Addressing the problems and realising the benefits of processing children's education data

Report on an expert roundtable

Digital Futures Commission
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The Digital Futures Commission

The Digital Futures Commission (DFC) is an exciting research collaboration of unique organisations that invites innovators, policy makers, regulators, academics and civil society, to unlock digital innovation in the interests of children and young people. It seeks to put the needs and interests of children and young people into the minds and workplans of digital innovators, business, regulators and governments. It calls for a critical examination of how children's lives are being reconfigured by innovation to reimagine the digital world in value-sensitive ways that uphold rights, and to take practical steps to meet children's needs. The DFC focuses on three areas: play in a digital world, beneficial uses of education data, and guidance for innovators. Each work stream is informed by the voices of children and underpinned by a research programme and outputs geared toward real world change for children. The DFC research team is led by Professor Sonia Livingstone OBE.

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Biographies for the Commissioners are here and for the researchers are here.

The roundtable

The Digital Futures Commission (DFC) held an expert roundtable discussion on 13 October 2021 online to discuss current governance and practice in processing children's education data. It sought to identify the purposes of processing education data that advance children's best interests, the problems that can arise from such uses of education data, and the practical steps needed for mitigating these problems so as to open up more benefits for children.

The roundtable was held under the Chatham House Rule with this agenda:

- Welcome and Introduction

- Breakout 1: The uses of education data in children's best interests

- Breakout 2: Problems arising from the processing of education data in children's best interests

- Group feedback and solution brainstorming to identify actions to mitigate problems and realise the benefits of education data

This report presents the range of views expressed at the roundtable together with participants' recommendations and useful sources. It offers an insight into our unfolding work on beneficial uses of children's education data and reflects work in progress. We warmly thank all the experts who gave their time to participate in the roundtable. The discussion will shape the DFC's ongoing research on governance gaps and stakeholder responsibilities and contribute to a blueprint for education data governance in 2022.

Context

Data have always been collected from children in schools, but the volume and kinds of data processed have grown exponentially with the increased use of EdTech in schools. Children have little choice and control over this, and they and their parents are often unaware of the extent or purposes of this data processing within or beyond the education system.

The Digital Futures Commission takes a holistic child-rights approach that centres children's best interests. We ask what good looks like when it comes to education data, what educational purposes are at stake and how they can be weighed against the child's right to privacy and other rights. In short, what should be included in the "best interests" equation?

This roundtable was designed to advance the DFC's report, Governance of data for children's learning in the UK state schools, which showed the challenges of education data governance in the UK and set out key recommendations for a child rights-respecting approach to EdTech in UK state schools. What was less clear from that report was the potential benefits of processing children's

education data. Can the UK avoid the potentially perverse result that EdTech companies are more or less *unhampered* in processing education data as they wish, while public or civil society bodies wishing to use education data in children's (or the public) interest feel *hampered* by impenetrable red tape? And is it right that hard-pressed schools are left *on their own* to solve the task of protecting children's privacy and data subject rights in relation to powerful global companies, or would alternative approaches unduly reduce schools' autonomy?

Faced with such dilemmas, this roundtable reviews some fundamental questions. What, if anything, do children stand to gain from educational and wider uses of their education data? And what should be done? The focus is on the UK, though we are keen to learn from best practices elsewhere, also recognising differences in approach across the UK's nations and regions.

Two key definitions and their interrelations framed the roundtable:

- **Education data.** We used a broad definition of education data, namely data collected about children at school and through their participation in school. We distinguished education data processed for purposes of teaching, learning and assessment, for safeguarding, and for school administration purposes (though we recognise their overlaps). Because they are regulated in different ways, we also distinguished data that schools are required by law to collect via the termly school census from much of the other data processed via EdTech in ways that can be difficult to track or quantify.

- **Best interests of the child.** As explained by the UN Committee on the Rights of the Child in its General Comment 14 (2013) on article 3(1) of the UN Convention on the Rights of the Child, "The concept of the child's best interests is aimed at ensuring both the full and effective enjoyment of all the rights recognized in the Convention and the holistic development of the child." Respecting the child's best interests as a primary consideration in actions by the state is the guiding principle of the UK's Age Appropriate Design Code, a statutory code of practice produced by the Information Commissioner's Office (ICO) as required by the Data Protection Act 2018.

1. Which uses of education data are in children's best interests?

The roundtable discussion opened with small group discussions in which participants were invited to exchange ideas about the uses of education data in children's best interests. In this context, participants identified some stakeholders with vested interests in using data in education, including major funders, policymakers and commercial entities. This raised concerns as to whether the stakeholders who can access data about children collected in education contexts "can be trusted". The discussion concentrated on the purposes of processing that would advance children's best interests and the types of data being processed for these purposes.

In identifying uses of education data in children's best interests, a range of types of data (also including special category data) were mentioned: engagement data; interaction data; real-time learning data (e.g., children's answers to quizzes and the accuracy of their answers, the time spent on each question); behavioural data; data collected for safeguarding, and for educational requirements; biometric data; disabilities; developmental and growth data (against agreed stages); users' emotions and preferences.

Possible purposes of processing identified through discussion that may be in children's best interests include the following.

1.1 Education data can offer insights for educators into children's learning and thereby support their progression by...

- Tracking aggregated student progress across diverse settings to identify (individual, school, local) external factors that make a difference so as to target resources and plan interventions, including guiding young people's career opportunities and advising on steps to access these opportunities.

- Helping teachers to observe each individual child's progress and development by comparison with others within the class and evaluating their progress against agreed stages or according to national standards.

- Using data about special educational needs and disabilities (among other kinds of data), including when analysed using AI (e.g., adaptive algorithms) to identify children's needs earlier than later, which is important for vulnerable children.

- Processing aggregate data for federated learning in ways that preserve privacy, though this is still theoretical.

1.2 Data-driven forms of personalised learning can be beneficial for children's outcomes

- Personalised learning could support advancement of knowledge in specific subject areas and for narrowly defined educational outcomes. Some of these subject areas include languages, science and mathematics.

- Personalised pupil reports can be produced and learning provisions can be adapted according to the needs and interests of children with particular needs (including addressing accessibility issues for children with disabilities).

- Personalised coaching programmes are being developed in the US to work with families to gather data and see their progress through school; also used within the university.

1.3 Facilitate teaching and content development

- Education data can help teachers with record keeping by automating certain tasks.

- Education data processing can enable flipped learning which is a mixture of individualised alongside group learning.

- Insights from data processing can help improve content discovery (how users find their way around content) which can improve learners' experiences.

- Educational content can be improved based on insights from, for example, users' preferences and emotions when interacting with content which in turn may result in improved educational outcomes.

1.4 Education data can facilitate schools' administrative tasks and processes by...

- Helping schools to improve their services and processes. For instance, data can be used in large-scale performance management by different actors in the education system (for example, data has been used for free school meals) and inform schools decisions about resource allocation.

- Realising the desirable benefits for schools (based on Ofsted's Education inspection framework (EIF)) include uses of data to advance schools' core purposes: 1) leadership & management (administration of schools); 2) personal development, including health, safeguarding & wellbeing; 3) quality of education (improving life-chances & progress of the child); 4) behaviour and attitudes.

- The creation of schools as trusted hubs that can enable multi-agency work. Non-attainment data can also be used for this purpose.

1.5 Safeguarding, health and wellbeing

- Education data can help identify patterns of missed school and how that affects learning. The processing of education data and non-attainment data can be important for safeguarding and can be used for child protection purposes later.

- It can be used in AI for tracking children's behaviour to keep children physically safe in a school setting (a lot of data about children is currently being processed for this purpose.

- There are both interests and expected benefits in safe, secure, proportionate and necessary data shares across multiple agencies, including schools, to keep children safe in education.

- Education data processing can yield public health benefits e.g., in understanding the situation for looked after children at national and local levels.

1.6 Research and Development

- Education data can be used in a systematic review on the use of AI in children's lives and when making claims of improvement to children's education outcomes.

- Data can be used to define and then optimise the algorithms that affect children's outcomes.

- Education data can be combined with other data sets from different sources to produce new insights (e.g., measuring the impacts of COVID became possible when data sets are more connected, as has been done in Wales).

- Data can contribute to research, but since many - or even most - of the claimed benefits have little scientific support, and since some may actually result in negative effects on children's rights (such as their right to development), it is vital to ensure adequate rules and regulations for research uses of education data to be sure that the children genuinely benefit.

- Data can be used to build evidence base and thus yield better understanding educational outcomes.

- Longitudinal data can be used to identify problems.

2. Problems with processing education data in children's best interests

In discussing the above points, questions were raised as to whether such benefits are being realised in practice, and about the available evidence to establish such benefits. Indeed, the discussion was hedged around with considerable uncertainties. These were clarified in the following discussion.

2.1 Lack of common definitions, evidence or benchmarks for what benefits children

- There is a shortage of independent evidence on whether EdTech tools live up to their promise, and whether children who use them genuinely fair better than those who do not. For example, we are yet to see any evidence tech personalisation improves e.g., Progress 8 scores.

- There is no clear benchmark on what improves educational outcomes or advances children's best interests. There isn't even consensus on the kind of education we want.

- It is difficult to pinpoint exactly which interventions improve which outcomes, if any, especially when the promised benefits are long-term or for the public good rather than individual children from whom data were collected.

- Since definitions and evidence around what actually benefits children are unclear, the data collected may not be fit for the purposes to which it is put. For example, apps are increasingly for social, emotional or mental health and we have no appreciation of their effects on child development

- There is a need to ask if data processing is beneficial to teachers as well as children. Too often, benefits are experienced by neither, or they are overclaimed.

- Once anticipated benefits are specified, this has its own consequences. For instance, introducing tests may mean that schools teach to the tests, leading to EdTech being further developed accordingly which eventually leads to the narrowing of education.

- It is important not to talk about children as a homogenous group as what may be a benefit to some children may be a risk to others. Vulnerable children with accessibility issues may gain an advantage from profiling.

- Moreover, risks and benefits are not equally felt, so some children may benefit from education data processing while others lose out.

2.2 Problems with data protection, regulation and enforcement

- The data being collected from children is so broad but the uses to which it is being put are narrow or, argued some participants, poorly used. It seems there is a mindset of collecting everything now and thinking about what to do with it later, contrary to the principles of data minimisation and purpose limitation.

- There is a perception that clear processes and principles for using education data are lacking, unaccountable, even chaotic.

- A clearer line is needed or what requires consent (for processing, for research), as are ethical alternatives to consent. For example, Google is believed to force schools to force parents to give consent to use those retaining data for use for its own purposes. This approach to consent may not be unique only to Google and may not necessarily be intentional. However, it is inconsistent with UK GDPR.

- When some EdTech companies process data (e.g., behavioural), they may keep that data (unlawfully) and breach their contract with the school (where businesses use data beyond the scope of the contract with the school) though this is not necessarily a norm or intentional.

- Looking from the private sector's eyes, many companies don't try to avoid compliance with the UK GDPR or any relevant guidelines. But this is a very complex area and it's difficult to ask small vendors to do what big vendors do (or do not). It is also not realistic to expect the private sector to self-regulate.

- Lack of independent oversight: AI vendors are represented on ethics oversight boards when the boards should be independent. More meaningful involvement of the ICO is needed.

- Too much bad advice regarding data protection has led to poor understanding of what is acceptable across the board for companies, researchers, and schools. There is confusion about the distinction between data processors and controllers, and about what data is anonymous or pseudonymous. This leaves schools in a minefield of poor documentation and poor understanding of roles and responsibilities. There is also a risk of the

"responsibilisation" of children, parents and teachers in holding data controllers to account.

- For example, although Google generally has its core services as a workspace in education, Google also offers additional services, for which it then becomes an independent data controller.

2.3 Problems facing schools

- Obtaining consent from children for each use of EdTech wouldn't work for teachers who need a whole-class solution. Emerging and aggregated benefits would be lost if individual consent were repeatedly required. It is also ethically questionable to ask children to consent to the processing of their personally identifiable data when there is no clear evidence of the benefits or who the actual beneficiaries are.

- It is inappropriate to ask schools and/or teachers to assess which EdTech vendors are compliant with the law. In healthcare there is a gatekeeper to assess the service before it enters the market (cf. NHS Digital). To help with compliance, some schools have used data protection officer services.

- Teachers don't always do a DPIA for all new EdTech because the marketing persuaded them of the educational benefits. Nor do they necessarily know whether the data processors store the data in territories that have consistent data protection laws. DPIAs and CRIAs should be done by EdTech and schools when they enter into contracts or other agreements with EdTech providers.

- There is a difficulty in identifying which activities are public or commercial. Teachers in their day-to-day jobs input data into systems such as SIMs which companies then monetise. This could be seen as a form of free labour for the companies.

- There are also concerns that having a sector-specific DPIA template might create a situation where we treat DPIAs more like a standard check list, where we go, sign it, and not actually know what is being shared. There is a need for schools to engage with what data they're sharing rather than abrogating that responsibility to someone else. They need to have some ownership of it, albeit without burdening schools with legally or technically impossible roles.

- If there is a tick box for companies to get as a Kitemark or other form of accreditation, it could mean that the choice is taken away from the school about how they use a product.

2.4 Problems facing children and families

- Children should always be kept informed about what happens with their personal data. But currently there is a lack of transparency - nobody (especially children) really knows what happens to data – of and public oversight.

- Also important is children's right to receive child-friendly and tailored information about these processes. How can children exercise their right to

erasure or the right to opt-out, bearing in mind that these rights are not absolute? In one cited case, a school failed to correct wrong student records - a child was incorrectly marked as having special needs, yet when parents requested the school to remove it, the school didn't. This conflicts with the UK GDPR principles of accuracy and with data subjects' right to rectification, with potentially detrimental consequences.

- What do EdTech companies do with the students' accounts when they leave school? Is it the large or smaller providers we should worry about more?

- How do we start digitally upskilling our children, making them aware of their data rights, while not "responsibilising" them instead of the accountable data controllers?

2.5 Problems with research

- Schools can find themselves forced into giving open-ended access to data that researchers say is anonymous but it may be pseudonymous and later matched with other data sets.

- What does it mean to do research within EdTech? An answer is needed across the whole of the UK to clarify for schools what it covers – BERA might address this. Currently, it is difficult if not impossible to get access to commercially proprietary data for research or get research cooperation from commercial suppliers.

- EdTech providers and universities are not consistent with their paperwork; they don't provide the information that schools need up front; or the information may be inaccurate. For example, there is a difference between anonymous and pseudonymous and universities tend to substitute anonymous with pseudonymous.

- There is insufficient oversight of academic research with schools, and few or no public DPIAs and CRIAs, though these might be needed or requested by school DPOs.

- Data collated for long-term research benefits may be acceptable but commercial providers doing the same is unacceptable.

2.6 Risks of discrimination and exacerbating inequalities

- Personalised learning is inherently problematic and there are risks attached to it, because it personalizes inherent differences between children and families as groups, thus runs the risk of exacerbating social injustices.

- Datafication follows contours of power - the most vulnerable groups tend to be the ones subjected to the most pervasive data processing. For example, Liberty found data about the children of immigrants was being shared with the Home Office to facilitate deportation.

- With reference to the AI ethics framework, there is concern that AI should not replace a teacher, or any other human in the loop. And then, ask if the data is beneficial and in the best interests of the child. In short, given that it's very

difficult to anticipate what's going to happen. human involvement is required in the context of automated decision making.

- Data often just gives middle-class parents more information to game the system in their interests and pick the best school etc.

- Don't we have enough data already to know who the disadvantaged are and why they are disadvantaged? Why collect more? After all, teachers know their students, and schools have always had basic data on parental circumstances. Too often the system reproduces rather than overcomes existing socio-economic inequalities.

2.7 Pervasive data collection and processing

- The use of biometric data has gained an exponential boost in hybrid settings. Future problems are anticipated where there is increased use of biometrics in measuring attention, engagement, and emotion. But we don't know the scale and scope of data being collected, how it's being used, or how it may be used in the future and affect children's lives and rights.

- Do children want someone else to know so much about them (e.g., their emotional state)? And should their teacher know)? The science behind AI emotion and feature recognition is highly contested. Children should be involved and consulted on these decisions.

- Questions were raised about whether an excessive amount of data is collected to provide safeguarding (e.g., use of AI for tracking to keep children physically safe in school settings).

- AI tech for education is problematic insofar as there is insufficient thought about the range of data collected to develop AI systems to deliver the claimed benefits, for example provision of safeguarding. Nor is data minimisation present in the data collection & development process of AI. Proportionality to the intended outcome isn't considered nor applied.

- Data is hardcoded into children's profiles that they can't challenge and follows them around for their careers. Too much is being 'read into' data - not giving children the chance to break out of expectations set for them based on very small amounts of data in just one area of their lives. Too little is known of the potentially negative effects on children's rights to development and identity both now and in the future.

2.8 Challenges in determining children's best interests

- Worries were expressed that the benefits might not outweigh the risks of harm or that there might be other ways of achieving the same goals which are more efficient and more privacy-preserving.

- Whether education data processing is actually in children's best interests, or in accordance with the fairness principle (see resources below), is insufficiently interrogated.

- Taking data for one reason and using it for other purposes is simply not in a child's best interests. relevant here is the principle of fairness and children's right to be protected from economic exploitation (art 32 UNCRC).

- Researchers and EdTech vendors alike may mistakenly define children's best interests to align more with the research needs of the research institution or business interests rather than the best interests of children whose data is being used for research or EdTech service provision, including product development.

- Automated personalised learning offers no opportunity for serendipity or diversity in what children access. So, there's a need to plan for purposely diversified children's education. It's important to avoid sorting children in ways that limit their educational opportunities, affecting rights to development, identity, education and freedom of thought.

- There is too little consideration of the consequences of data collection on children. Most benefits are still 'potential', and we do not yet understand what the effects are on the development of the child of using mental health prediction apps or behavioural scoring apps or psychometric apps). This is where the application of the precautionary principle could be useful and in the best interests of children.

- Teachers already personalise, and money would be better spent on reducing class sizes rather than buying in commercial tech. Tech is being used at the expense of personal connection between pupil and teacher.

3. Actions proposed to mitigate problems and realise benefits of education data

Participants were asked to brainstorm measures to mitigate the problems identified in their small group discussion first and then to share their suggestions in the plenary session after hearing summaries of discussion points from other groups. The proposed measures from both the small group and plenary discussions are grouped thematically follows.

3.1 Lawful, purpose-specific and data minimised usage of data in education as well as more effective enforcement mechanisms

- In the short term "knocking out the egregious" would be a big win. The principles of data minimisation and data purpose limitation must be enforced.

- AADC doesn't apply to schools but it could (arguably, should) be applied to education data. The ICO has provided further clarification on conditions under which AADC would apply to EdTech (See resources).

- A clearer sector-specific Code of Practice issued by the ICO might address these UK GDPR principles. An example of a useful guidance for school

includes the Information Management Toolkit for Schools. In addition to targeted guidance, schools need an exit clause in licences so that they do not continue to pay for tech that does not deliver or is not being used.

- EdTech should be more systematically evaluated, and greater accountability is required to identify what kinds of data are actually collected and what happens to the data that are processed.

- There could be a vetting system, possibly managed by the ICO, before EdTech providers are allowed to target children and schools. This would require an adjustment to ICO's powers and structure to create an ICO department for children's data, the Age Appropriate Design Code (AADC) and vetting digital products and services used or likely used by children.

- The ICO doesn't have legal powers to directly approve individual companies, but it does have legal powers to approve third-party certification schemes. The ICO recently approved the certification scheme on the UK GDPR and the AADC. Beyond formal certification schemes, the ICO could develop EdTech specific guidance as it has been doing (in general) for DPIAs.

- The ICO could maintain a database of DPIAs so that people could refer to them and they could be a standardised format to compare them was discussed. This requires DPIAs to be made public first. There were also requests for sector-specific standardisation of DPIAs and for ICO to check off and authorise EdTech companies, perhaps, to be used in schools.

- In terms of documentation (e.g., RFI documents), schools currently get different answers to the same questions from different companies. But schools can't make informed choices because there is no benchmark nor consistency despite the work started by the DfE Data Protection Working Group (See resources for examples of their work).

- The Scottish local authority model includes standard checks before local authorities are permitted to use certain apps and platforms or not. In this case, the local authority acts as a data controller, rather than individual schools. This model differs from Wales, Northern Ireland and England. In England, this model also exists in MATs because MATs act as data controller rather than individual schools.

- The controller-processor relationship can be complicated and it is difficult for schools to work this out. This needs to be done by an organization like BERA or universities to pull together and say this is what it needs to look like and get approval from the ICO. There is merit in learning from academic research carried out in and with schools, especially in discerning whether a research group operates as a separate data controller or whether they're in joint control with the school, or whether it's a three-way joint control relationship with the EdTech vendor themselves.

3.2 Ensuring that data processing is in children's best interests

- Organisations with statutory responsibilities for improving outcomes for children and young people should work together to improve accountability and public understanding, including of the responsibilities and interactions

between different services. DPAs could usefully be more involved and require EdTech to provide fully understandable information.

- In the long term, the wider issues need to include but also go beyond data protection to include educational issues. An Education and Digital Rights Act could help frame that bigger picture in law.

- Long-term child development must not be forgotten. Indeed, there is a need to keep the focus on the child and their best interests, then go to the parents, and then wider.

- Risk assessment is what a company does but safety by design means taking the risks out systematically because we have understood what risks are there. The need for risk assessment could be facilitated through the systematic use of DPIAs and CRIAs.

3.3 Research evaluating the benefits of education data

- We should start with a hypothesis about how these uses of educational technology and data, particularly about children, might benefit them. After this, work out to see whether that is the case and then feed that back into the process. There might be enormous benefits just from collating what research has been done.

- We should ask 'what data would people who believe in benefits want to collect?', bearing in mind that parents may know very little about how data-intensive modern schools are, or which vendors are profiting from schools. Also needed are mechanisms to meaningfully engage all relevant stakeholders in policies and practices regarding education data processing.

- Apply pre-registration protocols for large-scale quantitative studies in research.

- Distinctions between public and commercial research interests should be clear.

- Universities should work together to produce advice and guidance, in collaboration with EdTech vendors, as well as teachers, children, parents and schools, about how research with and in schools should be done properly.

- The precautionary principle should be applied in the absence of convincing evidence of benefits.

3.4 Clear scope of educational purposes & pedagogical direction

- Centre the child and focus on pedagogy rather than focusing on data - whether or not it includes data as a part of it! It is also important to include experts in pedagogy, experts in Early Years, experts in teaching and not EdTech for good policy framing, which is imbalanced and flipped today.

- AI shouldn't replace humans, but to complement humans, enhancing the qualities of human life. Crucially, human involvement is required in the context of automated decision-making. Always have humans in the loop, in

terms of data collection & usage and keep asking why are we collecting/using this data?

- As we start to look at the potential for change in the EdTech market, it is important to ask whether there are new approaches, new technologies that might shift the landscape, while taking a risk based and precautionary approach.

- Companies, acting with commercial interests in their minds, should be very careful when determining the scope of "education purposes". Both the ICO and the Irish Data Protection Commission have expressed strong doubts as to whether commercial interests can be reconciled with the best interests of the child. So, we could draw a strong line between public and commercial data processing and DfE should introduce new rules on procurement for schools.

- Need to have programmes that purposefully diversify education and expand children's horizons in ways that emerge organically. This may be (and perhaps is) threatened by profiling and personalisation.

3.5 Increase the agency of children, schools and parents

- Lack of children's agency should be addressed - we need agency by design in individual apps/platforms (See resources). Children and parents must be consulted by EdTech companies and other stakeholders. There is a long history of participatory research where practices can be adopted.

- Children should be given greater control over their own profiles and data about themselves which initially requires considerable transparency efforts. Safe models for interoperability that put the child and learning, and the teacher, at the centre of that practice also need to be considered. Some of the technology solutions that give data ownership and control to parents and children rather than companies include SOLID and micro-servers (see resources below).

- With regards to how schools make decisions about education data, the DfE should be accountable and develop a better data governance system. DfE could follow the Welsh model, which provides schools with better advice. Equally, schools require better guidance, funding and support from DfE, but without being more controlled.

- There are growing resources and services that schools can leverage to fulfil their data protection responsibilities. Examples of these resources and services range from web-based resources, IRMS toolkit for schools and the DfE toolkit for schools to Data Protection Officer (DPO) services which are currently available through commercial providers, such as Schools DPO, DPO Centre and Judicium Education, and through local authorities. Some MATS also have an in-house DPO or Information Governance Specialist. However, care must be taken to ensure that the existing resources and the resources being developed are not used in ways that render decisions by schools to use EdTech solely a compliance exercise.

Resources suggested by participants

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