

TRL Technology Readiness Level Scale : Overview table

Cluster	TRL	H2020 terminology	EARTO reading	EARTO definition and description
Invention	TRL1	Basic principles observed	Basic principles observed	that can be used in new technologies
	TRL2	Technology concept formulated	Technology concept formulated	Potential application of the basic (technological) principles are identified, including their technological concept. Also the first manufacturing principles are explored, as well as possible markets identified. A small research team is established to facilitate assessment of technological feasibility.
Concept validation	TRL3	Experimental proof of concept.	First assessment of feasibility of the concept and technologies	
	TRL4	Technological validity in a lab	Validation of integrated prototype in a laboratory	
Prototyping and incubation	TRL5	Technology validated in relevant environment (industrially relevant environment in the case of KETs)	Testing of the prototype in a user environment	The system is tested in a user environment, connected to the broader technological infrastructure. Actual use is tested and validated. Manufacturing is prepared and tested in a laboratory environment and lead markets can test pre-production products. Fist activities within the organisation are established to further scale up to pilot production and marketing
Pilot production and demonstration	TRL6	Technology demonstrated in relevant environment (industrially relevant environment in the case of KETs)	Pre-production of the product, including testing in a user environment	line or pilot plant (low rate manufacturing). The interaction between the product and manufacturing technologies are assessed and fine-tuned, including additional R&D. Lead markets test the early products and manufacturing process and the organisation of production is made operational (including marketing, logistics, production and others).
	TRL7	System prototype demonstration in an operational environment.	Low scale pilot production demonstrated	Manufacturing of the product is now fully operational at low rate, producing actual commercial products. Lead markets test these final products and organisational implementation is finalized (full marketing established, as well as all other production activities fully organized). The product is formally launched into first early adopter markets.
Initial market introduction	TRL8	System completed and qualified	Manufacturing fully tested, validated and qualified	fully established, as well as the organisation of production and marketing. Full launch of the product is now established in national and general early majority markets.
Market expansion	TRL9	Actual system proven in operational environment (competitive manufacturing in the case of KETs; or in space)	Production and product fully operational and competitive	

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The TRL scale for Life sciences

