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AGRICULTURAL AND NATURAL MANUFACTURING TECHNOLOGIES

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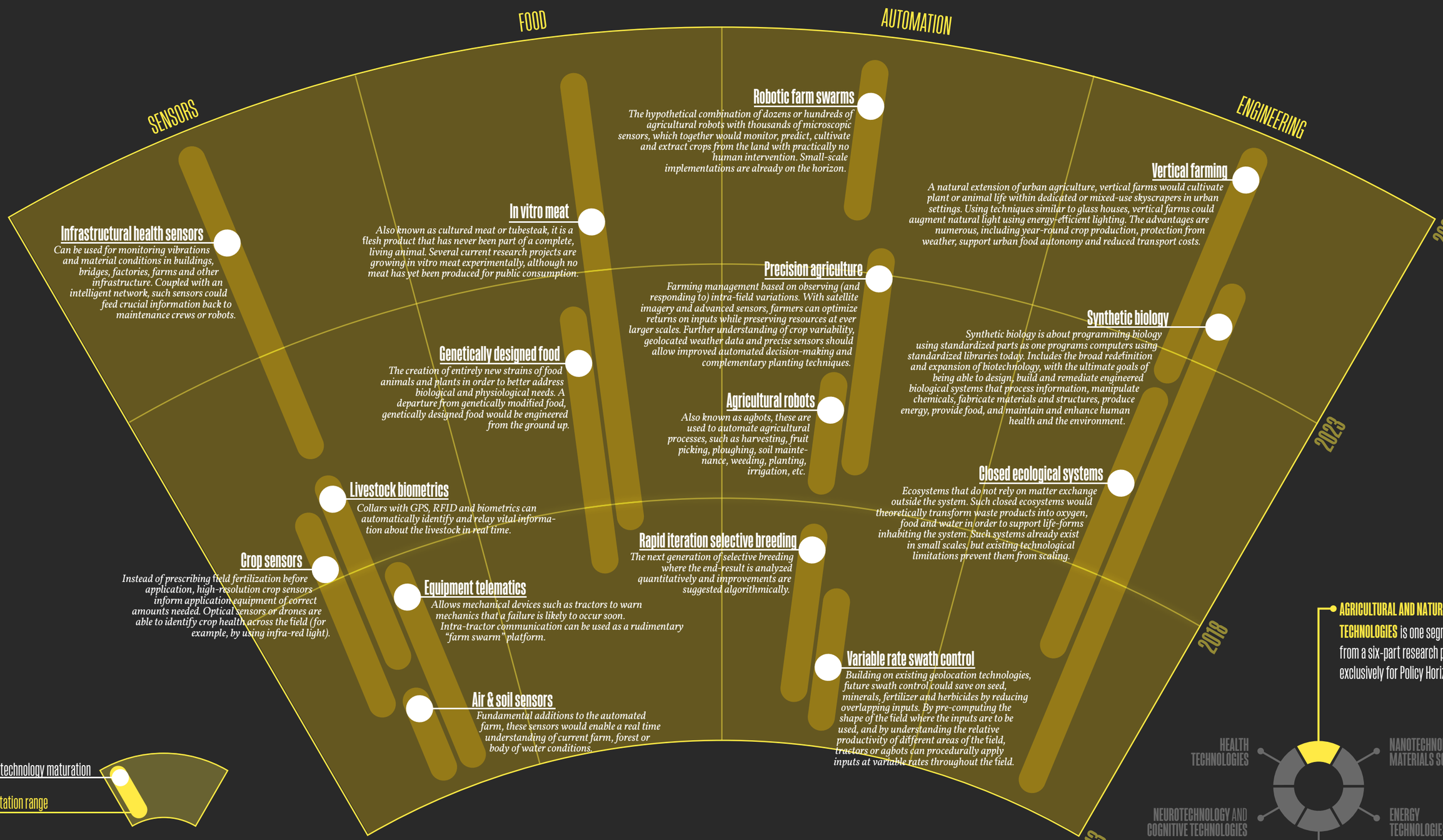
The near future of technology promises change at an ever-increasing pace while rapidly transforming business models, governments and institutions worldwide. In order to help us make sense of our uncertain future, Policy Horizons Canada engaged Michell Zappa of Envisioning Technology to explore key technologies that are likely to have a profound effect on humanity on a global level and generational timeframe. This report is structured around six key areas of technological research: digital and communications, neuro and cognitive, health, agricultural and natural manufacturing, nano and material science, and finally energy. It provides a sense of how broad and far-reaching our future technologies might be. Digital currencies, hydrogen energy storage, brain-to-brain interfaces, and robotic farms are all likely to be common before 2030. Each of the six key areas indicates the dozen or so interdependent technologies that are most likely to have a high impact on society and the economy. The six images provide the reader with maps of how the technologies portrayed in each area are likely to mature over the next 15 years; that is, our best estimate of the point at which a technology matures so that it can be used.

Agricultural and natural manufacturing technologies are the focus of the diagram below. It identifies four key areas of accelerating change: Sensors, Food, Automation and Engineering. Sensors help agriculture by enabling real-time traceability and diagnosis of crop, livestock and farm machine states. Food may benefit directly from genetic tailoring and potentially from producing meat directly in a lab. Automation will help agriculture via large-scale robotic and microrobots to check and maintain crops at the plant level. Engineering involves technologies that extend the reach of agriculture to new means, new places and new areas of the economy. Of particular interest will be synthetic biology, which allows efficiently reprogramming unicellular life to make fuels, bioproducts accessible from organic chemistry and smart devices.



Best estimate of technology maturation

Possible manifestation range

AGRICULTURAL AND NATURAL MANUFACTURING TECHNOLOGIES is one segment from a six-part research project created exclusively for Policy Horizons Canada.

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