

Knowledge and technology transfer

Fig. 12: Knowledge and technology transfer in the ETH Domain

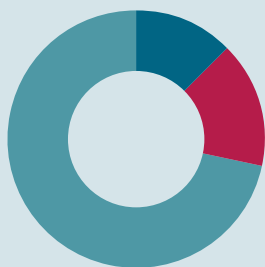
| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Invention disclosures¹ | – | – | – | – | – | – | 343 | 358 | 329 | 310 |
| ETH Zurich | – | – | – | – | – | – | 171 | 205 | 159 | 165 |
| EPFL | – | – | – | – | – | – | 134 | 119 | 132 | 107 |
| Research institutes | – | – | – | – | – | – | 38 | 34 | 38 | 38 |
| Software notifications^{1,2} | – | – | – | – | – | – | 26 | 36 | 40 | 32 |
| ETH Zurich | – | – | – | – | – | – | 20 | 19 | 26 | 18 |
| EPFL | – | – | – | – | – | – | 6 | 13 | 13 | 14 |
| Research institutes | – | – | – | – | – | – | 0 | 4 | 1 | 0 |
| Patents | 147 | 195 | 193 | 211 | 219 | 230 | 206 | 230 | 224 | 217 |
| ETH Zurich | 72 | 87 | 103 | 82 | 98 | 109 | 84 | 109 | 102 | 115 |
| EPFL | 52 | 75 | 66 | 99 | 88 | 100 | 95 | 95 | 98 | 75 |
| Research institutes | 23 | 33 | 24 | 30 | 33 | 21 | 27 | 26 | 24 | 27 |
| Licences | 194 | 230 | 223 | 270 | 311 | 353 | 377 | 341 | 324 | 338 |
| ETH Zurich | 45 | 35 | 38 | 35 | 50 | 78 | 82 | 87 | 62 | 43 |
| EPFL | 50 | 31 | 41 | 46 | 48 | 58 | 50 | 39 | 50 | 53 |
| Research institutes | 99 | 164 | 144 | 189 | 213 | 217 | 245 | 215 | 212 | 242 |
| Spin-offs | 40 | 38 | 43 | 49 | 48 | 50 | 48 | 55 | 59 | 66 |
| ETH Zurich | 22 | 22 | 24 | 22 | 25 | 25 | 25 | 27 | 30 | 34 |
| EPFL | 15 | 12 | 12 | 24 | 18 | 20 | 15 | 25 | 23 | 25 |
| Research institutes | 3 | 4 | 7 | 3 | 5 | 5 | 8 | 3 | 6 | 7 |

¹ Invention disclosures and software notifications were introduced in 2017 as additional KTT indicators.

² Open Source Software not included

Licences

338



| | |
|---------------------|-----|
| ETH Zurich | 43 |
| EPFL | 53 |
| Research institutes | 242 |

Invention disclosures

310

Software notifications

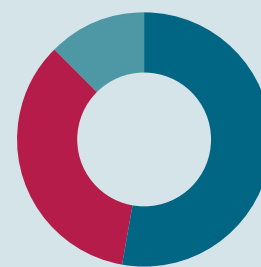
32

Spin-offs

66

Patents

217



| | |
|---------------------|-----|
| ETH Zurich | 115 |
| EPFL | 75 |
| Research institutes | 27 |

Fig. 13: Cooperation with the private and public sector

| | 2017 | 2018 | 2019 | 2020 |
|---|------------|------------|------------|------------|
| Collaboration contracts with the private sector | 507 | 594 | 570 | 610 |
| of which financed by the private sector | 316 | 415 | 404 | 388 |
| ETH Zurich | 122 | 149 | 163 | 143 |
| EPFL | 99 | 120 | 125 | 95 |
| Research institutions | 95 | 146 | 116 | 150 |
| of which financed by Innosuisse/EU FPs* | 191 | 179 | 166 | 222 |
| ETH Zurich | 57 | 74 | 55 | 72 |
| EPFL | 66 | 49 | 61 | 56 |
| Research institutions | 68 | 56 | 50 | 94 |
| Collaboration contracts with the Swiss public sector | 285 | 261 | 278 | 262 |
| ETH Zurich | 88 | 100 | 88 | 92 |
| EPFL | 54 | 43 | 51 | 47 |
| Research institutions | 143 | 118 | 139 | 123 |

Number of new cooperation agreements (research agreements and scientific services) with the private and Swiss public sector involving a volume of at least CHF 50,000 per contract. These indicators were introduced in 2017.

* EU FPs: European Framework Programmes for Research and Innovation

KTT indicators and counting methods

The patents correspond only to first filing, and the licences also include technology transfer agreements. The invention disclosures and software notifications correspond to the reports and notifications submitted in writing to the Technology Transfer Offices of the institutions of the ETH Domain in the reporting period. They reflect activities in the early phases of the innovation process, thereby supplementing the other KTT indicators. Open source software is not considered.

In order to reflect the cooperation between the institutions and private enterprise and the public sector, only recently concluded cooperation agreements are included. These are only research contracts and scientific services with a volume of at least CHF 50,000 per contract.

Cooperation with the private sector is divided into two categories: projects that are directly financed by industry in Switzerland or abroad; and those funded by Innosuisse or the EU Research Framework Programmes for Research and Innovation (EU FPs). Cooperation with the public sector includes contracts with public sector institutions in Switzerland, but not those with national or international research funding organisations and foundations.

Rankings observed worldwide (see Fig. 14 and 15)

The universities are assessed and ranked by institutions and businesses using various methods. THE (Times Higher Education World University Rankings) uses 13 key performance indicators for teaching (30% weighting), research (30%), citations (30%), international outlook (7.5%) and funding by industry (2.5%). QS (QS World University Rankings) focuses mainly on reputation (with a 40% weighting on academic reputation and 10% on reputation of graduates among employers), followed by the supervision ratio (20%), citations (20%) and international outlook (10%). ARWU (Academic Ranking of World Universities of Shanghai Ranking Consultancy) makes use of performance indicators for the quality of graduates and teaching staff that are based on the number of prestigious awards received (Nobel Prize, Fields Medal) and the number of frequently-cited researchers.

The publication activity is judged on the basis of the number of publications that have appeared in a select group of the most respected journals, and the ratio between the number of publications and the number of researchers at an institution. CWTS Leiden (Centre for Science and Technology Studies Leiden Ranking) is based solely on the publication activity of the universities, using this to calculate the indicators to assess research performance. One commonly used indicator for ranking the universities in the CWTS Leiden ranking is the proportion of publications each university has among the top 10% of the most-cited publications in the relevant discipline (PP(top 10%)). The CWTS Leiden World and Europe rankings of both Federal Institutes of Technology (see Fig. 14) are based on this indicator.