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Please be careful interpreting the attached data. The rankings should be considered as rough indicators given the sample sizes, the composition of the focus groups, and the need to make some subjective decisions when grouping the technologies.

## TOP-25 TECHNOLOGY LIST

RANK	TECHNOLOGY
#1	ELECTRONIC SPREADSHEETS
#2	BUSINESS INTELLIGENCE AND ANALYTICS TECHNOLOGIES
#3	DATABASE MANAGEMENT SOFTWARE
#4	ENTERPRISE RESOURCE PLANNING (ERP) SOFTWARE
#5	ACCOUNTING AND TAX RESEARCH SOFTWARE
#6	SECURITY TECHNOLOGIES
#7	COMMUNICATION SOFTWARE
#8	GENERAL LEDGER SOFTWARE
#9	WORD PROCESSING SOFTWARE
#10	CLOUD COMPUTING
#11	GENERALIZED AUDIT SOFTWARE
#12	GOVERNANCE, RISK MANAGEMENT, AND COMPLIANCE (GRC) SOFTWARE
#13	PRESENTATION SOFTWARE
#14	QUERY LANGUAGES
#15	BIG DATA TECHNOLOGIES
#16	DIAGRAMMING SOFTWARE
#17	INTERNET RESEARCH SOFTWARE
#18	NETWORK TECHNOLOGIES
#19	REPORTING SOFTWARE
#20	TAX PREPARATION SOFTWARE
#21	XBRL
#22	PRIVACY TECHNOLOGIES
#23	APPLICATION INTEGRATION TECHNOLOGIES
#24	PROGRAMMING LANGUAGE
#25	MOBILE TECHNOLOGIES

## Criteria

1. Should reflect what was said in the focus groups.
2. Based on definitions and descriptions found in the literature.
3. Easy to understand.

#	Technology	Definition	Adapted From
#1	ACCOUNTING AND TAX RESEARCH SOFTWARE	Typically Internet applications, used to search professional authoritative accounting and tax literature and other relevant sources such as research publications. Examples: Accounting Research Manager, Checkpoint, FASB Codification.	Burke, J.A., R. Katz, S.A. Handy, and R.S. Polimeni. 2008. Research Skills: A Fundamental Asset for Accountants. <i>CPA Journal</i> . January, p. 66.
#2	APPLICATION INTEGRATION TECHNOLOGIES	Enable the integration of various software applications and the sharing of information among them. Examples: XML (Extensible Markup Language, to share data), ODBC (Open Database Connectivity), Mule (Enterprise Service Bus).	Ozkarabacak, B., E. Cevik, and Y. Goksen. 2014. A Comparison analysis between ERP and EAI. <i>Procedia Economic and Finance</i> (9): p. 495.
#3	BIG DATA TECHNOLOGIES	Designed to extract value economically from very large volumes of a wide variety of data, by enabling high-velocity capture, discovery and/or analysis. Example: Hadoop.	Gantz, J. and D. Reinsel, 2011. Extracting Value From Chaos. International Data Corporation (IDC), Framingham, MA: p. 6, <a href="http://www.emc.com/collateral/analyst-reports/idc-extracting-value-from-chaos-ar.pdf">www.emc.com/collateral/analyst-reports/idc-extracting-value-from-chaos-ar.pdf</a> .
#4	BUSINESS INTELLIGENCE AND ANALYTICS TECHNOLOGIES	Used to support the analysis of critical business data to increase understanding of an enterprise's operations, financial performance, and markets, and to make timely business decisions. Examples: Cognos, Tableau.	Chen, H., R.H.L. Chiang, and V.C. Storey. 2012. Business Intelligence and Analytics: From Big Data to Big Impact. <i>MIS Quarterly</i> , Vol. 36, No. 4, p. 1166.
#5	CLOUD COMPUTING	Enables ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., applications, servers, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. Examples: NetSuite and QuickBooks online (software as a service); Amazon Web Services and DropBox (infrastructure as a service); Windows Azure (platform as a service).	Mell, P. and T. Grance. 2011. The NIST Definition of Cloud Computing. National Institute of Standards and technology. Publication 800-145: p.2.
#6	COMMUNICATION SOFTWARE	Permits individuals to transmit and receive information over distances. Examples: Outlook (e-mail software), Twitter (social media software), and WebEx (web conferencing software).	Straub, D.W. and J.C. Wetherbe. 1989. Information Technologies for the 1990s: An Organizational Impact Perspective. <i>Communications of the ACM</i> , Volume 32, Number 11, p. 1335.
#7	DATABASE MANAGEMENT SOFTWARE	Provides users and programmers with a systematic way to create, update, retrieve, and manage electronic data. Examples: Microsoft Access, Oracle.	C.J. Date. 2000. <i>An Introduction to Database Systems</i> , 7 <sup>th</sup> Edition, Addison-Wesley. TechTarget.com: <a href="http://searchsqlserver.techtarget.com/definition/database-management-system">http://searchsqlserver.techtarget.com/definition/database-management-system</a> .
#8	DIAGRAMMING SOFTWARE	Used to create, modify, and validate diagrams such as business process specifications, flow charts, and organizational charts. Example: Visio.	G. Socka. 1994. Diagramming Software, <i>CMA Magazine</i> , Jul/Aug, 68 (6): pp. 8-9.
#9	ELECTRONIC SPREADSHEETS	A computer application used for creating, editing, and analyzing data that is organized into rows and columns. Example: Microsoft Excel.	McDonald, W. 2013. Excel 2013. <i>The Missing Manual</i> ; p. xiii.

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#10	<b>ENTERPRISE RESOURCE PLANNING (ERP) SOFTWARE</b>	Integrated set of software modules linked to a common database, used for planning, communicating and controlling business functions such as finance, human resource management, materials management, sales and distribution. Example: Oracle, SAP.	Robey, D., J.W. Ross, and M-C Boudreau. 2002. Learning to Implement Enterprise Systems: An Exploratory Study of the Dialects of Change. <i>Journal of Management Information Systems</i> , Volume 19, No. 1: p. 18
#11	<b>GENERAL LEDGER SOFTWARE</b>	Used to record economic transactions and generate financial reports such as income statements, balance sheets, and cash flow statements. Example: Quickbooks.	Hall, J. 2014. Accounting Information Systems. 9th edition. Cengage Learning: p. 754
#12	<b>GENERALIZED AUDIT SOFTWARE</b>	Allows auditors to extract data from a variety of databases, applications software and other sources, and then conduct analyses and audit routines on them. Examples: ACL, IDEA.	Debreceeny, R., S-L Lee, W. Neo, and J.S. Toh. 2005. Employing Generalized Audit Software in the Financial Services Sector: Challenges and Opportunities. <i>Managerial Auditing Journal</i> , Volume 20, Issue 6: p. 605.
#13	<b>GOVERNANCE, RISK MANAGEMENT, AND COMPLIANCE (GRC) SOFTWARE</b>	Used to support an integrated, holistic approach to organization-wide governance, risk, and compliance. Example: SAP GRC.	Racz, N., E. Weippl, and A. Seufert. 2010. A Frame of Reference for Research of Integrated Governance, Risk and Compliance (GRC). IN: De Decker, B. and I. Schaumuller-Bichl (eds.) Communications and Multimedia Security 2010, LNCS 6109, pp. 112-113.
#14	<b>INTERNET RESEARCH SOFTWARE</b>	Used to search for and capture information related to a specific topic on the Internet. Example: Google.	Sharma, S. 2008. Information Retrieval in Domain Specific Search Engine with Machine Learning Approaches. <i>World Academy of Science, Engineering and Technology</i> , Vol. 2: p. 120.
#15	<b>MOBILE TECHNOLOGIES</b>	Handheld devices that incorporate software (interface and applications) and communication (network services). Example: iPhone (smartphone).	Jarvenpaa, S. and K.R. Lang. 2005. Managing the Paradoxes of Mobile Technology. <i>Information Systems Management</i> , 22:4, p. 8
#16	<b>NETWORK TECHNOLOGIES</b>	Used to connect computers and devices, and enable communication, access to data and applications, and sharing of information. Examples: TCP/IP (Transmission Control Protocol/Internet Protocol), VPN (Virtual Private Network).	Hall, J. 2014. Accounting Information Systems. 9th edition. Cengage Learning: p. 19.
#17	<b>PRESENTATION SOFTWARE</b>	A computer application used to create visual aids for communicating ideas and other information to a group. Example: PowerPoint	Vermaat, M.E., Sebok, S.L., Freund, S.M., Campbell, J.T., and Frydenberg, M. 2016. Discovering Computers, 1 <sup>st</sup> edition.

#18	PRIVACY TECHNOLOGIES	Help control the appropriate use of information: what and how much information about an entity is available to others and to whom it is available. Examples: BitLocker, GnuPG.	Hall, J. 2014. Accounting Information Systems. 9th edition. Cengage Learning: p. 760. and <a href="http://blog.propay.com/index.php/2010/09/15/what-is-the-difference-between-security-and-privacy/">http://blog.propay.com/index.php/2010/09/15/what-is-the-difference-between-security-and-privacy/</a>
#19	PROGRAMMING LANGUAGE	Used to create sets of commands that instruct computers to perform specific tasks. Examples: Java, Visual Basic.	Veerasamy, A.K. and A. Shillabeer. 2014. Teaching English Based Programming Courses to English Language Learners/Non-Native Speakers of English. <i>International Proceedings of Economics Development and Research</i> , 70 (4): p. 17.
#20	QUERY LANGUAGES	Computer languages for the retrieval and modification of electronic data. Example: SQL.	Jarke, M. and Y. Vassiliou. 1985. A Framework for Choosing a Database Query Language. <i>Computing Surveys</i> , Volume 17, No. 3: p. 313 and SAMET, J., Ed. 1981. Query languages-A unified approach. <i>Report of the British Computer Society Query Languages Group</i> . Heyden University Press, Cambridge, England.
#21	REPORTING SOFTWARE	Helps present data in a meaningful and understandable way. Example: Crystal Reports.	Scheps, S. 2008. <i>Business Intelligence for Dummies</i> , Wiley, p. 53.
#22	SECURITY TECHNOLOGIES	Help protect information and information systems from unauthorized access, use, disclosure, disruption, modification, or destruction. Example: McAfee Security Scan Plus.	Sattarova, F.Y. and T.-h. Kim. 2007. IT Security Review: Privacy, Protection, Access Control, Assurance and System Security. <i>International Journal of Multimedia and Ubiquitous Engineering</i> , Vol. 2, No. 2, 17, and U.S. Code collection <a href="http://www.law.cornell.edu/uscode/44/3542.html">http://www.law.cornell.edu/uscode/44/3542.html</a>
#23	TAX PREPARATION SOFTWARE	Computer software designed to complete tax returns. Example: TurboTax.	IRS Glossary ( <a href="http://apps.irs.gov/app/understandingTaxes/student/glossary.jsp">http://apps.irs.gov/app/understandingTaxes/student/glossary.jsp</a> )
#24	WORD PROCESSING SOFTWARE	Facilitates entry and preparation of documents such as letters and reports. Example: Microsoft Word.	Greenstein, M. and T.E. McKee. 2004. Assurance practitioners' and educators' self-perceived IT knowledge level: an empirical assessment. <i>International Journal of Accounting Information Systems</i> , 5, p. 217, and International Federation of Accountants. Education Committee. Exposure Draft IEG-11. 2001. p. 54.
#25	XBRL	An XML-based language for the electronic communication of business and financial data.	XBRL.org.



## TOP-25 TECHNOLOGY LIST: PRACTITIONERS

RANK	VERSUS AC	TECHNOLOGY	# OF GROUPS
#1	-	ELECTRONIC SPREADSHEETS	6
#2	+2	BUSINESS INTELLIGENCE AND ANALYTICS TECHNOLOGIES	6
#3	+3	ENTERPRISE RESOURCE PLANNING (ERP) SOFTWARE	5
#4	+11	SECURITY TECHNOLOGIES	4
#5	+12	CLOUD COMPUTING	4
#6	+1	COMMUNICATION SOFTWARE	4
#7	-4	DATABASE MANAGEMENT SOFTWARE	4
#8	-	GENERAL LEDGER SOFTWARE	3
#9	+9	GOVERNANCE, RISK MANAGEMENT, AND COMPLIANCE (GRC) SOFTWARE	1
#10	X	INTERNET RESEARCH SOFTWARE	2
#11	-2	GENERALIZED AUDIT SOFTWARE	2
#12	X	NETWORK TECHNOLOGIES	2
#13	X	REPORTING SOFTWARE	1
#14	-12	ACCOUNTING AND TAX RESEARCH SOFTWARE	2
#15	-1	BIG DATA TECHNOLOGIES	2
#16	X	PRIVACY TECHNOLOGIES	2
#17	-12	WORD PROCESSING SOFTWARE	2
#18	X	APPLICATION INTEGRATION TECHNOLOGIES	1
#19	-3	DIAGRAMMING SOFTWARE	1
#20	X	MOBILE TECHNOLOGIES	4
#21	-2	PROGRAMMING LANGUAGE	2
#22	-11	QUERY LANGUAGES	1
		PRESENTATION SOFTWARE	
		TAX PREPARATION SOFTWARE	
		XBRL	

## TOP-25 TECHNOLOGY LIST: ACADEMICS

RANK	VS PRACT	TECHNOLOGY	# OF GROUPS
#1	-	ELECTRONIC SPREADSHEETS	5
#2	+12	ACCOUNTING AND TAX RESEARCH SOFTWARE	4
#3	+4	DATABASE MANAGEMENT SOFTWARE	4
#4	-2	BUSINESS INTELLIGENCE AND ANALYTICS TECHNOLOGIES	5
#5	+12	WORD PROCESSING SOFTWARE	4
#6	-3	ENTERPRISE RESOURCE PLANNING (ERP) SOFTWARE	4
#7	-1	COMMUNICATION SOFTWARE	4
#8	-	GENERAL LEDGER SOFTWARE	2
#9	+2	GENERALIZED AUDIT SOFTWARE	3
#10	X	PRESENTATION SOFTWARE	4
#11	+11	QUERY LANGUAGES	2
#12	X	TAX PREPARATION SOFTWARE	3
#13	X	XBRL	5
#14	+1	BIG DATA TECHNOLOGIES	1
#15	-11	SECURITY TECHNOLOGIES	3
#16	+3	DIAGRAMMING SOFTWARE	2
#17	-12	CLOUD COMPUTING	3
#18	-9	GOVERNANCE, RISK MANAGEMENT, AND COMPLIANCE (GRC) SOFTWARE	1
#19	+2	PROGRAMMING LANGUAGE	1
		INTERNET RESEARCH SOFTWARE	
		NETWORK TECHNOLOGIES	
		REPORTING SOFTWARE	
		PRIVACY TECHNOLOGIES	
		APPLICATION INTEGRATION TECHNOLOGIES	
		MOBILE TECHNOLOGIES	