



For the attention of Mr Matt Waldron
Technical Director
International Auditing and Assurance Standards Board
529 Fifth Avenue
New York, New York, 10017
USA

[Submitted via IAASB website]

15 February 2017

Dear Matt

IAASB Request for Input: *Exploring the Growing Use of Technology in the Audit, with a Focus on Data Analytics*

We¹ appreciate the opportunity to comment on the IAASB’s Request for Input. Recognising and embracing the opportunities that technology can bring to an audit of financial statements is, in our view, critical to maintaining the relevance of the profession and driving audit quality in the future. Audits need to adapt in response to entities becoming increasingly reliant on advancing technology in their reporting systems and controls. At the same time, there is excitement about how data mining and other analysis tools and artificial intelligence can be used effectively to achieve audit objectives.

We commend the IAASB for exploring those opportunities and seeking to address the associated challenges and questions relating to how data analytics and other technology tools are applied in the audit – not only under today’s risk-based audit model but also in looking to the future and how standards may need to adapt, whilst remaining sufficiently flexible to reflect the fast-paced developments in this area.

The standard-setting challenge – reflecting rapidly evolving technology

Corporate reporting and the financial statement audit are fundamentally intertwined. Technology is rapidly changing both.

The nature of the information used in corporate reporting and advancements in how it is created, compiled and disseminated, including use of “big data” and Cloud-based solutions to record, sort and manage information, is already challenging traditional methods of gathering evidence and obtaining assurance. The advent of blockchain and similar developments – changing how transactions occur and companies interact –will only add to such questions.

Similarly, technological advancements are creating opportunities for auditors to develop increasingly sophisticated audit tools. Looking even further ahead, developments in artificial intelligence and the potential “automation” of evidence gathering, perhaps even where the tools themselves generate audit

¹ This response is being filed on behalf of the network of member firms of PricewaterhouseCoopers International Limited and references to “PwC”, “we” and “our” refer to the PwC network of member firms.



evidence, may raise questions about the role of the “human” auditor, the application of professional judgement and the overall execution of the audit.

To remain relevant, the profession needs to be able to adapt the external audit in ways that fully acknowledge the role and value of technology in both how information is compiled and used and in assuring the validity of reported information. In doing so, the profession will be challenged to reconsider what constitutes evidence and how it can be obtained.

We have not found current ISAs unduly constraining in how data analytics and other technological tools are being used in the audit today. In many cases, the use of such tools is additive to more traditional audit tests performed to satisfy ISA requirements. However, as developments in technology continue, we believe it is important to be alert to how and when standards may need to change to keep pace with how new technologies are applied in audits.

There may come a time when more fundamental change is needed – including perhaps even challenging the continued relevance of the approach followed under today’s risk-based model. For example, the IAASB made fundamental revisions to the audit risk standards in the early 2000’s when it became apparent the old model no longer fit with highly automated financial reporting systems and processes. But we believe that it is premature to make such changes to respond to technological developments in auditing standards now. For much of the technological evolution that is occurring, the impacts of the changes are not yet fully clear.

That being said, we agree with the Data Auditing Working Group (DAWG) that there are important questions for the IAASB and the profession, in conjunction with other stakeholders, to be reflecting on now. Specifically, what can technology and the tools being applied in today’s audit model achieve, including with respect to risk assessment, audit strategy and audit evidence? We comment further in the section on current standard setting projects below.

In moving forward, we believe the IAASB should:

- Not rush to short-term conclusions. Concluding too early about how such technology should be applied in the audit risks constraining auditors who are exploring new ways in which technology can be applied in the audit process to enhance audit quality. Introducing requirements or guidance too early may also result in changes to standards that quickly become obsolete due to continued changes in technology. Likewise, too narrow an interpretation of what technology tools can achieve under today’s audit model may have the unintended consequence of limiting advancements that can benefit audit quality;
- Through the IAASB’s DAWG and newly constituted Project Advisory Panel, keep up-to-date on the leading edge developments;
- Continue to liaise with stakeholders and be a catalyst for debate that can help progress thinking. For example, we believe that it would be useful to have broad stakeholder discussion about the nature and extent of audit evidence that can be obtained using certain types of technology tools. The IAASB is in a good position to bring stakeholders, including audit oversight bodies, together to debate such issues;
- As consensus emerges, consider developing appropriate guidance that can, for example, illustrate how technology tools are being used in the audit and the evidence that they can provide, being



careful not to prematurely “prescribe” or inadvertently imply unduly narrow boundaries on their use and the evidence they can provide; and

- Be alert to, and bold enough to recognise, the point in time when standards are out of step with developments and practice and need transformational change, with a more fundamental re-think of what technology means for the risk-based approach and role of the auditor.

Current standard-setting projects

The IAASB’s proposed project to revise ISA 500 (Audit Evidence) will play a key role in beginning to address some of the broader questions described above. We fully support the need for that project and encourage the Board to ensure that the scope of the project embraces these longer-term considerations.

In the immediate term, the current project to revise ISA 315 (Understanding the Entity and Risk Assessment) is also important, being a crucial standard in setting the overall direction and path for the audit. Many data analytic tools in use today – to analyse populations of data to identify unusual transactions and outliers – provide a more detailed and complete analysis for the auditor to help the auditor in deciding where to target further work effort. How such tools are currently being used is relevant to both ISAs 315 and 500, as well as to ISA 330 on responding to risks and we believe the IAASB could consider how best to reflect that use in guidance.

Beyond that, we agree with the DAWG’s identification of the key questions to be explored as to what audit evidence such tools provide, including:

- Do such tools enable, in effect, a combined risk identification and response?
- How is such evidence classified – is it a test of control, substantive test, a combined test – or does it need to be thought of differently e.g., as a new category of evidence?
- In narrowing identified areas of risk i.e. by focusing the auditor’s work effort on higher risk items or “anomalies”, what does that mean for the extent of audit evidence needed in other areas?
- Could these techniques eliminate the need for audit sampling and extrapolation of identified errors and be sufficient on their own in responding to identified risks, for example when analysing an entire population of transactions from initiation through to settlement?
- When able to test an entire population/data set, what testing is needed of exceptions or outliers?

It will be important for the DAWG and the IAASB, in the shorter term, to use the feedback on these questions to consider where there is consensus and where there are differences of view on which further debate may be warranted.

We also believe the DAWG has a role to play in providing input to the Board’s projects addressing quality control. For example, at the firm level, there are relevant considerations about quality control policies and procedures that may be needed to support engagement performance by ensuring that tools designed and employed on the audit are robust and suitable for their intended purpose. We also agree with the various documentation challenges, including data retention, outlined in the Request for Input.

We further note and support the DAWG’s proposed involvement in the current joint-Board project on professional scepticism. This is important for two reasons:



- As the Request for Input identifies, understanding how the use of technology tools affects individual auditor behaviours, conscious and unconscious biases, and what additional considerations may therefore be relevant in support of the application of appropriate professional scepticism and professional judgment need to be explored to understand how to better promote their consistent application. We believe that the use of data analytics, particularly during the risk assessment phase, can put the auditor in a position of being able to more effectively apply professional scepticism – by helping the auditor to hone in on areas warranting further investigation. At the same time, it is important to explore how best to help avoid the risk of auditors placing undue reliance on technology being “right” and accepting the results produced by a tool, when appropriate professional scepticism and application of the auditor’s knowledge of the entity would call into question whether those results really make sense.
- As noted in our response to the 2015 Invitation to Comment, many of the questions around professional scepticism are, in our view, questions about what constitutes sufficient appropriate audit evidence in different circumstances, or concerns over the sufficiency of audit documentation in evidencing the professional scepticism that was applied by the auditor. Such questions go hand-in-hand with the questions addressed in the Request for Input over what audit evidence data analytics and other tools provide.

In conclusion, we fully support the analysis being undertaken by the IAASB’s DAWG to inform the ISA 500, ISA 315, quality control and professional scepticism projects. The questions it is seeking to address are crucial, not only to maintaining the future relevance of the profession but in supporting approaches to the audit that can enhance audit quality.

In doing so, it is important that the DAWG and the IAASB reflect on the feedback obtained through this Request for Input, insight from the Project Advisory Panel and other outreach and not rush into short-term changes to standards before clear consensus emerges.

We see the working group playing an important role in being the Board’s “eyes and ears” on developments, a catalyst to engage stakeholders in debate to develop consensus around key issues, and a valuable resource to the various standard-setting and other projects. We stand ready to offer any additional information and insight sought by the DAWG that would be of assistance.

We would be happy to discuss our views further with you. If you have any questions regarding this letter, please contact Diana Hillier, at diana.hillier@pwc.com, or me, at richard.g.sexton@pwc.com.

Yours sincerely,

A handwritten signature in blue ink that reads "Richard G. Sexton". The signature is written in a cursive, flowing style.

Richard G. Sexton
Vice Chairman, Global Assurance



Appendix

Responses to specific questions

(a) Have we considered all circumstances and factors that exist in the current business environment that impact the use of data analytics in a financial statement audit?

We consider the list of factors: data acquisition, conceptual and legal and regulatory challenges, resource availability, regulatory and audit oversight and the investment in re-training and re-skilling auditors to be a fairly comprehensive list.

We would add to the list the following factors, as noted in our cover letter, both of which are related to the first factor:

- **Changes in corporate reporting** – changes in the nature of information reported by entities and how it is disseminated to users impacts what the auditor has to audit and, consequently, the approach the auditor may need to take to auditing that information.
- **Impact of new technologies** – as well as changes in what and how entities report, the way in which they compile, process and store data, including through use of new technologies, such as blockchain and Cloud-based accounting solutions, all impact how the auditor accesses and analyses data and designs their audit. For example, how does “the Cloud” impact the auditor’s consideration of the entity’s systems and processes and IT General Controls (ITGC’s)?

In relation to the factor of resource, we would also highlight that the DAWG may want to give further consideration to the role that technology, and specifically artificial intelligence, may have in the future. The discussion paper discusses how data analytics provide an opportunity to maximise the effectiveness of the “human element”. As developments in these types of technology advance, there are valid questions to be addressed regarding to what extent they may replace elements of professional judgement applied by the “human” auditor.

A final item that the DAWG may wish to consider is market expectations. As has been seen with enhanced auditor reporting, there have been growing calls for more insight from auditors. While the external auditor’s report is primarily targeted at value and insight for external users, the information that auditors may derive through data analytics and other tools has the potential to add considerable value to the audit that may benefit management and those charged with governance. There are therefore growing expectations that such tools and techniques will become an integral part of the audit, particularly for larger entities.

(b) Is our list of standard-setting challenges accurate and complete?

Yes. We consider the analysis of the standard-setting challenges to be thorough and well explained. As noted in our cover letter, questions about the nature of audit evidence that data tools provide, how



that evidence is classified and the implications for the auditor's further work effort, including how the auditor addresses exceptions and data outliers, are particularly important.

For example, we believe it is important for the IAASB to consider the nature and extent of evidence that can be obtained from tools that analyse entire populations of transactions from initiation to settlement. Fundamental questions have been raised about whether such tools can provide the totality of evidence that the auditor needs over the portion of that population of transactions that follows the anticipated transaction flow, assuming the underlying data reported by the entity's system has been validated by the auditor and such data is viewed as being accurate and complete. Testing entire populations and performing further procedures on exceptions or "anomalies" is profoundly different to sampling and extrapolation of identified errors. This is an example of the type of issue that the IAASB can play a valuable role in progressing by facilitating dialogue among key stakeholders. Ultimately it will be important to seek consensus on such issues to promote consistency in auditor judgements and clarify the potential implications for other audit procedures to respond to assessed risks of material misstatements when data analytics or other tools are used in the audit.

In relation to professional scepticism, the relevant considerations as to how technology tools may impact auditor behaviours and biases can also be aligned with the identified challenges of what the appropriate level of work effort is and expectations for auditor documentation.

We also agree with the identified factor of considering the relevance and reliability of external data but would extend that more broadly to how all data that may be used by the auditor in applying technology tools, including data generated by the entity, is validated. Furthermore, as the population of "analysed data" obtained by auditors grows, new questions may begin to emerge as to what extent, if any, such analysed data across industries could begin to be used, when appropriate, in obtaining "evidence" as part of an individual audit, through benchmarking analysis or more bespoke computer-driven comparison techniques.

Lastly, with respect to ITGC's, we believe this is a key area that raises some interesting questions. In addition to the questions posed by new technologies such as Cloud-based accounting packages, referred to in our response to part (a), there are also more fundamental questions about the nature and extent of ITGC's that are relevant when 100% of a population of transactions can be analysed using data tools.

(c) To assist the DAWG in its ongoing work, what are your views on possible solutions to the standard-setting challenges?

As we note in our cover letter, technology and the global corporate environment are evolving rapidly. However, the ISAs were developed based on an implicit assumption that testing entire data sets was not possible or expected. In moving forward we believe the IAASB should:

- Not rush to short-term conclusions. Concluding too early about how such technology should be applied in the audit risks constraining auditors who are exploring new ways in which technology can be applied in the audit process to enhance audit quality. Introducing requirements or guidance too early may also result in changes to standards that quickly



become obsolete due to continued changes in technology. Likewise, too narrow an interpretation of what technology tools can achieve under today's audit model may have the unintended consequence of limiting advancements that can benefit audit quality;

- Through the IAASB's DAWG and newly constituted Project Advisory Panel, keep up-to-date on the leading edge developments;
- Continue to liaise with stakeholders and be a catalyst for debate that can help progress thinking. For example, we believe that it would be useful to have broad stakeholder discussion about the nature and extent of audit evidence that can be obtained using certain types of technology tools. The IAASB is in a good position to bring stakeholders, including the audit oversight bodies, together to debate such issues;
- As consensus emerges, consider developing appropriate guidance that can, for example, illustrate how technology tools are being used in the audit and the evidence that they can provide, being careful not to prematurely "prescribe" or inadvertently imply unduly narrow boundaries on their use and the evidence they can provide; and
- Be alert to, and bold enough to recognise, the point in time when standards are out of step with developments and practice and need transformational change, with a more fundamental re-think of what technology means for the risk-based approach and role of the auditor.

(d) Is the DAWG's planned involvement in the IAASB projects currently underway appropriate?

Yes. The DAWG's planned involvement in the IAASB's current projects is appropriate, as further explained in our cover letter.

(e) Beyond those initiatives noted in the Additional Resources section of this publication, are there other initiatives of which we are not currently aware of that could further inform the DAWG's work?

Although the US Public Company Accounting Oversight Board (PCAOB) is mentioned briefly in the Additional Resources section, we note that their research agenda now includes specific consideration of the effects of changes in the use of data and technology in the conduct of audits. The PCAOB is exploring whether there is a need for guidance or changes to PCAOB standards in light of the potential increased use of new technologies in the conduct of audits.

The Additional Resources section also notes that the work of national auditing standards setters (NSS) will be relevant. For example, the US Auditing Standards Board is developing authoritative guidance to explain how data analytics may be used when the ASB's standards are applied to audits. As these standards are based on the ISAs, understanding these and other developments by NSSs who use the ISAs will help the IAASB consider whether any of this guidance may be useful on an international level, or whether such resources could be leveraged to assist the IAASB in moving forward.



Other sources of input that the DAWG may find useful include:

- IFAC member bodies, who may have introduced additional training or professional competency requirements to reflect the changing skillset that is needed of auditors resulting from technological evolution.
- Ongoing outreach with the accounting firms to keep abreast of the types of new technology-based tools that are being used in audits and related changes to firms' audit methodologies. This could potentially be done through, for example, the Global Public Policy Committee and the IFAC Small and Medium Practices Committee.

(f) In your view, what should the IAASB's and DAWG's next steps be?

For example, actions the IAASB and DAWG are currently considering include:

- Focusing attention on revisions, where appropriate, to ISAs affected by the IAASB's current projects.*
- Exploring revisions to ISA 520.*
- Hosting one or more conferences with interested stakeholders to collectively explore issues and possible solutions to the identified challenges.*
- Continuing with outreach and exploration of issues associated with the use of data analytics in a financial statement audit, with a view towards a formal Discussion Paper consultation in advance of any formal standard-setting activities.*

As noted in our cover letter and above, we support the DAWG's active involvement in the Board's current projects, specifically ISA 500 and professional scepticism, in addressing key questions about the nature and extent of audit evidence provided by data analytic and technology tools.

We note the DAWG's plan to take a look at ISA 520 on Analytical Procedures to determine whether data analytics could be incorporated into that standard. We are not convinced that is the right approach, as we believe holistic consideration of the issues and questions raised by the DAWG will help to avoid unintended consequences of discrete standard revisions ahead of answers to these issues and questions.

With respect to further outreach, see our responses to parts (c) and (e). We also note the establishment of the Project Advisory Panel to further help inform the group's work. An additional factor that we recommend the DAWG may wish to give further consideration to, related to our response in part (a), is the impact of new technologies such as blockchain and Cloud-based accounting solutions. Considering further outreach with academia as to their views on what the future really might look like and what that might mean for the audit would also provide useful insight.