

**Exploring the Dutch  
national algorithm  
register for education –  
results, insights and  
recommendations.**

## Exploring the Dutch national algorithm register for education – results, insights and recommendations.

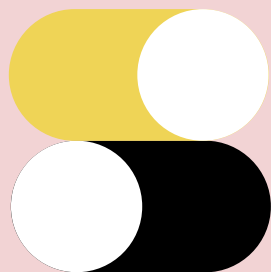
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Special thanks to:

- Members of the Dutch Algorithm Register working group
- Stakeholders from the Dutch institutes of tertiary education
- Consulted experts from Dutch municipal authorities, government bodies and suppliers



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## Foreword

We want to use AI and data responsibly in a way that respects public values. The education sector needs clarity and transparency if it is to have a say on how AI and data are developed, implemented and used. With a view to ensuring transparency on algorithms in education, Npuls brought together representatives from institutions of tertiary education (vocational education and training schools, universities of applied sciences and research universities) in the Netherlands to start working on a national algorithm register for education.

Transforming tertiary education will require exploring new ways of working and letting go of old habits. This is not a straightforward task and can be daunting – even this initial project was a challenging change process for the educational institutions involved. Members of the working group described it in terms like:

**“Trying things out, encountering obstacles, discussing how to move forward, almost losing heart, finding courage again together, shaking trees, many cups of coffee and sharing what we learned with each other.”**



This project has provided valuable insights and a tool for tertiary education institutions. We can use these insights to initiate follow-up activities by and with Npuls as well as within institutions.

We would like to thank all members of the working group for their enthusiastic commitment, perseverance and valuable discussions and insights. A special thanks too to all the other participants from educational institutions and suppliers who contributed their ideas, both at our request and on their own initiative.

If you have any questions about this final report or if you would like to respond or discuss the content further, please get in touch with us at [aiendata@npuls.nl](mailto:aiendata@npuls.nl). We also cordially invite you to become a member of the AI and Data Community via [community-data-ai.npuls.nl](https://community-data-ai.npuls.nl).

## Summary

Algorithms and AI are increasingly being used in education. But what exactly are the objectives, impact and risks of this? What should students know about this? Is it permitted by law? Do we actually want this? And does it align with the values upheld by educational institutions? The growing need to better understand these algorithms and make them transparent prompted the 'Exploring and designing an algorithm register for education' project.

In this project, Npuls explored the potential role of an algorithm register in tertiary education in the Netherlands. A working group set to work with input from institutions of tertiary education in the Netherlands and local authorities that already use an algorithm register.

The working group established four objectives for an algorithm register for education:

- **Getting an overview** of the algorithms used in your institution: what exactly are we doing with algorithms in our organisation?
- **Learning from each other** as educational institutions about the use of algorithms and risk management: how do you approach this?
- **Ensuring societal transparency**, particularly for students, regarding which algorithms are used and how: how does my institution use my data in algorithms, and how do they arrive at statements and conclusions about me? Other target groups (researchers, journalists, and so on) can also benefit from this transparency.
- **Complying with transparency legislation and regulations**: are we using algorithms carefully and in accordance with the law?

We organised various activities for the different objectives, from which the institutions involved gained valuable insights.

Initially, the intended end result was a publicly available algorithm register. But given that roles and responsibilities, processes, frameworks and implementation of legislation surrounding AI are still under development, such a public register is not yet expedient. For now, it seems wiser to continue with an internal framework. To this end, the project has developed a tool in the form of an Excel input form to catalogue algorithms in the institution. Although the Excel input form is not a final version, institutions can **use it immediately** as a tool to get an overview of algorithms used in the organisation and to raise awareness.

The main benefit of this project is not so much the Excel input form that has been developed as the discussions that have taken place and the lessons learned. There is still a lot of work to

be done, but this can be taken up later in follow-up projects and activities. One proposal that emerged from this project is to work together on creating a risk assessment framework. These kinds of tools are intermediate steps that help institutions achieve clarity, insight, control and consistency. They provide the information and structures needed to ultimately build and populate a public algorithm register.

And while the ‘Exploring and designing an algorithm register for education’ project has come to a close with this final report, there is still much work to be done. In the future, a public algorithm register – linked to the implementation of the EU AI Act and mature AI governance – could potentially become a powerful tool for transparency, oversight and public accountability. It is therefore advisable to keep track of developments at institutions (processes, governance, maturity) as well as in legislation and government. By continuing to monitor these developments, we will be able to resume the exploration and design of the algorithm register at the appropriate time.

In the coming period, educational institutions in the Netherlands will need to continue working on internal processes and governance. Npuls can share best practices that will help us move forward together. In the meantime, institutions and Npuls can work together to develop a risk assessment framework, for example.

## Introduction

Educational institutions in the Netherlands are increasingly using algorithms – for example in adaptive learning systems – to predict learning outcomes, academic progress and dropout rates, and in recommendation systems that suggest subjects, exercises or learning materials that match students’ interests and performance. However, much remains unknown about how algorithms and AI work as well as the related risks and effects. That is why educational institutions wish to gain a better understanding of these algorithms – for legal, ethical and educational reasons.

In 2023, SURF (specifically the team responsible for learning analytics at educational institutions) began to explore the extent to which an algorithm register could help to make the algorithms used more transparent. Npuls subsequently continued the process of exploring the transparency of algorithms in education. This marked the start of the ‘Exploring and designing an algorithm register for education’ project. This project continued until the end of 2025.

In an algorithm register, organisations can catalogue which algorithms they use (such as in applications involving AI), how these work and what effect they have on decision-making. An algorithm register can help them get an overview of the algorithms used in their institution, comply with laws and regulations and provide transparency for students, for example. Improving algorithms (and their use) can also be achieved through a register, provided that educational institutions share their experiences and solutions with each other.

This final report outlines the project’s objectives, lessons learned and suggestions for institutions seeking to enhance the transparency of the algorithms they use.

## Why an algorithm register, and for whom?

The initial briefing for this project focused on the purpose of an algorithm register for education. This purpose was described as being transparent (whether legally required or not) about the use of algorithms and being able to explain how decisions on this use were made. As a result, stakeholders both inside and outside the organisation can see how algorithms are used and what the effect of this is. Ultimately, transparency helps to foster responsible use of algorithms in education and allows us to improve our approach to handling data in education.

Transparency allows educational institutions to:

- ▶ Identify errors (the algorithm/data used does not measure what is intended)
- ▶ Identify and prevent undesirable (unethical) analyses
- ▶ Identify and prevent analyses/algorithms that are not permitted by law (such as those that discriminate)
- ▶ Improve and continue to develop algorithms
- ▶ Learn from each other
- ▶ Provide insights to stakeholders
- ▶ Assess, or have external parties assess, whether algorithms are fair
- ▶ Foster confidence in analyses. At present, not all teaching staff trust the feedback in the dashboard, as it is unclear how it was generated
- ▶ Students may also have questions or objections regarding the use of education data if they do not know what data is being used, how it is being used and for what purpose

When stakeholders in education were asked which of the above effects was most significant or urgent, no clear picture emerged. This is something that changes over time.

## Approach

The exploration of an algorithm register for education began with an initial briefing. In addition to input from experts at the institutions and from within SURF, this included experiences with the Dutch government's algorithm register.

### Learning from initiatives and experts

Municipalities in the Netherlands have been working with an algorithm register for some time now. The education sector stood to benefit greatly from the work done by these municipalities, both in terms of experiences gained and critical **feedback**. Consequently, one of the first steps in this project was to become involved in the working groups of the Dutch Ministry of the Interior and Kingdom Relations (*BZK*) and the Association of Netherlands Municipalities (*VNG*) before launching the algorithm register for local authorities. We also held discussions with the umbrella organisations, ministerial departments and the Dutch Data Protection Authority (*Autoriteit Persoonsgegevens*).

### Meetings with educational institutions revealed need and urgency

Based on the initial briefing on a possible algorithm register in education, SURF and Npuls organised meetings for representatives of educational institutions.



**Figure 1** One of the first meetings on the algorithm register for education

The conversations and discussions during these meetings soon revealed that educational institutions feel the urgency and need to get started on making algorithms transparent:

“The current situation is undesirable and untenable. We are not conscious and transparent about our algorithms. We have no insight into which algorithms are being used or where AI is being deployed. And because of that, we are not or cannot be transparent about it.”

Interest from the institutions of tertiary education involved remained high in follow-up meetings with these institutions in 2024 and 2025.

### Tertiary education working group

Beginning in 2024, a working group of representatives from all institutions of tertiary education in the Netherlands (vocational education and training schools, universities of applied sciences and research universities) met for half a day each month (see Annex 1: Working group and participating institutions) to explore and design a national algorithm register for education.



Figure 2 The working group

## Objectives and activities

From 2023 to 2025, we looked at the desirability and feasibility of an algorithm register for education. The working group established four objectives for an algorithm register for education.

1. **Getting an overview** of the algorithms used in your institution: what exactly are we doing with algorithms in our organisation?
2. **Learning from each other** as educational institutions about the use of algorithms and risk management: how do you approach this?
3. **Ensuring societal transparency**, particularly for students, regarding which algorithms are used and how: how does my institution use my data in algorithms, and how do they arrive at statements and conclusions about me? Other target groups (researchers, journalists, and so on) can also benefit from this transparency.
4. **Complying with transparency legislation and regulations**: are we using algorithms carefully and in accordance with the law?

We organised various activities for the different objectives. The fourth objective became increasingly important as the implementation of the EU AI Act continued to gather pace. Npuls and the working group held discussions with the Dutch Data Protection Authority and various ministerial departments to examine the objectives in terms of legislation and regulations. We also consulted different experts for their insights.

### Activities and deliverables

In 2023, we launched various activities:

- We took part in **working groups** of the Dutch Ministry of the Interior and Kingdom Relations, the Association of Netherlands Municipalities and municipalities that were preparing a [national algorithm register for municipalities](#). This register is now in use.
- We wrote an **initial briefing** setting out what an algorithm register could offer education, but also what challenges it would pose.
- On 20 April 2023, we organised a **meeting** entitled ‘Transparency of algorithms in education’ with representatives from tertiary education institutions in the Netherlands as well as the Dutch Ministry of Education, Culture and Science (OCW).
- We organised a **follow-up meeting** on 28 September 2023. The objectives of a potential algorithm register and the associated target groups were the main topics of discussion at this meeting.

In 2024, various activities were launched that continued until November 2025:

- **Working group** with members from the institutions (vocational education and training schools, universities of applied sciences and research universities)
- **Monthly working group meetings**, usually in person
- **Excel document/form** developed for organisations to catalogue their algorithms
- **Tips** for those who will be working with the Excel input form (see ‘Getting started’)
- **Presentations**: Npuls sprint presentations, Npuls community day, SURF Education Days, Policy & AI course
- Progress has been posted on the Npuls [community page](#)
- Meetings with institutions outside the working group
- **Exploratory consultation** with a number of suppliers
- **Exploratory talks** between PEA and Trustbound, Algorithm Guide
- **Discussions** with and [visit by the working group to the Data Protection Authority](#), OCW and BZK
- Start of a **sub-working group** called RAISE for a **national AI and Algorithm risk assessment framework for tertiary education in the Netherlands**
- [Questions to suppliers](#) identified (draft)
- Progress reports in the form of **articles** posted on the Npuls community page (AI & Data sub-domain)
- **Interviews** by working group members with [Graafschap College](#), [EUR](#), [TU Delft](#), [UU](#)
- [Working group’s response to the Report on AI & Algorithm Risks in the Netherlands](#) by the Dutch Data Protection Authority (Edition 3, summer 2024).
- This report.

## Results: from a public algorithm register to an Excel input form as a tool

Much has been learned during the working group’s term. We posted progress reports on the Npuls [community page](#). Sometimes this involved very specific questions about what an algorithm register for education should (or should not) look like. Sometimes there were discussions and insights about the scope and boundaries of the project. This reflects the fact that education is in a state of change and transition rather than being a predictable project with specific deliverables and deadlines.

### Different options

What exactly is an algorithm register? We can distinguish between:

- A **public algorithm register** (such as the one used by the Dutch government);
- Tools or frameworks for managing **governance, risk and compliance** of algorithms (and AI), such as the GRC tools used in some institutions;
- An **internal overview** or tool (such as an Excel file) to catalogue algorithms.

Initially, the intended end result of this project was a public algorithm register. It ended up becoming an in-ternal framework for cataloguing algorithms (the Excel input form). Exploratory studies have also been initi-ated for risk assessment and integration into tools for managing algorithms.

The question at this stage is whether it is expedient to pursue one of these options for education. We have set out the characteristics of the different options below. We also explain why some aspects of this project were elaborated in further detail and others were not, and whether the education sector should continue to focus on an algorithm register.

### Public algorithm register

The purpose of a public algorithm register such as the one used by the [Dutch government](#) is to provide external transparency – to students, parents, citizens, journalists and regulators, for instance. Its function is therefore to provide accountability and societal control.

This addresses Objectives 3 and 4: providing transparency and complying with laws and regulations. Objective 2, learning from each other as educational institutions, can also be achieved with this register.

Characteristics	Advantages	Disad-vantages/conditions
<ul style="list-style-type: none"> <li>• Accessible to everyone: public, online.</li> <li>• Focuses on comprehensible explanations: what does the algorithm do, for what purpose, what are the risks and who is responsible? Communication plays a major role.</li> <li>• Less tech-heavy, more about communication and accountability.</li> </ul>	<ul style="list-style-type: none"> <li>• Enhances public transparency and trust in education.</li> <li>• Provides insight into how education uses algorithms.</li> </ul>	<ul style="list-style-type: none"> <li>• Calls for mature internal processes: you can only disclose what has been properly documented and as-sessed internally.</li> <li>• Risk of incomplete or incomprehensible information if the organisation is not yet ready.</li> <li>• Requires governance, quality assurance and alignment with legal frameworks (such as the EU AI Act). This is still lacking in education (processes, roles and re-sponsibilities have not yet been established, as noted by the working group).</li> </ul>

### Further development for education?

While it is still expedient to continue exploring the concept of a form of public algorithm register and develop it into a public directory, this can only be as a final piece of mature algorithm governance and management.

There are several reasons why an algorithm register for education is not appropriate right now. Many of these are similar to the reasons why using an algorithm register is not yet mandatory for the Dutch government, such as:

- lack of maturity in algorithm use
  - many educational institutions are still in the experimental phase of using algorithms and AI applications.
  - there is still no uniform definition of what exactly constitutes an algorithm (rule-based systems? machine learning? decision support?).
  - without clearly defined frameworks, a register will result in inconsistency and administrative burden with no real transparency or comparability.
- insufficient maturity of governance and processes
  - institutions do not yet have a process in place to retrieve/identify, document, evaluate or audit their algorithms.

- a register requires structured information about purpose, use of data, risks and data controller. This is information that is often not yet systematically recorded by institutions.
- in that case, a register (whether or not mandatory) would lead to
  - een (verplicht) register zou dan vooral leiden tot oppervlakkige of onvolledige invulling, wat het vertrouwen juist kan schaden.
- legal and other ambiguities
  - new European rules/the EU AI Act will entail obligations regarding transparency, risk classification and supervision.
  - as long as these frameworks have not been fully developed and implemented, it is inefficient to develop national registers that will have to be revised later.
- high administrative burden, limited societal benefit
  - setting up, populating and maintaining a public register in an online tool takes a lot of time, resources and effort.
  - as long as students and regulators, for example, are unable to interpret or use the information properly, the added value to society will remain limited.

A public algorithm register may be of interest at a later stage; namely:

- after implementation of, clarity on and harmonisation with the EU AI Act
  - once clear European definitions, risk categories and transparency requirements are in place, a register that complies with these standards can be set up. This avoids duplication of regulations and creates a uniform basis of information.
- when there is mature governance and data management
  - in the coming years, institutions will improve their AI governance structures and processes (cataloguing algorithms, risk analyses, internal audits).
  - at that point, the register will be a logical extension of existing quality and accountability processes.
- greater awareness, public support and practical value
  - if students, regulators/supervisors and other stakeholders know what the information is worth and how they can use it, the register becomes an instrument for trust and dialogue rather than a symbolic ‘information counter’.

### Tools and frameworks for Governance, Risk and Compliance (GRC)

Tools already exist for managing strategies, risks and compliance with laws and regulations in an integrated manner – the so-called GRC tools. These types of tools are not necessarily public, but are primarily intended for internal management. Tools like these are already being used in institutions, for instance for information security.

These tools support Governance by documenting policies, responsibilities and decision-making processes but also by monitoring them. For Risk, there is often a risk register with risk levels and workflows to schedule and follow up on measures. And in terms of *Compliance*, the tools help by keeping track of requirements and automating audits and reports.

This best fits Objective 1: getting an overview of the algorithms used in the institution, and leads to Objective 4: complying with laws and regulations.

Implementing these types of tools for algorithms and AI requires clear processes, roles and responsibilities, insight into risks and comprehensively drafted legislation and regulations. As set out in this exploration, governance is not yet properly organised in the field of algorithms and AI in education. Identifying and assessing risks warrants attention, but with legislation on AI still under development, this is not straightforward. A clear framework, incorporated into existing tools, could be beneficial.

Advantages	Disadvantages/conditions
<ul style="list-style-type: none"> <li>Streamlines the management, reuse, and risk assessment of algorithms and AI.</li> <li>Ensures that institutions are prepared for future transparency or audit requirements.</li> <li>Can automatically feed into a public register at a later stage. The results of a GRC tool can 'end up' in the algorithm register; the final piece.</li> </ul>	<ul style="list-style-type: none"> <li>Requires investment in tooling and data governance (processes, roles and responsibilities).</li> <li>Its success depends on the quality of data and compliance by teams.</li> </ul>

### Further development for education?

There appears to be a growing need for GRC solutions for algorithms and AI. To align with this need, Npuls – together with several working group members involved in this project – contacted suppliers of GRC tools (such as Trustbound and Base27) to see whether the elements of the Excel input form could be incorporated into existing tools used by educational institutions. It will be a process requiring the necessary time and coordination.

In this project, we have also prepared a follow-up plan for a joint AI and algorithm risk assessment framework for tertiary education in the Netherlands (RAISE). The idea is that all tertiary

education institutions will benefit from this risk & measure template by identifying risks and categorising them as low, medium or high – with corresponding measures to reduce the risks.

### Excel input form for internal use (cataloguing tool)

The tool the working group started using in tertiary education institutions in 2024 is the Excel input form as a cataloguing tool. This incorporates input from the monthly working group meetings and other meetings organised by SURF and Npuls, developments relating to the government’s algorithm register and developments and challenges in the institutions themselves.

Our goal is to get an overview of algorithms used in our institutions and how they benefit us. Its function is therefore a cataloguing tool, but also – and very important at this stage in the working group’s opinion – a way to raise awareness. By having various individuals in the institution fill in the Excel document, people will become aware of the use of algorithms in the institution and in education. Initial attempts to have people fill in the Excel form sometimes yielded feedback such as “We don’t use algorithms in the institution.” This is no longer the case, of course, but a growing number of people in the institution are considering which algorithms are being used, for what purpose and what impact they have.

This tool is focused fully on Objective 1: getting an overview of the algorithms used in the institution, with the additional objective of raising awareness.

Characteristics	Advantages	Disadvantages/conditions
<ul style="list-style-type: none"> <li>A pragmatic, low-threshold tool.</li> <li>Focused on basic information: name, purpose, data used, status, risk indication.</li> <li>Used to gain an overview in the absence of formal processes or tools.</li> </ul>	<ul style="list-style-type: none"> <li>Quick and easy to deploy in the institution.</li> <li>Raises awareness in the organisation.</li> <li>Good stepping stone to more mature tools.</li> </ul>	<ul style="list-style-type: none"> <li>Limited scalability.</li> <li>Not yet standardised (each institution can still add fields).</li> <li>Few safeguards or links to risk management.</li> <li>Not unambiguously suitable as an accountability tool for external purposes.</li> </ul>



## Contents of the Excel input form

Using the Excel input form, an institution can describe information for each algorithm – such as its purpose and impact, the data used, how the algorithm works, human intervention, risk analysis and responsibility – and provide a contact person (see Annex 2: Elements of the Excel input form).

 <b>Algoritmeregister Onderwijs</b> 	
1	<b>Naam</b> <small>De naam die gebruikt wordt om het algoritme aan te duiden</small>
2	<b>Afdeling</b> <small>Waar binnen de instelling wordt het algoritme ingezet?</small>
3	<b>Contactgegevens</b> <small>De contactgegevens voor deze registratie (i.e. functioneel/systeem beheerder, systeemeigenaar, proceseigenaar).</small>
4	<b>Korte omschrijving</b> <small>Een korte beschrijving van het algoritme.</small>
5	<b>Status</b> <small>De status van het algoritme: in ontwikkeling, in gebruik, of buiten gebruik.</small>
7	<b>Begindatum</b> <small>Maand en jaartal waarin het algoritme in gebruik is genomen.</small>
8	<b>Doel en impact</b> <small>Het doel waarvoor het algoritme ontwikkeld is en wat voor impact de inzet heeft op de eindgebruikers (i.e. studenten, burgers, medewerkers en bedrijven)</small>
10	<b>Gegevens</b> <small>Een overzicht van de gegevens (datasets) die gebruikt worden door het algoritme en/of in het begin gebruikt zijn bij het maken van het algoritme (training datasets)</small>
11	<b>Technische werking</b> <small>Uitleg van hoe het algoritme werkt.</small>
12	<b>(Zelf)lerend</b> <small>Is het algoritme zelflerend? In een niet-zelflerend algoritme specificeert de mens de regels die de computer moet volgen. Als het een zelflerend algoritme is, leert de machine over de patronen in de data.</small>
13	<b>Stand-alone of embedded AI</b> <small>Betreft het een algoritme dat op zichzelf wordt aangeboden als zijnde een AI-systeem (stand-alone AI) of betreft het een algoritme die als (nieuw) onderdeel van het systeem is toegevoegd (embedded AI)?</small>
14	<b>Afwegingen</b> <small>Een afweging van de voor- en nadelen van de inzet van het algoritme en waarom dit redelijk</small>

## Interest and input from the education sector

Members of the working group filled the Excel form with several algorithms from their institutions. A number of suppliers also provided algorithms for the Excel form. Grasple and FeedbackFruit assisted the working group in exploring how to fill in the Excel form.

Around 30 people requested the Excel input form for the algorithm register on behalf of their institution. These requests were made by individuals from various departments, such as library staff, policy advisers, lecturers, privacy officers and data protection officers. Two meetings were organised with the various individuals who submitted requests. The reasons for requesting the Excel input form correspond to the objectives of the register previously established by the working group. At the same time, there are many other reasons to explore an algorithm register. See Annex 4: Why the interest in an algorithm register for education?

## Further development for education?

Although this final report marks the project's completion, the Excel input form is not a final version. Nevertheless, it is a tool that can be used immediately by educational institutions.

The working group has tested the Excel input form. Several members of the working group added algorithms to the Excel input form in different phases and rounds. Around 15 algorithms were described. Some of these were 'home-made' algorithms. There were also algorithms in stand-alone AI applications and embedded AI; this usually involved suppliers.

The Excel format was made available to all institutions – on request – in October 2024. Various institutions have provided feedback and are using the Excel format to catalogue algorithms.

But since governance, risk identification and management have not yet been established at institutions – and because the EU AI Act is still under development – the Excel input form can only be improved and developed further if more institutions start using it, while at the same time developing their GRC capabilities and getting a clearer picture of the EU AI Act.

The Excel input form serves as a **first step** or quick scan in institutions that do not yet have full maturity in this area. This is probably the case for nearly all educational institutions in Dutch tertiary education.

## Conclusion and recommendations

We still consider a public, online algorithm register to be valuable and desirable. But such a register will be the end result of mature AI and algorithm governance, not the first step. Introducing a public algorithm register on a broad scale now would lead to fragmentation, institutions spending considerable time on populating it, frustration and limited added value. Moreover, it could lead to pseudo-transparency as it would be unclear whether the information that ends up in the register is accurate and complete. This is particularly because roles and responsibilities, processes, frameworks and the implementation of legislation are still under development.

A framework for risk assessment and management, and possible processing in a GRC tool and the Excel input form, are **intermediate steps** that will help institutions gain an overview of and insight into their algorithms as well as develop control and consistency of these algorithms.

Institutions can use the Excel input form **immediately** as a **tool** for getting an overview of algorithms used in their organisation and for raising awareness. Discussions with suppliers on GRC tools are ongoing and a plan has been drawn up for a joint framework for AI and algorithm risk assessment (RAISE).

At this point, it seems wiser for institutions to **get started** with an **internal framework** (with or based on the Excel input form) and to **collaborate** on a **risk assessment framework**. Only later – once the basics are in place – does it make sense to introduce a public register.

“The algorithm register project and related discussions provide a practical framework for raising awareness and promoting the responsible use of algorithms and AI in education.

The search for a suitable tool has helped to initiate this discussion. Even just finding out exactly what algorithms your institution currently has at its disposal is a significant gain.”

– a working group member

### A public algorithm register in the future

In the future, a public algorithm register for education in the Netherlands – linked to the implementation of the EU AI Act and mature AI governance – could potentially become a powerful

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tool for transparency, oversight and public accountability. And with that, trust in education (“we handle your data with care”).

It is therefore advisable to keep track of developments at institutions (processes, governance, maturity) as well as in legislation (European framework, role of the regulator) and government. By continuing to monitor these developments, we will be able to resume the exploration and design of the algorithm register at the appropriate time so as to move towards a public algorithm register.

### **Getting started with processes, roles and responsibilities**

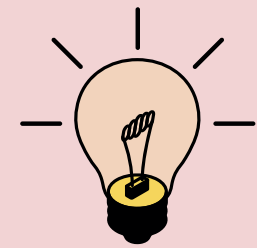
In the coming period, educational institutions will need to continue working on internal processes, roles and responsibilities. Npuls can share best practices and connect stakeholders. In the meantime, educational institutions and Npuls can work on developing a risk assessment framework and look at how parts of this framework are compatible with existing (GRC) tools and processes.

### **Involving suppliers**

Another recommendation is to involve suppliers in the process. Commonly used algorithms are likely to be provided by suppliers. Where a supplier of an LMS, assessment system or adaptive learning method uses algorithms to offer students enrolled at an institution more personalised education or to provide advice on studying/learning, can the institution ascertain exactly which algorithms have been used? A potential obstacle is that suppliers provide limited information about their algorithms, since this is in fact their revenue model. What agreements need to be made with suppliers? We endeavoured to compile [a list of questions for suppliers](#), as their input is required to complete the algorithm register. This is something that could be explored further in a possible follow-up project. Questions we need to ask here are: Will the algorithm register help to encourage suppliers to be transparent about their algorithms? Could this be undesirable for suppliers, given that the algorithms are actually part of their revenue model?

### **The project has been completed, but there is still work to be done**

Although the ‘Exploring and designing an algorithm register for education’ project has come to a close, there is still much work to be done. We are also curious to hear your input and suggestions. Do you have good examples of identifying and cataloguing algorithms in your institution? Or of describing algorithms along with the associated risks? Have you used the algorithm register and do you have any additions? Does your organisation already have some or all of the processes, roles and responsibilities in place? Let us know at [aiendata@npuls.nl](mailto:aiendata@npuls.nl) or share these on the [AI & Data community](#).



## **Getting started!**

Are you planning to start cataloguing the algorithms used in your institution? If so, we have the following tips to help you get started.

### **Designate an initiator or project leader**

All working group members are in agreement that identifying and cataloguing algorithms and AI in an educational institution is a long-term endeavour. People need to be persuaded and motivated to take action and, in the meantime, developments inside and outside your organisation are not standing still. A project leader backed by a mandate and commitment from the Executive Board would be a big help.

### **Involve your institution – not only in terms of risks but also values**

To mobilise and motivate your institution, you will have to repeatedly generate enthusiasm, raise awareness, explain why it is important to catalogue algorithms and what the risks are if you do not take action, why it is urgent, but also that it will not happen by itself. Do not focus only on fear and risk factors (reputational damage, fines and so on) but also on the value. What are the benefits of cataloguing algorithms in your institution? What values does your institution uphold, and how does algorithm transparency align with those values?

### **Identify and include stakeholders**

You will surely have heard this maxim before. But if there is one process where this is crucial, it is here. Before you start filling in the Excel input form – but also once you start cataloguing algorithms – you need to get stakeholders from your institution on board. Identify who those people are and what role they could play in the process. You will need them in the coming period.

A wide range of experts play a role in identifying algorithms and making them transparent, such as CAICO (Certified AI Compliance Officer), CAIO (Chief AI Compliance Officer) or AI governance officer. This role has not yet been assigned at every institution and is still under discussion. Other experts who play a role are IT managers, privacy officers, data protection officers, education specialists, ethicists, policy officers, teaching staff and students, executive boards and directors of education, purchasing & procurement, legal departments and of course communication officers/departments as well. Just because an algorithm has been made transparent does not mean that it is understood by the target group.



## Organise ownership and responsibility

Many people believe that algorithms and AI are already widely used in educational institutions. But who has an overview of this? Which person in the institution is responsible for all these algorithms? Who should you consult and who has decision-making authority? In the absence of ownership and accountability, it is hard to get started on making algorithms transparent. Take this into account and organise ownership and responsibility in your institution.

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## Establish the necessary processes

In addition to explicitly assigning ownership and responsibility, processes need to be established to ensure transparency around algorithms. Consider the processes for identifying algorithms in your institution and filling in the Excel input form, for instance.

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## How do you identify algorithms?

Getting an understanding of and identifying algorithms can be a real endeavour. Different routes for identifying algorithms in the institutions have been found, for example:

- Setting up a central reporting point for algorithms
- Sending out a questionnaire
- Visiting faculties
- Using the application catalogue as a starting point

Find out which approach works for your institution and is feasible. Depending on the level of **awareness of algorithms and AI**, sending out the Excel input form with the request to fill it in may or may not work. People will only understand the importance of filling in the form once awareness has been raised; until then, little to nothing will happen.

Furthermore, not everyone will be able to fill in all the fields of the Excel form straight away.

A designated professional in the institution can take the next steps by using basic information – such as the name of the algorithm/project, contact details, purpose and an initial assessment of the risks – to assess the following questions.

- Is there a reason to continue to discuss or catalogue this algorithm?
  - With whom should this be discussed further (the person who reported it, the person responsible, or the supplier)?
  - What is the risk of the algorithm/AI application?
  - Is further input into the algorithm register desirable/necessary for this algorithm?
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## Gradually gaining a clearer picture of what to include or omit

Is the aim to publish all algorithms or only the ones with the highest risk? Or only publish algorithms that affect individuals? And is there a reason not to proactively disclose high-risk algorithms? In short, what is a good starting point for filling in the Excel input form? A framework could be created for each institution to determine which algorithms should and should not be included in the register. By sharing these frameworks between institutions, a model framework can be established. In any case, do not wait until this framework is finalised before filling in the Excel input form, because it is precisely by doing so that you discover what considerations are important.

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## Consider embedding and aligning with other processes

Making algorithms transparent will not work as a separate project. It must be embedded in institutions and be compatible with processes that are already in place in institutions. But at the same time, if we want to embed everything, nothing will happen. We therefore recommend determining – in advance where possible – any overlap with a processing register, procurement conditions and DPIAs. This does not mean that you cannot use the separate Excel form, but keep in mind the possibility of embedding it. You can embed the input form yourself. It can be used as an Excel file, with a new tab created for each algorithm. You can also incorporate the elements of the input form into systems already in use at your institution. This is how Avans incorporated the elements into the SharePoint environment. See Annex 2: Elements of the Excel input form incorporated into SharePoint for an idea of what that looks like.

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## Collaborate with like-minded people

Educational institutions have different starting positions, levels of awareness and needs. Some institutions already have initiatives in place, while others have yet to get started and still need to work on raising awareness. One institution might use its own algorithms much more than other institutions, where algorithms from suppliers are mainly used.

This need not be an obstacle to using the Excel input form. Institutions can supplement this with fields that are relevant to the institution. We recommend seeking cooperation and coordination with institutions that are at the same stage and have a similar starting position (in terms of awareness, themes, roles and responsibilities, software used, and so on).

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## Start with small steps

Even though the Excel input form for education is not yet a final version, you can start using it straight away. It will raise internal awareness and clarity (which algorithm registers are we actually using?) and reveal where processes, roles and responsibilities in your institution still need fine-tuning. Start with small steps, such as less complex or challenging algorithms. Alternatively, you could focus on high-risk algorithms (as defined by the EU AI Act), because that is where you will get the most traction in your institution.

Collect examples and share them with others in your institution but also with peers at other institutions. It is essential to engage with each other in a spirit of collaboration and learning so that tertiary education as a whole can make its algorithms more transparent. If there are other tools available for this purpose besides the algorithm register/Excel form, be sure to discuss this with each other as well. And please feel free to share your experiences with us at [aiendata@npuls.nl](mailto:aiendata@npuls.nl)!

## Annex 1

### Working group and institutions involved

This exploration of a national algorithm register for education would not have been possible without the extensive expertise provided by the various educational institutions, especially the participants in the working group. A special thanks for your efforts. The working group's composition changed somewhat over the project period; the following individuals played a structural role in the working group:

#### Universities of applied sciences (hbo)

The Hague University of Applied Sciences, Theo Bakker  
Hotelschool The Hague / De Haagse Hogeschool, Matijs van Hilst  
Hanze University of Applied Sciences, Nghitti Saro-Kortmann  
University of Applied Sciences Amsterdam, Irene van Blerck  
Windesheim University of Applied Sciences (Almere), Irene Eegdeman

#### Research universities (wo)

Erasmus University, Henriette Dietz  
Erasmus University, Bo Schijven  
Delft University of Technology, Arvin Khozooei  
Delft University of Technology, Henk Ameling  
University of Amsterdam, Dario Boot  
Utrecht University & Tilburg University, Yvette Roman

#### Vocational education and training schools (mbo)

Graafschap College, Annie Slotboom  
ROC Amsterdam-Flevoland, Irene Eegdeman

Special mention to all those involved from Avans University of Applied Sciences, Utrecht University of Applied Sciences, NHL Stenden University of Applied Sciences, ROC Amsterdam, ROC Mondriaan, LUMC, Aventus, and Maastricht University.

## Annex 2

### Elements of the Excel input form

<b>Name</b>	<i>The name used to refer to the algorithm</i>	<b>Impact assessments</b>	<i>Which impact assessments were used, such as Data Protection Impact Assessment (DPIA) or Fundamental Rights and Algorithm Impact Assessment (FRAIA)?</i>
<b>Department</b>	<i>Where is the algorithm used in the institution?</i>	<b>How is responsibility for the system/application assigned?</b>	<i>Describe how responsibility is assigned within the line organisation with regard to the product/ lifecycle of the AI system. Consider the process of commissioning or bringing the AI system into use. Identify the stakeholders who contributed to the decision to select this AI system.</i>
<b>Contact details</b>	<i>The contact details for this registration (i.e. functional/system administrator, system owner, process owner).</i>	<b>Management of the AI system</b>	<i>Describe how management and maintenance are organised in the management team/department in which the AI system is applied. Consider, for example, change management, test management, compliance, quality assurance, hosting, and so on.</i>
<b>Brief description</b>	<i>A brief description of the algorithm.</i>	<b>Is [institution] a provider or a user of the AI system?</b>	<i>Has [institution] put the algorithm on the market or made it available for use (provider), or does [institution] use the algorithm in accordance with the intended use prescribed by the supplier of the algorithm (user)?</i>
<b>Status</b>	<i>The status of the algorithm: under development, in use, or not in use.</i>	<b>Supplier</b>	<i>If applicable, state the name of the external supplier of the algorithm.</i>
<b>Start date</b>	<i>Month and year in which the algorithm was first used.</i>	<b>External info</b>	<i>What do you wish to communicate to stakeholders/end users of this algorithm?</i>
<b>Purpose and impact</b>	<i>The purpose for which the algorithm was developed and what impact its use has on end users (i.e. students, citizens, employees and businesses).</i>		
<b>Data</b>	<i>An overview of the data (datasets) used by the algorithm and/or used initially in creating the algorithm (training datasets).</i>		
<b>Technical operation</b>	<i>Explanation of how the algorithm works.</i>		
<b>Self-learning</b>	<i>Is het algoritme zelflerend? In een niet-zelflerend algoritme specificieert de mens de regels die de computer moet volgen. Als het een zelflerend algoritme is, leert de machine over de patronen in de data.</i>		
<b>Stand-alone or embedded AI</b>	<i>Does the algorithm function as a stand-alone AI system, or has it been added as a (new) embedded component within a larger system?</i>		
<b>Considerations</b>	<i>An assessment of the advantages and disadvantages of using the algorithm and an explanation of why its use is reasonably justified.</i>		
<b>Risks</b>	<i>What are the potential risks of the algorithm for the institution and for the stakeholders?</i>		
<b>Risk management</b>	<i>An overview of how risks are managed.</i>		
<b>Human intervention</b>	<i>A description of how the outputs of the algorithm are used by humans, and how these outputs can be applied, verified and adjusted.</i>		

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## Annex 3

### Why the interest in an algorithm register for education?

We have seen evidence of interest in the concept of an algorithm register for education. Around 30 people requested the Excel input form for the algorithm register on behalf of their institutions. These requests were made by individuals from various departments, such as library staff, policy advisers, lecturers, privacy officers and data protection officers. Two meetings were organised with those who had submitted requests. Attendees indicated that they requested the register for various reasons, such as:

#### Getting an overview of algorithms used in the institution

- “As a first step towards cataloguing AI applications.”
- “So that we have an overview of what we use.”
- “Cataloguing what we already use (without us being aware of it) more easily and determining what kind of information is relevant for new algorithms.”
- “That would be conducive to the discussion in our institution.”
- “I want to see if we can incorporate this into our policy and whether it can help raise awareness.”

#### Assessing compliance and risks

- “Getting started with the EU AI Act / Transition to the EU AI Act.”
- “What we are seeing in our institution is an increasing number of cloud systems adding AI-based functions to our licensed systems. We hope that by performing various checks we will be able to better assess the risk and any actions we need to take or would be wise to take. We = security and privacy specialists.”
- “Understanding how we as an institution can make choices regarding AI.”

#### Reducing barriers to use

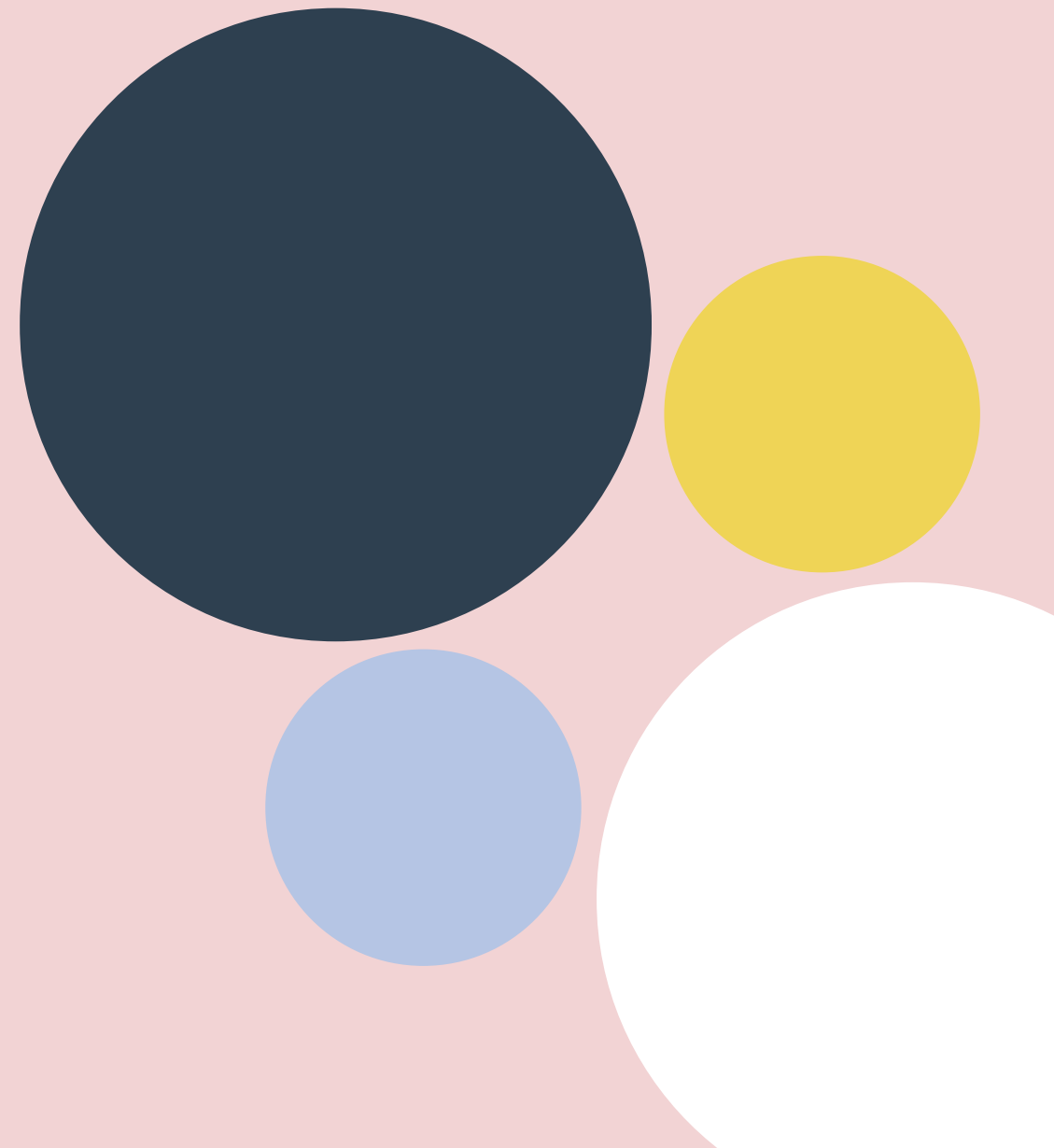
- “Transparency about the algorithm used can help lower the threshold for use/ implementation. That is why we are curious about the format you have developed.”

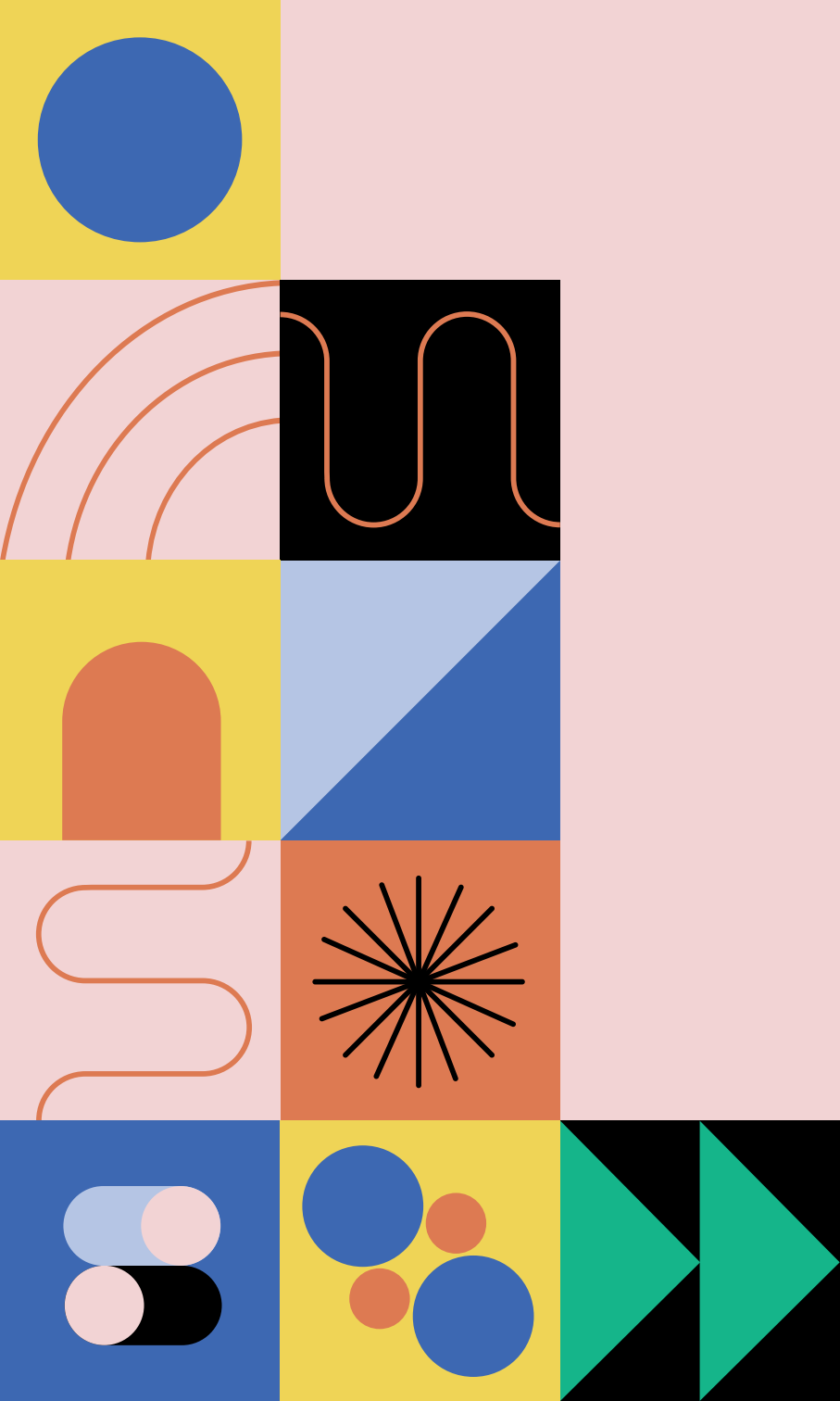
#### Suppliers

- “We would like to use this to initiate discussions with suppliers.”

#### Overlap with other initiatives and tools

- “We are working on this as well. We can use it as inspiration or connection.”
- “Finding out whether there are already initiatives in this area at our institution. Is there any overlap with the Processing Register?”





**Moving  
education.**