

ATTACHMENT B**TECHNOLOGY READINESS LEVELS (TRL) AND GANP MATURITY LEVELS**

Note. — These Technology Readiness Levels (TRLs) are provided on a provisional basis and will be amended based on the initial application of the roadmap.

Technology readiness levels			Some explanatory notes from: https://ised-isde.canada.ca/site/innovation-canada/en/technology-readiness-levels
Research	TRL 1	Basic principles observed	Scientific research begins to be translated into applied research and development. Activities might include paper studies of a technology's basic properties.
	TRL 2	Technology concept formulated	Invention begins. Once basic principles are observed, practical applications can be invented. Activities are limited to analytic studies.
	TRL 3	Experimental proof of concept	Active research and development is initiated. This includes analytical studies and/or laboratory studies. Activities might include components that are not yet integrated or representative.
Development	TRL 4	Technology validated in a lab	Basic technological components are integrated to establish that they will work together. Activities include integration of "ad hoc" hardware in the laboratory.
	TRL 5	Technology validated in a relevant environment	The basic technological components are integrated for testing in a simulated environment. Activities include laboratory integration of components.
	TRL 6	Technology demonstrated in a relevant environment	A model or prototype that represents a near desired configuration. Activities include testing in a simulated operational environment or laboratory.
Deployment	TRL 7	System prototype demonstration in an operational environment	Prototype at planned operational level and is ready for demonstration in an operational environment. Activities include prototype field testing.
	TRL 8	System complete and qualified	Technology has been proven to work in its final form and under expected conditions. Activities include developmental testing and evaluation of whether it will meet operational requirements.
	TRL 9	Actual system proven in an operational environment	Actual application of the technology in its final form and under real-life conditions, such as those encountered in operational tests and evaluations. Activities include using the innovation under operational conditions.

GANP maturity levels	
Concept	This maturity level focuses on exploratory research and includes scientific research, investigation of basic principles observed and reported and definition of the concept.
Validation	This maturity level focuses on industrial research and validation and includes proof of concept validation, standalone prototyping implementation and test, testing and prototyping in representative environment and the full engineering demonstration in actual system validation.
Standardization	This maturity level focuses on the definition of provisions necessary for the interoperability of systems and the harmonization of procedures.
Ready for implementation	This maturity level focuses on the end of system development and the initial operational capability at a global level.
