

Thinking innovatively about the risks of tech innovation

January 12 2016, by Andrew Maynard, Arizona State University

If you've been following this month's Consumer Electronics Show ([CES](#)), you'll know with absolute certainty that the future is cool, shiny and stuffed to the brim with "must-have" gadgets.

Reading the ebullient reports, you'd be hard-pressed to find anything other than overflowing optimism for how technology will transform our lives. And admittedly, it's hard to imagine how [smart shoes](#) or a [rollable TV screen](#) could possibly be bad for us. From virtual reality so "there" you can almost touch it, to the Internet of every imaginable thing, we're being dazzled by the seemingly infinite possibilities that modern tech has to offer.

But I wonder whether, in all the buzz and hype, we're in danger of losing sight of the darker side of [technology innovation](#). CES and [similar expos](#) represent the glitzy face of deeper trends that could be destructive if developed without a sophisticated appreciation of [potential risks](#).

All technologies come with risks

With the uncritical enthusiasm around CES, it's easy to ignore the potential consequences of irresponsible technology innovation. It's even easier to turn a blind eye to the challenges we face in developing technologies that are good for society as a whole, and don't just enrich those who create them.

Take for example robotics, artificial intelligence (AI) and the Internet of Things (IoT) – three trends that were amply represented at the show. While each holds the potential to profoundly change our lives for the better, these technologies are by no stretch of the imagination intrinsically safe. Fears over the consequences of irresponsible AI development [have already been widely voiced](#), and the rapid rise of the Internet of Things threatens to make everyday objects [vulnerable to cyber attacks](#). And all three have the potential to widen the gap between the privileged and the disadvantaged.

In today's evolving social marketplace of needs, wants and opinions, technologies must be designed to navigate a complex landscape of potential risks if they are to succeed and be beneficial. And it's not just health and environmental risks that are important – potential threats to beliefs, community, culture, even sense of identity, are becoming increasingly relevant.

Unfortunately, even if innovators want to steer safely through this evolving landscape, there's remarkably little help at hand. The ways we're taught to handle risk – even how we think about risk – are often as antiquated as the technologies being showcased at places like CES are innovative.

Take regulations. They're inevitably built around previous technologies: "dumb" digital systems, for instance – gadgets that don't communicate through the Internet, or medical devices that don't talk back. When novel technologies arise – the IoT, for example, cloud-based AI or wearables – the overwhelming impulse is to maintain the status quo by shoehorning them into existing frameworks. They're usually not remotely the right shape, never mind being an adequate fit.

Sadly, this lack of creativity and flexibility in how potential risks are understood and addressed only increases the chances of things going

wrong. Not only does it create uncertainty around the safe development of new products, but it obscures potential pitfalls.

What we're lacking – and what we desperately need – is parallel innovation in how we think and act on risk, to provide the insights and tools to navigate an increasingly hazardous future.

How do we rethink risk?

Here in the Arizona State University [Risk Innovation Lab](#), we're developing a new approach to risk that is designed to open up new ideas and possibilities. We call it [Risk Innovation](#).

Our inspiration is technology innovation itself. Imagine what might happen if we approach risk the way entrepreneurs approach innovation – combining creativity, technical know-how and market savvy to develop products that people are willing to invest in?

Start with the idea of "value." Innovation is typically defined as creating value that someone is willing to pay for. Can a similar approach work for risk?

One way to do this is to consider risk as a *threat to value*, and not just in the ways value is usually thought of when assessing risk, such as health, the environment or financial gain/loss. We need to also include less tangible but equally important measures of value – well-being, environmental sustainability, deeply held beliefs, even a sense of cultural or personal identity.

This in itself is an innovative way of thinking about risk. It opens up new ways of imagining the risk landscapes that new technologies both face and help to form.

Yet innovation is more than good ideas. To be successful, innovative products need to demonstrate market success. So what's the equivalent of the "market" when it comes to risk?

To me, it's the individuals, communities and organizations – the constituents (including developers and manufacturers) – who have something of tangible value (not to be confused with "values") that is potentially threatened, and that they are willing to invest in protecting.

This "value" may be possessions, employment, profit, health – the types of value that we typically think about in the context of risk. But it may also be professional standing, branding, cultural and social identity, equity and equality, lifestyle, deeply held beliefs and opinions, or sense of worth.

These more personal and social aspects of "value" are often overlooked when it comes to risk. But they are critically important to the decisions people and organizations make, and to what they think is worth protecting. Any attempt to develop new technologies that ignores them is supremely vulnerable to failure, because it runs the danger of inadvertently threatening what people are prepared to fight for.

Reframing risk yields benefits for innovation

When risk is seen through the lens of innovation in this way, what begins to emerge is a way of thinking about it that complements technology innovation; we open up pathways to socially and economically beneficial and successful development.

Rather than framing risk as a barrier to progress, [risk](#) innovation transforms it into a way of supporting beneficial and sustainable progress.

This is why it's so important that we don't become so bedazzled by emerging technologies that we fail to see their downsides, and how to successfully navigate them.

Of course, it's exciting to see the latest tech coming over the horizon at events like CES, and I'm a firm believer in the need for creativity and innovation in developing technologies that will help improve and enhance our lives. (And yes, for someone out there, I'm sure smart shoes will be a life-enhancing experience.)

Yet without parallel [innovation](#) in how we handle the potential downsides – especially in today's increasingly interconnected and complex world – how will we ensure there's true, lasting value beneath the glitz?

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