Get set for the new reality

#Data #Technology #Innotribe

The potential impact of digital technology innovation on our daily lives is all-embracing, the public policy implications barely less so.

The future has never been closer. According to some experts, technology is set to change the way we live and do business more in the next 20 years than in the previous 300. As such, the need for individuals, companies and governments to prepare for a future with artificial intelligence and cognitive computing has never been more crucial.

One of the firmest forecasts made by Gerd Leonhard, futurist, author and CEO of The Futures Agency, concerns the switch to voice control of technology. Within five years, Leonhard believes we will no longer be typing into computers or tapping at mobile phones. Voice recognition technology will be so sophisticated that all our interactions with computers will be spoken. "Voice recognition has been around for some time and never actually worked – but now it is more than 99% accurate."

Your virtual friend?

As machines become intelligent, in effect learning to hear as well as to read, less time will be spent programming computers and we will be able to rely on computers themselves to determine what they should do. "The computer will become our virtual friend. It is a scary thought but this is where self-learning devices, or cognitive computing, are headed," he adds.

Until recently, Leonhard says most transactions have been too vast and too complex and individual to be fully automated, but this is changing with the introduction of next-generation computing, specifically quantum computing, artificially-intelligent software and cognitive platforms.

Coupled with public newsfeeds, commercial databases and literally unlimited data from social media, an increasing number of financial transactions are becoming automatable and virtualised. He says: "IBM Watson is already working on automating medical diagnosis and has recently acquired a huge global library of MRI records and X-rays. A similar process is happening in banking – so within the next five years I think a significant number of transaction processes will end up completely automated.

"Reading and voice recognition have been the two big hurdles. Once a machine can actually read and speak, it can carry out any routine job. This means levels of automation will be dramatically increased within

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For Leonhard, the ubiquity of cloud computing is inevitable too, due its significant security and cost advantages over traditional methods of data storage. "Firms that are not going into the cloud with their data will probably not be competitive in the near future," he asserts.

With this new digital era come newly emerging risks and responsibilities. Different laws, regulations and social contracts will be needed as we look to harness the potential benefits of new technologies, from machine-learning to big data to blockchain. Leonhard notes the increased budgets of

governments and companies in the realm of cyber-security, but points to many other public policy implications.

He says: "Wider use of blockchain is inevitable because it makes transactions so much quicker, cheaper and user-friendly, but it will not work without government supervision, approval or regulation. And as technology frees up human labour to be more meaningful rather than routine, we must be very careful not to lose our skills and abilities. For example, the

ability to understand languages should not be diminished by using apps that translate.

"In 10 years we will be in a situation where computers and machine intelligence will handle so many tasks that we will no longer understand how we did them without them."

Policy implications

In some respects, regulatory frameworks are still struggling to catch up with the wider implications of a previous generation of information technology innovation. Aurélie Pols, data governance and privacy advocate at Krux Digital and a member of the ethics data group at the European Data Protection Supervisor, says we are only now beginning to understand the data privacy consequences of widespread internet usage and commercial exploitation, and argues that we should learn from past experience in preparation for the next wave of innovation.

Pols, who works closely with data companies and software

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vendors, says greater use of data aggregation techniques may have reinforced inequality. "For example, those with a low credit score will see a high amount of advertising for payday loans, getting them into more debt. This practice was recently banned in the US, and slowly we are defining a better balance between equality and dignity for all and using data in a more ethical way."

Much of the new push toward greater automation is fuelled by vast pools of data, but here too

public policy or industry-level consensus may play a role in ensuring responsible usage of this resource. Pols calls into question the lack of statistical analysis and hypotheses carried out on big data today to rigorously test its representativeness to check for any biases, despite the data mining and algorithmic tools available. "I think we should move towards using data in decision-making but we should not forget the fundamentals of statistical analysis," she adds.

To some extent, machines are learning to do this statistical analysis themselves, using algorithms to check for diversity whilst avoiding the risk of identifying individuals. But Pols argues that hypotheses and for-

mulas for data mining, as well as the internal processes within companies for determining ethical behaviour and treatment of data, still need to be defined.

As privacy legislation and data protection regulation evolve, more companies are training their data scientists about appropriate practices relating to privacy, sensitive data-handling and consent. Some also form ethical boards to improve these processes.

"Data is seen as an asset – the new oil – since the World Eco-

nomic Forum in 2011. Now the regulation of the market for data needs to be better defined," says Pols. "Rules for the exchange, ownership and co-ownership of data need to come in the next three years."

Reshaping reality

Innovation reshapes commercial realities and, in turn, policy implications. At present, many firms remain focused on refining their marketing strategies via data merging techniques to achieve more effective personalisation. But Pols hopes new breakthroughs will prompt a move away from marketing-focused uses of text-mining and machine-learning toward product development; technology deployed to better understand target audiences, creating products and services that engender long-term relationships with trusted and loyal customers.

"In the future, customers will not just buy a product, but a relationship with a company. The move toward subscription and rental models will encompass responsibility for security and the choices to be made about data usage. Businesses should not miss this opportunity to build on this new concept of loyalty," says Pols. ∎