Agenda Item B.1

Data Analytics and the International Standards on Auditing (ISA)

Objectives of the IAASB CAG Discussion

The objectives of this agenda item are to:

(a) Update Representatives and Observers on the Data Analytics Working Group's (DAWG's) information-gathering activities;

(b) Inform Representatives and Observers about developments in data analytics that may have an impact on international auditing standard setting, as identified by the DAWG, and obtain further input from Representatives and Observers on the topic; and

(c) Obtain Representatives' and Observers' views on the DAWG's proposed way forward.

Summary of the Discussions with the IAASB and IAASB Consultative Advisory Group (CAG) to Date

1. To date, the DAWG has discussed the following with the IAASB and the IAASB CAG:

   - At the June 2015 IAASB meeting, the Board was provided insights into the DAWG's initial activities, outreach, and plans to progress the project. This included a brief discussion on data analytics and the ISAs, key areas of data analytics (data standards, access to data and data analysis), a summary of the benefits to audit quality and challenges to adoption and implementation. The IAASB was also provided with a list of the organizations / groups with which the DAWG intended to perform outreach. These matters discussed at the June 2015 IAASB meeting were discussed with Representatives and Observers at the September 2015 IAASB CAG meeting
   - At the September 2015 IAASB meeting, Board members were provided with a number of illustrations to demonstrate use of data analytics techniques, both those that are being performed today, as well as those that may likely be performed in the near and more distant future.

2. Since the September 2015 IAASB and IAASB CAG meetings, the DAWG has conducted outreach to further inform its views (see Section I of this paper for further details). The result of the DAWG's monitoring activity to date has indicated that there are challenges to be explored with respect to the ISAs. However, it will be important to continue outreach activities in understanding the broader implications of the evolution of the use of data analytics in the audit before suggesting where changes to the ISAs may be made. To facilitate this broader outreach, there are a number of activities that the DAWG is proposing to progress its work (see Section VII of this paper).

3. This paper focusses on the impact of data analytics on the ISAs as follows:

   - Key messages from the DAWG's work to date
   - History of changes to audit approaches following new developments

- ISAs that contain reference to Computer Assisted Audit Techniques (CAATs)[1]
- Challenges being faced by stakeholders, including examples of current challenges with data analytics and the ISAs
- Interactions with other IAASB projects
- Ongoing efforts of others (such as member bodies) relevant to the IAASB
- DAWG's proposed way forward

Section I – Key Messages from the DAWG's Work to Date

4. To date, the DAWG has performed outreach with numerous individuals representing practitioners / accounting firms, national auditing standard setters (NSS), regulators and audit oversight bodies, IFAC member bodies and other professional organizations, investors and analysts and those charged with governance. The key messages from these outreach discussions to date are the following:

   (a) Innovation in audit is essential if the audit is not to be marginalized;

   (b) Audit standard setters need to proceed, but with some caution, in the area of standard setting; and

   (c) Stakeholders, particularly practitioners, audit oversight bodies and standard setters, need to work together in addressing developments occurring in technology. There are evolving expectations of the public regarding an auditor's use of technology in carrying out a more effective audit of historical financial statements.

Innovation

5. The ISAs have historically contemplated the use of technology in the audit, in the form of CAATs. Practitioners have generally made use of developments in technology to be able to automate many of the procedures that had previously been performed manually. However, as noted in paragraph 9 of this paper, there are mixed views on whether data analytics represents an extension of CAATs, or whether they represent a fundamental shift in emphasis in the use of data in an audit.

6. Developments in technology, both within the financial reporting systems used to initiate, process, record and store data representing the information in the financial statements, and the tools and techniques available to analyze that data, are resulting in questions being asked by stakeholders regarding the continued relevance of the current audit model. In a number of jurisdictions, particularly those that are now subject to mandatory auditor rotation where proposals and re-proposals for audit are now more common, entities being audited are expecting the auditor to perform, at least partially, a data enabled audit.

7. The current audit model is not broken, and has served stakeholders well in the past. It has however been constrained by technological limitations that no longer exist. Additionally, auditors find challenges in fitting the audit evidence derived from data analytics into the current audit approach required by the auditing standards.

[1] The ISA glossary defines computer-assisted audit techniques as applications of auditing procedures using the computer as an audit tool (also known as CAATs).

Audit Standard Setting Proceed But with Caution

8. Practitioners and audit oversight bodies are looking to standard setters, such as the IAASB, to act in this area. Auditing standards should enhance audit quality and also be able to accommodate developments (such as technology developments) that occur in the future such that they are not in a continuous state of change. While significant developments have occurred to date in the area of data analytics, further development and analysis (such as academic research) is anticipated in the near future. Until the path forward is clearer, significant changes to the standards at this time may lead to unintended consequences. However, there are likely opportunities for the ISAs to be amended to address data analytics, for example, in conjunction with the IAASB's current / ongoing projects (see Section V of this paper).

9. Stakeholders have also communicated the importance of defining what data analytics is, and more importantly, what it is not. However, from outreach performed and working group discussions to date, there are mixed views as to what an appropriate definition of data analytics in the context of an audit of historical financial statements should be. Are data analytics just an extension of CAATs? Some believe this to be the case. Others believe CAATs are about utilizing technology in the audit at a general ledger or summary level, whereas data analytics allows the auditor to analyze data at the detailed transaction level and make it easier than it was before for the auditor to analyze the data and form conclusions, for example, through visualization.

Working together to Meet Evolving Expectations

10. Data analytics challenges everyone and giving serious consideration to the possibilities requires vision. The ISAs were written in a completely different technological era. Some view the current environment as an opportunity to think again about what the audit could, or perhaps should be.

11. The ISAs do not prohibit the use of data analytics techniques, however, they are not explicitly mentioned in the ISAs. The lack of explicit reference to data analytics in the ISAs may be viewed as a barrier to their adoption more broadly. This is a result of the view that gathering information from use of data analytics does not reduce the existing required procedures in the ISAs, even if those required procedures now appear redundant as a result of the information gained from use of data analytics.

12. In a regulatory environment where practitioners are being innovative with the use of developments in technology to enhance audit quality and the effectiveness and efficiencies of their audits, they are having to be courageous in new ways of auditing without the support of the auditing literature. In some jurisdictions, increased use of technology and data in the audit are being demanded by the marketplace. This is a challenge both for practitioners and audit oversight bodies that regulate their work.

13. While recognizing the advice to proceed with caution in establishing new requirements or amending existing requirements as discussed in paragraph 8 of this paper, adding examples of data analytics or providing guidance through application material in the ISAs or issuance of other non-authoritative IAASB guidance or a DAWG publication may help in supporting an environment where practitioners are taking innovative steps to enhance the effectiveness and efficiency of their audits.

Section II – History of changes to audit approaches following new developments

14. In the history of the audit profession, there have been shifts in how the audit is executed as the environment in which companies operate, and in which audits are performed, transforms. An overview of some of these developments in the recent past is illustrated in Table 1.

Table 1. Changes to Audit Approaches following New Developments

Pre 1980	***Substantive Based Approach*** Human created, non-complex, limited size, analog data populations. Full population coverage, no sampling needed.
1980-1995	***Substantive Based Approach*** Human created, non-complex, digital data populations. Due to larger populations, need for sampling. Momentum for further development of CAATs.
1995-2002	***Risk Based, System Based Approach*** Human and machine created, complex, digital data populations in ERP. More focus on manual, automated and information technology (IT) dependent controls and IT General Controls (ITGC), less on detailed testing.
2002-2014	***More Balanced Top Down Risk Based Approach*** IAASB and U.S. Public Company Accounting Oversight Board developments: substantive testing for all major balances, transactions and disclosures. Limited experience in electronic data retrieval and data consolidation process.
2014 and beyond	***Data Enabled Audit*** Due to technological breakthroughs new powerful insight and evidence gathering possibilities, enhancing audit quality. Increasing experience in electronic data retrieval and consolidation using data analytics beyond traditional CAATs.

15. As illustrated in Table 1, historically, due primarily to far less complexity in the environment in which companies operate, the audit was able to address, at a granular level, a deep understanding of the entity and its operations.

16. Over time, due to increased complexity, higher volumes of data, regulation stimulated by highly public failures of companies and technology limitations, the audit has evolved into a risk based audit approach focused on areas of higher risk, with greater emphasis on controls established by an entity.

17. As a result of technological advancements data analysis provides an auditor with the tools to more effectively understand the entity and its operations. This concept is explored further in Example 1 below.

Section III – ISAs that contain reference to CAATs

18. The ISAs do not make explicit reference to data analytics. The ISAs do acknowledge the use of technology in the audit, through use of CAATs. The following is a list of the ISAs and associated

paragraph references where reference is made to CAATs (Agenda Item 6-B contains further context of the nature of the reference):

(a) ISA 240,[2] paragraph A37, Appendix 2 and Appendix 3;

(b) ISA 300,[3] Appendix;

(c) ISA 315 (Revised),[4] paragraph A91;

(d) ISA 330,[5] paragraph A16 and A27; and

(e) ISA 550,[6] paragraph A36.

Section IV – Challenges being faced by stakeholders, including examples of current challenges with data analytics and the ISAs

19. In addition to the challenges that practitioners encounter in executing audit procedures utilizing data analytics, there are numerous challenges, some of which are significant, before these procedures can be performed. Some of these challenges could directly affect the need for standard setting by the IAASB, while other challenges are more likely to have an indirect impact on the IAASB and the ISAs.

Challenges Indirectly Affecting Audit Standard Setting

20. Practitioner challenges encountered which may be considered as indirectly affecting audit standard setters are as follows:

(a) **Data acquisition** – practitioners have noted challenges with obtaining the large data sets that are needed to effectively execute data analytics. In most instances, the entity's data needs to be transferred to the auditor, and in addition to concerns related to data security and privacy, having sufficient infrastructure to store and then process data analytics tools on the data can be challenging due to the size of the data.

(b) **Conceptual challenges** – when performing an audit that involves data analytics, the audit team is requesting information from the entity and asking questions that have not been asked in the past. The approach to certain areas of the audit where data analytics is utilized is also quite different to what the entity may be used to seeing, and may be hesitant to provide all of the information being requested.

(c) **Legal and regulatory challenges** – these include concerns regarding data security and privacy, but also jurisdictional law and regulation that in some cases prohibit data from leaving the jurisdiction within which the entity is located. This can be particularly challenging when the

---

2 ISA 240, *The Auditor's Responsibilities relating to fraud in an audit of financial statements*

3 ISA 300, *Planning an Audit of Financial Statements*

4 ISA 315 (Revised), *Identifying and Assessing the Risks of Material Misstatement Through Understanding the Entity and its Environment*

5 ISA 330, *The Auditor's Response to Assessed Risks*

6 ISA 550, *Related Parties*

auditor needs to transfer the data to IT facilities that may be located outside of the respective jurisdiction.

(d) **Resource availability** – a model currently being used by practitioners utilizing data analytics in the audit is, generally, skilled centralized resources supporting engagement teams. These skilled centralized resources are often data scientists and as the extent of use of data analytics in the audit grows, strain is put on the resources currently available.

(e) **Over reliance on the tools being utilized** – under the model where data analytics skills are centralized supporting the engagement teams, there is a risk that engagement team members may place too much reliance on the tools being utilized without fully understanding the capabilities and limitations of the tool(s).

Challenges Directly Affecting Audit Standard Setting

21. Practitioner challenges encountered which may be considered as directly affecting audit standard setting are as follows:

(a) **ITGC** – data analysis triggers more questions regarding ITGCs and exceptions identified in the controls in the IT environment. Questions and challenges arise regarding what the minimum level of ITGC testing and the impact of the results of that testing should be when the auditor is using data analytics in the audit.

(b) **Independent validation of data** when majority of data utilized is internal. The ISAs require the auditor to establish the accuracy and reliability of information used in performing audit procedures. In a data enabled audit, where much or the majority of the data utilized is internally generated, what should the auditor be expected to perform to validate the reliability of the data? Considering the nature of the data being utilized, the ISAs could be expanded upon to provide greater specificity and guidance to auditors.

(c) **Validation of appropriateness and reliability of external data**. The auditor should not assume that data from third party sources is complete and accurate. External data obtained from third party data providers may only be an aggregation of data obtained from multiple sources and may not have been subject to procedures to validate completeness, accuracy and reliability of data that is needed in an external audit context. The question for standard setters becomes, what procedures could the auditor reasonably perform to validate completeness, accuracy and reliability of externally obtained data? How is this different from the premise in the ISA that information obtained / validated by a third party provides audit evidence or corroborating audit evidence? This is an area that is also being considered by the ISA 540[7] Task Force.

(d) **What is the nature of the audit evidence** obtained via data analytics when used as a risk assessment procedure but also yielding additional audit evidence (i.e., more than a risk assessment procedure but not meeting current requirements to be considered a substantive analytical procedure)?

[7] ISA 540, *Auditing Accounting Estimates, Including Fair Value Accounting Estimates, and Related Disclosures*

(e) **In the current risk and response nature of the ISAs**, how does an engagement team classify data analytics incorporated in the audit? Is the difference between tests of controls and substantive procedures relevant in a data enabled audit environment? Should the sometimes iterative nature of data analytics be reflected in the ISAs?

(f) **Risk measurement** – what does the implication of being able to measure risk precisely have on the audit? When the auditor has been able to analyze all transactions in a particular area of the audit for the entire period under audit, what does the auditor need to do to demonstrate that unexpected transactions have been adequately addressed in the audit?

(g) **When does data analytics provide substantive evidence**? Should an auditor always go back to original invoices for certain assertions from a fraud perspective?

(h) **What are the documentation requirements** when using data analytics? Does the audit team need to include all of the data and details of all of the routines that have been executed in the audit documentation?

Matter for CAG Consideration

1. Representatives and Observers are asked for their views on the challenges identified and the DAWG's assessment of those that may be considered as indirectly affecting audit standard setting and those that may be considered as directly affecting audit standard setting.

Examples of Current Challenges with Data Analytics and the ISAs

22. The following are examples that illustrate how data analytics are being currently used in common audit areas and discuss where auditors find challenges with the application of the ISAs. For purposes of illustration, we have assumed that the auditor has performed appropriate procedures to determine that the relevant data is complete and processed correctly into the auditor's data analytic tool.

Example 1 – three-way match control for purchases

- The audit team obtains the data relating to all purchase orders, invoices and goods receiving documentation from throughout the audit period.
- The auditor's data analytic tool re-performs the three-way match of these documents. This is a typical control embedded in most companies' purchasing systems that agrees the quantity and price for a purchase order with the suppliers invoice and the goods receiving documentation that lists what was actually received. The auditor finds:
    - 1,000 invoices (out of 1 million (i.e., 1%)) do not match but were still paid by the entity.
    - The value of these invoices equates to ten times performance materiality.

Questions

A. Does this test achieve the requirements of **ISA 315 (Revised), paragraph 18**?

> **ISA 315 (Revised).18**
>
> The auditor shall obtain an understanding of the information system, including the related business processes, relevant to financial reporting, including the following areas:
>
> (a) The classes of transactions in the entity's operations that are significant to the financial statements;
>
> (b) The procedures, within both information technology (IT) and manual systems, by which those transactions are initiated, recorded, processed, corrected as necessary, transferred to the general ledger and reported in the financial statements;
>
> (c) The related accounting records, supporting information and specific accounts in the financial statements that are used to initiate, record, process and report transactions; this includes the correction of incorrect information and how information is transferred to the general ledger. The records may be in either manual or electronic form;
>
> (d) through (f) not shown for illustration purposes.

B. What other procedures does the auditor need to perform to meet the requirements of **ISA 315 (Revised), paragraph 20** for this part of the purchases process?

> **ISA 315 (Revised).20**
>
> The auditor shall obtain an understanding of control activities relevant to the audit, being those the auditor judges it necessary to understand in order to assess the risks of material misstatement at the assertion level and design further audit procedures responsive to assessed risks. An audit does not require an understanding of all the control activities related to each significant class of transactions, account balance, and disclosure in the financial statements or to every assertion relevant to them. (Ref: Para. A96-A102)

C. Is this a test of control (**ISA 330, paragraph 10**) or a substantive test as described in **ISA 330, paragraph16**?

> **ISA 330.10**
>
> In designing and performing tests of controls, the auditor shall:
>
> (a) Perform other audit procedures in combination with inquiry to obtain audit evidence about the operating effectiveness of the controls, including:
>
> (i) How the controls were applied at relevant times during the period under audit.
>
> (ii) The consistency with which they were applied.
>
> (iii) By whom or by what means they were applied. (Ref: Para. A26-29)
>
> (b) Determine whether the controls to be tested depend upon other controls (indirect controls) and, if so, whether it is necessary to obtain audit evidence supporting the effective operation of those indirect controls. (Ref: Para. A30-31)
>
> **ISA 330.16**
>
> When evaluating the operating effectiveness of relevant controls, the auditor shall evaluate whether misstatements that have been detected by substantive procedures indicate that controls are not operating

> effectively. The absence of misstatements detected by substantive procedures, however, does not provide audit evidence that controls related to the assertion being tested are effective. (Ref: Para. A40)

D. Assuming this is deemed to be a test of controls, what extent of testing of the 1,000 invoices is necessary to achieve **ISA 330, paragraph 17**?

> **ISA 330.17**
>
> If deviations from controls upon which the auditor intends to rely are detected, the auditor shall make specific inquiries to understand these matters and their potential consequences, and shall determine whether: (Ref: Para. A41)
>
> (a) The tests of controls that have been performed provide an appropriate basis for reliance on the controls;
>
> (b) Additional tests of controls are necessary; or
>
> (c) The potential risks of misstatement need to be addressed using substantive procedures.

Discussion

- The use of data analytics provides the auditor with information to help make informed inquires of the entity of the process and controls. The auditor supplements these inquiries with observation and inspection as appropriate to confirm that the process and three-way match is designed appropriately (assuming this is a test of control). The reperformance of the three-way match by the auditor throughout the audit period provides evidence that its operation continues for that period.
- However, there is a contrary view that the auditor cannot treat this as a test of control as the reperformance is considered a substantive test and therefore ISA 330, paragraph 16 prohibits the auditor to conclude on the operating effectiveness of the control. To treat this as a test of control the auditor would need to perform a separate test, typically based on an attribute sample of 25 items.
- Would it be more appropriate (based on having obtained and interrogated 100% of the instances of the three-way match) to accept that the auditor has obtained evidence that the three-way match operated as an effective control throughout the period and permit the auditor to adjust the nature, timing and extent of substantive procedures accordingly?
- For the 1,000 exceptions, the auditor determines whether these represent a failure in the operation of the three-way match control or represent different paths that purchases may take (e.g., currency variations were the reason for the price not matching). Currently, the auditor is expected to look for similar characteristics of the exceptions and ‘collect’ these so that they can determine whether this ‘collection’ has a higher risk of a material misstatement. For those that do contain a higher risk of material misstatement, the auditor performs procedures to determine the extent of any misstatements.
- The challenge for the auditor is that had the auditor used the current approach of testing an attribute sample of 25 items from a population of 1 million, there is only a very slight chance that the auditor would have identified one of the exceptions. However, using data analytics the auditor has obtained evidence of the effective processing of 999,000 items but is required to perform further audit procedures to resolve the remaining 1,000. Whilst the quality of evidence has significantly increased

so has the cost of performing the procedures. Some view this scenario as a barrier to adoption of the data analytic techniques.

- Could further guidance assist the auditor by:
  - Acknowledging that the use of data analytic techniques can support the auditor's understanding of the flows of transactions as required by ISA 315 (Revised), paragraph 18?
  - Clarifying when such an approach can provide evidence of the operating effectiveness of a control by amending ISA 330, paragraph 16?
  - Providing further guidance to ISA 330, paragraph 17 to clarify what is expected of the auditor when exceptions are identified?
  - Providing further guidance of the extent of substantive procedures as required by ISA 330, paragraph 18 when data analytics have been used to test a control?
  - Or perhaps create a third testing technique (data analytics where 100% of a population is interrogated/tested) which is not solely a test of controls or a substantive test, but instead is just a testing technique that provides audit evidence? And it's up to the auditor to determine how much more evidence is required to form a conclusion on whether the audit assertion has been met, whilst keeping detection risk to an acceptably low level.

Example 2 – Performing substantive analytical procedures using highly disaggregated data

- The analysis below shows the daily sales made by a company throughout the accounting period. Performance materiality is established by the audit team as 3 million. The blanks represent weekends or holidays, although on some of these days there are still postings. For the auditor to obtain substantive evidence from this analysis:
  - Is the auditor expected to set an expectation in accordance with ISA 520,[8] paragraph 5(c)?
  - If so, what is an acceptable variance threshold in accordance with ISA 520, paragraph 5(d)?

ISA 520.5

When designing and performing substantive analytical procedures, either alone or in combination with tests of details, as substantive procedures in accordance with ISA 330, the auditor shall: (Ref: Para. A4-A5)

(a) Determine the suitability of particular substantive analytical procedures for given assertions, taking account of the assessed risks of material misstatement and tests of details, if any, for these assertions; (Ref: Para. A6-A11)

(b) Evaluate the reliability of data from which the auditor's expectation of recorded amounts or ratios is developed, taking account of source, comparability, and nature and relevance of information available, and controls over preparation; (Ref: Para. A12-A14)

(c) Develop an expectation of recorded amounts or ratios and evaluate whether the expectation is sufficiently precise to identify a misstatement that, individually or when aggregated with other misstatements, may cause the financial statements to be materially misstated; and (Ref: Para. A15)

[8] ISA 520, *Analytical Procedures*

(d)	Determine the amount of any difference of recorded amounts from expected values that is acceptable without further investigation as required by paragraph 7. (Ref: Para. A16)

	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014	Jul 2014	Aug 2014	Sep 2014	Oct 2014	Nov 2014	Dec 2014	Total
1				(1,224,902)			(1,463,850)	(1,222,793)	(1,961,883)	(1,320,457)		(489,450)	(7,683,335)
2	(3,798,309)			(906,834)	(1,863,000)		(1,213,888)	(95,975)	(1,668,520)	(1,693,803)		(651,550)	(11,891,878)
3	(2,857,738)	(3,755,499)	(2,605,780)	(889,050)	(9,975)	(2,165,861)	(1,595,871)		(1,314,202)	(1,666,119)	(2,014,328)	(801,710)	(19,676,134)
4	(11,843)	(1,699,304)	(2,548,945)	(1,737,226)		(2,067,577)	(1,250,149)	(2,124,729)	(2,398,432)	(99,825)	(1,108,389)	(998,913)	(16,045,330)
5		(1,548,759)	(1,672,258)	(15,542)	(1,389,058)	(3,107,239)	(14,502)	(2,336,905)	(1,914,180)		(1,321,546)	(705,968)	(14,025,958)
6		(1,871,872)	(2,132,630)		(876,139)	(1,870,495)	6,235	(1,771,882)	(10,231)	(2,781,516)	(853,402)		(12,161,932)
7	(2,508,729)	(1,406,150)	(2,314,893)	(2,201,372)	(614,563)		(2,622,701)	(1,715,119)		(1,176,970)	(466,456)		(15,026,953)
8	(2,882,603)	(67,266)	(315,404)	(950,769)	(1,788,870)		5,548,465	(1,935,736)	(2,500,773)	(1,226,837)	(13,499)	(60,722)	(6,194,015)
9	(2,361,681)			(1,510,697)	(404,429)	(2,400,354)	(768,428)	(213,177)	(2,195,849)	(1,111,819)		(2,447,188)	(13,413,621)
10	(2,246,951)	(3,173,869)	(3,371,648)	(2,000,313)	(163,736)	(1,451,191)	(1,500,393)		(2,121,099)	(1,694,104)	(2,934,650)	(1,240,914)	(21,898,867)
11	(34,107)	(981,882)	(1,350,411)	(1,833,976)		(2,566,166)	(1,893,911)	(1,638,692)	(1,733,512)	(44,157)	(1,247,597)	(743,174)	(14,067,585)
12		(2,154,239)	(1,809,738)	(171,188)	(3,516,400)	(2,067,217)	(18,172)	(1,553,537)	(1,941,591)		(1,214,337)	161,207	(14,285,211)
13	(3,235,667)	(2,090,055)	(1,405,992)		(1,543,993)	(1,164,949)		(831,651)	(35,340)	(220,183)	(1,334,540)	(126,157)	(11,988,527)
14	(2,424,137)	(2,330,715)	(1,458,586)	(2,048,883)	(812,633)	(36,934)	(3,076,083)	(1,148,162)		(848,251)	(1,145,686)		(15,330,070)
15	(1,965,664)	(20,662)		(1,603,397)	(2,063,067)	(241,615)	(1,485,842)		(3,168,410)	(1,000,669)	(102,999)	(2,567,899)	(14,220,224)
16	(1,963,883)			(915,860)	(1,795,774)	(1,895,478)	(1,582,944)		(1,595,593)	(1,619,061)		(1,404,030)	(12,772,623)
17	(2,174,867)	(3,116,815)	(2,059,847)	(1,069,970)	(33,343)	(1,791,598)	(1,787,114)		(1,715,837)	(1,764,638)	(2,337,387)	(1,402,423)	(19,253,838)
18	(32,159)	(1,681,523)	(1,577,881)	(726,106)		(1,932,611)	(975,043)	(1,215,241)	(1,448,620)	(68,967)	(1,259,309)	(1,654,614)	(12,572,072)
19		(2,260,334)	(1,852,618)		(1,981,896)	(1,795,547)	(16,882)	(1,098,734)	(1,658,616)		(1,628,932)	(1,172,416)	(13,465,975)
20	(3,713,710)	(1,773,320)	(1,208,139)		(1,112,918)	(1,185,852)	(33,552)	(828,574)	(95,221)	(3,436,302)	(1,256,809)	(130,770)	(14,775,167)
21	(2,375,168)	(2,045,637)	(1,439,126)		(1,645,656)	(254,054)	(2,911,132)	(1,088,670)		(1,770,197)	(1,844,020)	(25,415)	(15,399,076)
22	(1,924,289)	(16,114)		(489,426)	(1,449,802)		(1,307,525)	(1,013,550)	(3,637,311)	(1,567,834)	(35,561)	(3,543,895)	(14,985,306)
23	(2,222,853)			(2,693,996)	(1,607,129)	(2,891,196)	(1,523,116)	(23,523)	(1,845,828)	(1,873,203)		(7,642,989)	(22,323,835)
24	(1,807,374)	(2,563,143)	(2,619,632)	(2,210,919)	(271,544)	(1,843,272)	(1,088,001)		(857,873)	(1,684,836)	(2,726,344)	(1,424,249)	(19,097,189)
25	(104,976)	(2,261,192)	(1,096,439)			(1,819,670)	(1,187,914)	(1,477,253)	(1,757,072)	(851,913)	(1,429,640)		(11,986,069)
26		(2,056,901)	(1,536,840)	(5,507)	(3,226,447)	(1,481,193)	(236,433)	(891,310)	(2,197,902)		(1,818,708)		(13,451,240)
27	(3,932,037)	(1,557,900)	(979,727)		(2,171,183)	(1,880,292)		(959,947)		(2,323,440)	(1,568,742)	(1,697)	(15,374,965)
28	(1,287,228)	(4,180,660)	(1,184,007)	(3,122,932)	(2,134,467)	(339,781)	(2,611,388)	(898,526)		(2,161,077)	(3,504,372)		(21,424,437)
29	(1,069,941)			(2,481,399)	(2,687,293)		(532,742)	(1,205,258)	(2,521,784)	(2,135,454)		(1,915,631)	(14,549,504)
30	(1,436,913)			(3,307,676)	(4,564,996)	(4,649,478)	(656,637)		(4,938,151)	(2,001,604)	(1,795,563)	(925,182)	(24,276,201)
31	(2,404,012)		(3,216,156)		(859,358)		(2,891,212)	(2,905,241)		(4,472,746)		8,381,901	(8,366,824)
Total	(50,776,838)	(44,613,810)	(39,756,699)	(34,117,940)	(40,587,670)	(42,899,619)	(30,690,726)	(30,194,185)	(47,233,832)	(42,615,981)	(34,962,815)	(23,533,847)	(461,983,962)

Discussion

- It is very difficult for the auditor to set an expectation at such a granular level. However, being able to see the sales made on a daily basis enables the auditor to build a highly detailed understanding of the business. Presenting the information graphically can help identify patterns and develop expectations. Quite quickly, the auditor is able to determine patterns in the information and that there are clearly some unusual amounts – i.e., amounts that fall outside of that pattern. For example there is an 8 million debit on the last day of the year. In addition, there are some days when there are unusually large or unusually small revenues. Therefore, it is clear that the auditor can use this information to identify key items for testing and provides a useful tool for risk assessment purposes.
- However, can the auditor determine they have obtained substantive evidence over those days of the week when the sales fall within the identified pattern? Can this pattern be deemed an expectation under ISA 520, paragraph 5(c)? In other words, although the auditor did not set the expectation upfront, the daily analysis has enabled the auditor to develop expectations based on the information provided. Is this acceptable under ISA 520?
- If it is, how does the auditor set an appropriate threshold for which recorded amounts are acceptable without further investigation (ISA 520, paragraph (d))? Using performance materiality (i.e., 3 million) for each day would not enable the auditor to identify a material misstatement. However, using performance materiality divided by the number of days in the year (i.e., 3 million / 365) would provide such a small amount that every day would need to be investigated.

Example 3 – Matching of sales invoices to cash receipts

- Assume this is a simple business that sells a product and recognizes revenue as the goods are dispatched
- The auditor obtains the sub-ledger information relating to the entire year under audit plus those transactions processed in the first 4 weeks of the new financial year
- The auditor's data analytic tool re-performs the matching of all sales invoices to the respective settlement, such as credit notes or cash
- The auditor summarises the total of sales invoices per month and how those invoices were settled, and finds that 5% of invoices remained unpaid or unsettled by the customer.
- The auditor confirms that an adequate provision has been made in the financial statements for those invoices raised before yearend but settled by credit notes after the year end.
- For the invoices that remain unpaid, the data analytic tool calculates the number of days the invoices have remained outstanding by customer and confirms that this agrees with the average for each customer from throughout the audit period. For example, customer X on average pays the invoice in 35 days and the number of days the unpaid invoice has been outstanding is 29 days.

Question

If the pattern of unpaid invoices meets with the expectation of the auditor, does the auditor need to perform further substantive procedures, such as **ISA 330, paragraph 19**, on the unpaid invoices?

> **ISA 330.19**
>
> The auditor shall consider whether external confirmation procedures are to be performed as substantive audit procedures. (Ref: Para. A48-A51)

Discussion

- The auditor has obtained evidence that 95% of sales invoices raised in the year have been settled whether by cash or credit notes. Agreeing the invoices to cash provides third party evidence that the sale is real as the customer is unlikely to pay unless it accept the sale. (Note that for the purposes of this example, the auditor will separately test whether the sale is recognized in the correct accounting period and validate that the cash was received in the company's bank account).
- The outstanding invoices have been included in revenue and therefore there is a risk that the remaining 5% of revenue is being incorrectly recognized. However, using data analytics, the auditor can perform analysis on the remaining invoices to provide corroborative evidence that the invoices represent real sales.
- Is this considered sufficient and appropriate evidence on which the auditor can conclude on the existence of sales?

Section V – Interactions with other IAASB projects

ISA 315 (Revised)

23. ISA 315 (Revised) deals with the auditor's responsibility to identify and assess the risks of material misstatement in the financial statements, through understanding the entity and its environment, including the entity's internal control.[9]

24. From outreach conducted to date, the use of data analytics in the audit may be an effective tool to be able to gain the required understanding of the entity and its environment. For example, in executing the requirements in ISA 315 (Revised) to understand the entity's internal controls, the auditor may follow transactions through the financial reporting process to understand the transaction flow. These procedures are currently performed primarily from discussions with the entity and following a sample of transactions through the financial reporting process. Using data analytics, tools are available to analyze all transactions in a particular process for an entire audit period, allowing the auditor to visualize all the paths the transaction took. This allows the auditor to see what actually occurred, and not focus on what should be occurring.

25. The Board has established a separate working group to conduct the initial work related to possible revisions to ISA 315 (Revised). At the March 2016 IAASB meeting, the Board is to consider preliminary staff views on ISA 315 (Revised) and the challenges that have been communicated to date by stakeholders. As the ISA 315 (Revised) working group begins its discussions, the DAWG will coordinate its activities with that working group, with the direct involvement of the DAWG in the ISA 315 (Revised) project as needed.

ISA 540

26. In December 2015 the IAASB approved the commencement of a standard-setting project to revise ISA 540. The ISA 540 Task Force will be focusing on responding to calls for clearer or additional requirements or guidance to enable auditors to appropriately deal with increasingly complex accounting estimates and related disclosures, including the need to better guide auditors in obtaining sufficient appropriate audit evidence on which to base the auditor's opinion on the financial statements as a whole.

27. The IAASB, through its ISA 540 Task Force, will consider what revisions will be necessary to ISA 540 to promote audit quality in the varied and complex scenarios that arise today, and that are likely to continue to evolve in the future. In particular, the IAASB will consider how specific requirements in ISA 540 could be further enhanced or clarified, to drive auditors to perform appropriate procedures relating to specific types of accounting estimates, taking into consideration the processes and controls in place at the entity in developing those estimates, and reinforcing the application of professional judgment and professional skepticism.

28. With the increasing complexity of the business environment, including the increasing complexity of financial transactions that are entered into by companies, it has become necessary for the accounting standards to evolve in their ability to meet the needs of financial statement users in reporting the fair values of these financial instruments. Often, these estimates are influenced by large volumes of data, and the ISAs currently rely on the understanding of the estimate and the controls surrounding the

[9] ISA 315 (Revised), paragraph 1

systems that provide the information to develop the accounting estimate as part of the audit of the financial instrument. For example:

- Paragraph 8(c) of ISA 540 requires the auditor to obtain an understanding of how management makes the accounting estimates, and an understanding of the data on which they are based.
- Paragraph 8(c)(ii) of ISA 540 requires the auditor to obtain an understanding of the relevant controls around the accounting estimate.
- IAPN 1000[10] notes that controls are needed to ensure that data is completely and accurately picked up from external sources and from the entity's records and is not tampered with before or during the entity's use of such data.

29. From its outreach performed to date, the ISA 540 Task Force has heard that, due to the large volumes of data that feed into information systems that are then used in models to develop the accounting estimate, use of new data analytics tools may be valuable in addressing audit risks associated with these data sources. The ISA 540 Task Force and the DAWG will continue to coordinate as each of the respective group's work progresses, with the direct involvement of the DAWG in the ISA 540 project as needed.

Professional Skepticism

30. The Board continues to take steps to emphasize the importance of professional skepticism in audits of financial statements through the ISAs, with the topic continuing to be a focus area within its current projects. For example, more explicit references have been made to professional skepticism[11] within the IAASB's recently completed standard-setting projects addressing auditor reporting, the auditor's responsibility for other information, and disclosures.

31. Adopting and applying a skeptical mindset is a personal and professional responsibility for every auditor. The application of professional skepticism is influenced by personal traits, including fortitude (i.e., the strength of mind that enables the auditor to deal with matters arising during the course of the audit with courage), and the auditor's competence (e.g., knowledge, skills and experience).

32. Based on the nature of the procedures, the application of professional skepticism in a data enabled audit may be carried out and documented in a different manner than in a non-data enabled audit, however professional skepticism remains an important element of the auditors execution of the audit.

33. The DAWG and the IAASB's Professional Skepticism Working Group recognize the importance of coordination between the two WG's activities, particularly for the DAWG in understanding the findings of any research that may be conducted in the area of data analytics in the audit, and its impact on professional skepticism of the auditor.

---

[10] International Auditing Practice Note (IAPN) 1000, *Special Considerations in Auditing Financial Instruments*

[11] For example, as part of the disclosures project, new application material emphasizes the concept of professional skepticism when evaluating the effect of misstatements in disclosures (see paragraph A17 of ISA 450, *Evaluation of Misstatements Identified during the Audit*. Also, ISA 700 (Revised), *Forming an Opinion and Reporting on Financial Statements,* requires the inclusion of the statement, "As part of an audit in accordance with ISAs, we exercise professional judgment and professional skepticism throughout the audit" in the Auditor's Responsibilities for the Audit of the Financial Statement section of the auditor's report."

Quality Control

34. The IAASB's Invitation to Comment (ITC),[12] issued in December 2015, explores – among other matters – the potential effects that practitioners' changing business models and structures have on audit quality. The ITC notes that in conducting audits, some practitioners use Audit Delivery Models (ADMs) that are different to the traditional engagement team structures. These ADMs are reactions to changes in the global business environment, technology developments that better facilitate the functioning of virtual engagement teams and, in some cases, to changes in how the entities being audited are organizing themselves.

35. One example of an ADM is centralized resources that are available to perform audit procedures at the request of individual engagement teams. In some cases, these centralized resources may be physically located in a jurisdiction or in a location other than where the majority of the engagement team is located.

36. In the context of data analytics, as noted in paragraph 20(d) of this paper, a model currently being used by practitioners utilizing data analytics in the audit is, generally, skilled centralized resources supporting engagement teams. As a result, the DAWG will liaise with the quality control working group in this area of common interest.

Matters for CAG Consideration

2. Do Representatives and Observers agree with the DAWG's identification of interactions with other ongoing IAASB projects and those projects that the DAWG anticipates having direct involvement with?

Section VI – Ongoing efforts of others (such as member bodies) relevant to the IAASB's work

Rutgers[13] AICPA[14] Data Analytics Research Initiative

37. Established in December 2015, the Rutgers AICPA Data Analytics Research Initiative will undertake research projects that will focus on the potential for further integration of analytics into the audit process at a foundational level, in an effort to enhance audit quality. The scope of the research will encompass the testing of theory and methodology to inform the development of professional guidance on the application of audit data analytics.

Institute of Chartered Accountants of England and Wales (ICAEW)

38. Initially through a series of articles, the ICAEW is engaging in a dialogue with its members regarding the topic of data analytics. The first publication in a series of expected publications is titled 'Data Analytics: International Auditing Perspectives', and explores data analytics in the audit, covering topics such as:

    - What data analytics can do and how they contribute to audit quality

[12] Invitation to Comment—*Enhancing Audit Quality in the Public Interest: A Focus on Professional Skepticism, Quality Control and Group Audits*

[13] Rutgers Business School, New Jersey, USA

[14] American Institute of Certified Public Accountants

- Routines, tools and solutions: technical challenges
- Work in progress and looking forward

39. The ICAEW's objectives through this series of papers is to facilitate a dialogue amongst practitioners and audit regulators and generally raise the level of awareness (particularly with audit committee members) with respect to the use of data analytics in the audit.

Matter for CAG Consideration

3. To the extent Representatives and Observers are aware of activity occurring in their respective jurisdictions that would be relevant to the DAWG's work, please share that with the DAWG.

Section VII – DAWG's proposed way forward

40. In considering the DAWG's discussions to date, input obtained from outreach performed to date and discussions with the IAASB and IAASB CAG, the DAWG is proposing to take the following steps to progress its work.

(a) **Continue with outreach discussions** – including continuing discussions with those the DAWG has already obtained input from, as well as expanding the outreach to include input from stakeholders and jurisdictions that the DAWG has not yet obtained input from (for example, The International Forum of Independent Audit Regulators and NSS representatives from Africa, Asia Pacific and South America).

(b) **Development of an IAASB DAWG paper** – with the objectives of providing stakeholders with an update of the DAWG's ongoing work and creating awareness of matters to be considered when using data analytics in an audit. Specific topics to be covered would include background, summary of current practice (based on DAWG outreach activities), acknowledge challenges with the use of data analytics in the audit and what the DAWG's next steps are expected to be. The DAWG's initial view is that this paper would be similar to the Integrated Reporting working group publication 'Exploring Assurance on Integrated Reporting and Other Emerging Developments in External Reporting' published in 2015. The DAWG intends to develop this paper and present for the IAASB's consideration at its June 2016 meeting. This would demonstrate that the IAASB is committed, through the activities of the DAWG, to the topic, without setting course on a standard setting direction at this time.

(c) **Active participation with ongoing IAASB projects** – as noted in Section V of this paper, the DAWG anticipates active involvement in some of the IAASB's ongoing projects to contribute to the further progress of those projects, including where those standards might make reference to or include language related to data analytics, sharing with the other task force and working groups information from the DAWG's findings, as well as further informing the DAWG on matters related to data analytics and the ISAs.

41. **Possible responses to steps noted in paragraph 40 above** – with the input gained from the DAWG's continued outreach and active engagement in other IAASB projects, consider additional possibilities for the way forward, including:

(i) Development of an IAPN or Staff Q&A – which may address considerations for the auditor when using data analytics in accordance with the current ISAs.

(ii) Amendments to ISA 520 – the DAWG's active engagement in the ISA 315 (Revised) project would address how data analytics could be incorporated into the auditor's risk assessment. ISA 520 is viewed currently as the closest the ISAs get to addressing concepts similar to the concepts within data analytics. A closer look at ISA 520 might provide an opportunity to consider how the auditor's response to assessed risks of material misstatement could incorporate the use of data analytics.

(iii) A broader consultation (such as an IAASB Discussion Paper) – if the views expressed in the DAWG's ongoing outreach indicate that a broader and formal consultation is necessary to gather input on the way forward, a Discussion Paper may be an appropriate step to take to obtain that wider input.

Matter for CAG Consideration

4. Representatives and Observers are asked to provide their views on the DAWG's proposed way forward.