

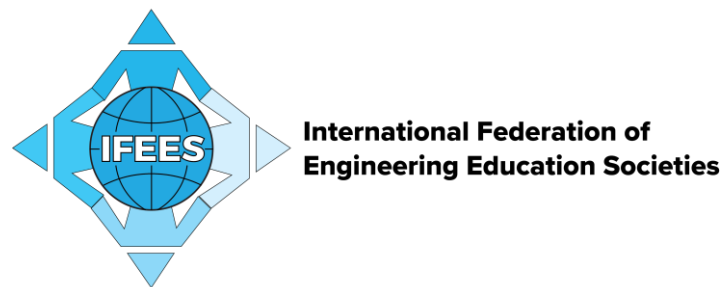
The New Guidelines for Engineering Education in Brazil



José Roberto Cardoso

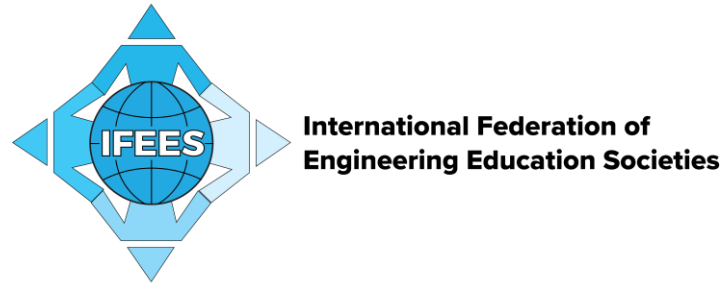
**Escola Politécnica da
Universidade de São Paulo**

June 2020



Agenda

1. Brazilian GDP
2. Brazilian Research by Numbers
3. Innovation Ranking
4. Competitiveness Ranking
5. Engineering Education by Numbers
6. New Guidelines Challenges
7. New Guidelines Impact
8. Conclusion



1. Brazilian GDP

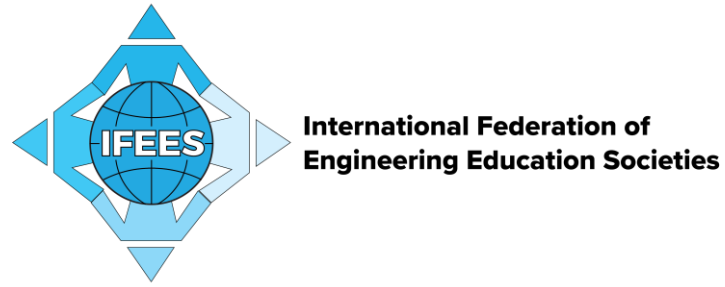
2011 – 2,624 trillion USD

2018 – 1,462 trillion USD

8th World Economy

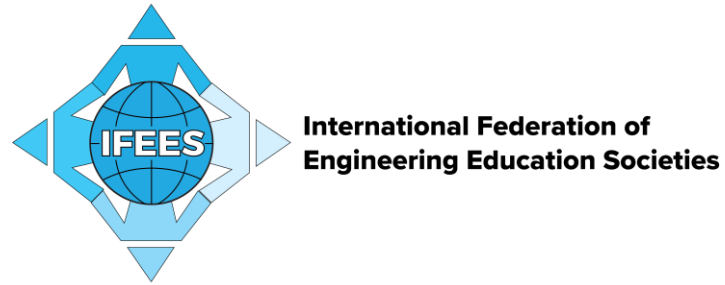
210 million inhabitants

12 million unemployed



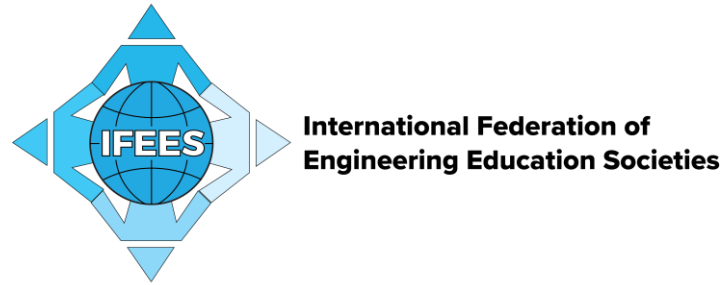
2. Brazilian Research in Numbers

0.7% of GDP for Research
Ranking of Publication: 14rd
Source: Clarivate Analytics



3. Innovation Ranking

66th Position among 126 countries
Only 1% of top 2000 companies



3. Innovation Ranking

Chile – 51
Mexico – 56
Uruguay – 62
BRAZIL - 66

Colombia – 67
Peru - 70
Argentina – 73
Panama - 75

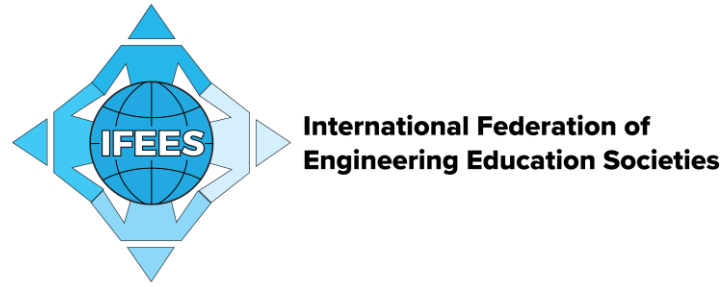
Source: Global Innovation Index 2019
Univ. Cornell



4. Competitvity Ranking

71th among 141 countries

Source: World Economic Forum

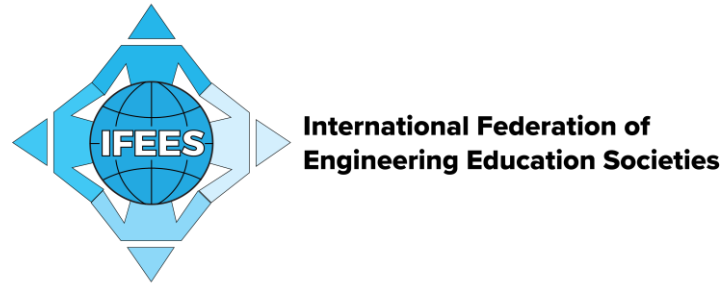


4. Competitiveness Ranking

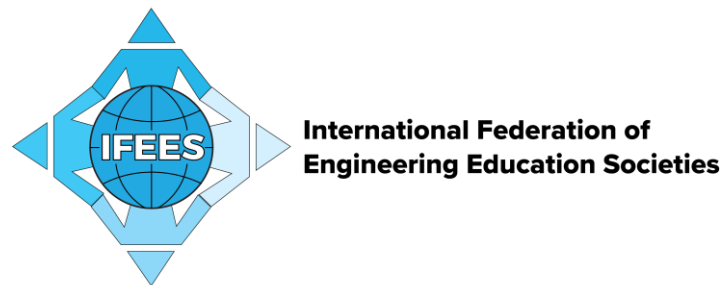
Singapore - 1
United States - 2
Hong Kong - 3
Netherlands - 4
Switzerland - 5
Japan - 6

Chile - 33
Mexico - 46
Uruguay - 54
Colombia - 57
Peru - 65
Brazil - 71

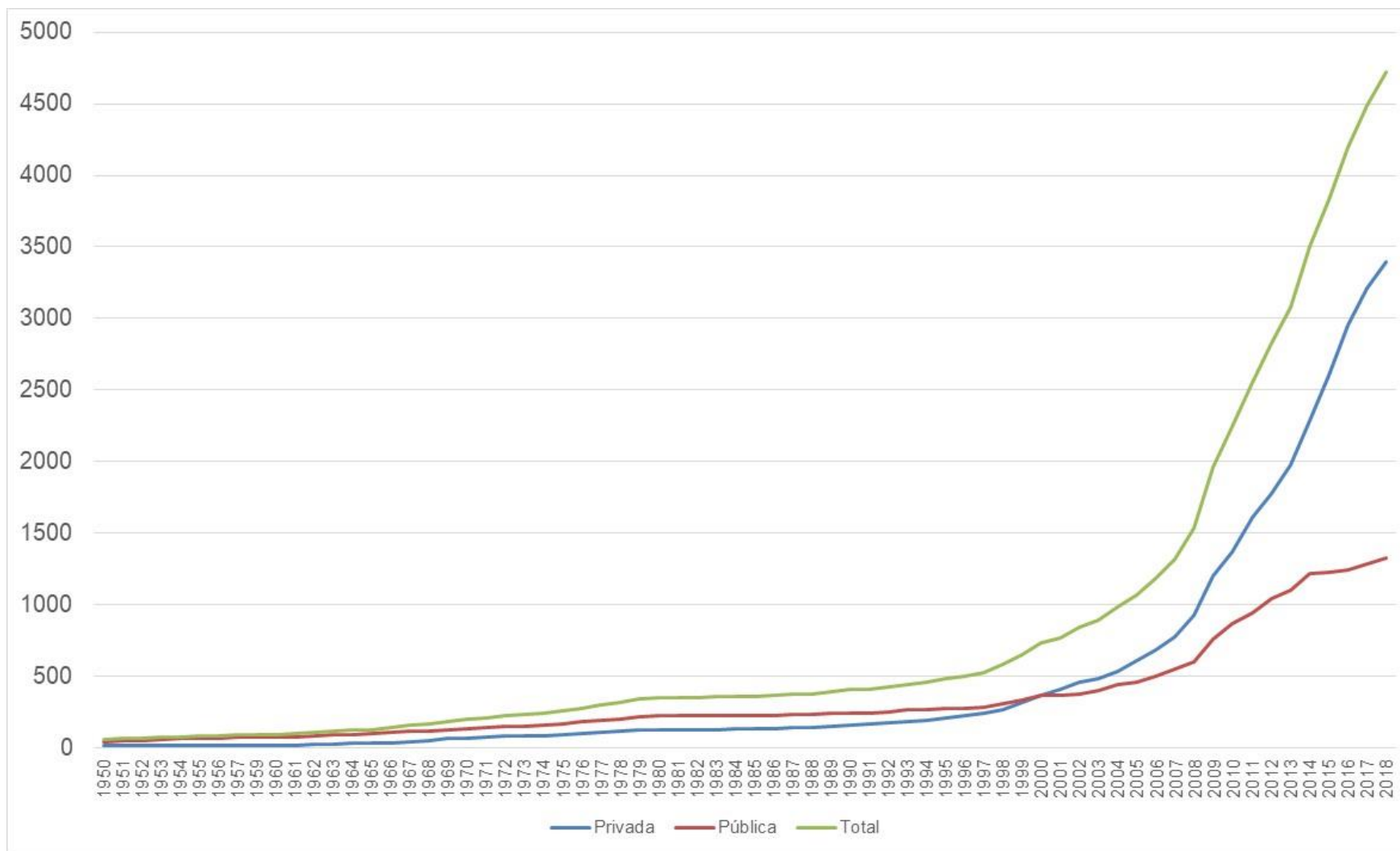
Source: World Economic Forum



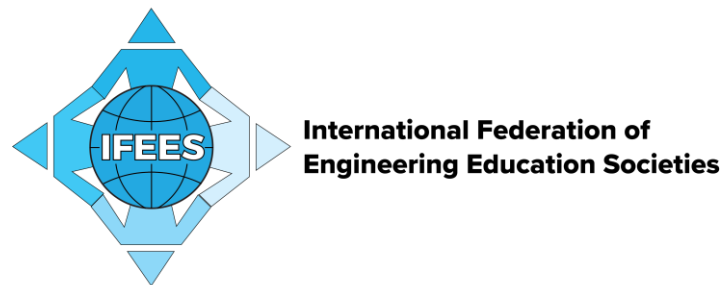
5. Engineering Education by Numbers



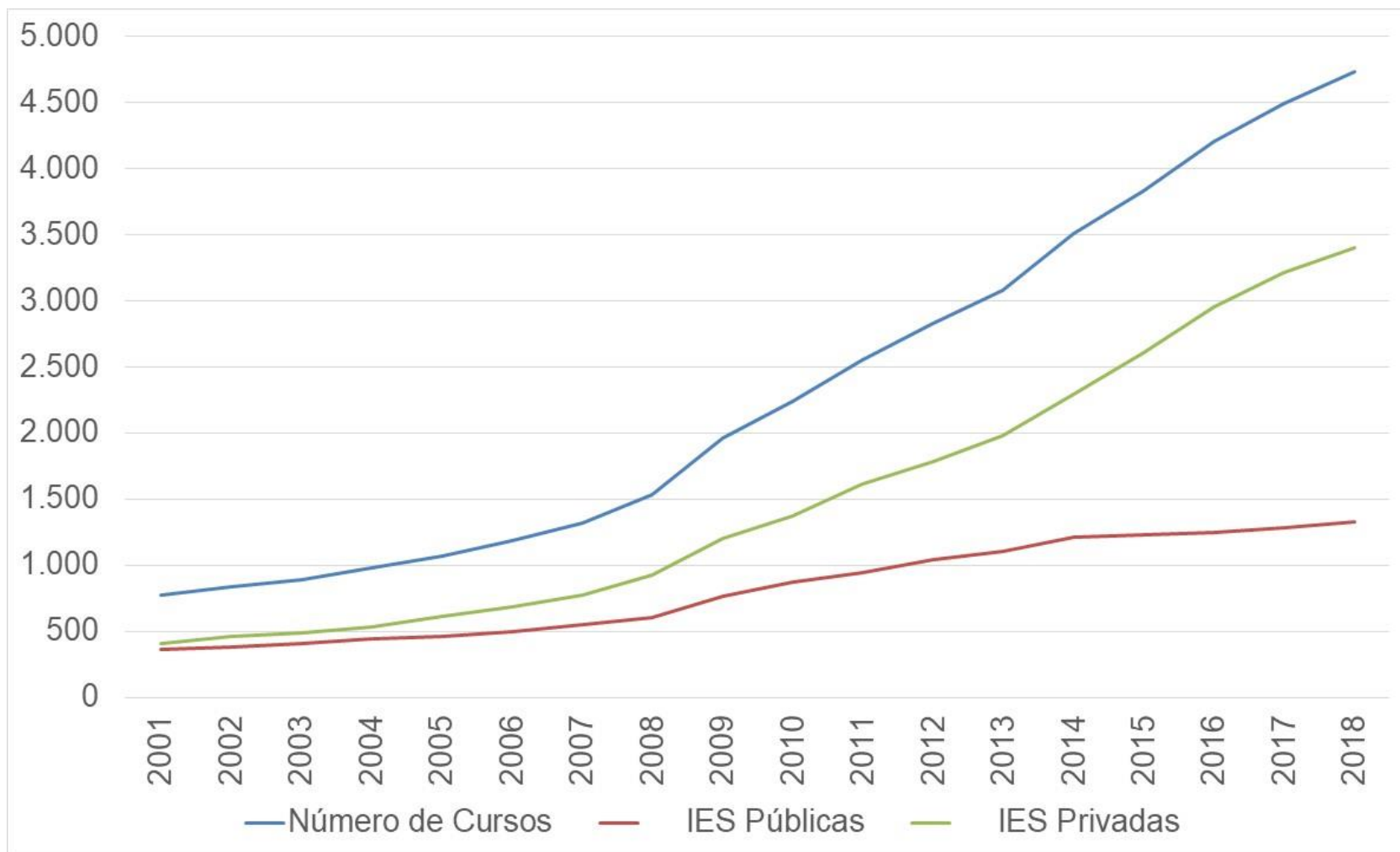
Numbers of Engineering Programs (Face-to-face + Online)



Fonte: Organizado por Vanderli Fava de Oliveira. Base: dados inep.gov.br, abr/2020



Numbers of Engineering Programs (Face-to-face + Online)



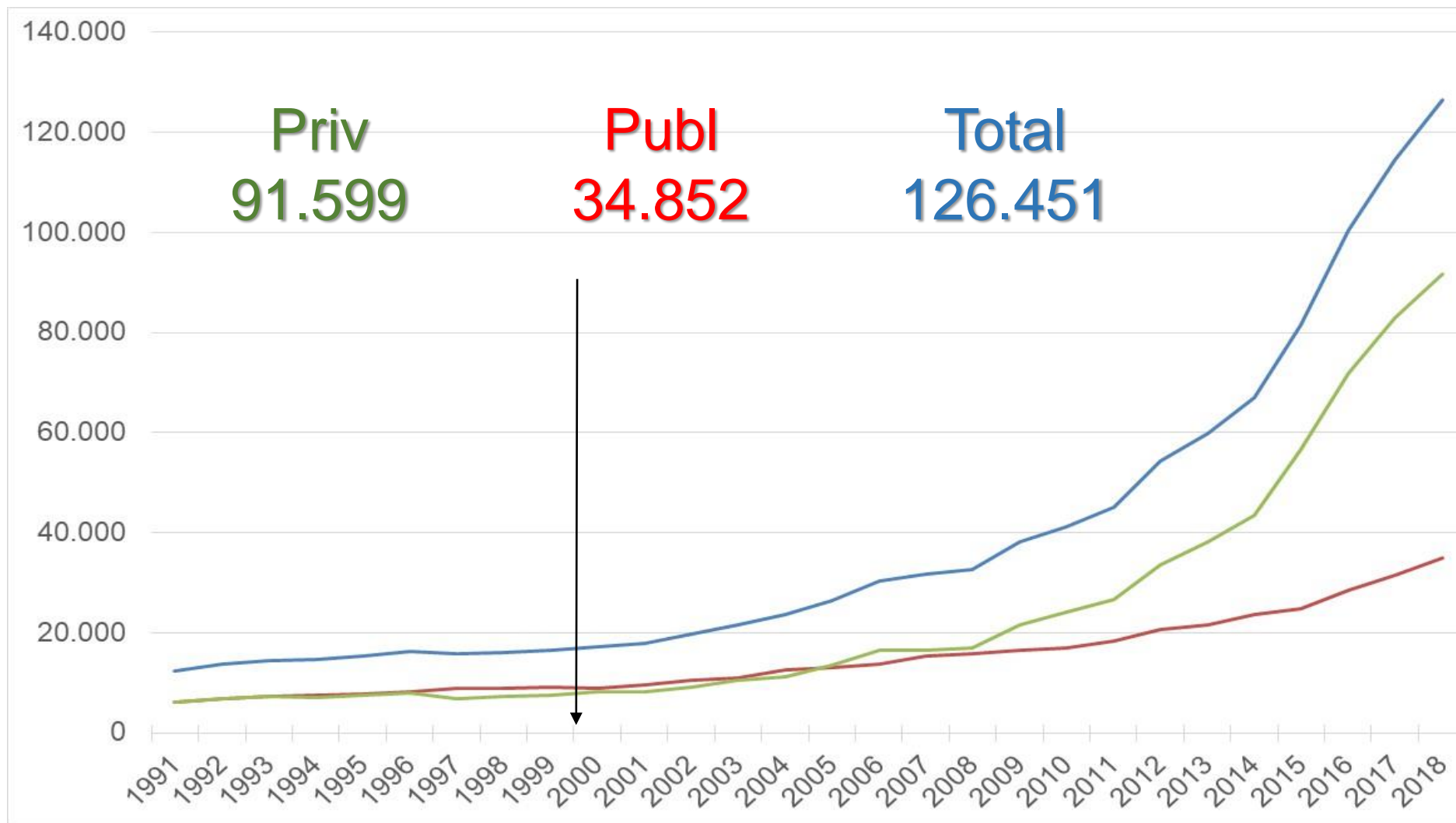
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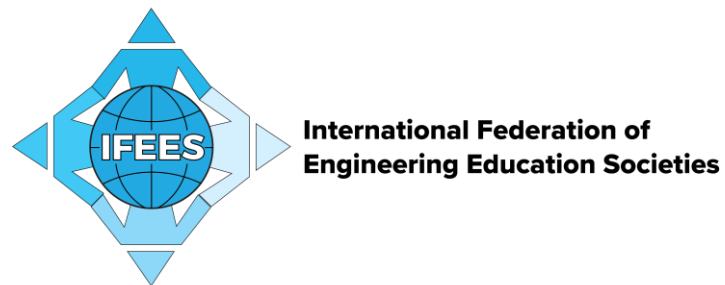
International Federation of
Engineering Education Societies



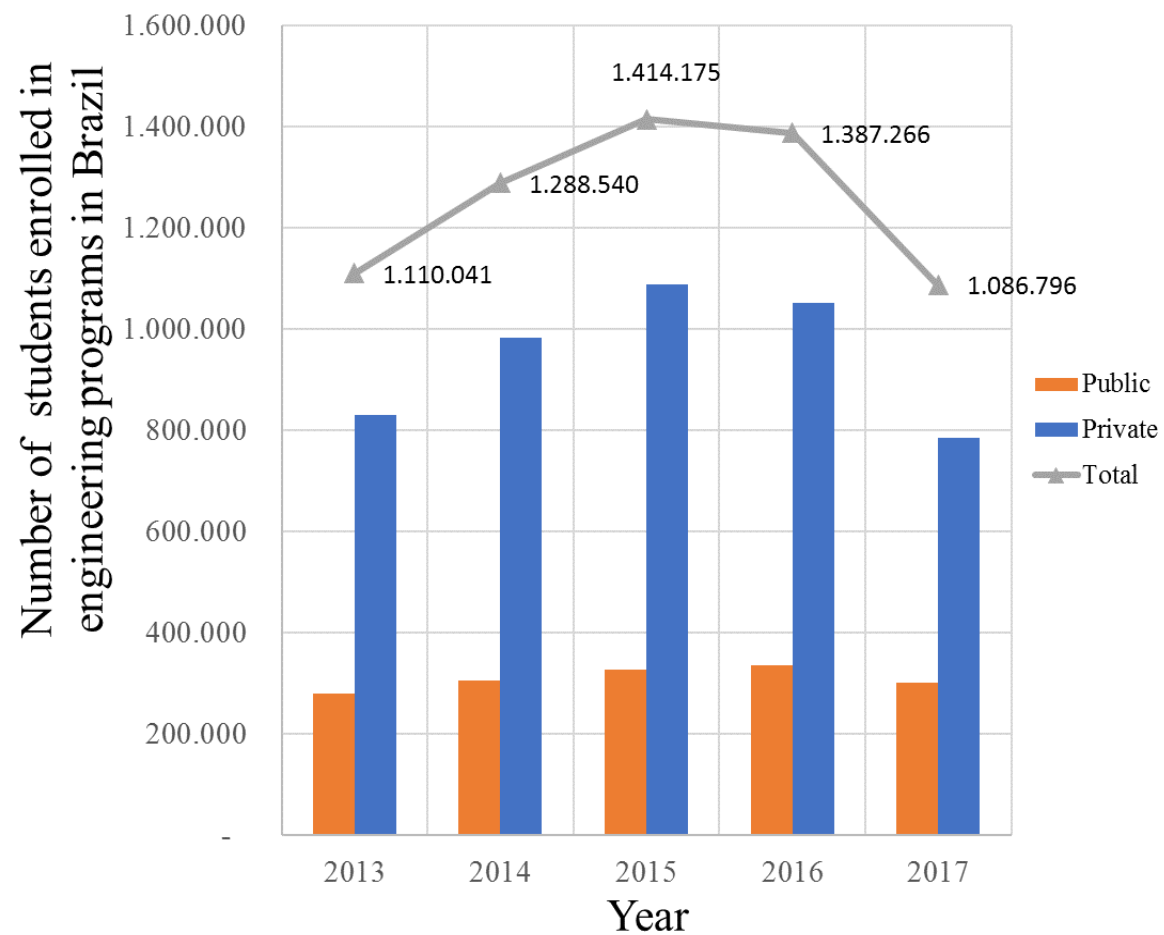
Engineering Graduates (face-to-face+online)



Fonte: Organizado por Vanderli Fava de Oliveira. Base: dados inep.gov.br, out/2019



Number of Students Enrolled - Brazil

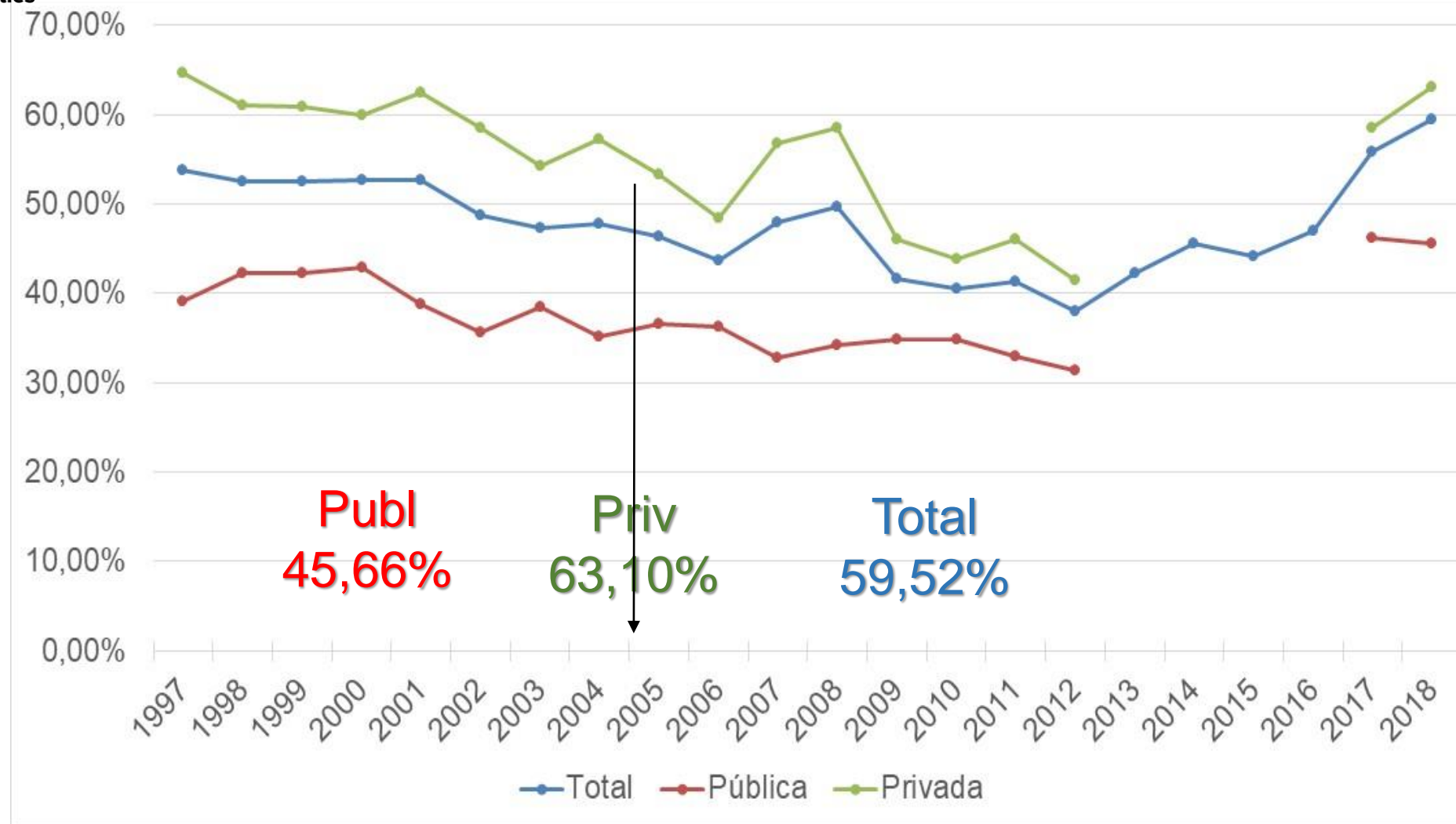


Source: Prof. Marcello Nitz – IMT Institute Maua of Technology

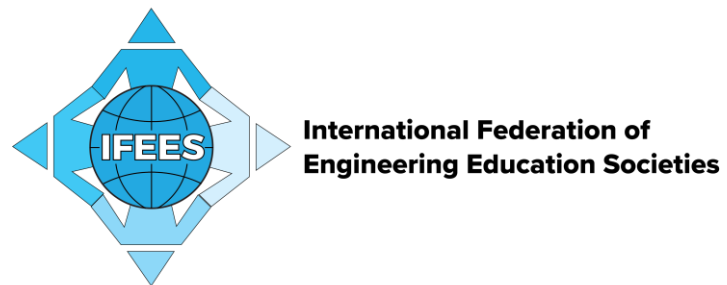
Engineering School Evasion (5,5 to 6,5 years for graduation)



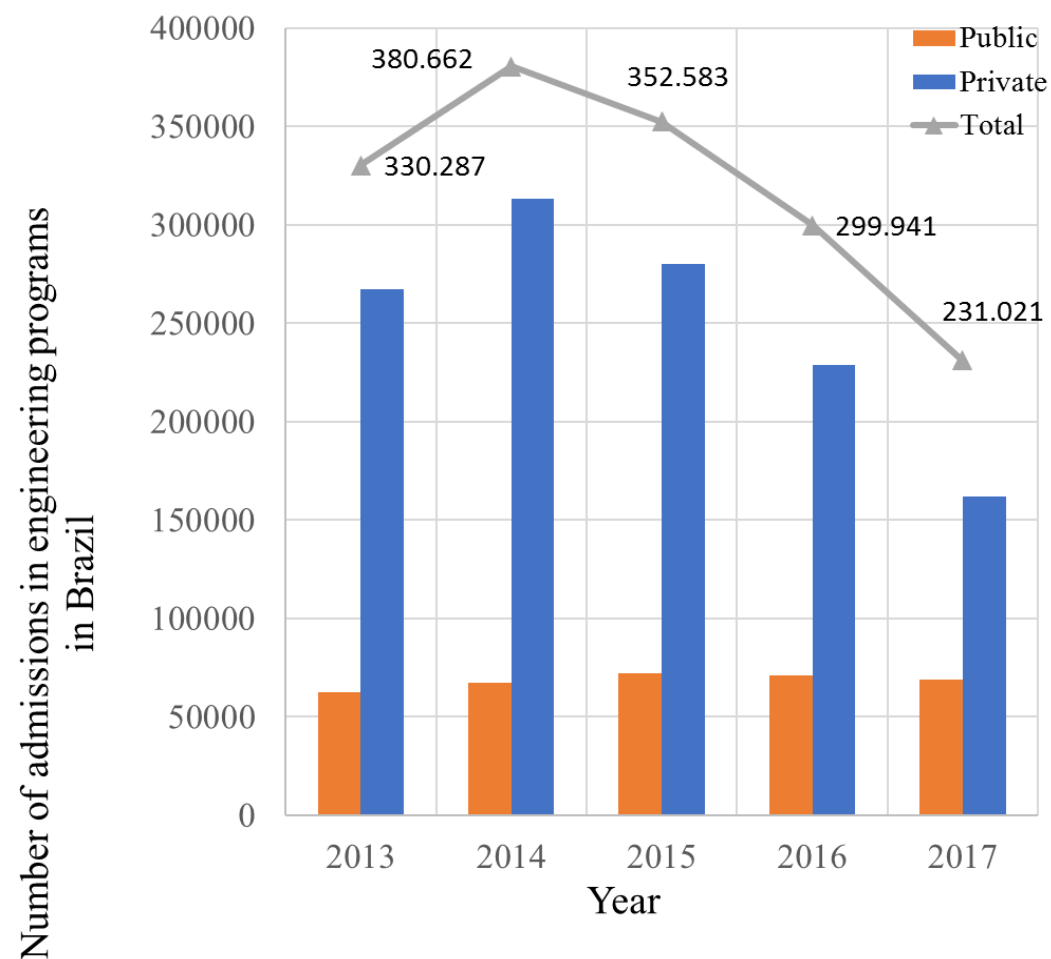
International Federation of
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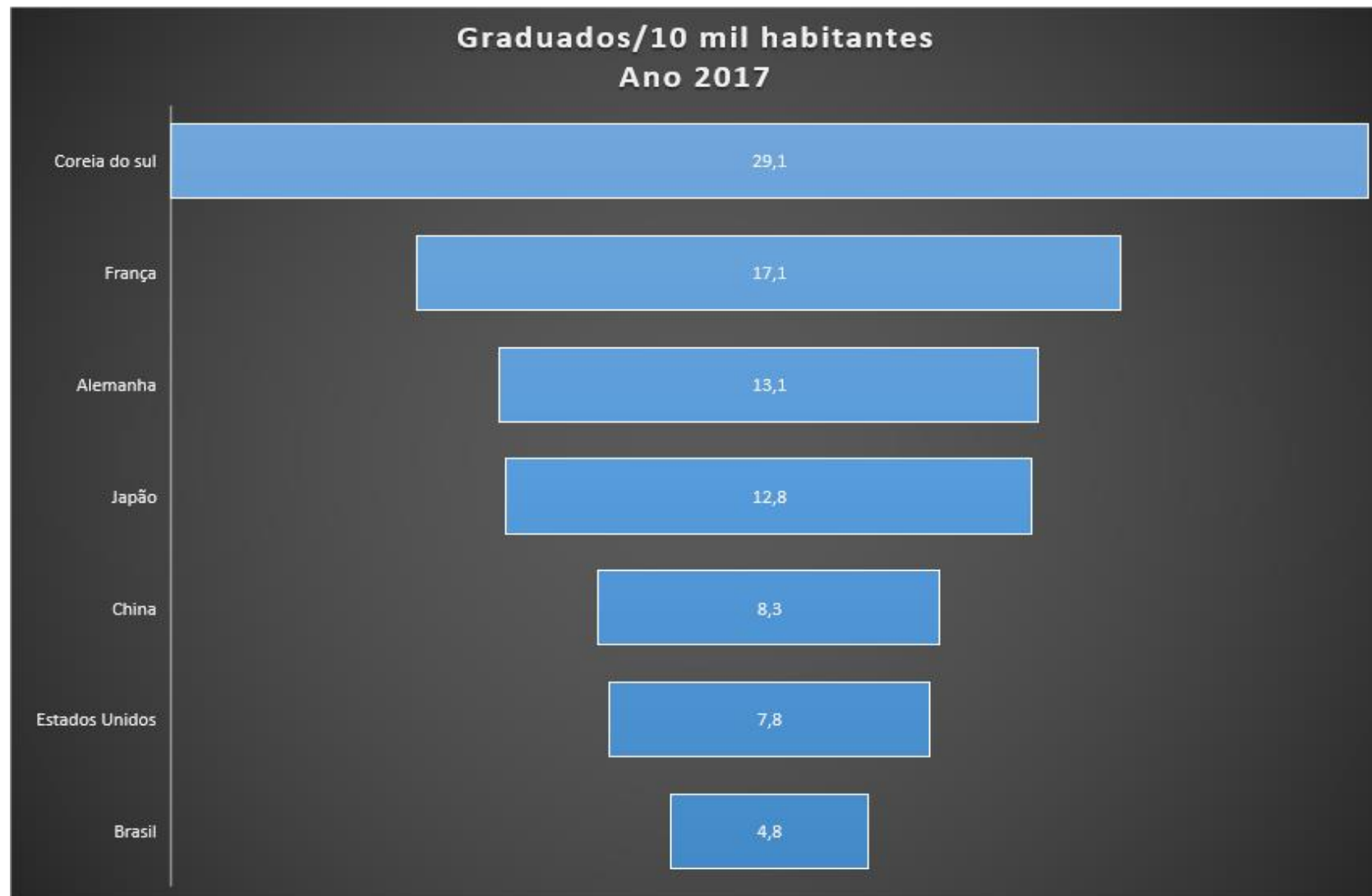
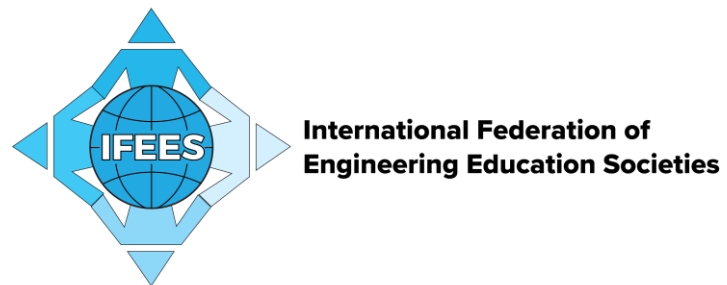
Fonte: Organizado por Vanderli Fava de Oliveira. Base: dados inep.gov.br, jan/2019



Number of Admissions in Eng. Programs - Brazil



Source: Prof. Marcello Nitz – IMT Institute Maua of Technology



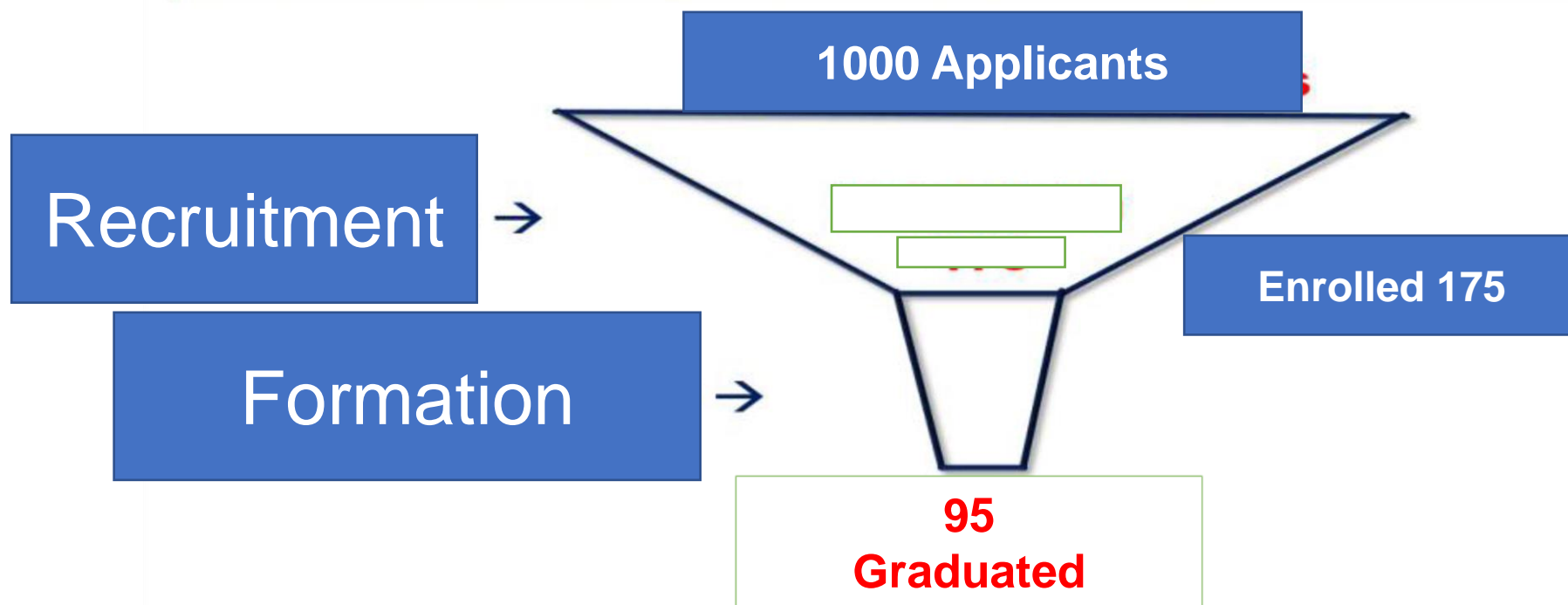
Source: CNI/MEI



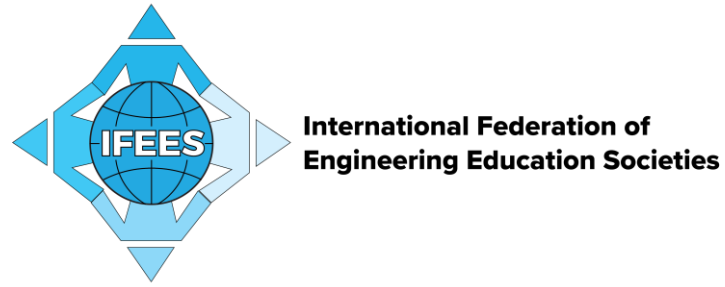
International Federation of
Engineering Education Societies



Funnel of Engineering Education



Fonte: Organizado por Vanderli Fava de Oliveira. Base: dados inep.gov.br, set/2017



6. New Guidelines Challenges



**Solid Technical
Skill**

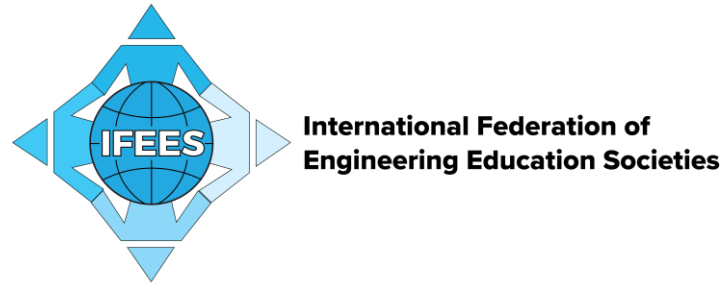


**Humanist
Soft Skill**



Freedom for Innovation

The Project is a System



6. New Guidelines Challenges

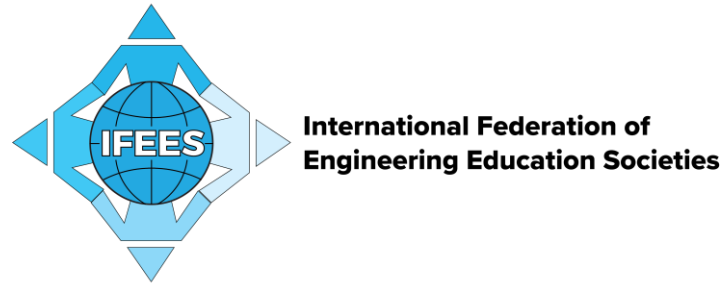
Teacher
Centered



Student
Centered

More Flexible Programs

More Women

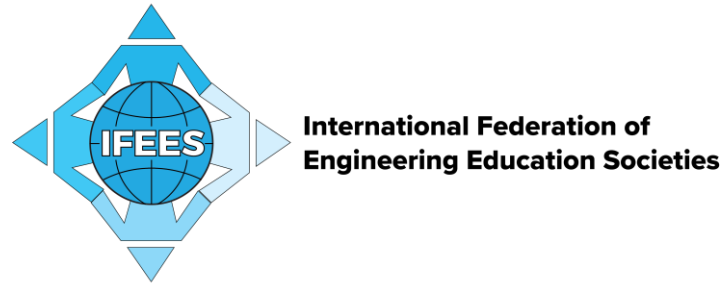


6. New Guidelines Challenges



Teacher Development
in New Technologies

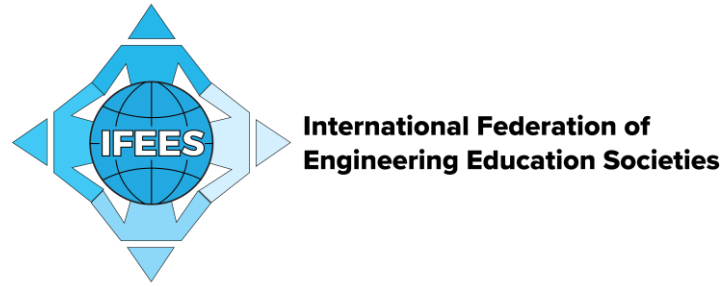




7. New Guidelines' Impact

Contents → Competences

Passive → Active Learning



7. New Guidelines' Impact

Improvement of Hands-On activities

Continuous Assessment

Credits for Extra-Classes Activities

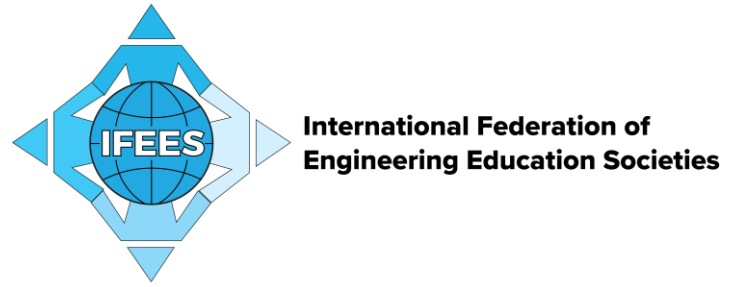


7. New Guidelines' Impact

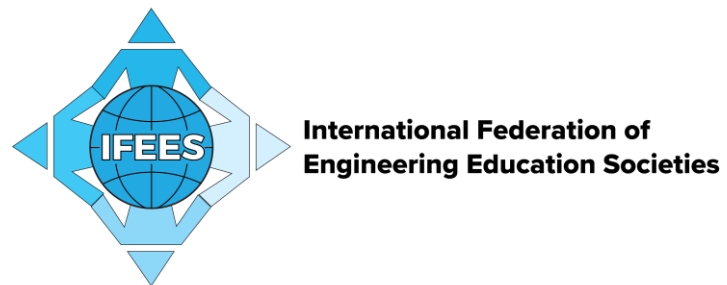


Hospitality Policy





Conclusion



Thank you

José Roberto Cardoso
Escola Politécnica da
Universidade de São Paulo

Junho 2020