

What will threaten us in 2040?

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Could terrorists of the future use a swarm of tiny robots -- less an a quarter-inch high -- to attack their targets? Will new bio materials be able to target individuals carrying specific genetic markers? Could cyber-attackers melt down a nuclear facility with the press of a "return" key, or implant chips to control our minds?

These scenarios may sound like science fiction, but according to Dr. Yair Sharan, Director of the Interdisciplinary Center for Technological Analysis and Forecasting (ICTAF) at Tel Aviv University, they're all within the realm of possibility in the next few decades. That's why it's critical for nations to be aware of the risks, and primed to mitigate them to avert another 9/11 or Mumbai terror attack.

As head of a pan-European project called FESTOS (Foresight of Evolving Security Threats Posed by [Emerging Technologies](http://www.festos.org): <http://www.festos.org>), Dr. Sharan and his colleagues are looking 30 years into the future to determine what our real technological threats will be. At the end of their three-year project, already underway, they'll issue a detailed task report to describe the threats and suggest to leaders of democratic nations how they can avoid them.

Forecasting disaster

Part of ICTAF's work looks for "signals" in politics, news reports, and advanced high-tech coverage to assess what technologies and applications could be used for future crime and terror. "While America did not foresee the scale of 9/11, the signs were there that such an act

was a possible event," says Dr. Sharan. He calls 9/11 an example of a "wild card" — an event or scenario with a low probability and a very high impact. "Our mission is to forecast wild card calamities, natural and manmade, so that nations can be alert and poised to avoid human casualties."

The FESTOS team's method also uses questionnaires and interviews with 250 experts from the United States and Europe in a variety of disciplines including chemistry, robotics and computer sciences. The research team analyzes the data to determine and classify future threats, and proposes strategies to mitigate the risks.

At Tel Aviv University, researchers dig into the numbers to estimate threat probabilities. With the input of technology pioneers and scientists, they are exploring what inventions might be available that are meant to improve our lives, but have the potential to be used for malicious purposes. They are "technology mapping," looking into possibilities such as robot terrorists, dangerous new chemicals, and pioneering materials born of biotech and nanotech.

The probability is that tomorrow's terror attacks will be information technology-related, Dr. Sharan predicts. Forecasters envision an attack on a country's energy supply, or a cyber attack on a major airport, especially since hackers of the White House and the Iran [nuclear facility](#) have shown how vulnerable critical infrastructure systems can be.

Experience with terrorism provides an advantage

Unfortunately, Dr. Sharan observes, democratic nations like the United States, the United Kingdom, and Spain have learned over the last decade that threats from terror are not limited to Israel. But Israel's unrelenting experience with terrorism, and Tel Aviv University's demonstrated expertise in forecasting, have created a laboratory for work that can have

a profound impact on Western policy making and planning. And knowing what's possible will arm future leaders with the tools to protect their citizens.

After the forecasts in the FESTOS study are collected, the results will be shared with decision and policy makers in governments in Europe, Israel, the USA and other democratic nations. Policy makers will then be able to prepare for "foreseen" surprises.

Tel Aviv University is also taking a leading role in another significant foresight project. ICTAF centre now heads the Israel component of the Millennium Project — previously under the auspices of the United Nations — to assess the future state of the world in the areas of politics, science and technology, health practice, and economics.

Provided by Tel Aviv University

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