

'Father of computing' says we're vulnerable to attack ❖❖❖

Gotlieb says consequences 'unimaginable'

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Calvin (Kelly) Gotlieb received an honorary doctorate at the University of Victoria.

The "father of computing in Canada" is urging stronger efforts to safeguard systems controlling vital infrastructure from attacks.

Computing pioneer Calvin (Kelly) Gotlieb said computer systems running operations such as power grids, hospitals and airports should be protected at

all costs to avoid "unimaginable consequences."

Gotlieb, 90, was in Victoria on Thursday to accept an honorary doctorate of engineering from the University of Victoria, the latest of many honours he has received nationally and internationally.

Gotlieb brought the first electronic computer to Canada, arriving at the University of Toronto in 1945 to develop computer science as a new field of study. An innovator and educator, he is a Member of the Order of Canada, a Fellow of the Royal Society of Canada, and has been inducted into the Canadian Information Productivity Awards Hall of Fame, which also includes Alexander Graham Bell.

He suggested in an interview that during wartime, a group could — instead of dropping a bomb — target infrastructure controlled by computers. "It's unimaginable what the consequences would be," said Gotlieb.

Gotlieb, who was speaking of the issue in a global context, said there is an awareness of vulnerabilities to essential services and moves have been made to address them. But he is not convinced our systems are safe from attack. He

said he is not enough of an expert to say which is the best defence but fears that we are "frighteningly vulnerable."

A natural disaster such as a storm or flood can cut off power to millions of people for a few days, but Gotlieb is concerned that an attack on computerized systems could have an even greater impact. "What about a computer virus cutting off power from one corner of the continent for 30 days? It's terrifying."

He believes such an attack on systems could occur. "I think that our issues of protection have not kept up with our abilities to deploy this technology into our infrastructure."

As an example, fake Apple stores, complete with fake products, were set up in China.

"There is no doubt groups in China are able to infiltrate the American system and grab out the technological components which they can copy."

Given that was possible, "that means they can infiltrate our most valuable resources," he said.

Gotlieb has witnessed the speed at which technology can change. He was five years old when neighbours gathered around a radio — the only one on the street — set on a porch so that everyone could listen to a famous fight between boxers Joe Dempsey and Gene Tunney.

Now, small hand-held computers can link people around the world. "The mind boggles," he said, laughing. Gotlieb has a cellphone and three computers. He is active in his field and spends two hours each day on email.

In 1951, the second electronic computer in the world arrived at the University of Toronto. It filled a large room with vacuum tubes, and a massive air conditioner in the building's basement took up another large space. "It is cost \$500,000 and it had one-millionth the

capacity of your iPhone," he said.

If someone had told him then what computers could do today, Gotlieb said he would have thought "they were mad."

Growth in computing is not slowing down, he said. "I still won't be foolish enough to try and predict where it is going to be five years from now." After all, "nobody predicted that computers would replace typewriters."

Cloud technology, in which hosted Internet services are sold to customers, is taking root and gaining acceptance at a rate, which Gotlieb said is "unstoppable."

What will need to be resolved is who owns data if, for example, it is on a cloud, perhaps in another country.