FROM THE EDITORS

Stay Professionally Fit, Always

San Murugesan, BRITE Professional Services

The digital landscape is changing and will continue to change for the foreseeable future. It is also creating profound changes in every area, and its impact will be more phenomenal in the years to come—and more profound than in years past. As a result, a new information age has dawned, driven by recent advances in IT that are being widely embraced by several new and existing applications in previously unimaginable ways. This new age is fostered by the emergence and adoption of new technologies such as cloud, fog, and edge computing, artificial intelligence (AI), machine learning, cognitive computing, the Internet of Things, wireless communications, virtual and augmented reality, autonomous and connected vehicles, blockchain, crypto currencies, and more. In the coming years, our dependence on IT will only intensify and become even more significant.

We’re experiencing and enjoying this paradigm change in IT, which also poses some new concerns and threats. The emergence of a new information age presents several new opportunities and benefits as well as challenges and risks. This is both an exciting and a challenging time for IT professionals as well as for technology leaders, several industry sectors, and even governments. To succeed and thrive in this dynamic environment, we need to stay professionally fit and relevant not only now, but always. Although staying professionally fit is rewarding and enjoyable, it is also challenging in a few ways. Nevertheless, we need to satisfactorily cope with and address many challenges.

Manifold Challenges
Industry and the general public’s expectations of IT professionals continue to be more demanding. To keep professionally fit, IT professionals must do the following:

• Stay abreast of ongoing developments. Driven by ongoing rapid advances in multiple directions, today’s IT professionals are overwhelmed with too much information to comprehend and too many tools to be familiar with. They must continue to stay abreast of advances in IT, emerging novel applications, new challenges and issues, and potential new opportunities. They should never stop learning.

• Be innovative and address real-world problems. IT professionals must be able to identify and understand the promises, capabilities, and limitations of various technologies and embrace them in applications as necessary to address real problems facing global society. The UN has come up with 17 sustainable development goals to transform our word (bit.ly/1Kjkn0B), and IT could play a major role in attaining each of these goals.

• Address new threats and concerns. As IT professionals, while we’re expected to embrace technology’s benefits, we’re also required to satisfactorily address new and ongoing challenges facing IT systems and applications and the concerns they pose, such as
cyberthreats, privacy concerns, scalability and resilience issues, increased complexity, and environmental impact. This means IT professionals should also be able to identify and assess these threats and concerns and address them adequately.

- **Embrace ethical design.** The advent of self-driving vehicles, AI, cognitive computing, and autonomous systems has turned society’s attention, for valid reasons, to the ethical aspects and societal implications of emerging applications that embrace these technologies. We need to consider ethical and moral aspects and potential societal impact while conceiving and designing applications. For further information on technology and ethics, refer to The Institute’s special report on ethics in engineering (bit.ly/2yhqtSp).

- **Cultivate soft skills.** IT professionals must build their people and decision-making skills as they progress in their career journey. They must also develop good communication and presentation skills, which are critical throughout an IT professional’s career. Moreover, they should cultivate other soft skills, such as problem identification and solving, critical observation, aptitude for learning, adaptability, and effective teamwork.

Meeting all these requirements is not easy and calls for passion, commitment, and a personal strategy that is in tune with your personal preferences and habits.

**T-Shaped IT Professional**

IT professionals need to protect themselves from “technological threats”—that is, threats and issues posed to them by continuing rapid and widespread advances in IT. These include technological obsolescence, technological irrelevance, and a lack of skills and knowledge that are relevant now.

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**In Memoriam: The Legacy of Howard Frank (1941–2017)**

We mourn the loss of Howard Frank, former IT Professional advisory board member (1997–2000), who died recently. Frank was a high achiever. What made his contributions particularly outstanding was that he was a visionary in how he accomplished his goals. He was a visionary entrepreneur, a visionary technologist, and a visionary educator, all together.

As a visionary entrepreneur, in 1969—following his tenure as assistant professor at the University of California, Berkeley—he formed the highly successful startup company Network Analysis. The company was a fertile ground for nurturing professional growth in its staff, among whom were many IEEE fellows, senior executives, and well-known IT researchers and technocrats.

As a visionary technologist, Frank had several firsts to his credit in areas that are highly relevant now: the Internet, virtual reality, and cybersecurity. In 1969, he developed effective methods for interconnecting Internet routers before the term “Internet” became common. He was inducted into the Internet Hall of Fame for his contributions. In 1994, as the director of the IT office at DARPA, he sponsored virtual reality projects way before the term “virtual reality” became common. In 1995, as DARPA’s director of IT, he sponsored a project for developing strategies to counter cyberattacks on communications and power infrastructures before the term “cyberattack” was recognized.

In recognition of his outstanding achievements at DARPA, Frank received a Distinguished Service Medal, the highest honor from the US Department of Defense for a civilian.

As a visionary educator and transformational leader, Frank’s accomplishments during his 11-year tenure as dean of the Robert H. Smith School of Business at the University of Maryland were significant: he quadrupled revenues, hired 100-plus faculty members, doubled the school’s facilities, expanded curriculum to infuse the importance of digitization and IT for leaders of the digital economy, and led the school to a top-10 worldwide ranking in the UTD Top 100 Business School Research Rankings. His inspirational leadership, ability to conceive and successfully execute ambitious projects, and commitment to sharing information about plans and progress with faculty members won praise and admiration from many of those who worked with him. After completing his term as dean, he served the Smith School as a full professor before he retired in 2015.

Frank was a member of the US National Academy of Engineering and a Fellow of IEEE.

The enduring legacy of Howard Frank will continue to impact many, including the IT professional community.
IT professionals need to protect themselves by staying professionally fit and relevant.

Our society is relying on those who conceive, design, develop, deploy, and manage IT systems and applications. As IT professionals, we’re expected to satisfactorily address new and ongoing challenges facing IT systems and applications, such as cyberthreats, scalability and resilience issues, privacy concerns, increased complexity, and environmental impact. We must also uphold our professional, social, and ethical responsibilities and work collaboratively with other professionals, managers, and colleagues.

This means IT professionals must be well-versed not only in technology but also in the related areas I’ve highlighted. They should be T-shaped professionals, also called funnel-shaped professionals—that is, professionals who have broad knowledge in several related areas and in-depth knowledge and skills in one or more specific areas of interest. Such T-shaped professionals would be able to view a system, an application, an issue, or a challenge they encounter from multiple perspectives and collaborate effectively with others, including those in other disciplines, customers, and end-users. Today, IT professionals need to work on multidisciplinary, multisector, and multicultural teams because they work on systems and applications that are applied in several domains or globally. To improve their ability and confidence, they should also mingle with those people, colleagues, and friends who teach, inspire, and guide them.

IT managers and industry share responsibility for nurturing, grooming, and training their IT professionals and facilitating their continuous learning and acquisition of new skills and knowledge. T-shaped IT professionals are in demand—and this demand is only increasing.

**Updates**

Here are a few major updates that we wish to bring to your notice.

**ITiP Symposium 2018**

To engage with IT practitioners and facilitate closer interaction with others, *IT Professional* continues to collaborate with the Computers, Software, and Applications (COMPSAC) conference (www.compsac.org), and cosponsors and organizes a unique symposium, IT in Practice (ITiP). The fourth symposium in the series will be held as part of COMPSAC 2018 in Tokyo, from 23 to 27 July. We solicit your active participation. Papers are due by 15 January 2018. For further details, visit www.computer.org/web/compsac2018/itip.

**In Memoriam: Howard Frank**

With deep sorrow, we report that Howard Frank, former *IT Pro* advisory board member (1997–2000), died recently. Frank was a visionary entrepreneur, technologist, and educator who made outstanding contributions to the IT field. The “In Memoriam” sidebar has more on these contributions.
New Editor in Chief
My four-year term as editor in chief of this magazine ends as of December 2017. Irena Bojanova will be the new EIC, effective 1 January 2018—please join me in extending her a cordial welcome. For a brief introduction, see the related sidebar on p. 6.

I enjoyed my role as EIC and feel very happy that I was able to contribute to IT Pro and the professional community and society, though in small measure. I thank you all profusely for your support, contributions, and encouragement (see the related sidebar on this page).

IT Pro Turns 20
Next year, this unique scholarly publication, covering a spectrum of areas of interest to IT professionals, will turn 20—a significant milestone to cherish and celebrate. You can look at past issues, articles, and article summaries conveniently aggregated at obren.info/ieeect. In our 20th anniversary, January/February 2018 issue, past EICs and promoters will share their reflections and retrospectives, and the incoming EIC will share her vision and what’s ahead for you. Stay tuned!

Significant digital shifts are still ahead of us. You—IT professionals, academics, and researchers—can make a difference, helping change the world for the better, embracing ongoing advances in technology, and addressing challenges and issues that arise in the new, interconnected, smarter information age. You can—and will need to—continue to be professionally fit, always, and thrive as a successful IT professional. IT Pro will continue to help you by providing ongoing updates on IT research and practice and general insights of interest and relevance to IT professionals and executives, researchers, and students. Continue to enjoy reading it.

We wish you a happy New Year, filled with accomplishments that you can cherish!

San Murugesan is the director of BRITE Professional Services and an adjunct professor at Western Sydney University, Australia. His areas of interest include the Internet of Things, cloud computing, cognitive computing and artificial intelligence, green IT, and IT applications. Murugesan is the editor in chief of IT Professional and co-editor of the Encyclopedia of Cloud Computing (Wiley, 2016); serves on the editorial boards of Computer, IEEE Transactions on Cloud Computing, and The Institute; and edits Computer’s bimonthly column, Cloud Cover. He is co-program chair and standing committee liaison for the COMPSAC 2018 IT in Practice (ITiP) Symposium. He is a fellow of the Australian Computer Society and the Institution of Electronics and Telecommunication Engineers (IETE) and a senior member of IEEE. Contact him at san@computer.org; bitly.com/sanprofile.