

Daniel Burrus

TECHNOLOGY PREDICTIONS

GLOBAL FUTURIST | STRATEGIC ADVISOR | BEST-SELLING AUTHOR

In 1983, Daniel Burrus pioneered a new and powerful methodology for accurately predicting the future of technological change. He became the first and only forecaster/futurist to accurately identify the ground-breaking technology categories that have driven decades of change and continue to revolutionize how we live, work, and play. Since then, hundreds of corporations, universities, and research laboratories have adopted his **Hard Trend Methodology** to accelerate innovation and guide strategic planning. To this day, his **Taxonomy of High Technology**, first published in 1983, remains an accurate depiction of the driving forces behind the monumental changes that continue to drive economic value creation.

The following is a brief history that will give you a look at how Burrus created a planning and innovation methodology that is being used to drive innovation and growth globally.

Burrus started Burrus Research in 1983 after selling four companies and conducting a year of deep research into global innovations in all areas of science and technology. As part of his research, he pioneered a new and powerful methodology (*Hard Trend Methodology*) for accurately predicting the future of technological change, and he developed *The Taxonomy of High Technology* as a way of organizing technology innovations that would drive economic growth for decades to come.

At that time, Burrus became the first and only forecaster/futurist to accurately identify the groundbreaking technology categories that have driven decades of economic growth and continue to revolutionize how we live, work, and play. Since then, hundreds of corporations, universities, and research laboratories have adopted this list to guide strategic decisions in a variety of areas. To this day, it remains an accurate depiction of the driving forces behind the monumental changes that continue to drive economic value creation.

THE TAXONOMY OF HIGH TECHNOLOGY (1983)

In Burrus' original Taxonomy, published in 1983, there were 20 major technology categories shaping the future:

- 1 Digital Electronics
- 2 Distributed Computing and the Internet
- 3 Artificial Intelligence and Neural Networks
- 4 Parallel Processing Computers
- 5 Flat-Panel and Advanced Video Displays
- 6 Optical Data Storage
- 7 Fiber-Optic Networking
- 8 Microwaves and Wireless Networking
- 9 Advanced Communication Satellites
- 10 Micromechanics MEMS and Nanotechnology
- 11 Lasers
- 12 Photovoltaic Cells
- 13 Genetic Engineering
- 14 Advanced Biochemistry
- 15 Molecular Designing
- 16 Advanced Polymers
- 17 High-Tech Ceramics
- 18 Fiber-Reinforced Composites
- 19 Thin-Film Deposition
- 20 Superconductors

If you look at the major drivers of exponential change over the decades, including today, you can see why so many organizations have used this list and their subcategories as their go-to list of major technology trends shaping the future.

Daniel Burrus

GLOBAL FUTURIST | STRATEGIC ADVISOR | BEST-SELLING AUTHOR

THREE DIGITAL ACCELERATORS Driving Exponential Change (1983)

1983

In Burrus' research in 1983, he came across *Moore's Law*, which most of us know today, but way back in 1983, few knew about it. It basically stated that *processing power* would double every 18 months as the price dropped in half, and Burrus felt it was valid and would stand the test of time. That gave Burrus a way to plot over time how powerful a computer would be in the future and how much it would cost.

Knowing the price and the power of computers at any given point in time provided a great way to look into the future, but he found that he needed more than Moore's Law to accurately predict timelines of technology-driven innovation. After further research he added the exponential growth of *digital storage* and *bandwidth* and called the combination the *Three Digital Accelerators* that would drive exponential change and value creation. Thanks to the exponential curve of all three, Burrus was able to create hundreds of accurate predictions going 10 years out and more.

As a side note, in 2010, Burrus changed *processing power* to *computing power* because exponential growth is now taking place in the cloud ecosystem, and there is a lot of exponential growth to go from there! **So here are the Three Digital Accelerators: computing power, digital storage, and bandwidth.** Major innovations are launched when all three are at a point of enabling an affordable, great end-user experience.

HARD TREND PLANNING AND INNOVATION METHODOLOGY (1984)

1984

In Burrus' speeches and audience handouts starting in 1984, he began to refer to the technology-driven trends as *Hard Trends*, and defined a Hard Trend as a trend that is based on a *Future Fact*, something that *will* happen. His Hard Trend examples included hundreds of *Cycles* that repeat, *Technology* based on his Taxonomy of High Technology including the sub-categories he identified, *Demographics* looking at the future of each generation, and *Government Regulations* with new laws creating new opportunities. If a trend was not a *Hard Trend* based on a *Future Fact*, he called it a *Soft Trend*. He also taught that each trend should be followed by an opportunity to make the trend actionable.

TECHNOLOGY HARD TREND PATHWAYS TO INNOVATION (1985)

1985

In 1985, Burrus published and shared in hundreds of speeches another powerful list he called the ***Eight Technology Hard Trend Pathways to Innovation***. They included:

- 1 **Dematerialization** (Reducing Size to Elevate Value)
- 2 **Virtualization** (Hardware, Software, and Services-as-a-Service)
- 3 **Mobility** (Hardware and Software)
- 4 **Intelligence** (Think IoT)
- 5 **Networking** (Fiber Optics, Wireless, and Virtual)
- 6 **Interactivity** (Interactive Media)
- 7 **Globalization** (Technology-Enabled Globalization)
- 8 **Convergence** (Converging Features, Functions, and Industries)

Note: Take a few minutes now to look over this list to see if you can identify a pathway you should be innovating around now. And remember what Burrus says about technology-driven innovation if it's based on a Hard Trend: *If you don't do it, someone else will!*

Daniel Burrus

GLOBAL FUTURIST | STRATEGIC ADVISOR | BEST-SELLING AUTHOR

1985

The First TECHNOTRENDS NEWSLETTER (1985)

In 1985, Burrus started his first newsletter, originally called *The Technology Futures Newsletter* (many of his longtime subscribers will remember that name). Because the word “Futures” could be confused with stock market futures, he changed the name to *The Technotrends Newsletter*, and as many of you know, that became the name of his fifth international bestselling book, *Technotrends: How to Use Technology to Go Beyond Your Competition*, published by Harper Business in 1993.

Here are a few technology predictions covered in his first newsletter in 1985:

- Email, or as it was called by the very few at universities who were using it back then, electronic mail, and how that would grow, starting in the '90s and beyond.
- The ability to get a college degree by attending classes virtually.
- Using voice recognition to interface with our computers.
- Smart tractors with sensors that allow them to save fuel and self-drive.
- Electronic shopping (think e-commerce), and I mentioned how it would bring profound changes to retail in the mid-'90s and beyond.
- Smart cards that had both information and chips for near-field communication.
- Fiber-optic communication networks. (As a side note, I hosted the first all fiber-optic teleconference in the world.)
- Office automation systems.
- Satellite broadcast television systems for home users.
- Cars with sensors that, for example, can stop the car for the driver when an object is in the way.
- New robotic systems using multiple sensors, including robot lawn mowers.
- Computerized homes with home security and automation systems.
- Supercomputers using parallel processing to drive artificial intelligence applications.
- Electronic news as a new way to get up-to-the-minute news as it happens.
- Using ultrasound to treat kidney stones and more.
- Computers that can read handwriting.
- Battery-operated portable multimedia computers.
- Laser surgery applications.
- Listening to music on personal digital devices.
- Genetically altered crops.
- Smart tires with sensors for inflation and temperature.
- Machine vision to read and recognize the color of paint and more.
- CAT scans showing real-time moving pictures of the inner body, PET scans to see how the brain works, and MEG to help brain surgeons operate.

And there was much more in the first issue way back in 1985.

Daniel Burrus

GLOBAL FUTURIST | STRATEGIC ADVISOR | BEST-SELLING AUTHOR

Here are a few of the article subjects and titles Burrus wrote about in over 430 newsletters he published over the decades.

1984

Sequencing of the Human Gene Code by 2000

1986

Interactive Television (Streaming Video) by the Mid-1990s

1988

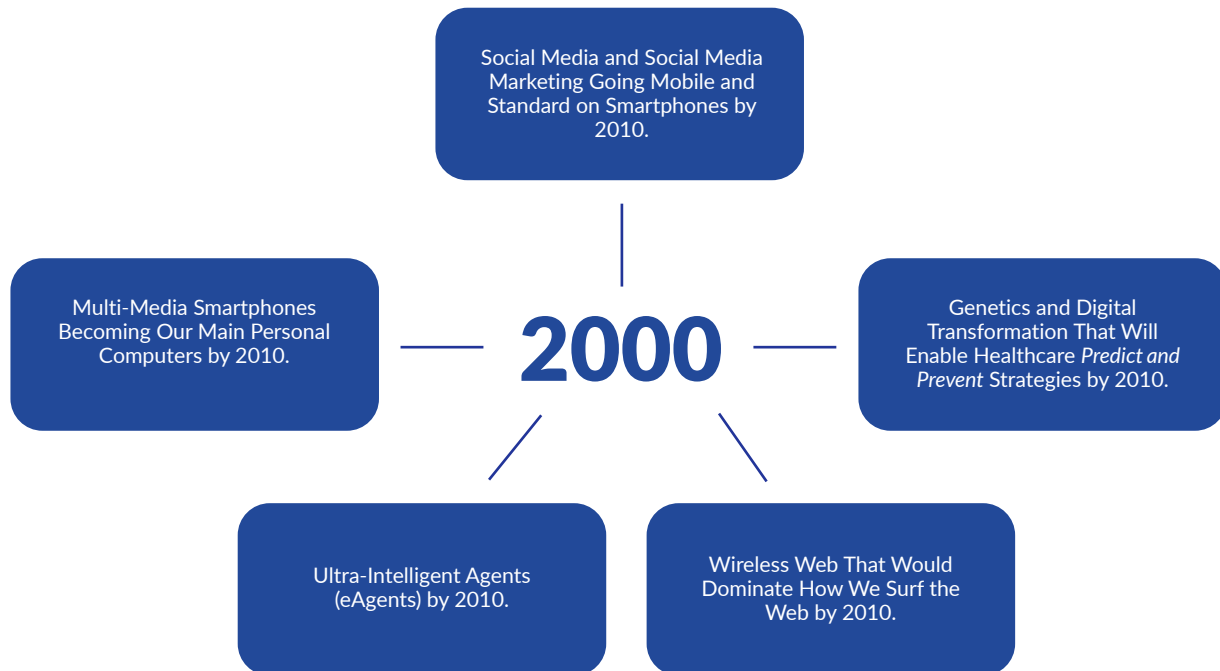
GPS for Navigation and Agriculture by the Mid-1990s

1996

Interactive Television (Streaming Video) Big by the Early 2010s

Each year he covered a wide variety of key innovations and subjects.

For example, here are a few of the article headings published over 20 years ago in the year 2000:



Since 2000

Since 2000 he has made hundreds of accurate predictions in his speeches and blogs that you can access from our website at www.burrus.com or from his [LinkedIn posts](#).

Looking Ahead

There has never been more opportunity to elevate your relevancy, accelerate your growth and transform your business than there is today! Therefore, it's now more important than ever to go beyond reacting quickly to change and disruption, and become *anticipatory* to stay ahead of, as well as take advantage of, change and transformational innovations.

To see his latest list of Hard Technology Trends shaping the future, go to: www.burrus.com/seethefuture