



IEEE Neuroethics Framework

Guiding Responsible Neurotechnology Innovation

Technologies/Methods

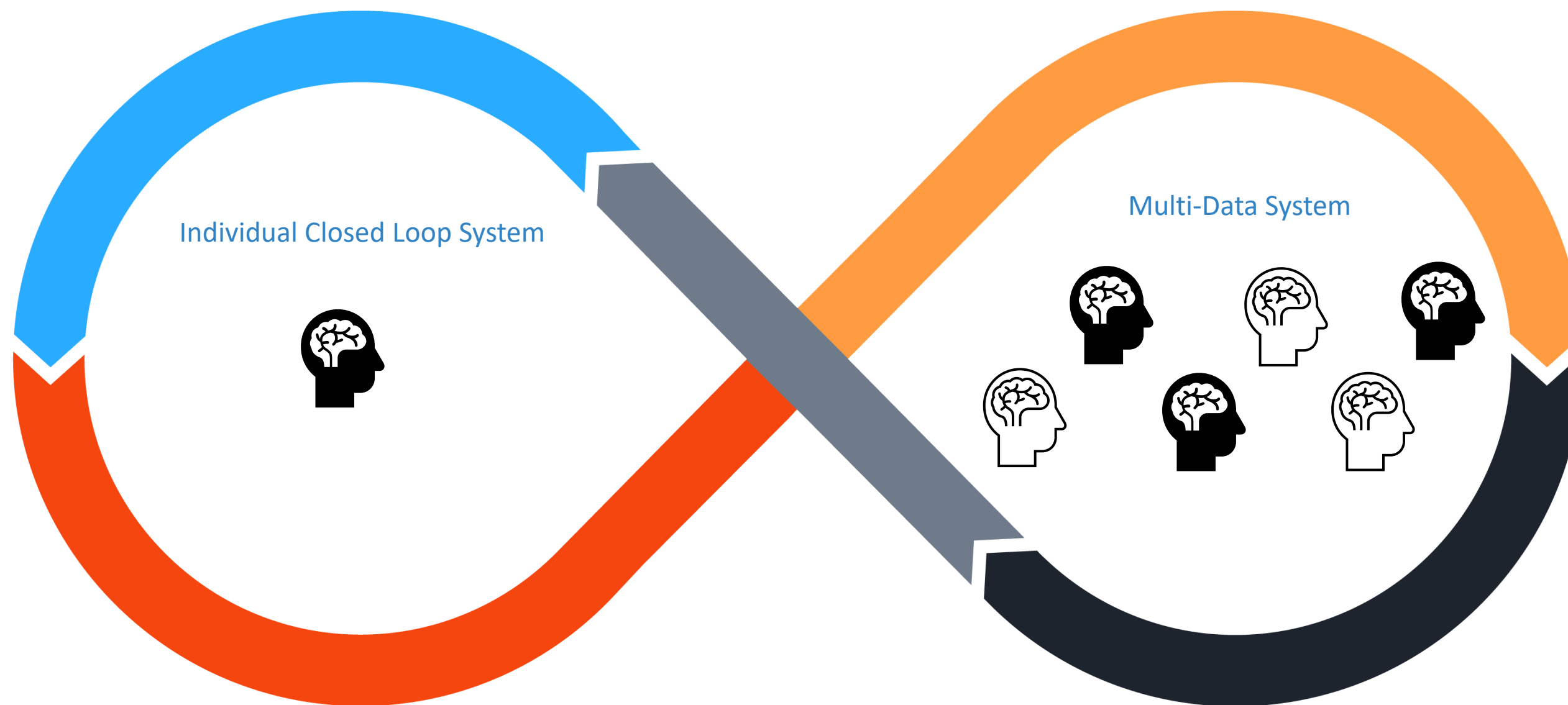
Applications/ Purpose		Recording/Sensing Technologies to capture information about or from the nervous system	Stimulating/ Actuating Technologies to stimulate or modulate the nervous system	Closed-Loop Technologies that combine recording / sensing with stimulation / actuation to control the nervous system	Direct Physical and Biological Modification Technologies to physically alter the nervous system by modifying physiology, and/or specific systems or sub-systems
	Medical Technologies for diagnostics or treatment of infirmity and disease, including direct-to-consumer				
	Wellness Technologies for active pursuit of a healthy and fulfilling life; improving physical, mental, and social well-being				
	Education Technologies to improve and/or facilitate learning; assist in remedial learning strategies; cognitive enhancement				
	Work and Employment Technologies to monitor or modify brain in the workplace; efficiency improvements, evaluation and monitoring				
	Military/National Security Technologies to augment or improve the ability to fight or defend through soldier enhancement, intelligence, and/or debilitate the enemy				
	Sports and Competitions Technologies impacting success in sports or competition, including before, during or after competition				
	Entertainment Technologies for use in entertainment, including virtual/augmented reality and brain-controlled video games				
	Analytics, Marketing, & Advertising Technologies used to inform decision making, including data used to profile and influence consumers				
	Legal System Technologies for use in civil and criminal adjudication, as well as in the correctional context, including to detect, modify and/or surveil brain states				

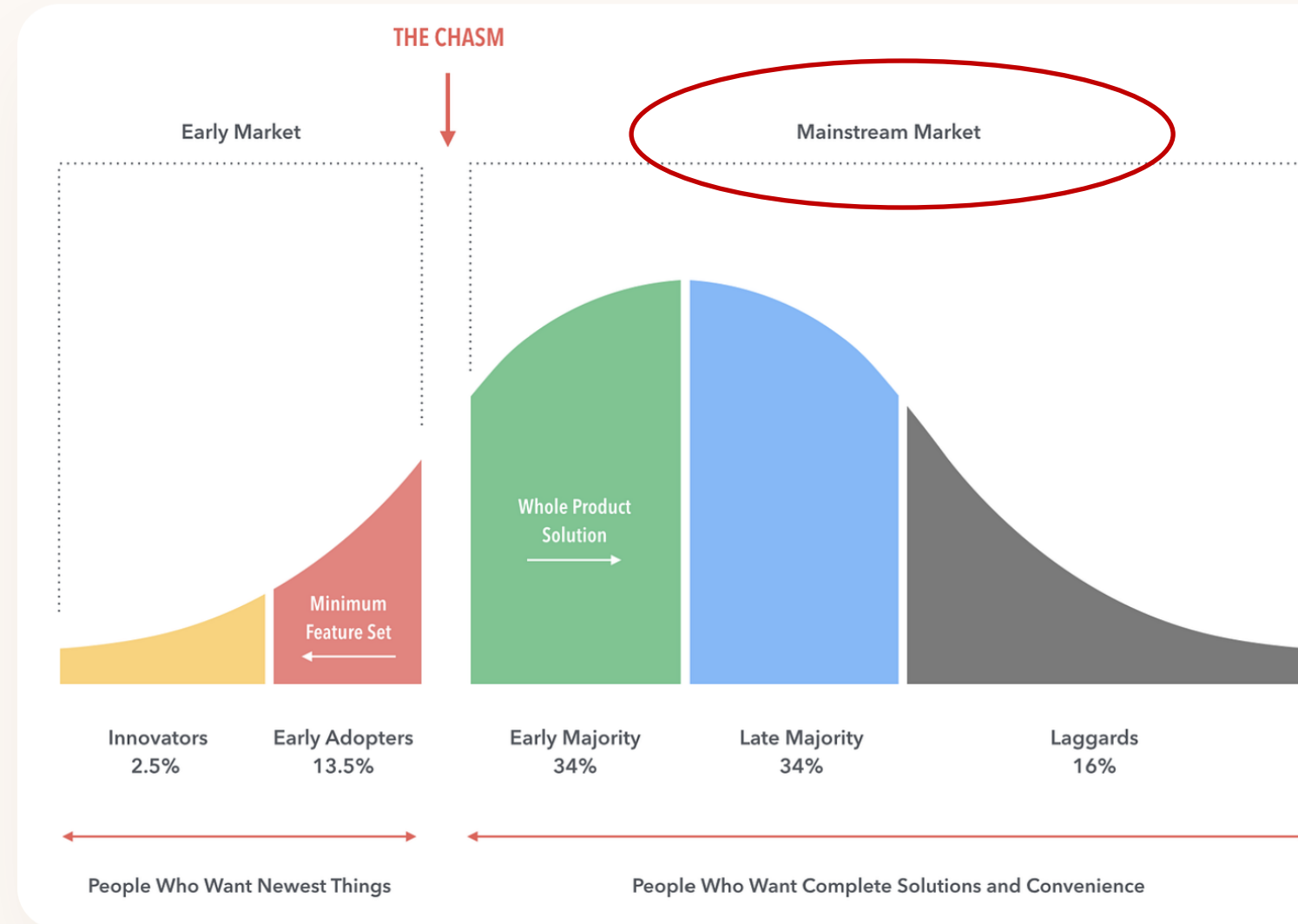
Applications & Purpose

The Lived Experience

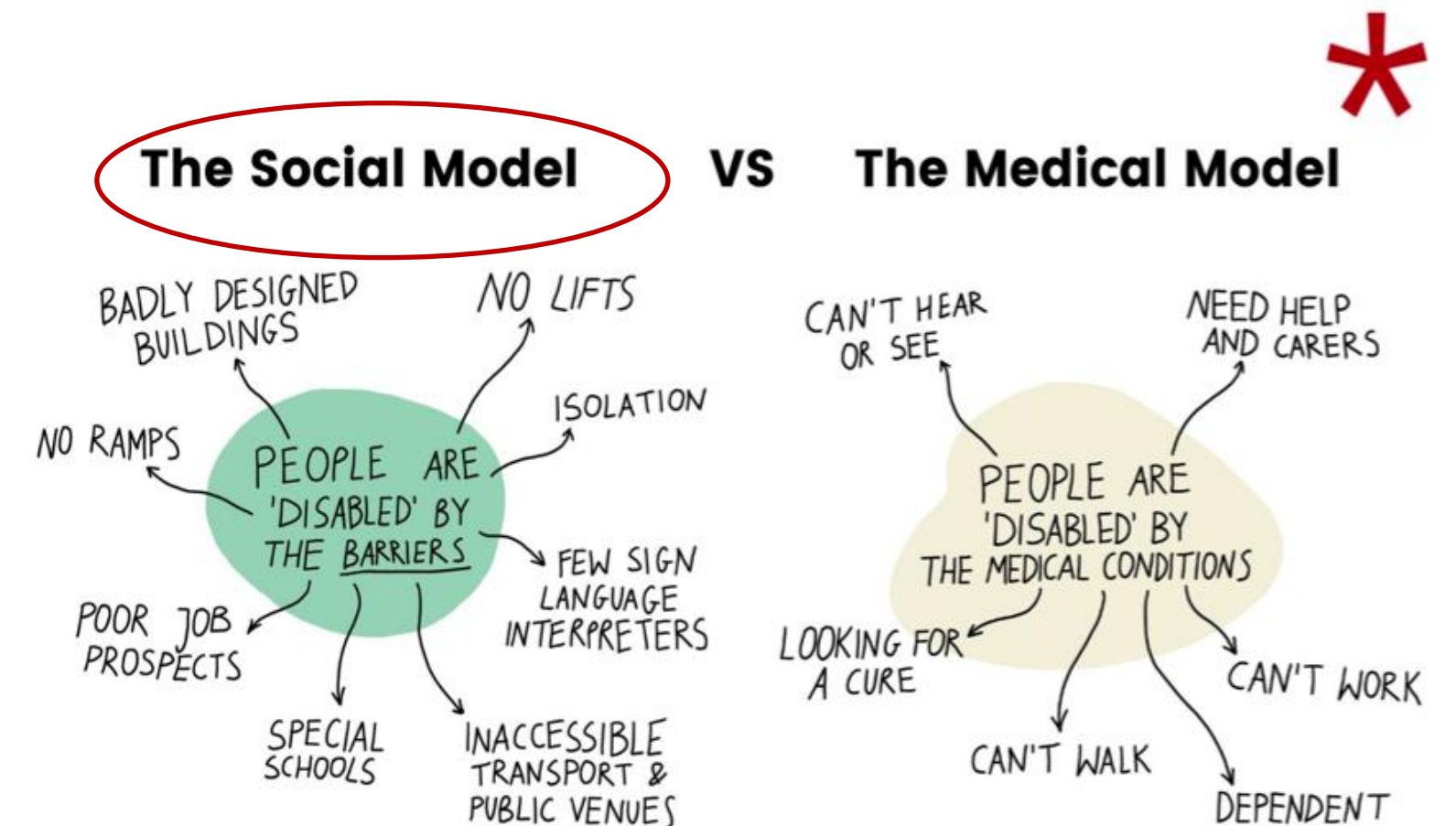


Individual vs Crowdsourced

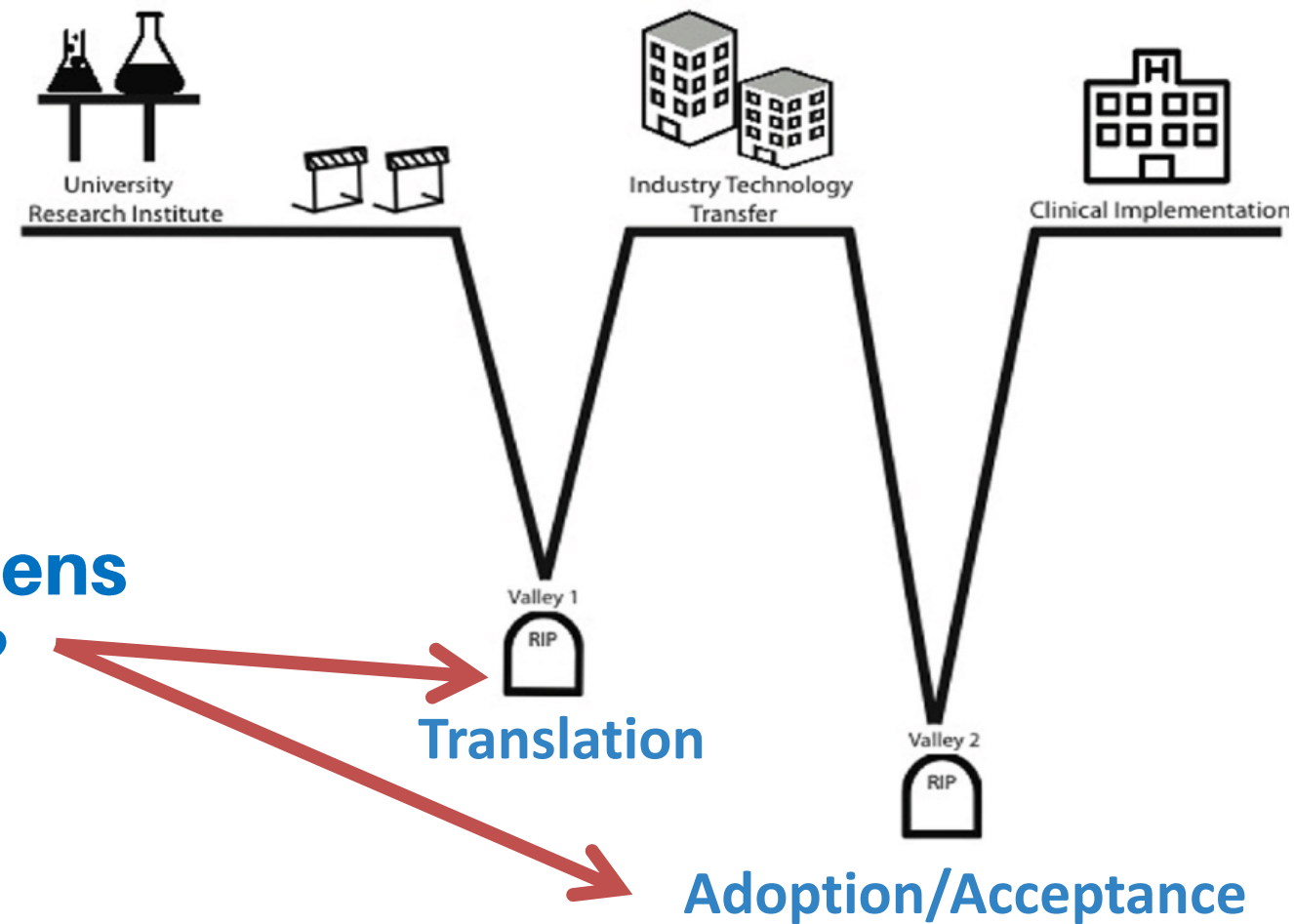




Gaps in Design



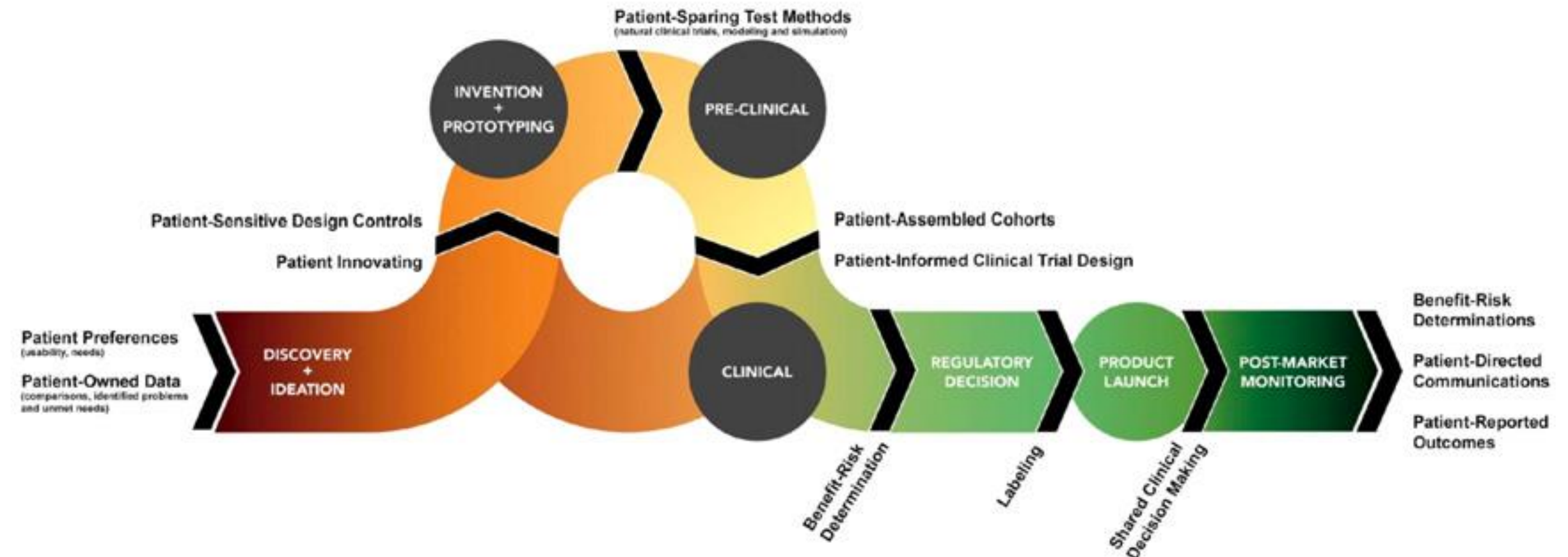
What
Happens
here?



Valley of Death

Community Engagement

Incorporating Patient Preferences into the Medical Device Total Product Lifecycle



Sources:

Fernandez-Moure, Joseph. (2016). Lost in Translation: The Gap in Scientific Advancements and Clinical Application. *Frontiers in Bioengineering and Biotechnology*. 4. 10.3389/fbioe.2016.00043.

Benz HL, Civillico EF. Neuroprosthetics and the science of patient input. *Exp Neurol*. 2017 Jan;287(Pt 4):486-491. doi: 10.1016/j.expneurol.2016.07.017. Epub 2016 Jul

22. PMID: 27456271; PMCID: PMC5508582.

iBCI Collaborative Community

Welcome to the Implantable BCI
Collaborative Community

ibci-cc.org

