INTRODUCTION

1. The objectives of this Issues Paper are to:

   a. Provide a summary of the Information and Communications Technologies (ICT) project.

   b. Update the IAESB (the “Board”) on (i) the proposed disposition of the comments received at the June 6, 2019 teleconference, (ii) the comments received from the DWG and (iii) provide the final proposed learning outcomes for Board consideration and approval.

2. Integral to this issues paper are the following agenda items:

   | Agenda Item 2-3 | Marked-up Version of Suggested Revisions to Exposure Draft of Proposed Revisions to IES 2, 3, 4 and 8 - Information and Communications Technologies and Professional Skepticism (June 24, 2019) |
   | Agenda Item 2-4 | Clean Version of Suggested Revisions to Exposure Draft of Proposed Revisions to IES 2, 3, 4 and 8 - Information and Communications Technologies and Professional Skepticism (June 24, 2019) |
   | Agenda Item 2-5 | Information and Communications Technologies Project: Basis for Changes for Learning Outcomes (06/19) |

BACKGROUND

3. Changes in technology across the financial reporting supply chain are impacting the ICT competencies and skills needed by aspiring and professional accountants (“Accountants”) to perform their roles. Identifying the ICT skills needed by Accountants serves the public interest by enabling the accounting profession to provide high quality financial reporting, auditing, or other related financial and accounting services in the digital age. The Board identified ICT as a strategic priority to accountancy education. A summary of the almost two-and-a-half-year ICT project is being presented for background purposes.
4. The ICT Task Force commenced its activities in February 2017 and has held monthly conference calls and in-person meetings throughout the process. The ICT project plan was approved by the IAESB at its November 2017 meeting.

5. The scope of the project was driven by the overall focus on professional competence and the evolution of the knowledge, skills and behaviors (collectively referred to as skills) needed in ICT. The approach was a baseline evaluation of skills that are needed without consideration of the existing Competency Areas and Learning Outcomes in the International Education Standards (IESs).

6. Five ICT elements were developed to guide the input obtained from information gathering activities and served as the basis for developing an ICT skills inventory and resultant Learning Outcomes included in the Exposure Draft (reference Appendix I for a description of the five ICT elements).

   - Business Acumen
   - Behavioral Competence
   - Digital Acumen
   - Data Interrogation, synthesis and analysis
   - Communication

7. Highlighted at the July 2018 Board Meeting was the high degree of geographic dispersion from where input was obtained as depicted by the countries in dark shading (see below).
8. Also, as more fully presented at the July 2018 Board meeting, the sources of information gathering activities and the methods used to obtain feedback and insights from the stakeholders were as follows:

<table>
<thead>
<tr>
<th>Source</th>
<th>Outreach Methods</th>
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</table>
| Literature review and recent articles | • Literature Review conducted by J. Birt (CAG Member)  
• Article Review |
| IFAC member bodies | • Initial Online Surveys  
• Targeted Online Surveys  
• Individual Interviews  
• Group Interviews |
| • Professional Accountants in Business Committee  
• Academics  
• American Accounting Association  
• AACSB  
• Regulators  
• Practitioners  
• Other professional accounting organizations | • Initial Online Surveys  
• Targeted Online Surveys  
• Interactive Webinars  
• Roundtables:  
  o Nairobi, Kenya  
  o Mexico City, Mexico  
  o Chengdu, China  
• Presentations and Discussions |
| ISAs, Auditing Standards issued by the PCAOB and Ethics Standards | Analysis of content to identify ICT skills inherent in the standards |
| Frameworks issued by CGMA, IMA, AICPA, AIA, ACCA, CFI, HKICPA, SAICA. 1 | Analysis of content to identify ICT skills |

9. This outreach resulted in 1,063 data points that were used in the judgmental evaluation of ICT skills needed by Accountants. The ICT Task Force previously concluded, and the Board agreed there was sufficient diversity in countries, stakeholders, and types of analysis to provide a reasonable basis for the development of Learning Outcomes included in the Exposure Draft.

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1 Chartered Global Management Accountant, Institute of Management Accountants, American Institute of Certified Public Accountants, Association of International Accountants, Association of Chartered Certified Accountants, Corporate Finance Institute, Hong Kong Institute of CPAs, and South African Institute of Chartered Accountants organizations.
REVISIONS TO IES 2, 3, 4 AND 8 AND ISSUANCE OF THE EXPOSURE DRAFT

10. These 1,063 data points were used to develop a skills inventory, which then guided the development of the revisions to the IES Learning Outcomes and the implementation guidance.

11. The ICT Taskforce leveraged this skills inventory to develop a set of ICT-related learning outcomes leveraging those Taskforce members who have expertise and experience in the development of learning outcomes, including the use of the appropriate directive verb and methods of assessment.

12. The learning outcomes were evaluated against the existing learning outcomes in the IESs to determine the following: a) whether new learning outcomes were needed, b) whether revisions to existing learning outcomes were required, or c) whether existing learning outcomes were appropriate in the context of ICT. Where the ICT Taskforce concluded that existing IESs incorporated the concepts from the draft learning outcomes, changes or revisions were not made.

13. These changes and mappings were reviewed by the Cold Review Team (CRT) and the revised Table A's were reviewed by the DWG prior to issuance of the Exposure Draft in December 2018.

COMMENTS ANALYSIS AND REVISIONS TO LEARNING OUTCOMES

14. As discussed during the June 6, 2019 teleconference, the ICT Task Force completed its detailed analysis on the comments received in response to the Exposure Draft published in December 2018. Through in-person meetings, phone calls and webinars, the ICT Task Force:

a. Considered each comment individually
b. Debated the intent of the learning outcome as compared to the comment
c. Evaluated the comment when considering the competency area as a whole
d. Revisited past discussions by the ICT Task Force that were held when the original revisions were made
15. The results of these deliberations were presented to the Board during the June 6, 2019 teleconference. The learning outcomes, Board comments and proposed disposition are provided in Table A, Analysis of Board Comments – Learning Outcomes.

<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>Board Comment</th>
<th>Proposed Revision or Explanation for No Change</th>
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<tbody>
<tr>
<td>1 IES 2 (f) (vi) Analyze the adequacy of systems, processes and controls for capturing, transmitting, reporting and safeguarding data and information.</td>
<td>Reconsider whether the actions in these learning outcomes should be consistent.</td>
<td>The Task Force proposes the following revision: IES 2 (f) (vi) Analyze the adequacy of systems, processes and controls for capturing, transmitting, reporting and safeguarding collecting, generating, storing, accessing, using or sharing data and information.</td>
</tr>
<tr>
<td>2 IES 2 (f) (vi) Analyze the adequacy of systems, processes and controls for capturing, transmitting, reporting and safeguarding data and information.</td>
<td>Why did the Task Force determine it appropriate to change the verb from “Assess” to “Analyze”?</td>
<td>These verbs were changed as a result of the Task Force’s consideration of comments received in response to the exposure draft. These learning outcomes are intended for use in IPD and the Task Force concluded it was appropriate to use a more foundational verb.</td>
</tr>
<tr>
<td>3 IES 4 (b) (vi) – Explain ethical principles when collecting, generating, storing, accessing, using or sharing data and information.</td>
<td>Suggest reversion to the verb “Apply” rather than “Explain”. If “Explain” is left, suggested edit to include “to be applied when”</td>
<td>The Task Force proposes the following revision: IES 4 (b) (vi) – Explain Apply ethical principles when collecting, generating, storing, accessing, using or sharing data and information.</td>
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16. As a result of these comments, the Task Force further revised the learning outcomes as discussed above. For reference purposes:

a. The marked version from the exposed learning outcomes are presented in Agenda Item 2-3
b. The Clean version of final proposed learning outcomes is presented in Agenda Item 2-4
17. In addition, the following revision to the definition of Information and Communications Technologies was presented to the Board on June 6, 2018.

*Information and Communications Technologies - A diverse set of established and emerging technologies, techniques, and processes used to capture, manage, transform, and/or communicate data and information.*

18. The comments received along with the proposed disposition are included in Table B, *Analysis of Board Comments – Definition.*

<table>
<thead>
<tr>
<th>Board Comment</th>
<th>Proposed Revision or Explanation for No Change</th>
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<tr>
<td>1 Reconsider the inclusion of “A diverse set of..“</td>
<td>The Task Force considered the CAG’s comments and the Board’s comments, which differed. With a view towards conciseness and the recognition that “a diverse set” may not always be applicable, the Task Force is proposing that “a diverse set” be removed.</td>
</tr>
<tr>
<td>2 Consider whether the use of “technologies” within the definition is appropriate because it is included in the term being defined.</td>
<td>The Task Force debated the comment but ultimately determined that it is appropriate to leave “technologies” in the definition. The use of technologies is referring to established and emerging technologies, not technologies itself. This approach is similar to other defined terms by the IAESB.</td>
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</table>

19. The Task Force is proposing the following for the definition of ICT:

*Information and Communications Technologies - A diverse set of Established and emerging technologies, techniques, and processes used to capture, manage, transform, and/or communicate data and information.*

20. The additional comments that resulted from the DWG full review have been incorporated into the revised learning outcomes in Agenda Item 2-3.
DISCUSSION

Action Requested:

A. Does the Board agree with the disposition of comments received from the June 6, 2019 teleconference related to learning outcomes?

B. Does the Board agree with the revised definition of ICT?

PROPOSED MILESTONES, TIMELINE, AND WAY FORWARD

21. The proposed milestones and expected completion dates from the current time period forward are presented below.

<table>
<thead>
<tr>
<th>Milestones</th>
<th>Completion Dates</th>
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<tbody>
<tr>
<td>1. Incorporate Board’s input into and present the revised IES 2, 3, 4 and 8 to the Board for approval.</td>
<td>June 2019</td>
</tr>
<tr>
<td>2. Issue Revised IES 2, 3, 4 and 8 and related implementation guidance.</td>
<td>September 2019 (after PIOB approval of revised standards)</td>
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</table>

RESOURCES

22. The Task Force members are Anne-Marie Vitale (Chair), Helen Partridge (Secretary), David McPeak (IAESB Staff), Keryn Chalmers, Mienkie Etcheverriary, Gabriela Farias, Sue Flis, Sarah Hamlin, Steve Matzke, Greg Owens and Sidharta Utama.

23. The CRT members are Elizabeth Gammie, Catherine Edwards, Raef Lawson, and Karl Thaesler.
APPENDIX I

The five ICT elements identified and supported by information gathering activities are presented below.

<table>
<thead>
<tr>
<th>ICT Elements</th>
<th>April 2018 Description</th>
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</table>
| 1 Business acumen             | ▪ Strategic business decisions are based on the integration of appropriately analyzed large data sets and professional judgment as applied to differing business environments amongst stakeholders such as vendors, customers, and employees.  
▪ Understand the impact ICT has on business models and risk, including how current and emerging technologies will impact the way business is conducted and measured. |
| 2 Behavioral competence       | ▪ Enhance intellectual curiosity, critical thinking, agility and life-long learning to effectively respond to an environment of rapid technological change.  
▪ Professional judgment and professional skepticism will be applied in more situations faced by Accountants, which requires a strong sense of self- and situational-awareness.  
▪ Demonstrate ethical use and dissemination of data.                                                                                                           |
| 3 Digital acumen              | ▪ Understand how new and emerging technologies operate, are used, and impact the generation, processing, and flow of data. For example, increased functionality through the cloud, elimination of manual processes through robotic process automation, artificial intelligence that senses, analyzes and learns from data and automates decision making, and blockchain that securely records transactions and eliminates third party verification or reconciliation.  
▪ Understand and influence how governance effectively oversees the impact of ICT, including data security.                                                   |
| 4 Data interrogation, synthesis and analysis | ▪ Use structured and unstructured data, evaluate data integrity (complete, accurate and relevant) and understand exceptions to expectations.  
▪ Effectively and appropriately interpret the “story” the data is telling and make decisions accordingly.  
▪ Conduct risk assessments, predictive analysis and effectively use visualization tools.                                                                      |
| 5 Communication               | ▪ New and emerging technologies will change the channels of communication from and across systems, for example, using social media and smart devices.  
▪ Effectively use new and emerging communication channels to communicate with impact, influence, and tell the “story” of new insights gained through the use of technology. |