?

Development began in a small cross-functional team combining technical, legal and design expertise:

> **I don't think it was designed; it grew organically. We were mandated to solve problems in the sickness-benefit system, but leadership expected an automated casework platform. It took years to realise this mismatch, and many 'design decisions' became compromises between these expectations and legal constraints.**

As a result, the system was initially designed to maximise automation volume rather than coverage, quality or caseworker usability. In practice, this meant the new system lacked a manual layer, requiring semi-automated cases to be transferred back to the legacy system for human handling. At the time of the interviews, approval to implement a manual layer had finally been granted, "eight years too late", as one informant put it.

The reactive nature of development was further shaped by the team's "project-organised" structure from 2018 to 2023, driven by the funding structure. While teams attempted to work in agile, iterative ways, they were constrained by deadlines and the volume of incoming casework. This limited opportunities for iterative learning and course correction that a product-oriented model might have enabled. The team has since transitioned to a product-oriented structure. As one informant reflected:

> **Looking back, there are things we wouldn't have done the same way. But because of the overarching rules we were working under, we couldn't make the choices we wanted. Now we're in a different place, we're adjusting course, focusing less on automation and more on manual casework, since a large share of applications is still handled in the old system.**

Caseworkers were important in the development phase. Rather than large-scale releases, changes were implemented incrementally to a small number of cases, tested and then deployed. Every month, a random sample of automated cases is analysed by three experienced case managers to verify accuracy. The role of caseworkers in development has evolved.

Initially, caseworkers were embedded directly within the development team, creating a short feedback loop. Eventually, "expert caseworkers", a small number of experienced caseworkers, were temporarily brought in to work with the development team, allowing them to build a working relationship. However, removing expert caseworkers from case processing stripped them of their casework insight, depriving the frontline of the expertise they were supposed to provide. Coaches were then introduced, one from each unit. Coaches maintained their frontline casework role while also serving as the communication channel between caseworkers and developers, meeting weekly and escalating problems through a dedicated channel.

The amount of training required to adapt to the new system was underestimated by the implementation team. Each new deployment required caseworkers to learn both new system functionality and new legal content. In some cases, new functionality was introduced before training caught up. Additionally, the nature of the work itself also changed. As the automated system handles routine cases, caseworkers are left to manage the most complex cases. This means the caseworker needs greater legal competence. While new caseworkers entered directly into the new system and learned the ways of working, experienced caseworkers who had used the old system were sometimes more reluctant to transition. They had to learn to trust the new system and move away from manually checking and controlling all of the data themselves.

Legal considerations

Weitzenboeck argues that lawful automation requires legal rules, relevant facts and safeguards to be accurately translated into code, while meaningful human review must remain available in cases that require discretion or interpretation.[15] This is particularly challenging in welfare administration, where statutory rules interact with professional

judgement, changing life circumstances and acceptable levels of uncertainty.[16]

The NAV case illustrates these challenges clearly. Development of the sickness-benefit automation began before a specific legal basis for ADM existed, with NAV-loven § 4a (Lov om arbeids- og velferdsforvaltningen, LOV-2006-06-16-20) only introduced in 2020. At the same time, sickness-benefit legislation contains complex and context-dependent provisions that are difficult to formalise, particularly in increasingly fragmented labour markets characterised by multiple employers, self-employment and freelance work.

As one interviewee noted:

> **The law is quite old and doesn't fully reflect how work is organised today. It assumes a single employer over time, but in reality, people may have several employers at once, sometimes three, four or more, and may need sick leave from some or all of them.**

Organisational issues compounded these legal challenges. Several interviewees described an early tendency among developers to assume that legal rules could be independently interpreted and translated into code without sufficient legal involvement. The relationship between legal experts and developers was also initially adversarial, with legal staff focused on identifying errors rather than enabling solutions. Although this dynamic improved over time, early legal oversight was characterised as defensive rather than constructive.

The Norwegian Parliamentary Ombud (Sivilombudet) did not question the legality of automated sickness-benefit processing itself, but identified several shortcomings in the implementation of Speil. Most importantly, the system's income-basis calculation did not adequately reflect the statutory requirement that sickness benefits be calculated based on income reported through the national salary reporting system (a-ordningen). The Ombud also found deficiencies in the reasoning provided for some semi-automated decisions and noted that decisions did not consistently identify the responsible caseworker and NAV unit.

The Ombud emphasised that digitalisation does not diminish citizens' legal rights and that automated systems must comply with existing legal standards rather than redefine them. The case illustrates a broader challenge in public-sector automation: legal requirements, organisational practices and technical solutions do not always align, and tensions between them often become apparent only after implementation. NAV has since introduced corrective measures, including a new income-reporting solution and improvements to decision explanations and signatures, although the Ombud's formal follow-up remains ongoing.

Impact of automation on civil servants

Efficiency gains and redistribution of work

Case management has become significantly faster for straightforward cases, with interviewees reporting that 85% of applicants now receive their outcomes within 1.5 days. Informants also highlight improved accuracy, precision and transparency in the new system compared with the old system, with legal rules applied more consistently. As one informant noted:

> **The old system was, it turns out, highly efficient, but only because it didn't have to care about the law. The new system cares about the law.**

Another interviewee described this efficiency gain more practically. For routine cases, "everything is automatic and very quick", and most applicants "get paid or get the case closed after just one and a half days".

These gains also change how frontline work is done. Automation removes many routine cases from caseworkers' desks, leaving them with fewer but more complex cases. As the same interviewee explained, caseworkers previously handled high volumes of relatively simple cases, whereas now "the easy cases are gone" and "very difficult cases" remain. A substantial change: a caseworker might previously have processed "117 cases in a day", now the number has shrunk to "between two and 15 because it's complicated".

Taken together, the interviews suggest that automation does not reduce overall workload; rather, it redistributes and concentrates it. As routine cases are automated, the remaining cases handled by humans are the most complex.

This reflects broader findings on digitalised public services: automation does not reduce the amount of work but shapes it towards greater coordination and more complex case handling.[17] When cases cannot be resolved in Speil and are routed back to the old system, coordination work increases precisely in the cases dominating frontline time, creating a gap between the system's ideal workflow and the realities of casework.[18]

Changing nature of work and professional skills

The redistribution of work has shifted the skill profile required of caseworkers. Whereas the old system prioritised speed in data entry and familiarity with its technical features, the new system requires stronger legal judgement and analytical capacity. Consequently, casework has become more cognitively and emotionally demanding, requiring sustained concentration and deeper expertise. As one informant reflected:

> **Before, if you had a bad day, you could take easier cases – but not anymore. Now every case takes time.**

This transformation also affects professional identity and motivation. Caseworkers who derived meaning from processing high volumes of cases – handling, for example, 100 cases a day – may find the new work less immediately rewarding. At the same time, the shift creates potential for greater professional fulfilment. As one experienced caseworker noted, those who adapt may "feel like you've worked on something, achieved something", as the role increasingly demands greater expertise.

The changing relationship between people and technology is also described as a fundamental shift. **Where previously caseworkers did the work and used the computer as a tool, now the machine does the work and humans oversee it.** Despite this shift toward digital solutions, there is a deliberate effort to preserve the human element. One expert caseworker acknowledges this by describing how "people in vulnerable situations have a need to be seen". Caseworkers are trying to practice calling applicants directly to gather information: "We're doing something in our culture here […] So it feels like you have actually been seen".

Discretion and standardisation

One unintended consequence concerns the risk of unequal treatment across systems. As one interviewer explained:

There's a chance you get different treatment in the old and the new system, partly because the new system is better, but also because it detects things differently. So you might be treated more correctly in the new system, but there's still a risk of inconsistent treatment.

ADM creates a problem in which systems that present themselves as universal are, in practice, automated only for the most typical citizens or include biased data. At the same time, those in non-standard situations face a heavier manual-processing burden, longer waits and more opportunities for error.

Accountability

Multiple caseworkers mention that the new system creates a clearer audit trail than the old one. Every automated decision is logged separately from caseworker decisions, and caseworkers sign off on semi-automatic cases with their own IDs. One of them describes this: "If it's a caseworker, we will show it. And if it's the fully automated history, we will show it's our automated case".

Citizens also now receive formal decision letters for every case, something that did not reliably happen in the old system. However, the Ombud found that semi-automatic decisions still did not include the caseworker's name or unit, despite this being a legal requirement the Ombud had raised as early as 2017. This is the boundary problem flagged earlier: the accountability gap forms where automated and human decision-making overlap. NAV's 2025 annual report states that it corrected errors and omissions pointed out by the Ombud in 2025, and that 93% of surveyed users found the decisions easy to understand. The Ombud's public case page, however, still shows the formal follow-up as ongoing.

The NAV case illustrates how automation may simultaneously strengthen and weaken accountability. Automated systems increase traceability, yet responsibility becomes more difficult to locate when decisions emerge from interactions between the system and human intervention.

2.2 Case #2: ADM in Migri

Migri is the central government authority responsible for residence permits, asylum applications, citizenship and other immigration-related matters in Finland. It has gradually introduced ADM into immigration processing through the Enter Finland digital platform. Automation is limited to straightforward, rule-based positive decisions, while negative decisions and cases requiring discretion remain under human review. The primary goals have been to improve efficiency, reduce processing times and free resources for more complex applications.[19]

Alongside ADM, Migri also employs assistive automation in application processing and automated post-decision monitoring.[20] While automated systems in migration governance carry risks of social and algorithmic harms, previous research highlights their dual nature: when implemented cautiously, they can also alleviate "analogue harms" such as long processing times, a challenge that became particularly visible following the 2015 immigration crisis.[21]

Migri's approach to automation has developed gradually rather than through a single reform. As one caseworker described, initial steps were taken around 2016-2017, followed by a more systematic expansion from 2018 onwards, with automation becoming part of routine procedures by 2019-2020. Early implementation was guided by the recognition that certain positive decisions could be determined with clarity based on predefined criteria. When the legal conditions for granting a permit or citizenship were met, they could be verified automatically. In contrast, negative decisions inherently entail greater case-by-case discretion and therefore fall outside the scope of automation.

The aim of introducing automated processes at Migri has been to streamline the processing of straightforward positive decisions, improve efficiency and free up resources for more complex cases that require human judgment. ADM was not developed as a standalone system but as part of a longer, incremental process of digitalisation. Over several years, small, cumulative changes enabled the integration of ADM into existing systems. These systems are subject to ongoing monitoring and development to ensure their adaptability to increasing volumes and evolving legal requirements.

The system in practice

Migri's automation is built on a case management system with embedded automation functionalities that has been developed incrementally in collaboration with external suppliers. While the system's technical development is outsourced, governance and control of its use are managed internally. Following a recent competitive tender process, Accenture and Twoday are both responsible for system development, with Accenture responsible for system maintenance.[22]

Central to this arrangement is Migri's governance model for automation, which structures how rules are designed, implemented and maintained. Automation rules are defined internally by process owners and legal experts, while technical implementation is outsourced to external suppliers. The case suggests that the key governance question is not whether technical development is outsourced, but whether public authorities retain ownership over legal interpretation, rule design and accountability.

A defining feature of Migri's approach is that automation is restricted to cases in which legal criteria can be applied without interpretation. Cases involving discretion, ambiguity or additional parties are excluded from automated processing. First, routine processes have been automated, including automatic register checks triggered as soon as an application is submitted. These checks streamline basic verification tasks during the early stages of processing.

In Migri, it needs to be clearly indicated when a case has been processed automatically. This transparency requirement is likely derived from legislation such as the Data Protection Act. Applicants must also consent to the use of ADM. If they don't at least formally consent, applicants can opt out of automated processing by submitting a paper application.

Automation has an impact on applications as well, creating two administrative pathways: a fast-track for standardised applicants; and a slower, more complex one for others, which some of the interviews described as risks to equality.

Who took part in the development of the system?

Before deployment, all new or modified automation rules undergo thorough testing and validation. This includes detailed documentation of processing rules, involvement of multiple stakeholders, such as legal services; and formal approval procedures at the managerial level, indicating a strong emphasis on traceability, accountability and quality assurance in the governance of automation.

Overall, based on interviews with caseworkers at Migri, employees generally felt they had opportunities to participate in the system's development and implementation by providing feedback and recommendations when issues arose. Some caseworkers played a more substantial role, contributing directly to system development and participating in quality control once the system was in use. Others had a more limited role, mainly reporting issues and areas for improvement to their supervisors.

Mainly, the development of the system has happened within a separate unit handling process development and automation, but they have listened to caseworkers as part of that development work, for example, by testing and incorporating the worker's perspective into the system as an end-user. Testing has been constant, especially when automation was introduced into the organisation.

They are involved. It always depends on the process, of course, but they are certainly involved in the early stages, especially when we were creating the first versions of those automation systems; the permit officers were there to provide their perspective on how things work from their point of view, the processing of applications, so they were certainly involved at that stage. That's still the case to some extent, but perhaps not quite as much as in the early stages.

When the system was first introduced, there were several training sessions for the staff. Over time, automation shifted from being perceived as a major organisational change to becoming the default way of working for new employees.

Well, yes, more training. Perhaps it feels like legislation is changing at a rapid pace and, well, I do trust that automation will keep up with that and that updates will come in good time to our systems as well. But, well, training sessions would also be good to organise. For example, if there are new changes or something new related to automation.

Well, of course, always, especially before automation. I mean, whenever new automation is introduced, training is provided before implementation, and particularly with regard to this automated solution, there was more extensive training than is usually the case, so that, in a way, we explained what the automated solution means for the applicant, what it means for the caseworker and for the agency.

Yes, the staff are familiar with it, and it's our established way of doing things; of course, if a new person joins, they'll be trained, but as the transition to automation has already taken place, there's no need to brief them directly on how the automation works and behaves. That's just how it is. It follows from that, of course, back when we first started developing this assistive automation in particular, well, that's how it was. I had to go through a change process where I had to get the staff to move from the old way of doing things to the new one, which took a bit longer at the time.

Another challenge concerns the ongoing development of the system, both legally and technically, as the regulatory framework is subject to frequent change. This requires caseworkers to stay alert and keep their knowledge up to date. At the same time, the development and maintenance of automated systems depends on external providers, which raises concerns regarding legality, administrative accountability and institutional dependence on consultancy firms.[23]

However, based on the interviews, a clear governance model can mitigate such dependencies. When the rules governing automation are developed and maintained internally, organisations retain greater control over the implementation process. As one informant emphasised, regulatory authority remains firmly within Migri:

> **I don't really see outsourcing as relevant for us, because regulation and capability are very much in our own hands. That means we have quite direct control over how automation is implemented. In each case, we assess non-discrimination carefully and ensure equality is upheld.**

This internal control over regulatory design and implementation was described as an important safeguard for ensuring both legal compliance and accountability in the use of ADM systems.

Legal considerations

In Finland, the legal framework governing ADM in migration administration is complex and continually evolving, requiring ongoing awareness of its legal context.[24] Rather than being primarily a technological development, Finland's shift toward ADM is fundamentally a legal-doctrinal process shaped by multiple layers of regulation, including EU law, international human rights obligations, the Finnish Constitution, general administrative law and sector-specific legislation. The ADM provisions introduced in the Administrative Procedure Act and the Information Management Act[25] have imposed significant constraints on automation in public administration since May 2023. Only rule-based systems are permitted, explicitly excluding data-driven machine learning and AI, meaning that only decisions directly translatable into formalised rules can be automated.

The Administrative Procedure Act sets strict national limits on ADM at Migri. Automation is used only in straightforward cases where decisions align directly with the application, and no other parties are involved. Due to the absence of an internal review procedure and the possibility of appeal to administrative courts, Migri adopts a cautious interpretation and operates strictly within these legal boundaries. While these safeguards reduce the risk of algorithmic harms, they also hinder the full automation of decision-making processes and contribute to persistent bureaucratic delays, leaving the permit seekers exposed to ongoing "analogue harms". The legal framework is, in some aspects, stricter than the AI Act, as it effectively excludes machine-learning-based decision-making from administrative decisions altogether and permits automation only where the decision logic can be fully specified in advance.

Moreover, ADM is prohibited in cases that require human discretion. These constraints are reinforced by Finland's strong tradition of personal official accountability, which requires that responsibility for decisions be traceable to human actors; as machines cannot bear liability, the law mandates detailed documentation of system design and use.

So, rather than merely constraining automation, the Finnish legal framework actively shapes the design of ADM systems. In practice, legality becomes a design principle: only cases that can be translated into explicit legal rules are considered suitable for automation, while discretion-intensive decisions remain outside its scope.

Impact of automation on civil servants

Efficiency gains and redistribution of work

As one caseworker expressed, the changing legal landscape requires constant updating of the caseworkers' skills and knowledge:

> Or at least I feel that legislation relating to immigration is really undergoing a major transformation, and there are huge legislative changes all the time, which also affect permit processes using a high volume of automation and the rules for their automated processing, so they need to adapt to that changing situation or changing environment – so yes, I at least feel that of course, as I've been somewhat involved in that, and particularly in the testing, so in a way it's been part of my job as a case officer to provide feedback on it.

This highlights that automation is not a static intervention but an ongoing process that requires continuous adaptation. As legislation changes, ADM systems must be updated accordingly, which, in turn, requires caseworkers to remain informed about both legal developments and how the automated processes function. Interviewees described participating in testing and providing feedback on system updates. They reported that the system's implementation has expanded their role beyond case processing to include contributions to the development and maintenance of automated systems.

Automation has reshaped how Migri caseworkers allocate their time and attention. Interviewees emphasised efficiency gains, particularly through the automation of routine data checks. Tasks that previously required manually accessing multiple registers and datasets, and verifying conditions, can now be done automatically. That allows caseworkers to focus on cases that require further investigation or judgment. As one interviewee described, automation "directs the attention of the processing team to where it's needed", streamlining the overall process and reducing time spent on repetitive tasks.

In practice, automation has led to a redistribution rather than a reduction of work. While automation has simplified application processes, it has also enabled Migri to increase application volumes and introduce new tasks, such as post-decision monitoring. Caseworkers no longer process entire applications from start to finish. Instead, their role has become more fragmented, focusing on specific elements flagged by the system. As one respondent noted, whereas they were previously responsible for the "whole pie", their work now consists of "bits and pieces" of the process. This indicates that efficiency gains come with reconfiguration of work rather than leading a straightforward reduction in workload. The same is also observed in other cases. **Automation rarely eliminates work, but, instead, it shapes it towards monitoring and exception handling**.

Changing nature of work and professional skills

The introduction of automation has also changed the required skills of caseworkers in Migri. They increasingly operate as supervisors of structured processes rather than as independent handlers of the application process.

Interviewees highlighted that making full use of ADM requires understanding how the system operates and how to respond to its alerts. At the same time, they describe the decision-making processes as being substantially similar to manual decision-making. Caseworkers still assess whether applicants meet the legal conditions for permits. What has changed is that they do it in a more structured way, guided by the system. This leads to different roles for caseworkers. They are still able to exercise judgment but within procedures and categories the system defines.

Discretion and standardisation

Migri has designed its automation around the principle that cases which require discretion remain outside of the automated process. Predefined rules allow automated decisions in straightforward cases, which reduces the need for case-by-case judgment. According to several caseworkers, this standardisation is beneficial for ensuring consistency and legal certainty, when similar applications are processed according to the exact same criteria.

However, as one informant noted, automation can create differences in processing times:

> **What we have observed, however, is that applications processed with more automation tend to move through the system faster than others. This has been part of how we manage workload – by directing applications along different paths. But some cases require closer scrutiny and additional information, which naturally takes more time.**

Discretion remains in more complex cases and especially when applications are diverted from the automated process. So, caseworkers have the possibility to intervene, prevent automated decisions and conduct additional investigations if needed.

Accountability

The interviews revealed an interesting distinction in how accountability is visible in practice. When a caseworker intervenes in an application, their name appears on the decision, which makes the human actor directly identifiable and accountable for the decision. By contrast, automatically processed decisions are attributed to the system itself, but not to individuals who have designed, developed or maintained the system. Unlike manually reviewed cases, automated decisions do not identify the individuals involved in designing or maintaining the system. Responsibility, therefore, becomes more difficult to locate at the level of an individual worker.

In such cases, accountability shifts from individual decisions toward the design, approval and maintenance of automation rules. While caseworkers remain responsible for the aspects of the decision they manually verify, responsibility for automated elements is linked to the design and approval of the processing rules. As one interviewee explained, if an automated system fails to flag a relevant issue, responsibility may not lie with the individual caseworker but rather with those who defined and approved the automation rules.

In practice, accountability is understood as a shared and relational concept that involves both human actors and the automated system. Errors are assessed holistically, considering whether they stem from human input, system design or data quality. While caseworkers can intervene and correct errors, sometimes even before decisions are finalised, there remains the possibility that mistakes go unnoticed, shifting part of the burden of detection to applicants themselves. This illustrates a shift in accountability from individual decisions towards the governance of systems, rules and organisational processes, which can make responsibility less visible.

2.3 Case #3: Statistical profiling tool of the Swedish PES

The Swedish PES (Arbetsförmedlingen) uses a statistical profiling tool to support decisions concerning labour-market support for jobseekers.

The system was introduced to improve consistency and efficiency in allocating employment support services by identifying which jobseekers require more intensive interventions. The profiling tool has been in use since 2020, although Arbetsförmedlingen introduced a new, updated assessment model in April 2023 to address flaws in how the original model handled unemployment duration.[26]

It generates recommendations on whether a jobseeker should receive personalised support as part of the agency's "Prepare and Match" programme (a "positive" decision) or not (a "negative" decision). Jobseekers deemed not fit for the programme are either given only light assistance, such as automated job-matching services, or undergo further investigation and other, more in-depth forms of support.[27]

The tool is based on a neural network model trained on approximately 1.1 million profiles. [28] Neural networks are machine-learning models designed to identify complex relationships within large datasets. The tool estimates the probability that a jobseeker will find employment within six months, drawing on variables including age; gender; education; unemployment history; and contextual factors such as unemployment rates, income levels and educational attainment within the jobseeker's residential area.[29] Importantly, these variables are defined and managed by humans, reflecting human decisions about what information is relevant and how it should be used.

The system is designed as a decision-support tool, but, in practice, it strongly structures decision-making. Caseworkers are generally expected to follow the automated recommendations, and overriding these recommendations, particularly negative classifications, or classifications where there isn't deemed to be a need for support, is described as difficult.[30] The system's performance is also uneven across population groups: for jobseekers with disabilities, the accuracy of negative decisions has been reported to be as low as 17%.[31]

An informant noted that it has become increasingly unlikely that jobseekers will have consistent interaction with a dedicated caseworker, because organisational restructuring has reduced direct contact between jobseekers and caseworkers.

As of 2 March 2026, case handling has shifted from local offices to a national model. The shift is intended to increase efficiency in decision-making. Such reorganisations are not uncommon in the public sector but may have significant implications for how automated systems are experienced in practice. This dynamic reflects a broader tension in public administration between pursuing automation for efficiency and standardisation versus retaining augmented human discretion to protect citizens from algorithmic harm.[32]

The system in practice

In practice, the profiling system determines whether the jobseeker is directed toward standard job-matching services or more intensive support, such as participation in programmes involving private job coaches. Overriding the decision is possible by a caseworker only when there is additional qualitative information about the jobseeker available that the system does not capture. For example, factors such as work ability, motivation or ongoing studies may justify adjustments, but only if they can be formally documented.[33]

Caseworkers described the system as an effectively structuring and partially automating decision-making process. However, they also emphasised its limitations, particularly its inability to capture qualitative aspects of a jobseeker's situation. While some room for professional judgement remains, it is conditional and constrained by the requirement to provide formal justification based on additional information.

Recent developments suggest a slight increase in flexibility. As an informant noted:

> **At the beginning, it was more fixed, but now there is a bit more flexibility. We can make adjustments if we receive information from the jobseeker that justifies it. Otherwise, we have to follow the decision – and so does the jobseeker.**

Despite this, caseworkers report that the system has reduced their decision-making autonomy. For example, they are expected to follow the automated recommendation even if they are surprised by it, unless new information justifies an override.

This constrained discretion has consequences not only for caseworkers but also for the jobseekers whose cases they handle. The system has been criticised for limited transparency and explainability, making it difficult for jobseekers to understand how decisions are made or to contest them meaningfully.[34] Although PES has since increased transparency regarding the variables used in the system and updated the assessment model, the reasoning behind individual classifications remains difficult for jobseekers to understand. An informant noted that jobseekers are sometimes hesitant about the arrangements recommended by the system, yet in practice, they are expected to accept the decision.

Who took part in the development of the system?

The system was initially developed as an EU-funded pilot project, with some caseworkers involved in testing and providing feedback before full implementation. However, the core design was carried out by external actors who, according to informants, had a limited understanding of frontline casework. This reflects a broader pattern in public-sector AI adoption, where agencies rely on external specialists due to limited internal technical capacity.[35] While often necessary, outsourcing can create a disconnect between system design and the practical realities of administrative work.

According to interviews, closer collaboration between developers, system designers and frontline staff would have improved the system's alignment with everyday casework, legal requirements and organisational knowledge. Although feedback from caseworkers and jobseekers was incorporated during system development, survey respondents reported limited involvement in the process.

Legal considerations

The profiling system has been subject to academic and legal scrutiny regarding transparency, explainability, discrimination risks and jobseekers' ability to understand or contest profiling outcomes.[36] Although Arbetsförmedlingen has increased public information about the variables used in profiling and emphasises that the tool is only one component of the overall assessment,[37] concerns regarding the explainability and contestability of individual classifications remain.

The system also raises data-governance questions. Jobseekers are informed that personal data are processed and may be shared with external service providers, but opportunities to opt out are limited in practice. This reflects a broader tension in the public sector, where access to services depends more and more on the provision of personal data.[38] More recently, Arbetsförmedlingen introduced additional forms of data use, including monitoring IP addresses to verify that jobseekers are physically present in Sweden.[39]

The opacity of algorithmic recommendations also creates challenges related to accountability. While Swedish administrative law requires decisions to include understandable reasoning, both caseworkers and jobseekers may find it difficult to understand or explain how recommendations are produced.[40] Survey respondents were unable to identify if the EU AI Act had been considered, which illustrated the implementation gap between

emerging AI governance frameworks and frontline administrative practice.

Impact of automation on civil servants

Efficiency gains and redistribution of work

With automation, PES is aiming to increase efficiency by standardising decisions and ensuring that similar cases are treated in similar ways. As one informant noted:

> We aim to make decisions as consistent as possible, treating similar cases in the same way. Sometimes the system works well, but if a person has more complex issues, things become more difficult. Often, we don't have all the necessary information. If the system has complete data, it can make correct decisions – but if information is missing, it can lead to wrong decisions and extra work for the caseworker, who has to start again. In those cases, the system is not efficient.

While the tool is seen as useful for making routine decisions faster, particularly for less experienced caseworkers, more experienced staff report limited impact on their work. A concern is that efficiency gains are highly dependent on data completeness. When relevant information about a jobseeker is missing, automated recommendations may be incorrect. This may increase workload rather than reduce it. Furthermore, automated recommendations may be incorrect for jobseekers with complex situations, as the statistical model struggles to capture qualitative, unprogrammed personal information.[41]

By requiring caseworkers to follow algorithmic recommendations, PES may not be making full use of the experience and professional expertise of its personnel.[42]

Overall, the efficiency gains associated with automation appear to be conditional and uneven, depending largely on data quality and the complexity of individual cases.

Changing nature of work and professional skills

Automation at PES has reshaped the professional identity and day-to-day experience of caseworkers in ways that go beyond the redistribution of workload. Key concerns relate to the outcomes of decisions, the ownership of those decisions and the reduced role of human interaction in casework.

As one informant described, this creates a tension between professional expertise and system-driven decision-making:

> You are trained and given the knowledge to make decisions, and you know how to do the job. But at the same time, you're told not to use that knowledge – that it's the artificial intelligence that will do it. It becomes a kind of paradox. Sometimes I feel free to decide, and sometimes I feel locked in.

This shift challenges traditional notions of professional judgement. While caseworkers are equipped with training and experience, their ability to apply this knowledge is increasingly constrained by system recommendations.

Survey data reinforces this sense of tension. Respondents described their work as becoming

more mechanical due to the system. For one, this had a clear negative impact on motivation, as algorithmic logic appeared to displace the human judgment that gives the work its meaning. Another respondent was less affected in terms of motivation but located their sense of purpose primarily in direct interaction with jobseekers, rather than in the use of digital tools – suggesting that the system does little to support the relational dimension of the work.

Discretion and standardisation

A central aim of the system is to standardise decision-making, ensuring that similar cases result in similar outcomes.[43] A caveat to this is that the agency introduces intentional inconsistencies into the automated process by applying randomisation in borderline cases and by adjusting decision thresholds based on available resources and volume goals. The thresholds determining who receives intensive support are set administratively by Arbetsförmedlingen and may be adjusted over time based on available resources and programme capacity.[44] Caseworkers, meanwhile, have limited capacity to intervene in these system-generated recommendations on their own initiative.

Survey responses illustrate how this plays out differently across individuals. One respondent reported consistently following the system's recommendations, relying on organisational rules to determine the limited conditions under which exceptions are permitted. Another adopted a more active approach, occasionally departing from the recommendation in light of their own professional assessment of the jobseeker's needs.

Despite these differing orientations, respondents rated the practical ease of overriding the system similarly. This suggests that, while the formal possibility for discretion exists, it is tightly constrained in practice and exercised selectively, requiring clear justification. Prior research shows that deviating from a positive assessment is relatively common when the caseworker can cite one of the nine predetermined formal justifications (such as upcoming studies or health issues), whereas deviating from a negative assessment is difficult.[45]

The boundaries of discretion become unclear and situational, rather than stable. When automated systems heavily constrain human discretion, it can cause professional skills to deteriorate and diminish the operators' sense of control and moral agency.[46]

The push toward standardisation highlights a broader tension between the standardisation goals of automation and the complexity of individual cases, which often resist full formalisation. There is a competing demand to treat all citizens equally through rigid, standardised rules (or algorithms) while simultaneously needing to exercise discretion to adapt decisions to ambiguous, individualised human circumstances.[47]

Accountability

Questions of accountability are a recurring concern regarding the system. An informant described ongoing discussions about who ultimately "owns" decisions made with the support of automation, and at what level responsibility lies:

> **There is always a discussion about the ethical side – who owns the decision-making, and to what extent. There is also some fear that as the system becomes more efficient, we may eventually be replaced. The system is like a counsellor, but the discussions around responsibility are always there, and adjustments are made over time because of that.**

This fear of replacement aligns with previous observations that AI adoption in public administration frequently triggers anxiety regarding workforce displacement, which can inhibit internal adoption and create friction among staff.[48]

At the same time, accountability is formally individualised. All actions taken within the system are electronically recorded and attributed to the caseworker handling the case. This traceability reinforces individual responsibility, even in a context where automated recommendations shape decisions. When asked who is responsible in cases of error, the same informant highlighted an inherent ambiguity: "It could be an error in the system, but the caseworker is still responsible for making the final decision. At that moment, the person has the freedom to decide – not the system. The person comes first".

As Green cautions,[49] when formal accountability is individualised, but practical agency is heavily restricted, agencies risk positioning frontline human operators as scapegoats for systemic algorithmic errors over which they have minimal control. This creates a responsibility-without-control dilemma: caseworkers remain formally accountable for decisions that are heavily shaped by algorithmic recommendations they have limited ability to challenge.

Survey responses reflect this ambiguity. A respondent viewed responsibility as shared between the system and the caseworker, while another located it clearly with the caseworker and, by extension, their line manager. Perceptions of transparency were similarly mixed: one respondent pointed to increased transparency through publicly available information about the profiling system.

More broadly, respondents expressed concern about the system's implications for public trust. Arbetsförmedlingen already faces credibility challenges due to recent controversies, and there is a perception that increased reliance on automated systems may further erode trust – both among jobseekers and within the organisation itself. When algorithmic decisions lack transparency or cannot be fully explained, they undermine legal accountability and may erode the public's trust in the legitimacy of the welfare state.[50]

3. CROSS-CASE LEARNINGS

Key learnings

Table 1. Key features of the cases.

Country	Case	Sector	Level	System type	Automation level	Implementation model	Legal considerations
Sweden	PES (*Arbetsförmedlingen*): statistical profiling tool	Employment/ labour-market services	National	Machine learning (neural network)	Semi-automated (decision support, constrained override)	Vendor-developed with external technical actors	Transparency, explainability, GDPR, limited ability to contest decisions, uncertainty around AI Act implications
Norway	NAV: automated processing of benefit applications	Social security/welfare: sickness benefits	National	Rule-based ADM	Fully automated for routine cases; semi-automated/manual fallback for flagged cases	In-house	Legal basis for ADM introduced after development began; challenges in translating welfare law into code; Ombud's concerns regarding transparency
Finland	Migri: ADM	Migration/ residence permits/citizenship	National	Rule-based ADM	Fully automated for standard positive cases	Vendor-led technical development under strong internal governance (Accenture, Twoday)	Strict legal limits under the Finnish Administrative Procedure Act and the Information Management Act; only rule-based ADM permitted; no machine-learning-based AI allowed

Based on the cross-case analysis, in this section, we have identified eight key learnings on how ADM and AI affect accountability, transparency, discretion, civil-servant work and citizen trust in the Nordic public sector:

1. Automation improves efficiency but creates new forms of complexity.
2. Automation does not remove discretion but relocates it.
3. Automation fits standard cases better than complex human lives.
4. Automation reshapes public-sector organisations and work.
5. Trust depends less on technology and more on fairness, accountability and human access.
6. Automation transforms professional identity and the meaning of civil-service work.
7. Outsourcing may create new governance dependencies.
8. The gap between policy ambitions and practical implementation is systemic.

1 Automation improves efficiency but creates new forms of complexity

ADM and AI in the public sector are commonly justified by expected efficiency gains, including faster processing, cost reduction and increased consistency.[51] Several interviewees across the cases confirmed that automated systems can streamline routine tasks and speed up processes.

Automation also redistributes the administrative burden by leaving the most complex cases for frontline human workers. However, system-level efficiency benefits don't necessarily translate into service quality or reduced workload for civil servants. Rather, the implementation of technological systems generates new forms of complexity and increases the cognitive load, coordination work, and documentation demands on caseworkers. Efficiency gains seem to lead to a redistribution rather than to a reduction of workload. Previous research has even found that digitalisation may result in an overall increase in workload.[52]

The interviewers reported that automated systems manage highly standardised procedures well but struggle with exceptions, leaving civil servants to resolve the most ambiguous and resource-intensive situations. When a case cannot be resolved automatically and must be routed back to the old system, the resulting coordination work can create more administrative friction than if the case had been processed manually from the beginning.

2 Automation does not remove discretion but relocates it

Based on the cases, automation does not eliminate discretion but shapes where and how it is exercised. In rule-based systems, such as those used at NAV and Migri, discretion is embedded in the system's design through rules, thresholds and eligibility criteria. At the practical level, caseworkers have only limited possibilities for discretion in routine cases and retain it mainly in exceptions and complex situations.

In practice, the role of caseworkers shifts from making independent qualitative assessments toward validating and documenting recommendations produced by the system. Even in cases where no formal automated decisions are made, discretion is practically constrained. At PES, caseworkers are generally expected to follow the profiling system's recommendations, and overriding a negative classification is difficult and requires specific, documented justification.[53]

This reconfiguration of discretion creates a risk of "responsibility without control", in which frontline workers remain accountable for decisions they may not fully control.[54] This poses a risk that civil servants are held accountable for errors they were not truly able to control.

3 Automation fits standard cases better than complex human lives

Automated systems function best in predictable, standardised cases but struggle to process the complex realities of human life. As ADM demands technical simplification, translating nuanced contextual situations and complex welfare legislation into code becomes both practically and legally challenging.

The case studies illustrate how ADM and AI systems alter when faced with non-standard cases, such as fragmented work histories and qualitative factors that are not easy to program. The statistical profiling tool used by PES has generated systematically inaccurate recommendations for specific vulnerable groups, such as jobseekers with disabilities.[55] At NAV, translating the legal requirements for the sickness-benefit system was challenging, as the legislation included provisions that were difficult to formalise, for example, regarding individuals with multiple concurrent employers or irregular incomes.

As one caseworker explained:

> **This is only for the people that have a steady job and one employer, but you have other situations, you have self-employed people, you have freelancers, you have people with combined incomes.**

This simplification creates a tension between the pursuit of process consistency and fair, individualised treatment. Automated systems achieve procedural uniformity by processing applications through the same templates. By restricting human discretion, these systems diminish the capacity to provide fair, individualised solutions for citizens.[56]

4 Automation reshapes public-sector organisations and work

Automation reshapes not only administrative processes but also organisational structures. Tasks are redistributed across systems, teams and

organisational units, while service delivery becomes increasingly centralised and standardised.

The integration of algorithmic technologies requires civil servants to adapt to entirely new ways of managing cases. For example, caseworkers from Migri report that automation has fragmented their roles, shifting their work from holistic case management toward system supervision and oversight. As one respondent noted, whereas they were previously responsible for the "whole pie", their work now consists of "bits and pieces" of the process.

Automation is often linked to broader administrative reforms, such as service centralisation and reduced face-to-face interaction. At both NAV and PES, the agencies have restructured their operations by moving casework from local community offices to centralised national processing centres. These structural shifts aim to increase processing speed and reduce costs. However, they risk creating "faceless interactions" that weaken the relational support traditionally provided, especially to vulnerable users.[57]

5 Trust depends less on technology and more on fairness, accountability and human access

If ADM and AI support faster, more consistent processes and service delivery, they can improve public trust. However, the procedural improvements do not always secure public confidence. Perceptions of fairness, accountability, explainability and contestability can be more important for public trust than the technological sophistication of automated systems themselves.[58]

Trust erodes when automated systems operate opaquely, restrict avenues for contestation or diminish human interaction. At PES, the use of a complex neural-network model has made it difficult for jobseekers and caseworkers to understand the rationale behind assessments fully, thereby restricting their ability to negotiate or contest unfavourable decisions.[59]

In addition, automation affects public employees' confidence. When civil servants are required to validate opaque system recommendations, they might risk developing "automation bias". Over time, heavily constrained discretion can cause officials to place unwarranted faith in algorithmic outputs while losing confidence in their own professional expertise and moral agency.

6 Automation transforms professional identity and the meaning of civil-service work

ADM and AI change not only what civil servants do, but also how they experience their professional role. As decision-making becomes increasingly guided by technological systems, civil servants may have fewer opportunities to exercise judgment, develop expertise and experience ownership over outcomes. At the same time, automation can create new professional roles focused on analysis, exception handling and quality assurance. At NAV and Migri, civil servants increasingly supervise structured processes rather than manage applications holistically. With increasing automation of processes, public employees become less like independent caseworkers and more like operators who oversee technological infrastructures and validate algorithmic recommendations.[60]

An interviewee at PES noted that, although they are trained and expected to make independent assessments, in practice, algorithmic recommendations can constrain how much they can rely on their own judgement:

> **You are trained and given the knowledge to make decisions, and you know how to do the job. But at the same time, you're told not to use that knowledge.**

Reduced opportunities to exercise discretion and deploy professional skills may weaken employee motivation and diminish the long-term attractiveness of civil-service jobs. If executed well, however, the evolving skill requirements associated with the uptake of ADM and AI can also generate new sources of professional reward. A NAV interviewee reflected that, as the role increasingly demands higher levels of analytical expertise, some officials report they now "feel like you've worked on something, achieved something".

7 Outsourcing may create new governance dependencies

Because public institutions often lack internal technical expertise, they increasingly rely on external vendors and technical specialists to develop ADM systems.[61] Responsibility for legality and administrative accountability nevertheless remains firmly with public institutions. This creates a dependency through which civil servants must answer for normative choices encoded in algorithms by private developers, who often lack the legal and other expertise and training to perform administrative tasks.[62]

Without strong internal governance, technical system design may become disconnected from frontline administrative realities. In the case of PES, the core design of the statistical profiling tool was executed by external developers who, according to informants, had a limited understanding of everyday casework.

Outsourcing can create challenges related to transparency, procurement and democratic oversight, but there are good practices to keep governance in-house and develop in-house systems. For example, to regain ownership of its digital solutions, and enable more agile development,[63] NAV opted to build its automated sickness-benefit system internally, and Migri outsourced technical coding while maintaining direct internal authority over the definition and legal interpretation of automation rules.

8 The gap between policy ambitions and practical implementation is systemic

While AI and ADM are frequently framed as transformative for public administration, the distance between strategic vision and actual implementation remains wide.

Integrating these systems faces legal, technical, organisational and data-related barriers. At Migri, legal constraints restrict automation to narrow, rule-based processes. NAV experienced an organisational disconnect between system developers and management during deployment. Additional interviews and desk research found, for example, that the City of Helsinki struggled to identify viable use cases for automation because translating complex administrative rules into functional code proved too difficult, and that the Swedish municipality of Trelleborg discontinued its automated robotics system due to persistent technical failures.

Consequently, **many public-sector initiatives do not advance beyond the pilot phase, remain confined to simple rule-based algorithms or encounter operational difficulties.** The potential of new technologies may easily be overstated when policymakers ignore the institutional realities of public administration.

4. POLICY IMPLICATIONS AND RECOMMENDATIONS

4.1 Governance challenges beyond technology

The cases provide important context for interpreting the policy implications and recommendations followed in this section. First, the systems examined in this study were largely initiated before the AI Act and continue to operate within pre-existing organisational practices and legal frameworks. Awareness of the AI Act was quite limited among interviewed civil servants across all cases. While the regulation establishes important requirements regarding risk management, transparency and human oversight, its practical influence on everyday administrative work was not yet clearly visible.

Second, the cases illustrate that **many important governance questions emerge during implementation rather than in system design**. How discretion is exercised, how accountability is distributed, how fairness is interpreted, and how human oversight functions in practice are often shaped through everyday organisational routines and local practices rather than through formal legal requirements alone. This also highlights the need for ongoing co-determination and participation of civil servants and their representatives, as challenges become often apparent during everyday use.

Third, the existing governance frameworks capture only part of the reality of automation and AI in public administration. While current regulation focuses primarily on transparency, documentation, risk management and technical compliance, the interviews show that automation also affects organisational structures, professional roles, accountability relations and the exercise of discretion.

Finally, the cases highlight data governance as a critical but often underappreciated dimension of public-sector automation. The effectiveness and scalability of automated systems depend heavily on the availability, quality and interoperability of data. Improving system performance often creates pressure to expand data collection and increase information sharing across organisations. As Madan and Ashok note,[64] this reflects a structural tension in public-sector data governance: the provision of personal data increasingly becomes a practical precondition for accessing public services. The challenge is therefore not only how to govern automated systems, but also how to govern the data infrastructures on which they depend.

4.2 Policy implications of the learnings

The Digital Decade report[65] demonstrates how EU member states are at very different levels of digital maturity. Nordic countries are already among Europe's most advanced digital administrations,[66] while some member states are facing more fundamental challenges related to digital infrastructure, interoperability, digital skills and public-sector capabilities. This means that the learnings of this study and their implications are likely to vary, depending on the current processes and structures of digitalisation in public administration. In more so-called digitally mature administrations, key challenges of ADM and AI concern accountability, professional discretion, organisational impacts and the maintenance of public trust. However, in less digitally mature administrations, priorities are probably more foundational, including process standardisation, data quality, interoperability and organisational readiness. That's why the recommendations presented in this section need to be contextualised across different administrations.

The cases examined in this study highlight how the challenge for public administration is not how to expand the use of AI and ADM, but rather how to understand where technological systems are meaningful and how to govern them throughout their life cycle in ways that they can strengthen public value and support civil service. Building on the learnings presented in the previous section, we propose recommendations for public administrations and policymakers on what to take into account when designing, implementing and governing AI and ADM while safeguarding fairness, accountability, professional discretion and public trust.

The recommendations reflect a key finding of this study: **the main challenges of public-sector automation are not primarily technical, but organisational and institutional**. The recommendations, therefore, address not only the governance of technology but also organisational changes.

Table 2. Summary of the learnings.

Learning	Policy implication
Automation improves efficiency but creates new forms of complexity	Invest in organisational capacity, not just technology
Automation does not remove discretion but relocates it	Ensure meaningful human oversight
Automation fits standard cases better than complex human lives	Preserve discretion in complex cases
Automation reshapes public-sector organisations and work	Assess organisational and workforce impacts alongside technical risks
Trust depends less on technology and more on fairness, accountability and human access	Strengthen transparency, contestability and human access
Automation transforms professional identity and the meaning of civil-service work	Involve frontline civil servants throughout design and implementation
Outsourcing may create new governance dependencies	Strengthen procurement and vendor-governance capability
The gap between policy ambitions and practical implementation is systemic	Evaluate automation through public value, not economic efficiency alone

4.3 Recommendations for public administrations and policymakers

Building on the learnings, we propose 13 recommendations for public administrations and policymakers seeking the meaningful adoption of ADM and AI in the public sector.

Recommendations for public administrations

1. Ensure meaningful human oversight

ADM can function well in routine and standardised cases where individual interpretation is not required. If discretion is needed, civil servants should have meaningful opportunities to intervene in automated processes. Human oversight should also involve the capacity to question and override automated decisions. Oversight mechanisms should not remain solely formal requirements, in which civil servants are expected to approve system outputs without realistic opportunities for independent decision-making.

This could mean, for example:

- Civil servants can meaningfully challenge recommendations or decisions made in the technological systems.
- Override mechanisms are available and practically usable.
- Automated decisions can be reviewed and corrected when new information emerges.
- Human oversight is supported by sufficient information about how recommendations or decisions were produced.

2. Invest in organisational capacity, not just technology

Automation often creates new forms of complexity. That's why the successful implementation of technological systems depends as much on organisational readiness as on technical capability. Public administrations should invest in training, legal expertise, and coordination and management structures alongside technological development.

This could mean, for example:

- Continuous staff training.
- Involving legal and ethical expertise throughout the design, development and implementation of the systems.
- Cross-sectoral and continuous collaboration between developers, legal experts and operational staff.
- Developing administrative practices, organisational structures and work practices to support the adaptation of systems.

3. Involve frontline civil servants throughout design and implementation

Civil servants handle practical, contextual and legal knowledge that is often difficult to capture in technical specifications. When designing the systems, one should consider not only automation volume but also coverage, quality and caseworker usability. Continuous involvement of frontline staff from the design to implementation phases can improve usability, legitimacy and organisational adoption.

This could mean, for example:

- co-creation with frontline staff in system design and testing;
- establishing regular feedback loops between developers and users;
- including caseworkers in quality assurance processes; and
- ensuring that the operational experience of civil servants has an impact on system development, and the systems must enable correction and adaptation.

4. Safeguard accessibility and fair treatment in public services

Because automated systems work best in standardised situations, public administrations should prioritise automation in areas characterised by high volumes, low levels of discretion and clear decision rules, while maintaining human-led processes for complex, context-dependent and vulnerable cases. Automated systems can produce systemic biases or unequal outcomes, even if they are unintended. That's why they should be regularly tested and monitored. Citizens should have meaningful access to human support when needed, and civil servants should retain the possibility to exercise their professional judgement.

Special attention should be paid to the following:

- vulnerable groups;
- cases requiring contextual interpretation; and
- situations where automated classifications may not adequately reflect individual circumstances.

5. Efficiency cannot be achieved through economic efficiency alone

Public-sector automation should not be assessed only based on speed, consistency or cost reduction, but also on its impact on service quality, fairness, accountability, trust and the working conditions of civil servants. These are important dimensions for evaluating if ADM and AI contribute to the public value in the long term. But also, economic efficiency is often achieved through these broader goals rather than in spite of them: if technological systems reflect organisational realities, support professional expertise, and maintain trust and fairness, they are more likely to deliver efficiency gains than systems optimised solely for cost reduction. In other words, long-term efficiency cannot be achieved by pursuing economic efficiency alone.

This could mean, for example:

- assessing fairness across different groups, including differences in outcomes, error rates, processing times and potential discriminatory impacts of ADM and AI;
- evaluating service quality and outcomes, not only administrative speed, but also whether services achieve their intended objectives;
- monitoring employee experiences, including workload, professional autonomy, accountability and opportunities to exercise judgement; and
- tracking public trust and legitimacy, including citizens' trust in the fairness, transparency and responsiveness of public services.

6. Build automation incrementally and institutionalise learning

When organisations introduce technological systems, involving frontline staff from the earliest design stages and continuously monitoring outcomes will mean they are more likely to succeed. Sufficient time should be allocated to the design, development and implementation of automated systems to ensure that they are robust and fit for purpose. This requires creating space for reflection, deliberation and the reconciliation of different perspectives. The idea of slow *technology development* emphasises the importance of embedding ethical considerations, long-term sustainability and fairness into the design and deployment of the systems[67]. Such an approach can improve not only the effectiveness of these systems but also their legitimacy, public acceptance and long-term sustainability.[31]

This could mean the following:

- pilot programs before scaling up;
- continuous quality assurance;
- involving employees in testing;
- monitoring appeals and user experiences; and
- updating systems as legislation and practices evolve.

Recommendations for policymakers and regulators

1. Recognise ADM and AI as organisational change, not just technological change

The cases examined in this study demonstrate that automation also reshapes professional roles, discretion and the everyday work of civil servants. That's why European governance frameworks should require public administrations to assess not only technical risks but also organisational, workforce and service impacts.

This could mean, for example, assessing how automation affects professional discretion and decision-making authority; evaluating impacts on workload, skills requirements and working conditions; monitoring effects on citizen access to services and human support; involving employee representatives and social partners in the design and evaluation of automated systems; and incorporating organisational impact assessments into future AI governance and digitalisation initiatives.

2. Move beyond technical compliance towards organisational accountability

Existing regulatory approaches, including the AI Act, primarily focus on risk management, transparency, documentation and technical compliance. However, the cases demonstrate that automation also transforms organisational and accountability structures.

In public-sector automation and AI, governance should focus not only on formal accountability but also on who actually shapes decisions in practice. Accountability mechanisms should reflect the distributed nature of ADM systems.

3. Protect discretion where public administration requires interpretation

Many administrative decisions require interpretation of individual circumstances and contextual judgment.

European and national governance frameworks should recognise that discretion remains a necessary component of lawful and fair public administration. Automation should support rather than eliminate the capacity to consider individual circumstances.

This is particularly relevant to ongoing European discussions on AI in the workplace, algorithmic management and workers' rights in the digital economy. Public administrations should ensure that automation supports, rather than replaces, professional judgement, and that civil servants retain meaningful opportunities to exercise their expertise and challenge system outputs.

4. Strengthen data governance without undermining fundamental rights

The effectiveness and functionality of ADM and AI systems depend on the quality, availability and interoperability of data. Developing technological systems creates a need to expand data collection, increase data sharing between authorities and broaden the use of personal data.

European and national policymakers should ensure that the pursuit of more efficient and accurate automation aligns with fundamental rights, including privacy, data protection and non-discrimination.[68] Existing governance and regulatory frameworks, such as the General Data Protection Regulation (GDPR), the AI Act and the Charter of Fundamental Rights of the European Union, provide important safeguards. Still, practical implementation of them requires continuous attention while technological systems become more integrated into public administration and services.

Policymakers should not assume that more data automatically leads to better decisions. Many interviewers reported how implementation problems stemmed from organisational and legal challenges rather than insufficient data availability.

5. Strengthen public-sector capability in procurement and vendor governance

As public organisations increasingly rely on external suppliers to develop technological systems, the internal capacity to govern and steer these systems becomes more and more important. Public organisations should consider developing in-house solutions and aim to retain ownership in legal interpretation, accountability and strategic decision-making, even if technical development is outsourced.

European policymakers should also consider how public procurement rules can support long-term public-sector capability, digital sovereignty and the reduction of dependence on external vendors in critical administrative functions.

6. Support systematic learning between European public administrations

Successful ADM and AI systems require knowledge and understanding of design and implementation, rather than of the technology itself. EU institutions should support and facilitate the systematic exchange of information, knowledge and experience between public administrations and member states on governance models, procurement, workforce impacts, accountability arrangements and organisational changes.

7. Consider public-sector work within future AI-at-work regulation

In emerging European debates and policies on AI in the workplace and algorithmic management, policymakers should explicitly consider the specific role of civil servants. Public-sector workers face different accountability obligations and legal responsibilities than those in the private sector. Future regulation should therefore ensure that automation supports, not just replaces, professional judgement and that civil servants have real opportunities to challenge the systems and their outputs.

Table 3. Summary of the recommendations

Recommendations for public administrations	Recommendations for policymakers and regulators
1. Ensure meaningful human oversight 2. Invest in organisational capacity, not just technology 3. Involve frontline civil servants throughout design and implementation 4. Safeguard accessibility and fair treatment in public services 5. Efficiency cannot be achieved through economic efficiency alone 6. Build automation incrementally and institutionalise learning	1. Recognise automation as organisational change, not just technological change 2. Move beyond technical compliance towards organisational accountability 3. Protect discretion where public administration requires interpretation 4. Strengthen data governance without undermining fundamental rights 5. Strengthen public-sector capability in procurement and vendor governance 6. Support systematic learning between European public administrations 7. Consider public-sector work within future AI-at-work regulation

5. CONCLUSIONS

The case studies in this policy study indicate that **the future of ADM and AI in the public sector depends less on technological advances and more on the ability of public organisations to understand their impact and govern their use**. Automation redistributes judgement, discretion and accountability across organisations, technologies and people, and the key challenges are not technological but rather related to organisational capacity, legal interpretation, procurement and trust.

This raises important implications for European policymakers. The current discussion on AI governance is often related to risk management, transparency requirements and technical compliance. While those are essential, this study demonstrates that successful implementation of AI and ADM requires more organisational capability and institutional design. Public administration relies not only on the consistent application of rules but also on interpretation, justification and the possibility to contest decisions. These are difficult to reconcile with systems designed around standardisation, prediction and predefined rules.

The key challenge for public administration is, therefore, how organisations succeed in designing, developing and implementing systems that truly support the civil servants who work alongside them. Maintaining professional competence, meaningful work and opportunities to exercise judgement may become as important as the technical performance of the systems themselves.

It's important to note that **not all tasks and aspects of public administration are suitable for automation**. Decisions that require contextual judgement and discretion, and the interpretation of complicated life situations, should not be generalised into automated processes. That's why public organisations and policymakers should ask which processes and services should and could be automatised and under which conditions, instead of how to advance automation. Success in digital governance can be achieved if technology is combined with strong institutions, meaningful accountability and the continued exercise of professional judgement.

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APPENDIX

Case coverage and depth of inquiry

This appendix clarifies the level of research depth behind the cases discussed in the policy study. The initial mapping covered a broader set of Nordic public-sector AI and ADM cases. The final analysis, however, does not treat all mapped cases as carrying the same evidentiary weight.

Three cases form the core empirical basis of the report: NAV's automatic processing of sickness-benefit applications in Norway; Migri's ADM; and the Swedish PES's statistical profiling tool. These were selected to provide variation across countries, sectors, system types, automation levels and governance arrangements.

Two further cases – the Municipality of Trelleborg and the City of Helsinki – are used as supplementary/contextual cases. They help test and illustrate cross-case themes, especially the gap between automation ambition and implementation reality. Still, they are not analysed in the same depth as the three core cases.

Case coverage and depth table

Case	Role and depth	Evidence basis	Use and limits
NAV automatic processing of sickness-benefit applications (Norway)	Core case – deep	7 interviews; coded NAV highlight pack; case-study log; Sivilombudet/legal source checks; NAV source and literature map	One of the three main Stream 1 cases. The case material concerns sickness-benefit processing/Speil, not NAV jobseeker profiling, and treats the system as rule-based ADM rather than AI
Migri ADM (Finland)	Core case – deep	5 interviews; coded Migri analysis; report draft case material; desk research on residence/citizenship automation	One of the three main Stream 1 cases. The material focuses on positive automated residence/citizenship decisions, legal thresholds, documentation and transparency, not on all Migri processes
Swedish PES/Arbetsförmedlingen statistical profiling tool (Sweden)	Core case – medium-deep	Survey/questionnaire responses; publicly available policy and system documentation; desk research, and relevant academic literature	The third main case and the main profiling/machine-learning contrast. The empirical material is thinner than that for NAV or Migri, so the case is treated as a core but medium-depth case
Municipality of Trelleborg social assistance automation/RPA (Sweden)	Supplementary/context case	1 interview; desk research; academic and public material identified in the working documents	Treated as a supplementary Swedish local social assistance comparator. The interview material suggests the automation/RPA story is partly historical and that current decisions are more human-led than the public Trelleborg-model shorthand implies
City of Helsinki ADM exploration/use cases (Finland)	Supplementary/context case	1 interview; presentation and case-study-log notes	Treated as contextual Finnish material on ADM exploration and implementation difficulty, not as a mature full case study

Case	Role and depth	Evidence basis	Use and limits
Malmö municipality semi-automated social assistance/ RPA (Sweden)	Initial desk research only	Initial light desk research; contextual references from the Swedish social assistance discussion	Appears in the initial mapping and selection background. No FEPS interview or coded case-analysis material was found in the working documents checked
Swedish Tax Agency automated taxation decisions/Skatteverket (Sweden)	Initial desk research only	Initial light desk research and public/secondary source pointers	Appears in the scan as a possible high-volume taxation ADM comparator. No FEPS interview or coded case-analysis material was found in the working documents checked
NAV jobseeker profiling tool (Norway)	Initial desk research/contextual comparator	Initial light desk research; Fafo report identified; broader NAV literature may be relevant	A separate NAV profiling example, not the NAV sickness-benefit/Spiel case, was developed in the deeper empirical material
Oslo/SynPlan healthcare workforce scheduling (Norway)	Light desk research only	Initial light desk research; limited open/public material found	Mapped as a possible case, but not taken forward in the working material checked. The notes point to limited public-authority documentation and a more vendor-led approach to workforce optimisation
Kela automated benefit decisions (Finland)	Initial desk research only	Initial light desk research; public information and Finnish ADM legal literature identified	Appears as a Finnish welfare administration comparator in the scan. No FEPS interview or coded case-analysis material was found in the working documents checked
Finnish Tax Administration automated tax decisions and AI-assisted tip triage (Finland)	Initial desk research only	Initial light desk research; Tax Administration public material and Sitra example identified	Appears as a Finnish taxation/ compliance comparator. The working documents contain two distinct examples here: binding tax-decision ADM and AI-assisted tip triage

Case descriptions from the initial mapping

The following case descriptions were prepared during the initial light desk research and case-selection work. They document the broader universe of cases considered for the policy study. The descriptions vary in the depth of evidence and should be read together with the coverage/depth table.

Malmö municipality's semi-automated social assistance system

The Malmö Municipality introduced a semi-ADM system in 2018 for social assistance and labour-market issues. The system is centred on repeated applications for social assistance. It uses robotic process automation (RPA) and an associated algorithm to process data input from the e-application; no AI or machine learning is involved. The RPA performs the necessary calculations, most notably on the applicant's expenses and income, and provides a suggested decision that the caseworker must manually approve.

The tool is not fully autonomous, as the human caseworker retains final authority over the decision. The primary ambition behind the e-application and RPA was to relieve caseworkers of routine administrative tasks, allowing them to focus on value-creating social work, such as monthly follow-up meetings and self-sufficiency activities.

Despite the shift toward more client-facing work, which led to a larger proportion of clients having follow-up meetings, the RPA's development faced technical challenges. These issues were largely attributed to the inflexibility inherent in designing the algorithms. The case has previously been studied from the perspective of social work and of the system's effects on public values.

The Swedish PES's machine-learning profiling tool

The Swedish PES uses a statistical profiling tool to assist in labour-market policy assessment for jobseekers. The profiling tool suggests whether the jobseeker should receive intensive or lighter personal support through a job-matching system. The system uses a neural network model trained on 1.1 million profiles to estimate a jobseeker's probability of finding employment within six months. Factors considered by the model include age; gender; education; unemployment history; and the unemployment, income and education levels of the jobseeker's postal area.

The tool is a decision-support system, meaning the final decision is formally made by a caseworker. However, caseworkers are instructed to adhere primarily to the automated recommendation, and overriding a negative one is difficult.

The system's performance varies significantly across different sub-populations. For instance, jobseekers with disabilities have the highest accuracy and true positive rate, but also the highest false positive rate, meaning they are often offered support when they do not need it. The system has been described as difficult to interpret, leading many caseworkers to perceive it as a black box. Jobseekers often view the explanations behind classifications as insufficient and potentially misleading.

ADM in the Swedish Tax Agency (*Skatteverket*)

The Swedish Tax Agency (*Skatteverket*) uses ADM extensively. The main areas where automated decisions are used include income tax declarations, discretionary taxation when income declarations are missing, special fees such as late-filing fees for delayed or missing declarations, and reassessment decisions where the request is fully granted or where the reassessment is highly standardised. The system does not use AI or machine learning, but only rules-based algorithms.

The Trelleborg model of fully automated social assistance

The municipality of Trelleborg has used RPA to handle financial aid applications since 2016 and is considered a frontrunner in this regard. The system, the development and implementation of which were partly outsourced to the consultancy Valcon, manages routine applications by comparing digital

user data against standardised local and legal norms through a simple rules-based algorithm. The algorithm does not use machine learning and would not be considered AI by a tight definition.

What makes the Trelleborg model different from other ADM models is that it is fully automated: in most cases, it is not handled by a civil servant at all. This has enabled drastic reductions in processing times, with 97% of applicants receiving their decisions within one day. However, if the software detects significant changes in a resident's situation in a reapplication, it halts the process and alerts a caseworker for manual review.

The model has faced legal and transparency challenges. Many legal experts have argued that fully delegating decision-making powers was not legal at the time the model was implemented. The system has also sparked high-profile debates concerning data security. In 2020, following legal action by a journalist seeking the system's source code, the Administrative Court of Appeal ruled that the code must be made public. However, the subsequent release of the code by a private consultancy led to a major data breach, exposing residents' sensitive personal identification numbers and names to the press.

The academic literature on the Trelleborg model has examined the case from both legal and civil-servant agency perspectives, including qualitative analyses based on interviews with politicians, project leaders and administrators.

AI tool for planning healthcare staff work schedules in Oslo

SynPlan is an AI and machine-learning solution that helps healthcare organisations optimise workforce planning. It uses predictive AI to determine healthcare needs and forecast worker absences. It uses internal company data, including workers' personal data, and external data, such as weather data. Its stated mission is to ensure a better life for healthcare workers and increase the quality of healthcare services.

The system has been used in Oslo, Norway, in the Alna district, and has also been piloted in the USA.

The available case material shows positive indications, at least in vendor-published customer examples. However, the case also raises potential risks regarding sensitive employee data, and there appear to be fewer academic or independent reviews of those implications. The English-language open-source coverage found during the initial scan was mainly positive, and limited public material was found.

NAV's algorithm for classifying jobseekers' profiles

NAV has implemented a rule-based profiling tool that performs the initial sorting of jobseekers' profiles when they register for assistance or unemployment benefits. Its main function is to classify users into profiles based on their expected level of effort or follow-up needs. The algorithm relies on a limited set of variables drawn from user self-registration and employment registers, focusing on factors such as age, education, stated health challenges, stated other problems and recent work history.

The algorithm does not use machine learning and is entirely rules-based. It is not fully automated either, as a civil servant makes the final decision on assigning an effort category. The most comprehensive information identified during the scan was the Fafo report "Navs profileringsverktøy og Nav-veiledernes behovsvurderinger",[69] which analyses the tool and the caseworker process.

Automatic processing of benefit applications in NAV

NAV relies on rules-based algorithms to automatically process applications across multiple benefit areas, including child benefit, unemployment benefit, retirement pension, parental benefit, care benefit and sick benefit. These processes do not use machine learning or AI. Automation diminishes caseworker agency in routine cases, while applicants retain the right to request assessment by a civil servant. Human intervention is required when

substantial discrepancies are detected, as seen in the sickness-benefit case.

There has been controversy surrounding the automation of sickness benefits, as the current system was deemed noncompliant with legislation in 2025 by the Norwegian Civil Ombud. The legal flaw stems from the requirement that benefit calculation must start with income from the A-scheme, a coordinated national register, while NAV's system relies on the employer's report. Information on the subject is available on NAV's website, in NAV's follow-up to the Ombud report and in NAV's annual reports.

Automated benefit decisions at Kela

Automation is used at Kela in routine tasks that do not involve case-specific consideration by the authorities. An automated decision is a decision made without human involvement. Logic based on machine-learning applications, statistical or scientific models is not used to make automatic decisions. Automatic decision-making is used in many benefit decisions, such as granting allowances that require no case-specific consideration.

In addition to rule-based automation, Kela plans to introduce AI on a risk-based and carefully considered basis to support benefit processors. According to Kela's report, rule-based processing is always a prerequisite for automation, and case-by-case consideration is an obstacle to it.

As a key part of its development programme, Kela is updating its benefit-processing information systems to meet customer requirements for the digital operating environments of the 2030s. Over the next ten years, automation is expected to make it significantly easier for customers and partners to do business with Kela. In some cases, the need for interaction may disappear altogether. In its report, Kela states in general terms that it is pursuing rule-based automation, particularly through the Eepos project. Specific functions, such as parts of the Eepos development programme, are outsourced, while other technological solutions are in-house.

ADM at Migri

Migri can issue fully automated decisions for a limited set of standard applications if all legal requirements are clearly met and the application is submitted through Enter Finland. This includes some residence permits, such as those for study and work, as well as some citizenship applications. However, only positive decisions and only simple, rule-based cases are automated. Negative decisions and cases requiring discretion, such as credibility, proportionality or special humanitarian circumstances, are never decided automatically and are referred to human officials.

IT development and maintenance are outsourced, while IT infrastructure is built and maintained by private vendors under Migri control. The source notes identify Accenture Oy as being responsible for maintenance and part of the development, Twoday Oy as being responsible for part of the development and Digia Finland Oy as being responsible for client support.

While Migri frames automation as a way to make immigration more seamless and safe, critics argue that the push for efficiency may come at the cost of individual rights, proper administrative scrutiny and safeguards for vulnerable applicants.

Automatic decision-making in the Finnish Tax Administration

The Finnish Tax Administration uses ADM in taxation. This means that taxation decisions can be made automatically, entirely or in part.

Automatic decision-making is based on precise, predefined processing rules. A case can be resolved automatically only if the decision does not require case-specific consideration, or if an official resolves any issues that require consideration.

The Tax Administration makes over 15 million tax-related decisions every year. These decisions include, for example, determining the withholding tax rate, income tax and property tax. Like Kela, the Finnish Tax Administration does not use machine

learning to produce binding tax decisions, but only for risk scoring, fraud detection and internal analytics. The technical solutions are both in-house and outsourced.

AI-assisted tip triage in the Finnish Tax Administration

Every year, the Tax Administration receives thousands of tips about possible tax evasion through its website. Manually reviewing this volume of tips would consume a significant amount of officials' time and resources.

A machine-learning model can identify low-risk cases that do not require further action, allowing staff to focus on the most important cases. The accuracy of the AI-supported solutions is monitored regularly, and officials intervene as necessary. The model is also continuously trained using new cases solved by officials, so the formula is refined, and the quality of solutions improves over time.

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ABOUT THE FOUNDATION FOR EUROPEAN PROGRESSIVE STUDIES (FEPS)

FEPS is the European progressive political foundation and the think tank of the progressive political family at EU level. Our mission is to develop innovative research, policy advice, training and debates to inspire and inform progressive politics and policies across Europe.

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The 2025-2026 Programme has focused on the impact of AI on labour productivity and the public sector, as well as trade union capacity building in relation to algorithmic management and other aspects of workplace digitalisation.

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AI DISCLOSURE STATEMENT

This publication was written in accordance with FEPS guidelines on the responsible use of AI in research and writing activities. AI tools were used to support transcription and editing. Condens was used to transcribe interview recordings, and NotebookLM was used to support text editing. The analysis, arguments and substantive content were developed and written by the authors.

Artificial intelligence (AI) and automated decision-making (ADM) are increasingly used across a growing range of societal domains, including public administration. They **are shaping how public authority is exercised and how civil servants carry out their work**.

This policy study looks at cases from the Finnish, Norwegian and Swedish public sectors to analyse how AI and ADM work in practice. Based on interviews, desk study and cross-case comparison, the policy study suggests that the main challenges in public-sector AI and ADM are rarely technological. Instead, they are related to organisational capability, professional discretion and judgment, legal interpretation, procurement, accountability, and public trust.

Automation does not replace human judgment. Rather, across the cases, it shifts judgment and accountability between technological systems, organisations and civil servants. **Automation** may make routine processing more efficient, but it also **creates new forms of work and organisational complexity**.

In addition to cross-case analysis, the policy study includes recommendations for public organisations and European policymakers on governing AI and ADM in ways that **strengthen public value, fairness, accountability and democratic governance**.

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