

Assessment of a TRL

## Other Examples

**EARTO:** EARTO's reading on the TRL scale incorporates manufacturability and includes non-technological aspects in a multi-technology adaption.



1	2	3	4	5	6	7	8	9
Basic principles observed	Technology concept formulated	First assessment feasibility concept & technologies	Validation integrated prototype in lab environment	Testing prototype in user environment	Pre- production product	Low scale pilot production demonstrated	Manufacturing fully tested, validated and qualified	Production & product fully operational
Invention		Concept validation		Prototyping & incubation	Pilot production & demonstration		Initial market introduction	Market expansion

**US Department of Energy:** The US-DoE has adapted the TRL scale to incorporate more energy based and biotechnology aspects.



1	2	3	4	5	6	7	8	9
Basic principles observed	Technology concept formulated	Proof of Concept	Component/ system validation in lab environment	Validation in relevant environment	Pilot scale Validated in relevant environment	Full scale Demonstration in relevant environment	System complete and qualified (test and demonstration)	Actual system operated full range conditions
Basic technology Research to research prove feasibility			0	Technology Technology development demonstration		System commissioning		System operation



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## Summary Sheet

Revenue TRL	Revenue Definition	TRL	H2020 Definition	EARTO reading	KPMG definition and description
0	Idea	0			Idea formulation
1	Basic Research	1	Basic Principles Observed	Basic Principles Observed	Basic principles translated from scientific research.
2	Technology Formulation	2	Technology Concept Formulated	Technology Concept Formulated	A technology concept is formulated in terms of how the basic principles can be applied.
3	Applied Research	3	Experimental Proof of concept	First assessment of feasibility of the concept and technologies	First assessment of concept through actual research assessing technical and market feasibility.
4,5	Small Scale Prototype  Large Scale Prototype	4	Validation of integrated prototype in a laboratory	Validation of integrated prototype in a laboratory	Early feasibility tested in laboratory by integrating basic technological components.
6	Prototype System	5	Testing of prototype in a user environment	Testing of prototype in a user environment	System, actual use and manufacturing tested and validated in user environment
7	Demonstration System	6	Technology demonstrated in relevant environment	Per-production of the product, including testing in a user environment	Full integration of product and manufacturing technology now established in pilot line/ plant.
8	First kind of commercial System	7	Low scale pilot production, producing actual commercial products	Low scale pilot production demonstrated	Low scale pilot production demonstrated. Product launched to early markets.
9	Full commercial application	8	System Completed and qualified	Manufacturing fully tested, validated and qualified	Manufacturing of system has been fully completed. Product is launched to majority markets.
		9	Market expansion, incremental changes in product create new versions	Production and product fully operational and competitive	Product fully operational and competitive. Production and manufacturing optimised through continuous incremental innovations.