

FAQ: Where does i2S fit amongst transdisciplinarity, systems thinking, action research and similar research approaches?

Integration and Implementation Sciences (i2S) aims to be the discipline that underpins a range of research approaches that tackle complex societal and environmental problems. These are approaches that draw on the insights of different disciplines and stakeholders to develop:

1. a more comprehensive understanding of the complex problem, both what is known and unknown
2. more ideas for ways of addressing the problem
3. effective ways of supporting policy makers and practitioners from government, business and civil society in bringing about change to improve the problem.

There are many approaches, listed in the table over the page, that have been developed to undertake all or some of these tasks. Some aim to be comprehensive, such as transdisciplinarity, systems thinking and action research. Others address only a subset of these three tasks, such as implementation science, which focuses on effective ways of supporting policy and practice change, and the science of team science, which, although relevant to all three tasks, concentrates on the best ways of working together.

i2S recognizes that tackling complex societal and environmental problems generally benefits from a mix of approaches in that action research led by those affected by the problem may be suitable for some aspects of the problem, a system dynamics model for other aspects, and a specific change management approach for still others.

i2S also recognizes that none of the existing approaches encompasses everything that's required to tackle complex problems or even all of the aspects of the other approaches. For example, all of the approaches are limited in how they deal with unknowns and change. Taking unknowns, for example:

- approaches such as interdisciplinarity and implementation science hardly deal with unknowns
- other approaches deal with unknowns in a specific way ignoring other aspects, for example postnormal science has developed 'NUSAP' to allow different sorts of uncertainty to be presented in a standardised way, while not dealing with unknown unknowns, for example.

The point here is not to be critical of existing approaches, which have been hugely beneficial in highlighting the challenges of addressing complex societal and environmental problems, as well as developing effective ways of responding to those challenges. Instead, the time is right for developing ways of tackling complex problems that bring these different approaches together, as well as identifying and filling gaps that remain. This is the task that i2S has set for itself.

Approaches to tackling complex societal and environmental problems	
Comprehensive approaches	Approaches tackling specific aspects
action research complex project management complex systems science design science integrated assessment interdisciplinarity mode 2 operational research, including community operational research post-normal science sustainability science sustainability transitions systems thinking, including systems analysis, systems engineering, soft systems thinking, critical systems thinking, system dynamics (including participatory system dynamics), systemic intervention transdisciplinarity	<i>Approaches supporting policy and practice change</i> change management impact assessment impact evaluation implementation science K* (KStar), including knowledge brokering, knowledge exchange, knowledge management, knowledge mobilization, knowledge transfer, knowledge translation policy science <i>Approaches to improve decision making</i> decision making under deep uncertainty decision sciences risk analysis <i>Approaches to improve teamwork</i> science of team science

References:

This FAQ response builds on previous work in:

Bammer, G. (2013). *Disciplining Interdisciplinarity: Integration and Implementation Sciences for Researching Complex Real-World Problems*. ANU Press: Canberra.

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Origin:

This is one of four FAQ resources produced by Gabriele Bammer in 2022 for the Integration and Implementation Sciences (i2S) website. The information on that website has been transferred and is now available at <https://i2insights.org/i2s/>. The FAQ are listed under “Historical notes” on <https://i2insights.org/i2s/i2s-publications/>, which provides more information about them.