



Implications Wheels: Structured Brainstorming about the Future

Ted Farrington, Christian Crews & Jennifer Blenkle

To cite this article: Ted Farrington, Christian Crews & Jennifer Blenkle (2013) Implications Wheels: Structured Brainstorming about the Future, Research-Technology Management, 56:3, 56-58, DOI: [10.5437/08956308X5603008](https://doi.org/10.5437/08956308X5603008)

To link to this article: <https://doi.org/10.5437/08956308X5603008>



Published online: 28 Dec 2015.



Submit your article to this journal [↗](#)



Article views: 24



View related articles [↗](#)

Implications Wheels

Structured Brainstorming about the Future

Ted Farrington, Christian Crews, and Jennifer Blenkle

The IRI2038 project explores plausible, yet provocative scenarios for the future of R&D management. Using backcasting techniques, the project considers how IRI and its members can prepare for each scenario. The discovery phase, comprising an internal futures audit and a weak signals environmental scan, was completed in 2012. Complete information about the project can be found at www.iriweb.org/IRI2038.

IRI2038 has moved into the extrapolation phase (Figure 1). In this stage of the project, we are using implications wheels and expert panels to project potential future impacts of the trends and weak signals identified during the discovery phase. Sometimes also referred to as “futures wheels,” implications wheels were developed in the 1970s by Joel Barker as a tool to explore potential future implications of current decisions and events in a structured fashion (Hines and Bishop 2007). Implication wheels have been developed to explore possible developments and implications in areas as diverse as nuclear reactor accident preparedness, the growth of charter schools, and impacts of big data on college education (see <http://implicationswheel.com>). They can be used in conjunction with other tools as part of an overall foresights process, as we are doing in IRI2038, or as a standalone device to understand the future impacts of current events and decisions.

Ted Farrington is senior director at PepsiCo Corporate Research, working in the food-processing area. He holds BS and MS degrees in math and physics from Clarkson University, an MS in chemical engineering from Caltech, and a PhD in chemical engineering from the University of Maine. ted.farrington@pepsico.com

Christian Crews is the principal of AndSpace Consulting. He has an MS in studies of the future from the University of Houston–Clear Lake and a BA in English from the College of William and Mary. Christian is a founding member of the Association of Professional Futurists. christian@andspaceconsulting.com

Jennifer Blenkle is vice president, research and innovation, at the Industrial Research Institute; she has over 15 years experience leading new program development and research programs for associations and nonprofit organizations. Jennifer has an MA in public administration from San Francisco State University and a BA in political science—public service from the University of California, Davis. blenkle@iriweb.org

DOI: 10.5437/08956308X5603008

Implications wheels play a critical role in the foresights process, as a single weak signal can have multiple, possibly contradictory, implications 25 years out. These 25-year implications, derived from many current signals and trends, will be the building blocks for inductive scenarios to be developed in the next phase of the project.

Implications wheels are created in workshops, which may be held face to face or virtually. An implications wheel exercise begins with a focus on a particular weak signal or trend that has been deemed relevant based on the topic of interest, the timeframe, and customer for the project. Any debate about whether that trend may, or may not, manifest is suspended; the signal is assumed to become a reality and its possible impacts are brainstormed. The point here is not to predict the future but to explore how it might emerge. After several direct (first-order) impacts are identified, the group and the facilitator select a few for further exploration. For what we called the “augmented workforce” signal, we identified many possible first-order impacts:

- The use of physical augmentation to increase physical endurance and, hence, productivity
- The development of a mental augmentation divide, similar to today’s digital divide
- The development of a distributed R&D workforce
- The use of implants to collect direct consumer data

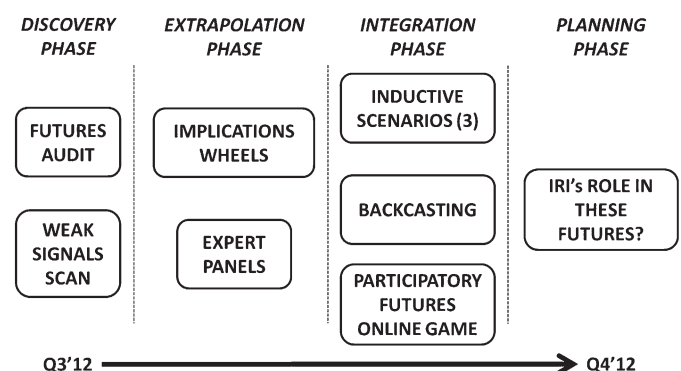


FIGURE 1. IRI2038 foresight process

- The rise of a practice of “tailoring” babies for specific jobs and roles
- The end of the gender divide through physical augmentation
- The extension of human life expectancy to 300 years—with all the challenges that will bring

We chose to pursue the first three of these, primarily for their diversity and their potential to impact the future in many ways (Figure 2).

- **Physical augmentation.** The use of augmentation technology to increase human endurance has some interesting implications for the future. Long-term health concerns could create tension between safety and the desire to gain new capabilities, as with athletic performance-enhancing drugs today. At the same time, a workforce with increased endurance should be more productive and increase the pace of innovation. But the implications for future work–life balance (already an oxymoron for many) could be dramatic, depending on how increased endurance manifests itself and what people choose to do with their enhanced capabilities.

- **Mental augmentation divide.** There was great concern in the workshop group that mental augmentation would become another driver of a “have and have not” society, based on affordability and access. Proceeding to second- and third-order impacts, would some countries promote augmentation to gain strategic advantage over other nations? Would companies do the same? Could this lead to social unrest and violence, as we’ve seen in the case of financial stratification? One can envision governments intervening to protect the rights of the unaugmented. Implications wheels often have contradictory branches, and this debate is no exception. Participants offered a contrary possibility, that augmentation might be used primarily to assist those with some deficiency, thus contributing to a more even playing field instead.

- **Distributed R&D workforce.** Implants allowing the brain to directly connected to the Internet or some proprietary cloud will take the virtual team concept to a whole new level. Citizen science will accelerate. Companies and other organizations, which are struggling to find breakthroughs today, will become more irrelevant to

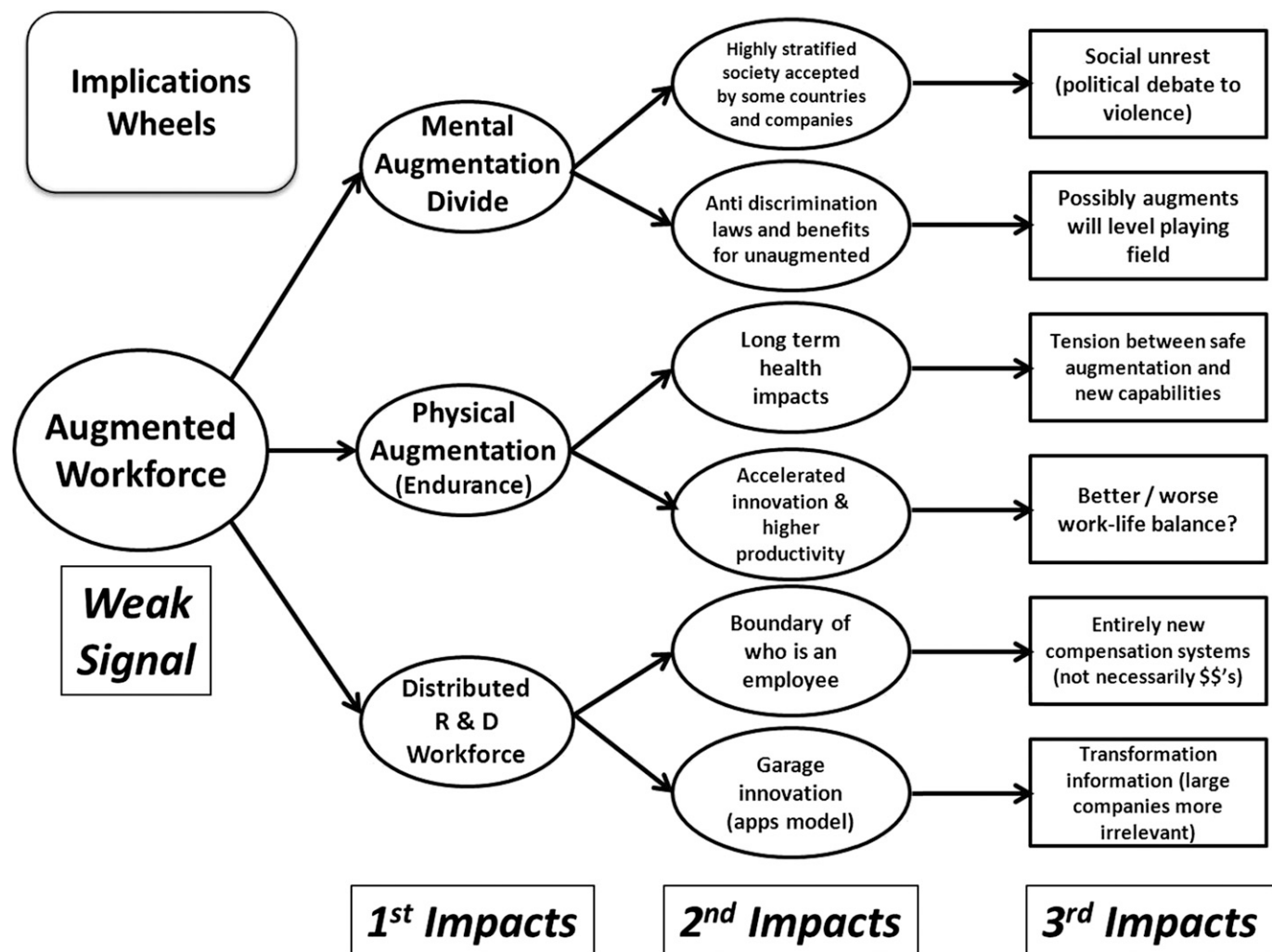


FIGURE 2. Implications wheel for augmented workforce signal

delivering future disruptive innovations and solutions to the world's grand challenges. Augmented collectives will take their place, collaborating at a more intimate level to produce new ideas. These collectives will raise fundamental questions for corporate structures. How does one define the boundary between employees and non-employees, between the company and outside, when engaging a virtual collective? And workers engaged via the collective may require new compensation systems, not necessarily based on money.

There are a couple of important points to be made here. First, developing implications wheels is more art than science, involving a lot of judgment. Others may see different potential impacts or choose different ones to pursue, resulting in different scenario systems at the integration phase. Second, the overall foresights process is one of divergence followed by convergence. Trends and signals are prioritized throughout the process, and many are left behind. To have a manageable number of elements from which to build the scenarios, the implications wheels process must winnow the long list of weak signals to just a few significant impacts. However, the process may also be recursive; the trends, signals, and impacts from earlier phases may always be revisited to test the robustness of the scenarios and see if different choices lead to other interesting results.

The inductive scenarios that will be developed in the next phase will emerge from interactions among future impacts across multiple trends and weak signals. For instance, trends the group has identified as "freelance R&D" and "global war for talent" both explore the implications of workforces that exist primarily outside traditional organizational boundaries. These impacts can only be amplified by the emergence of augmented super-humans in the workforce!

Over 100 threads like these are being generated during IRI2038's extrapolation phase. Interactions among implications of strong trends from the futures audit and signals from the weak signals environmental scan will form the building blocks for three inductive scenarios and an online game to be delivered as part of this initiative.

We would like to thank the following organizations that assisted us with the process of creating the implications wheels, ensuring diversity of thought in the result: Crown Holdings, Foresight Alliance, The Inovo Group, PepsiCo, The Thought Leadership Institute, Designs on Talent, Creelman Research, Customer Innovations, Staffing.org, Dow, and the University of Houston Department of Futures Studies.

References

Hines, A., and Bishop, P. 2007. Thinking About the Future: Guidelines for Strategic Foresight. Washington, DC: Social Technologies.

Gain Access to the Community of Innovation Champions

IRI is the leading association of organizations working together to enhance technological innovation in industry. Network with the world's best innovation thought leaders and practitioners to seek, share, learn and create.

Only at IRI. Benefit from an environment rich in idea exchange.

Benefit from IRI's outstanding value:

- » Actionable solutions and R&D best practices
- » A diverse community for collaboration and problem solving
- » Current information developed for and by innovation practitioners
- » The only cross-industry, cross function association in R&D and innovation

BECOME A MEMBER TODAY.

Visit www.iriweb.org or call 703.647.2580.



Creating Innovation
Leadership Solutions
WWW.IRIWEB.ORG

2200 Clarendon Blvd., Suite 1102, Arlington, VA 22101
703.647.2580 tel 703.647.2581 fax membership@iriweb.org

