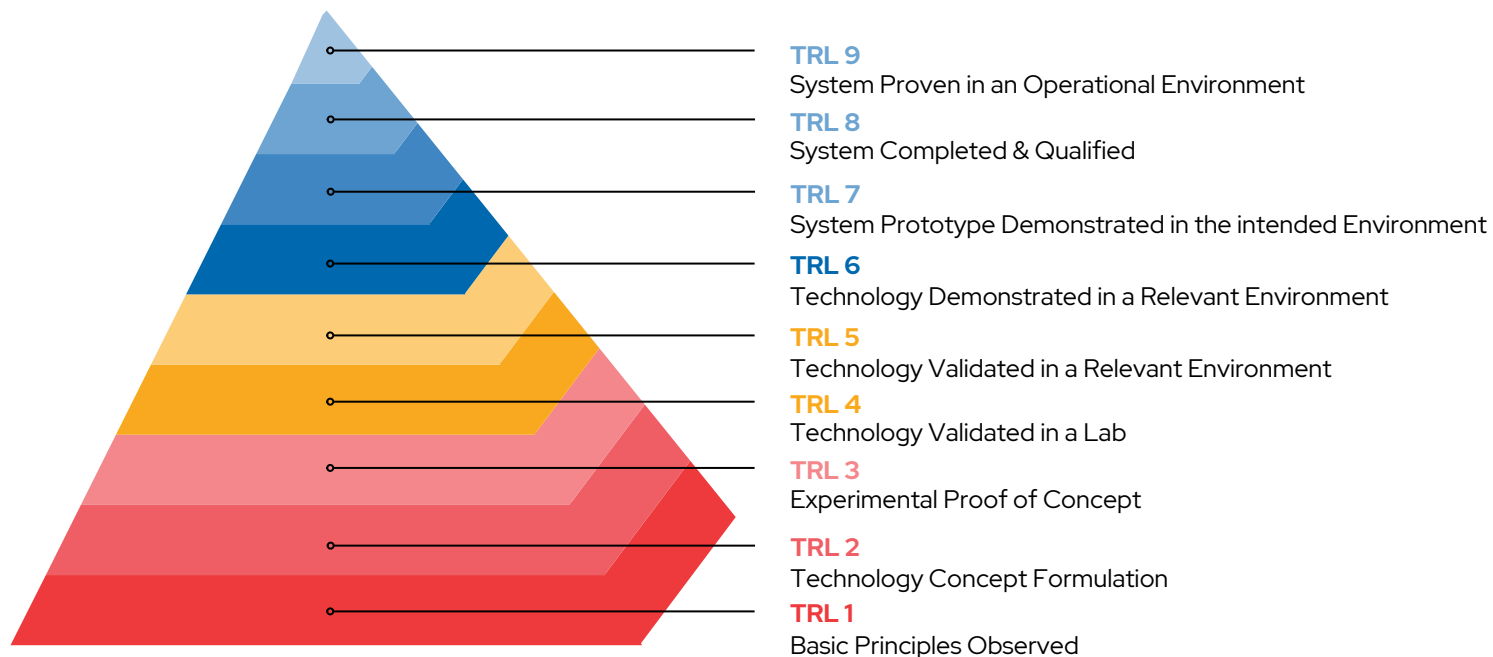




Technology Readiness Levels

A quick guide



N.B. Please note that “Technology” is defined as the application of knowledge and tools to solve problems, enhance capabilities, or improve efficiency across various fields.

Technology Readiness Level (TRL)	Definition	Explanation
TRL 1	Basic principles observed.	Lowest level of technology readiness. Process concept with basic scientific foundation.
TRL 2	Technology concept and/or application formulated.	Scientific research begins to be translated into applied research and development. Applications are speculative and may be unproven.
TRL 3	Analytical and experimental critical function and/or characteristic proof-of-concept.	Active research and development is initiated, including analytical / laboratory studies to validate predictions regarding the technology.
TRL 4	Scientific & process validation in laboratory environment.	Basic technological components are integrated to establish that they will work together, in a controlled environment.
TRL 5	Scientific & process validation in intended environment.	The basic technological components are integrated with reasonably realistic supporting elements so it can be tested in a simulated environment.
TRL 6	System /subsystem model or prototype demonstration in an intended environment (ground or space).	A representative model or prototype system is tested in an intended environment.
TRL 7	System (full-scale) prototype demonstration in a real operational environment at pre-commercial scale.	A prototype system that is at the planned operational system.
TRL 8	Actual system completed and validated as capable commercial system.	In an actual system, the technology has been proven to work in its final form and under expected conditions.
TRL 9	Full commercial application and technology available for consumers	The system incorporating the new technology in its final form has been used under actual mission conditions.