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# Developing a Data Enabled Public Sector Audit Approach

# Frequently Asked Questions

## How cleansed is your data right now or is that part of the challenge?

Currently we receive data for our financial audit work in the form of a download from a range of Financial Management Systems. The quality of that data varies and often a lot of time is spent placing the data into standard formats before analysis can be undertaken. This a problem that our partners (Wales Audit Office and Audit Scotland) experience also. We have therefore made this a compulsory part of the challenge, i.e. all applicants must demonstrate that their final solutions will be capable of extracting, cleansing, formatting and validating information from different Financial Management Systems.

With regards to Value for Money Auditing, data is received in the form of management information and publically available data. Generally the publically available data will not require much cleaning but there may be some work in cleaning the management information that we receive.

## What does good look like for Phase I?

Phase I provides an opportunity for suppliers to research our challenge and propose a potential solution. Ideally that proposal would identify ways of making our audit work more efficient by reducing the amount of time spent identifying, extracting and manually testing samples. It would also potentially enable us to automate data analysis currently undertaken (e.g. reconciliation of general ledger transaction activity to the accounts, variance analysis, and production of lead schedule templates) and test whole financial transaction populations ‘at the touch of a button’. This would allow us to focus our audit effort towards identifying high risk transactions, anomalies and potential irregularities for further human investigation, freeing up more time to be spent on value added work.

With regards to the Value for Money Audit work, at Phase I we would be keen for suppliers to identify a potential solution that could analyse data (both management information and publically available data) on a wide range of topics. The proposed solution would suggest ways in which we could standardise the approach to analysing this data to support findings and conclusions in our public reports.

## Is it difficult to develop a training set of data?

This is something that we haven’t attempted to do. In Northern Ireland a shared service provider holds all of the financial records for all nine government departments and their agencies. We are suggesting that Phase I would focus on the data supplied by the shared service and possibly one other NDPB. This would need to be extended to other sources of data (potentially from Wales and Scotland) in Phase II to ensure that any solution is suitable for the wider market. We are happy for suppliers to develop their own set of training data if they feel that this would be beneficial.

## Within the process of co-creation; how much would you be willing to redefine the initial expectations for the solution?

It will be important that the solution addresses our original expectations unless there is an opportunity to develop a solution that is more advanced and is capable of delivering additional functionality or benefits that we hadn’t originally anticipated.

## Will the NIAO provide their Information Asset Registry and/or exemplar open datasets for challenge participants to prototype against?

Anonymized datasets that are currently used for audits will be made available to suppliers for use as part of the project. Furthermore, we are in discussion with data holders to see what additional sub ledgers and fields can be provided.

## Will suppliers know the structure of the data before they make promises on what they can provide?

While datasets will not be provided to suppliers prior to the start of Phase I, the structure of the data is reasonably simple with similar information recorded for each body. Datasets are currently held in Excel and CSV file formats and include a large range of fields such as:

* Cost centre
* Account Code
* Transaction description
* Transaction date
* Value
* Transaction type
* Batch name
* Supplier name
* Invoice number
* Purchase Order number
* Purchase Order approval details
* Journal approval details
* Good receipt details

## What data will be used of Phase I and will this data be standardised or will it be scanned invoices which require natural language parsing?

The intention is that Phase I will predominately use datasets provided by a shared service centre for a couple of NI departments. The structure of the datasets will be standardised and will include the fields outlined above for each transaction. While scanned invoices may not be available for interrogation as part of Phase I, suppliers may want to consider how scanned invoices could be used as part of a data enabled audit when developing proposals. At this stage we can give no guarantee that we will have access to databases or files that include scanned invoice details.

## For the Value for Money stream, do NIAO have plans to publish new open administrative and management datasets that would allow third-sector and civil society organisations to look into the effectiveness of public spending?

While we are aware that the public sector is keen to publish more open data for consumption by the public, as we are not data producers we will not be publishing this data. Central Government departments, aided by the Northern Ireland Statistics and Research Agency (NISRA), publish open data at the Open Data NI portal.

## For the use of government data, what hosting/security requirements will there be, or will data hosting services be provided?

Due diligence will be applied as to what will be done with data and we will be explicit in how data should be handled. We will also provide light touch advice to suppliers on the technology code of practice (<https://www.gov.uk/government/publications/technology-code-of-practice/technology-code-of-practice>) so that solutions meet Government Digital Service (<https://www.gov.uk/service-toolkit>) requirements and reduce barriers to subsequent product sale.

## Will suppliers have to access data on site or can it be made available remotely?

Subject to appropriate security arrangements, project datasets will be made available for suppliers to use remotely. While datasets will not be made available to suppliers prior to the commencement of Phase I, an outline of their structure has been made available in response to [question 6](#question_6) above.

## How much supporting language is involved in the audit process?

Value for Money work is text heavy and in the future this could increase by considering evidence bases not currently used, such as social media. There is also a lot of time spent preparing for the Assembly/Parliament which text analysis could help with. From a financial audit perspective, audit planning involves a lot of time reading minutes, contracts, policies, procedures and business cases.

## What audit tests will the final product complete?

We don’t want to be too prescriptive in what the final product does and want to encourage suppliers to think about innovative and new ways to address the challenges posed. That said, we imagine the final product would be able to:

* consume/extract, cleanse, format and analyse data from different accounting systems;
* automate some routine data analysis that we currently complete during audits – such as the reconciliation of general ledger transaction activity to the figures disclosed in the financial statements, completion of variance analysis between current year and prior year figures to identify significant movements, and calculation of relevant public sector ratios to assess performance and identify matters of interest;
* produce outputs that can be used in audits – such as lead schedule templates which show balance/transaction streams included in each audit area, templates which predict the outturn of account balances such as payroll, income and asset movements based on reliable and independent data, and working papers which have identify populations to be tested;
* test and risk assess complete populations to identify high risk transactions. As well as carrying out a range of tests this might also involve assessing individual transaction characteristics to identify high risk transactions to be further reviewed and tested by audit teams ;
* identify potential anomalies, irregularities and errors in transactions; and
* consider internal control structures and processes, such as segregation of duties, procurement thresholds and delegated limits.

Other product features may include tracing transactions from their initiation through to recognition in the general ledger and subsequent payment/receipt; reading scanned invoices to confirm the accuracy of transaction details recorded in the General Ledger in terms of value, classification, cut-off and occurrence; and digitalising and reading other key audit documents such as contracts and purchase orders.

While all bids will need to address data ingestion, it is important that they go beyond this and cover the audit analytics elements of the challenge.

## What does compliance with auditing standards mean?

International standards on Auditing govern our working practices and how we obtain audit assurances. To demonstrate compliance with auditing standards we need to be able to understand, justify, explain and demonstrate the results of data analytics applied. Any solution can therefore not be a black box approach and there needs to be a full audit trail of any machine learning applied. NIAO will work with suppliers to ensure that solutions comply with auditing standards. This may involve developing a tool which interprets and easily explains the results of machine learning applied.

## Is the majority if audit work currently Excel based due to barriers of getting everyone trained on something like IDEA, or is it more the cost of having that many users licenced?

In the past the main barrier has been staff being uncomfortable using IDEA. However, the use of IDEA for audit work has increased significantly in recent years as training has been provided and staff have become more familiar with functionality. However, the majority of data analysis undertaken is reasonably simple e.g. simple reconciliations, extractions and sample selections. Outputs saved within audit files are Excel based as this is a convenient way for audit evidence and work to be stored and saved.

1. Do you differentiate in your approach in auditing different public bodies? Are there key audit risks for different public bodies?

While audit approaches are largely standard, they do vary slightly depending on whether audit risks have been identified and whether reliance can be placed on the internal controls established and operated by public bodies. There are key risks for some public bodies (e.g. fraud and error, regularity of expenditure for various programmes, value of provision balances) which are usually addressed through controls testing or distinct/focused transaction testing.

1. Are public audits mostly focused on the expense side? Or do you look in detail at other financial statement balances?

Audit focus and approach will largely be concentrated on significant balances reported in the financial statements. While public bodies are largely expenditure driven, with a significant net operating expenditure reported for each, our audit approach considers and tests all significant financial statement transactions, including income, PPE (property, plant and equipment), intangible assets, receivables, payables, provisions etc.

## How are Value for Money reports produced, how much do they cost and who is the main target audience?

Each Value for Money report is produced entirely different and may involve focus groups, site visits, surveys, reviewing documentation produced by others, reviewing contracts and reviewing post project evaluations. Some reports are more statistical based than others, such as the sustainability of schools in terms of performance and enrolment numbers.

The process involves engaging very closely with bodies being audited and accessing the data they have available, including minutes, interviews, etc. We agree the factual accuracy of reports with these bodies and potentially this process could be made clearer. Generally, word counts are restricted to 10,000 words and the costs of reports range from £60,000 to £120,000.

In Northern Ireland reports are presented to the Assembly before being considered by the Public Accounts Committee. As public documents, they are widely circulated and are often picked up by various media outlets.

## Do you have a large dataset, showing the results of previous testing, which can be used to train the product?

We don’t have a dataset showing the results of previous testing, therefore it would be difficult to train a product using retrospective data. However, we consider it is possible for the product to learn going forward (albeit we don’t have strong error signals in our populations) using cluster analysis.

## Is there IP protection for suppliers who provide details of specialist machine learning algorithms for the purposes of transparency and understanding?

In accordance with International Standards on Auditing, we need to demonstrate that we understand the work that has been completed and how the algorithm works. Any solution developed therefore has to be defensible. Phase I is about understanding risks for both the supplier and NIAO, and co-creating proposals in a way which addresses these. While we don’t want to limit suppliers, where machine learning conflicts with understandability, suppliers should err on the side of understandability.

As part of the project, suppliers may want to consider the development of tools which interpret any machine learning applied.

## Is the National Audit Office making data analytics inroads? Are they involved with the project?

The National Audit Office is not involved with this GovTech challenge due to a potential conflict of interest with the Cabinet Office. However, they do wish to be informed at all stages. While the National Audit Office have been making progress with their own data analytics work stream, it has been piecemeal and they have not yet developed a holistic solution.

## Can suppliers focus on just the financial audit challenge, or must all solutions address the Value for Money challenge as well?

Suppliers can do either the financial audit, Value for Money or both challenges as part of one or more applications. At least three of the five Phase I proposals will address the financial audit challenge. However we would like to consider one or two proposals for the Value for Money challenge as part of Phase I.

## Is cost a marked criteria? If so, does reduced cost give a competitive advantage?

Marking will be applied against fair market value and will consider how costs are allocated, particularly to research and development. We expect to see the majority spent on research and development activities.

## How many suppliers will be accepted onto Phase I and then onto Phase II?

Up to five suppliers will take part at Phase I. Following an assessment of Phase I proposals, up to two suppliers will progress to Phase II.

## Would joint, independent access to solution IP for NIAO and collaborators be looked on favourably? Either as a commercial open source product, or through specific agreements?

The principle is that suppliers will retain the IP so they can scale any product developed. However, they are obliged to give a Licence fee version to challenge owners. An agreement on how to commercialise the product will be developed during Phase II between suppliers and NIAO, and will vary depending on the challenge. For example, other challenge owners have requested a proportion of product royalties to come back to their organisations.

It is likely that any products developed will be sold to public bodies and therefore commercial open source solutions would work well. However, this is not a complete requirement for this challenge. Solutions should include models where NIAO and suppliers are working together.

## Is there a case for a standalone solution which addresses data extraction and cleansing only?

Data extraction and cleansing is an integral part of the financial audit challenge. However, any solution would need to go beyond this and address the financial audit analytics element of the challenge.

## Is there then an opportunity to partner and if so how?

Collaborative approaches between suppliers are welcomed. Innovate UK’s Knowledge Transfer Network provide a matching service to identify potential partners to collaborate with.

## Will proposal results need to be validated during Phase I?

Phase I proposals and developments will need to demonstrate potential, therefore there will need to be some degree of results validation. While this does not need to be perfect during Phase I, it must give an indication of what is possible during Phase II.

During Phase I there will be a mid-term review which will allow NIAO to provide feedback on research and development undertaken by suppliers, including results validation.

## Are international companies eligible to participate?

Any organisation with a registered office in the European Union (EU) that can demonstrate a credible and practical route to market can submit an application. The contract would be with this office, who would act as lead organisation at phase 1 and complete the majority of research and development.

## What are the top three data challenges faced by the audit office concerning for Value for Money Reports?

The main data challenges faced by the NIAO in relation to our value for money work are:

* determining what data should be used, e.g. management information, publically available information etc
* determining how best to use the data to support findings and conclusions
* benchmarking - audited bodies are reluctant to accept comparisons with other public bodies

## Are you looking for support with verifying the findings and recommendations made within reports, from multiple data sources, or needing help with the overarching management of the reports or both?

The main purpose of the VFM part of the challenge is to develop a solution that will assist us in making better use of data to support/verify the findings and recommendations made within the reports.

## Can you confirm which auditing standards apply to Value for Money reports?

The International Standards on Auditing apply to financial audit work only. There are no external auditing standards which apply to our VFM work.

## How are topics selected for Value for Money reports now?

In order to select VFM topics we undertake an initial analysis of an audited body (general survey). This involves examining a range of background documentary sources and liaising with those with an interest in the body’s activities. General survey work is expected to identify a selection of areas, or issues, requiring more detailed review. We have recently published a Public Reporting Programme which provides some insight into the topics that are likely to be covered over the next three years https://www.niauditoffice.gov.uk/public-reporting-programme-2018-2021 .

## Which datasets and sources are typically used to a) influence topic selection now and b)verify findings/conclusions made within reports?

This will be a combination of management information and publically available data.

## How are reports typically reviewed and verified currently?

Reports are reviewed and verified in a number of ways:

* Internal review - reports will be reviewed by a Manager and a Director and there is also a Quality Assurance Panel which reviews the reports.
* External review - an external review panel reviews all published reports.
* Clearance - the clearance process provides audited bodies with an opportunity to review the draft report and comment on its factual accuracy.

## Can you provide an overview of the organisational structure of the roles / team that are responsible for Value for Money reports within the Audit Office?

The C&AG is responsible for all VFM publications. A team will be assigned to each individual report. This will generally incorporate a Director, a Manager and a small team of audit staff.

## Why would a value for money report not be accepted through clearance?

In theory a report would not be accepted through clearance if the audited body disagreed with the accuracy of its content. However in practice we would work with the audited body to ensure that any inaccuracies are addressed.

## How often do reports not pass successfully through clearance?

There is no history of reports not passing through clearance although some reports take longer to clear than others. It would not be in our interest to publish a report that was not factually accurate.

## How is author/producer bias within Value for Money reports checked for and managed now?

There is an internal review process and the clearance process ensures that the audited body is content with the factual accuracy of the report. This ensures that any bias is managed.

## What is the typical production cost, incurred by the audit office, of a Value for Money report?

The cost of a VFM report varies but is generally within a range of £60,000 to £120,000.

## Would you describe the review process for reports prior to and during clearance as a bottleneck?  Noting you mention that some reports take longer than others to pass through this process.

The length of time that is taken to complete the clearance process varies a great deal and this largely depends on whether the audited body accepts our findings or not.  If they don’t agree with our findings it can take some time to agree the factual accuracy of the findings.  The Department of Finance issued guidance to NI Departments in 2015 about the clearance of NIAO Value for Money reports.  Annex 1 sets out a timetable for clearing reports and this has helped to reduce the amount of time taken during clearance.  The guidance can be found at <https://www.finance-ni.gov.uk/sites/default/files/publications/dfp/daodfp0715v2.pdf>

## Our preference is to develop and run on public cloud for example Microsoft Azure/Amazon AWS would this be an issue?

In accordance with the Technology Code of Practice and the government’s cloud first policy, the use of public cloud is encouraged. Given the Technology Code of Practice actively encourages open cloud, the use of physical infrastructure is not a hard constraint. I am aware that other audit agencies are predominately cloud based. However, we will be explicit in how data is handled and secured. In addition, given our existing IT infrastructure, any product developed should be capable of being run on physical servers.

## What are the requirements around Data sovereignty?

The project is open to all organisations with a registered office in the European Union (EU). The data should therefore be handled and stored within the EU and be subject to relevant legislation e.g. the Data Protection Act 2018 and the General Data Protection Regulation.

## What is the scope of the planning section, should we cover phase 1 or phase 1 and 2. Phase 2 will likely be affected by the output of Phase 1.

The scope of this competition is Phase I only. At the conclusion of Phase I there will be a separate competition for Phase II.

## Kindly assist us with a competent and reliable Programmer / Software Developer with proven experience in configuring government wide financial accounting and audit processing packages (Modules) with financial audit analytics. The undersigned will provide manual written programmes that will be transformed and developed into the appropriate application packages for both patenting and deployment in the United Kingdom.

Unfortunately, although we are happy for suppliers to work together, we are not in a position to provide introductions. You would need to source other suppliers/sub-contractors from the market yourself.

## It is stated in the Brief that “A total of up to £250,000 (inc VAT) is allocated to phase 1 of the competition and it is anticipated that the feasibility study contracts will be in the region of up to £50,000 (inc VAT) per project for up to 3 months”.

## Can one project for £50,000 (inc. VAT) cover both Financial Audit Analytics and Value for Money Analytics? Will you reward contracts to five different vendors to perform the Proof of Concept contracts end-to-end or are you intending the five different vendors to work together in Phase 1?

We would anticipate awarding five £50,000 (including VAT) contracts during phase one and they will cover a mixture of financial audit and value for money audit analytics.  We would anticipate that if suppliers submit bids for both financial audit and VFM audit that they would effectively be submitting two bids of £50,000 (including VAT), one for financial audit and one for value for money.  However if bidders feel that they could cover both for the £50,000 (including VAT) we are happy to look at that also.

It is our intention to award five contracts to five vendors and they will work in isolation to other suppliers.

## It is stated in the Brief that “up to two phase 2 contracts, up to £500,000 (inc. VAT) will be awarded”. Does this mean up to £500,000 per each contract?

Yes, up to £500,000 (including VAT) per contract.

## On Question 5 of the application form it states “*You may wish to attach an image or diagram separately with the application form, max 2 A4 pages”.* Does the limit of 2 A4 pages include the page within the application form. i.e. Can we write a brief description of our proposed  idea/technology within the application form and in addition, attach two pages/slides of images/diagrams?

You complete the application form with text and then may add an additional 2A4 pages as an appendix for pictures.

## Does the NIAO currently use a central repository for any financial data and/or audit workpapers/test papers?

At the moment we do not have a central repository or data warehouse. While financial transaction downloads for some of our audits are saved to a dedicated network area, supplementary data received during audits can be saved to a number locations. Working papers are stored within our audit management software and are not exported to a central repository.

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