



Robotics in Horizon 2020 IMPACT and Technology Readiness Levels

Franco Mastroddi

Unit A2 - Robotics

DG Communication Networks, Content and Technology

European Commission



Impact – main principles

- By coupling **research** and **innovation** (R&I), H2020 aims to drive economic growth and create jobs.
- H2020 gives **more weight** to IMPACT
For Innovation actions (our Use cases):
 - impact criterion weighted by factor of 1.5
 - impact considered first when scores equal
- Robotics contributes more directly and more explicitly to impact than in previous framework programmes.





Expected Impact in the WP

- Increase **Europe's market** share in industrial and domestic service robots
- Improve the **competitiveness** of Europe's manufacturing sector
- Increase **Industry-Academia cross-fertilisation**
- Deploy robotics technologies in **new application domains.**
- Improve **Technology Readiness Levels**
- Improve **performance evaluation** and certification (**Call1 only**)

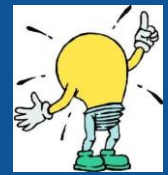


Expected Impact in the WP (cont.)

- Create and maintain **world class research** in Europe and achieve excellent standards of publications and research outputs.
- Ensure sufficient numbers of **well-trained professionals** required by the growth of the industry.
- Ensure wide use of **shared resources**.

Plus, for Call 2:

- Contribute to an **inclusive society** through robotic technologies (e.g. exoskeleton, advanced prosthesis).
- Address **ethical, legal and societal** issues and engage the wider public.



IMPACT - tips

- Any individual proposal is not expected to address the whole list!
- Be concrete and specific about what the project results would achieve in the areas described in the Workprogramme, during the project lifetime and beyond
- Stress your (competitive) positioning / technical advantage in possible future markets or applications
- Assess the need for industry participation and provide evidence of their commitment



Dissemination

- Provide concrete dissemination plan, scientific and non-scientific, with a coherent vision, not just a 'shopping list'
- Prepare for all types of media channels (including e.g. YouTube)
- Involve the right kind of person with communications and media skills
- Note: specific rules apply to PcP dissemination (e.g. in the tender launch phase) with respect to Treaty and State Aid principles



A good exploitation plan

- Should be well thought-out and properly resourced
- Directly supports the expected impact
- Includes, where relevant, a credible business case
- Involves people with the right expertise (for technology transfer, patents etc.).
- Projects with a more scientific approach should still make clear what the eventual exploitation outcomes and impact will be.



Technology Readiness Levels

- TRLs are a measure of maturity of a technology for its intended market, typically used by e.g. space agencies, US DoD, the oil and gas industries
- The basic TRL scheme has progressive levels going from e.g. TRL 1 (less mature) to TRL 9 (more mature – ready for market)
- LEIT – ICT- Robotics aims to "improve the Technology Readiness Levels (TRL) of robotics R&D"



H2020 general TRL scheme

- *TRL 1 – Basic principles observed*
- *TRL 2 – Technology concept formulated*
- *TRL 3 – Experimental proof of concept*
- *TRL 4 – Technology validated in lab*
- *TRL 5 – Technology validated in relevant environment*
- *TRL 6 – Technology demonstrated in relevant environment*
- *TRL 7 – System prototype demonstration in operational environment*
- *TRL 8 – System complete and qualified*
- *TRL 9 – Actual system proven in operational environment*



TRLs applied to robotics

- Improved TRLs are not the only method of portraying expected impact in robotics.
- TRL interpretations are not set in concrete, and can depend on the context of different H2020 sections e.g., space, manufacturing, micro/nano – and of course robots.
- TRLs for robotics can be seen as milestones, marking significant concrete changes in the process of robotics technology development from concept to market



TRL – tips

- A proposal **does not** have to address **all** TRLs
- We **do not** target any specific TRLs. It is up to the proposer. Other parts of the H2020 Workprogramme **do** address specific TRLs
- State the TRL you are **starting** from and the TRL you are **aiming** at
- TRL 1 and 2 are **not** excluded from LEIT-ICT-Robotics
- For robotics use cases, higher TRLs are targeted.

For further reference

Robotics PPP (SRA and MAR)

- <http://www.eu-robotics.net/ppp/>

H2020 Workprogramme General Annexes

- http://ec.europa.eu/research/participants/portal/desktop/en/funding/reference_docs.html

