

<b>Dimension</b>	<b><i>Research and development</i></b>
<b>Sub-dimension</b>	<b><i>Network of collaborations</i></b>
<b>Indicator name</b>	<b><i>R4: Peer-to-peer collaborations</i></b>
<b>Rationale</b>	It measures how many collaborations are developed by agents of a geographical area, so indicating the degree to which geographical areas are able to collaborate for R&D purposes. With specific reference to the innovation capacity, this is linked to the capacity of actor to interact among themselves. When multiple perspectives and different notions are brought together and converge towards a common objective, they are very likely to favour the generation of innovations (Lane & Maxfield, 2005).
<b>Definition</b>	Number of weighted collaborations developed by economic agents. The weight is based on fractional counting. As what considered are "peer-to-peer" collaborations, each collaboration has a weight that equals one divided by the binomial coefficient determined with $n$ =number of players involved in the collaboration, and $k=2$ . The sum of all fractions adds up to 1.
<b>Unit of measurement</b>	Real positive number
<b>Geographical coverage</b>	World
<b>Geographical granularity</b>	Macro areas (top countries plus world regions), EU27 Member States
<b>Breakdown</b>	Profile of collaborating agents, as a combination of type of agent (firm, research, government) and location of agents (local, abroad) as follows: <ul style="list-style-type: none"> <li>• B2B abroad, which indicates that firms located in the considered geographical area collaborate with other firms located abroad (i.e., not in the same geographical area),</li> <li>• B2B local, which indicates that firms located in a specific geographical area collaborate with firms located in the same geographical area,</li> <li>• B2R local, which indicates that firms located in a specific geographical area collaborate with research institutes that are located in the same geographical area,</li> <li>• G2B local, which indicates that the governmental institutions of that geographical area collaborate with business players in the same geographical area,</li> <li>• R2R abroad, which indicates that research institutes located in that geographical area collaborate with research institutes located abroad,</li> <li>• R2R local, which indicates that research institutes located in that geographical area collaborate with research institutes located in the same geographical area.</li> </ul> Additional breakdown: Type of R&D activity: patent applications, frontier research publications, and EU-funded projects FP7-H2020 (where relevant).
<b>Data source(s)</b>	JRC AI TES Dataset 2020, available at <a href="https://data.jrc.ec.europa.eu/collection/id-0126">https://data.jrc.ec.europa.eu/collection/id-0126</a> See description of the dataset in indicator G1.
<b>Reference date</b>	Period 2009-2020 (one value for the entire period)
<b>Known limitations</b>	
<b>References and Comments</b>	Reference: Samoili S., Righi R., Cardona M., López Cobo M., Vázquez-Prada Baillet M., and De Prato G., TES analysis of AI Worldwide Ecosystem in 2009-2018, EUR 30109 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-16661-0, doi:10.2760/85212, JRC120106. <a href="https://publications.jrc.ec.europa.eu/repository/handle/JRC120106">https://publications.jrc.ec.europa.eu/repository/handle/JRC120106</a> Lane, D.A., Maxfield, R.R. Ontological uncertainty and innovation. Journal of Evolutionary Economics, 15, 3–50 (2005)