Submission to the Minister for Industry and Science and the National Robotics Strategy Advisory Committee, on the National Robotics Strategy Discussion Paper

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To the Hon. Ed Husic and Members of the National Robotics Strategy Advisory Committee,

I am writing as a researcher in consumer psychology and humanised technologies within the BEST Centre at QUT to make a submission on the National Robotics Strategy Discussion Paper. My comments in this submission do not seek to subtract from the indisputable importance of other disciplines and applications of robotics featured in the discussion paper, but rather to provide an additional social science perspective on the robotics and automation strategy for Australia. My two recommendations are:

1. Explicitly include social robots in definitions and in the National Robotics Strategy

Adding 'Social Robots' as a sub-category of Service Robot (alongside 'Field Robot') creates positive flow-on effects for diversity, human-centred development, and trust. A social robot can be defined as "…an embodied system that can be perceived as a social entity and is capable of communicating with the user" (p.1180)[1]. The field of social robotics is naturally multi-disciplinary, offering greater diversity of not only approaches but of traditionally under-represented groups. Diversity is also key to strengthening ethical development such as reducing algorithmic bias[2]. Further, the explicit inclusion of robots designed to interact socially with humans enhances opportunities for human-centred design by requiring consideration of human needs from conception to delivery. For instance, trust and support for robots can be achieved by making robots more human-like[3] and by allowing people to contribute to designing robots.

In short, broadening our definition of robotics broadens participation and enhances outcomes for policy, business, and consumers.

[Definition (1); Australia's robotics opportunity (2); National capability (6); Skills and diversity (18)]

[1] Naneva, S., Sarda Gou, M., Webb, T. L., & Prescott, T. J. (2020). A systematic review of attitudes, anxiety, acceptance, and trust towards social robots. *International Journal of Social Robotics*, *12*(6), 1179-1201.
[2] Li, M. (2020). To Build Less-Biased AI, Hire a More-Diverse Team. Harvard Business Review.
[3] Blut, M., Wang, C., Wünderlich, N. V., & Brock, C. (2021). Understanding anthropomorphism in service provision: a meta-analysis of physical robots, chatbots, and other AI. *Journal of the Academy of Marketing Science*, *49*, 632-658.

2. Consider the household as a gateway to trust, inclusion and adoption

Strong growth in the consumer robotics market – which primarily includes robots used in domestic/personal settings – is predicted to continue at a compound annual growth rate of 26.89% between 2022-2027[4]. Hence it should be considered that robots and automation technologies are not just inputs to business but can also be profitable business outputs[5]. Further, the consumer market may offer benefits beyond traditional economic outcomes. Whilst more research is needed[6], increasing focus on household/consumer applications of robotics may offer a gateway to trust, inclusion and adoption by providing a lower-risk opportunity for people choose to learn about robots in a familiar environment that allows direct 'hands on' engagement.

Greater access to affordable, ethically and responsibly developed technological innovation in household environments – in addition to within industry – has the potential to benefit Australian consumers as well as the economy.

[Trust, inclusion and responsible development and use (13); Increasing adoption (22)]

In summary, my recommendations to the Minister, Department, and Committee are to include social robots and household applications of robotics/automation more explicitly within the National Robotics Strategy.

Yours sincerely

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[4] Infiniti Research Limited (2022). Global Consumer Robotics Market 2023-2027.

[5] Robotics Australia Group (2022). A Robotics Roadmap for Australia.

[6] Lu, V. N., Wirtz, J., Kunz, W. H., Paluch, S., Gruber, T., Martins, A., & Patterson, P. G. (2020). Service robots, customers and service employees: what can we learn from the academic literature and where are the gaps?. *Journal of Service Theory and Practice*, *30*(3), 361-391.