Challenges and Opportunities in University-Industry Collaborative Research

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Outline

- Features of the System of Innovation in SP
- The role of Fapesp in fostering university-industry collaborative research in the State of SP through PITE, ERCs and PIPE
- Conclusion: challenges and opportunities

State of São Paulo, Brasil

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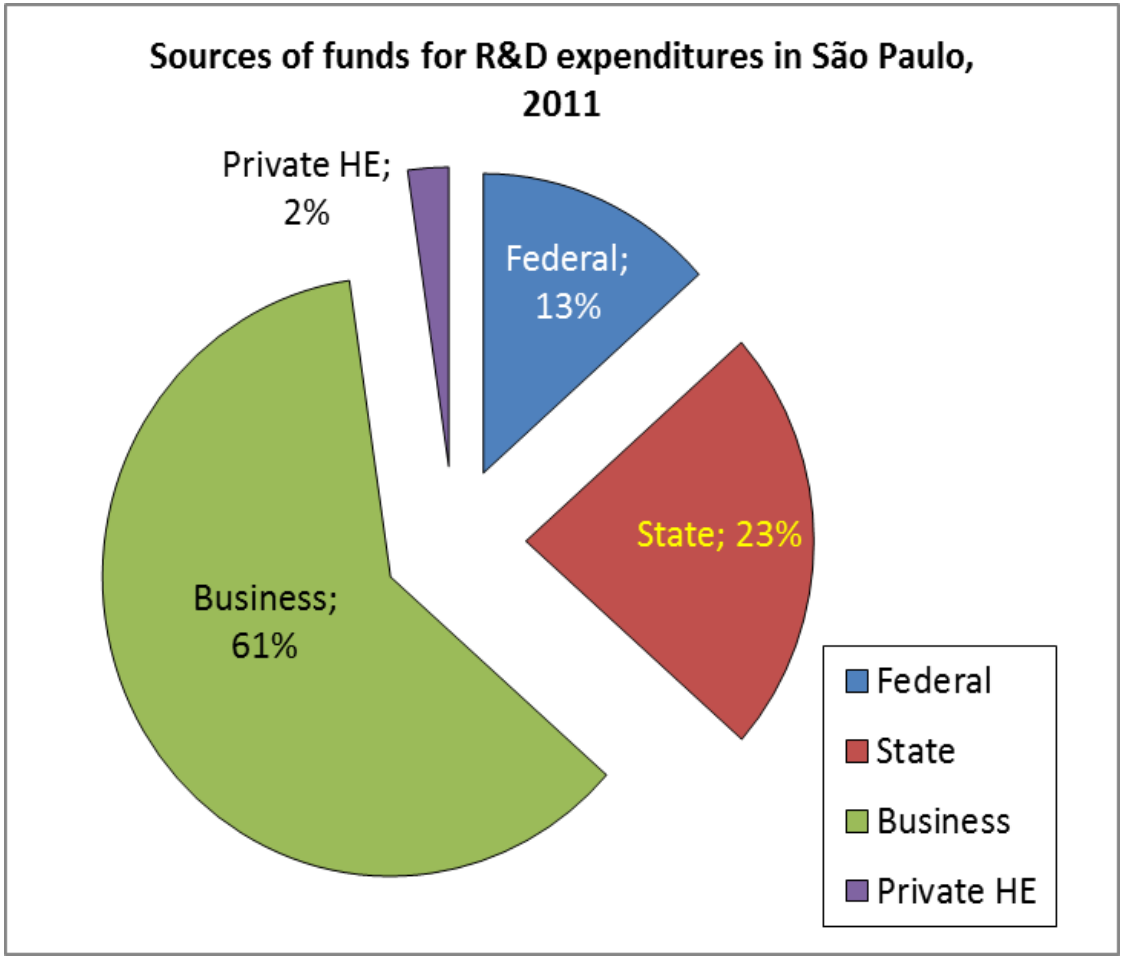
41	Million people
34%	of Brazil's GDP
50%	of Brazilian science
13%	of State budget to HE and R&D
1.64% GDP for R&D	

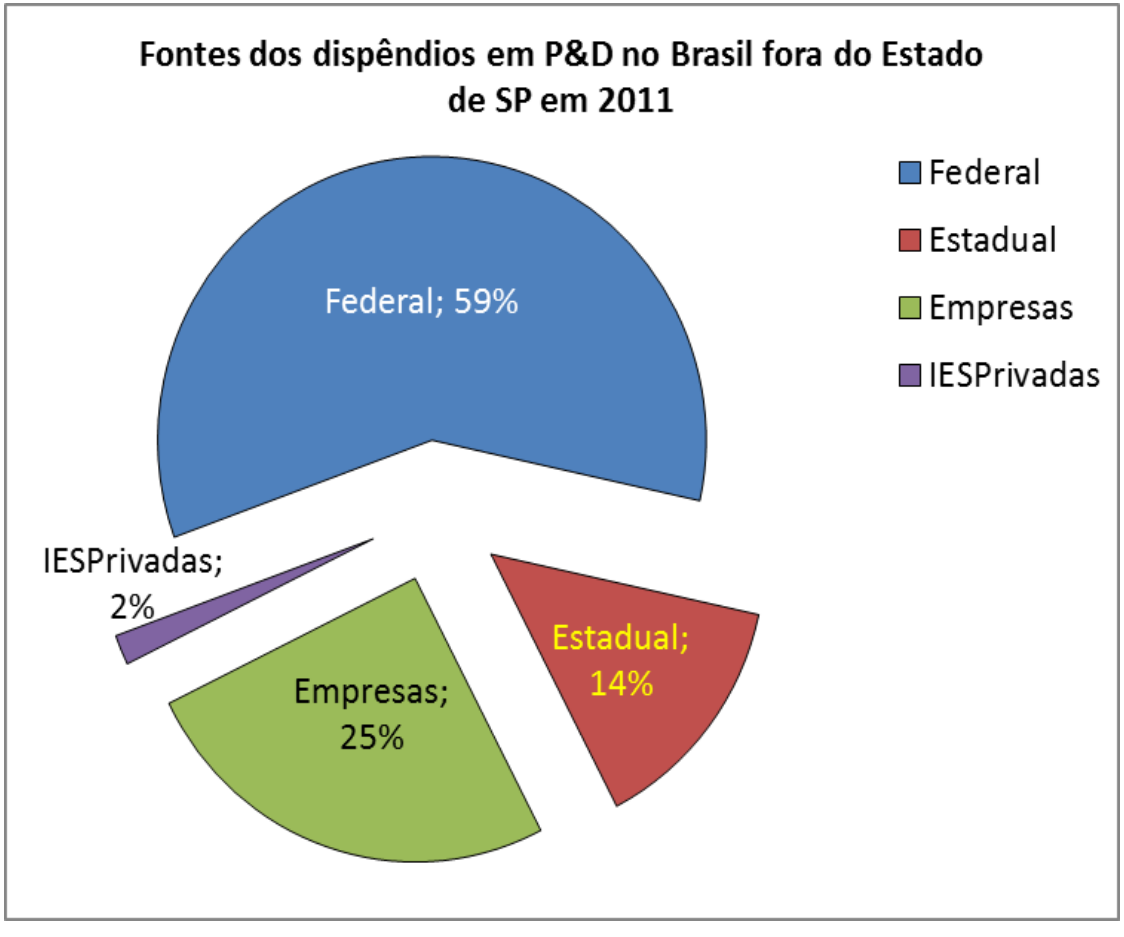
3	State Universities
3	Federal Universities
52	State Tech Faculties
45%	of the PhDs graduated in Brazil (4,937 in 2010)
22	Research Institutes (19 state/3 federal)
1	Research Foundation
62%	of R&D public support comes from State sources

São Paulo: R&D Expenditures, 2011, by source



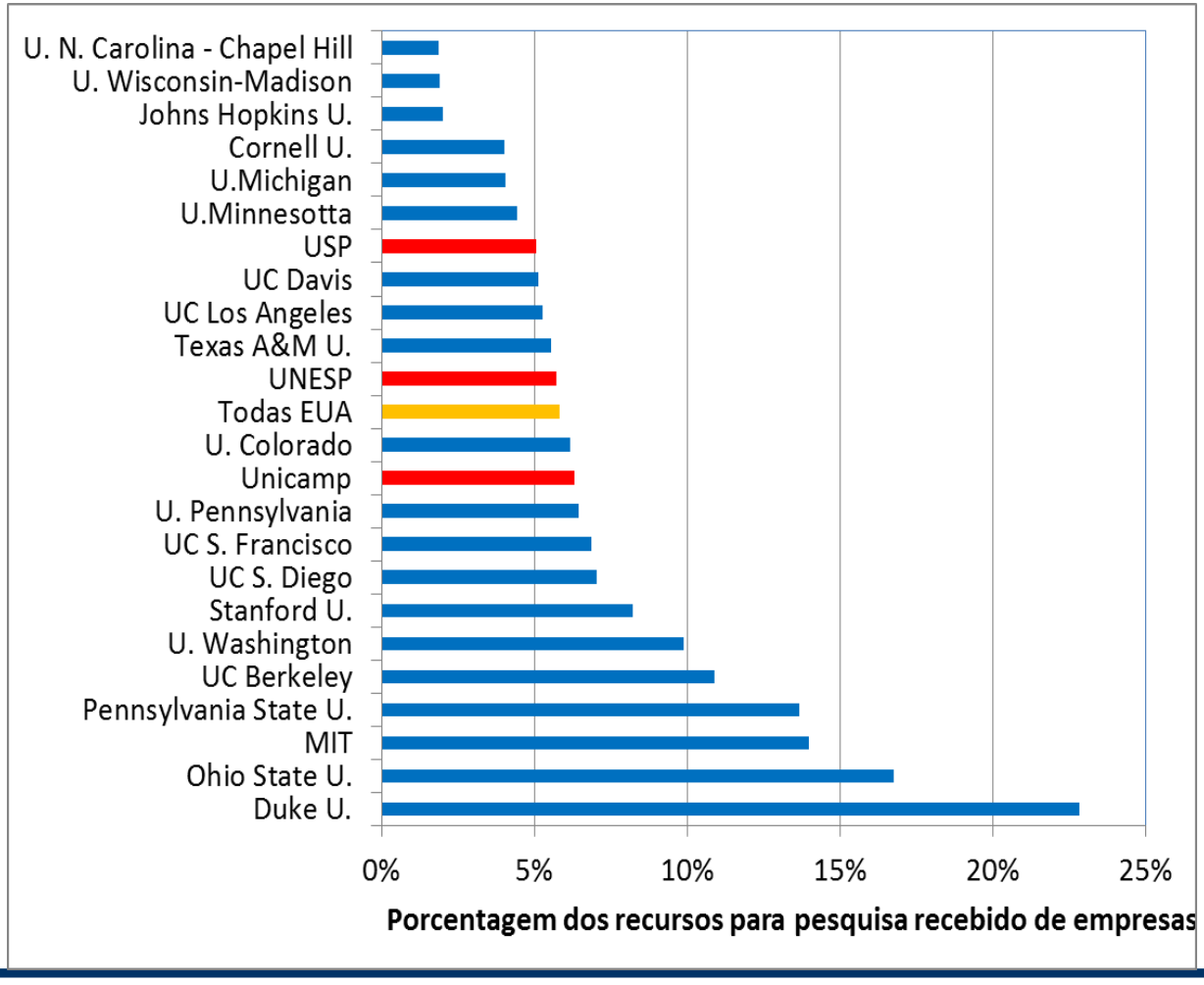
- R&D expenditures total 1.6% of State GDP (Brazil is 1.2%)
  - Grew from 1.52% in 2008
- Public expenditures
  - State 63%
  - Federal 37%

Brazil excluding São Paulo: R&D Expenditures, 2011, by source

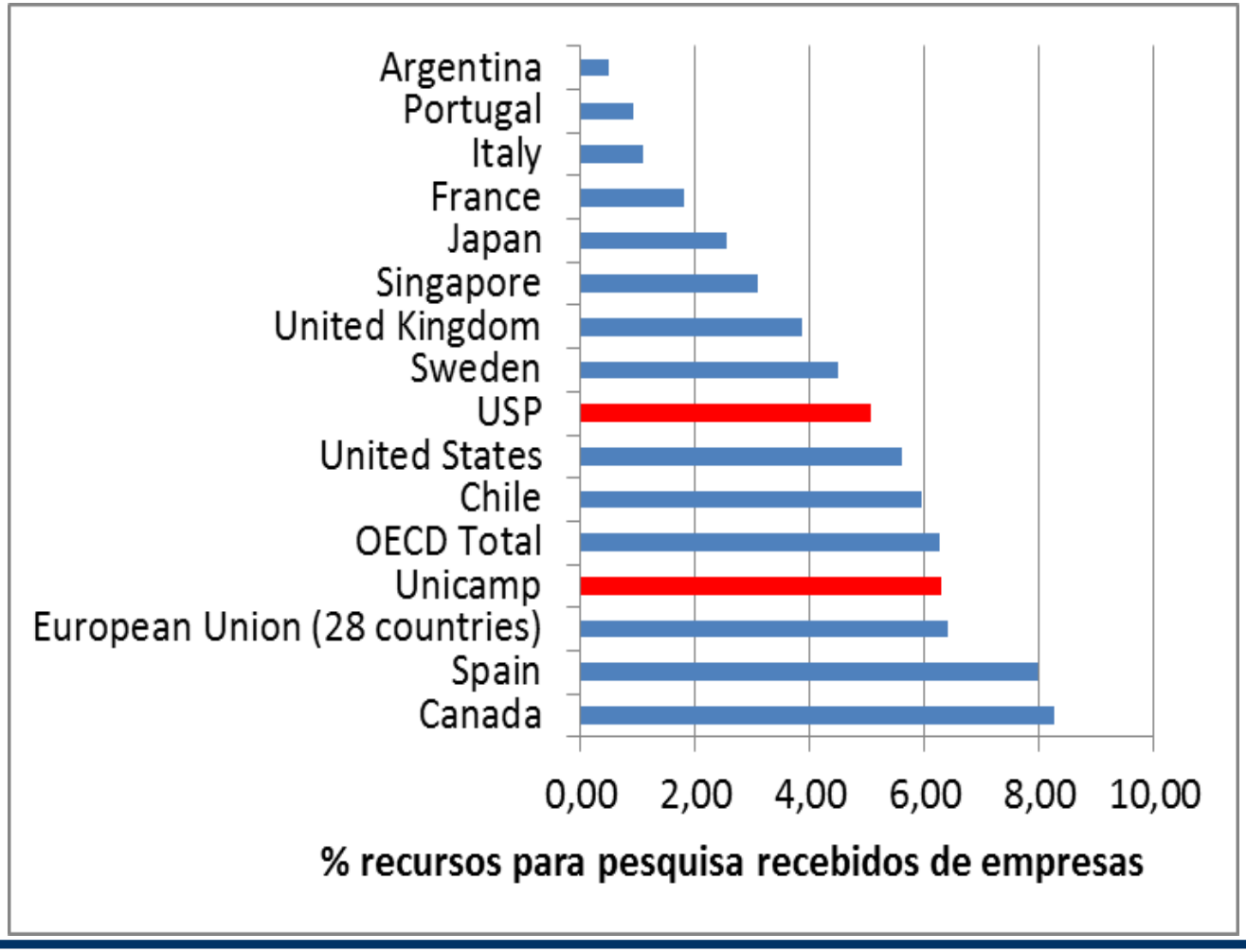


- R&D expenditures total 0.9% of States GDP
- Public expenditures highly concentrated on Federal sources
  - States 19%
  - Federal 81%

Percentage of research expenditure in SP State universities funded by firms



U-I interaction intensity, 2009



Unicamp: 254 start-ups, >16.000 jobs, annual revenues R$ 2 billions

FAPESP contribution for university-industry collaborative research in the state of SP

FAPESP – The São Paulo Research Foundation

- Mission: support research in the State of São Paulo in all fields
  - Started in 1962
- Funded by the State of São Paulo with 1% of all State revenues
- All proposals are peer reviewed (10,000 applicants / 26,000 proposals in 2014)
  - Average time for decision: 65 days in 2014

FAPESP – The São Paulo Research Foundation

- Annual budget: : $PPP 550M in 2014
  - **Fellowships** (2,600 SI, 2,300 MSc, 4,100 DrSc, 1,900 Post-docs)
  - **Academic R&D** (RIDC, Thematic, Young Investigators, Regular)
  - **University-Industry Joint R&D**: Microsoft, Agilent, Braskem, Oxiteno, SABESP, VALE, Natura, Petrobrás, Embraer, Padtec, Biolab, Cristalia, Whirlpool, Boeing , GSK, BP, BG, PSA (Peugeot-Citröen), ...
  - **Small bussiness R&D**: 1,200 SBE's (two PIPE+PAPPE awards per week in 2013)

Research for Technological Innovation

- PITE – The Partnership for Technological Innovation Program
  - Research projects developed in partnership with R&D institutions in the State of São Paulo and businesses located in Brazil and abroad
- ERCs – Engineering Research Centers
  - Research program addressing medium and long term challenges of high scientific and technological impacts
- PIPE – The Research for Technological Innovation in Small Businesses Program
  - Research projects developed by researchers in small companies

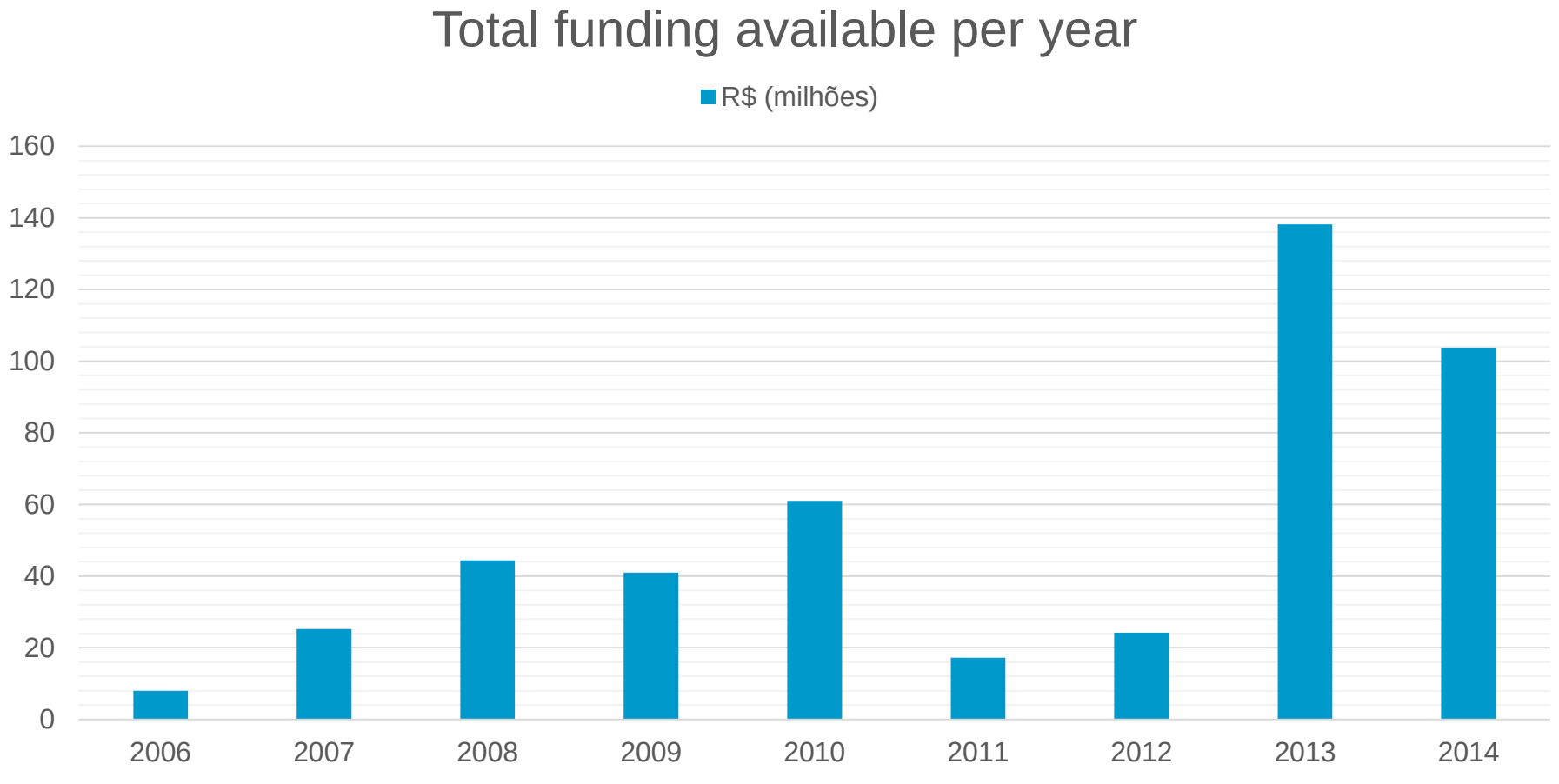
Partnership for Technological Innovation (PITE)

- Cooperative R&D
  - University/Research Institutes - Industry
  - Fapesp funds (non refundable) - 20 to 70%
  - Industry funds the complement
- PITE Proposals
  - Industry-University demand (since 1995)
  - Joint calls Fapesp-Industry (since 2006)

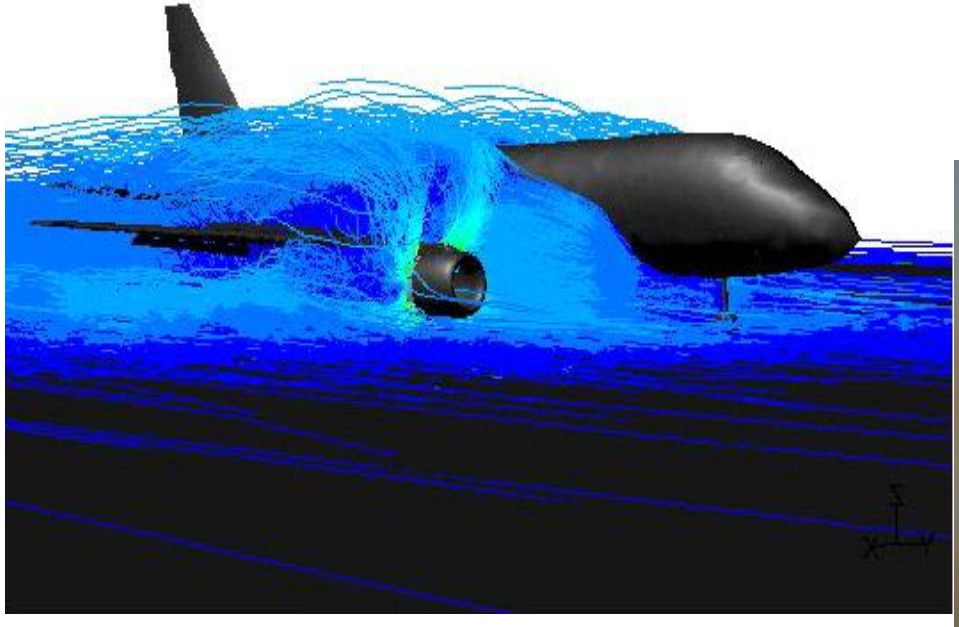
Fapesp –Industry joint calls for proposals

- Fapesp and a company issue a joint call for proposals
  - Themes proposed by industry
  - Exploratory R&D
  - Joint Steering Committee
  - Merit reviewed by Fapesp together with the partnering company
- Embraer, Natura, Ouro Fino, Oxiteno, Microsoft Research, Telefonica, Dedini, PadTec, Ci&T, Braskem, Whirlpool, Sabesp, Vale, ETH, Agilent, Biolab, GSK...

Call for proposals – partnerships with industry



Embraer-FAPESP: R&D to build an innovative jet



Computational Fluid Dynamics (CFD) simulation and tests
Research co-funded by FAPESP, using several universities

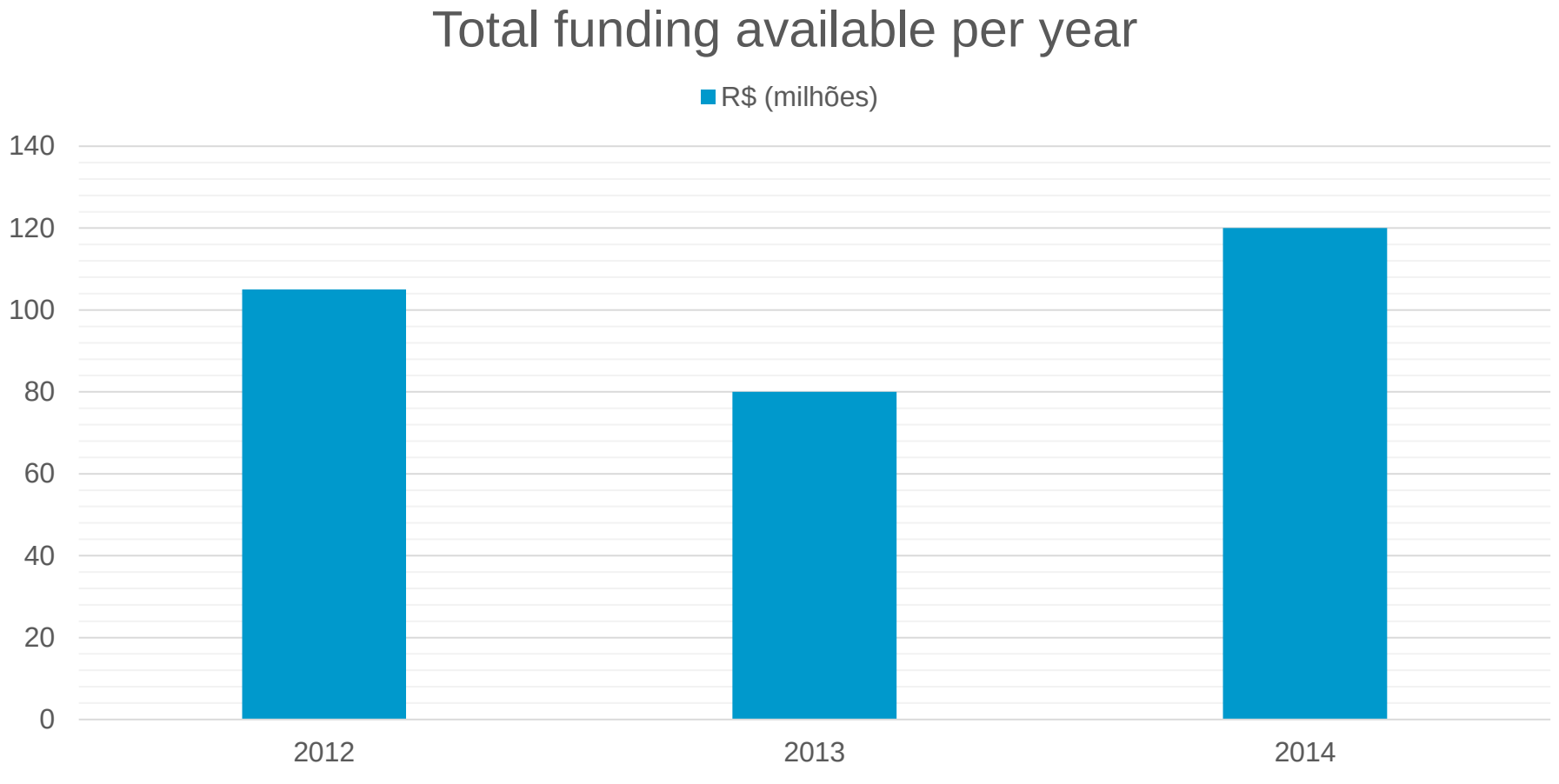
Engineering Research Centers

- New instrument to support research in partnership with industry
  - Peugeot Citroën: Engineering Research Center for Biofuel Engines
  - Natura: Centre of Applied Research on Well-Being and Human Behavior
  - BG: Research Center for Gas Innovation
  - GSK: Centre of Excellence for Research on Sustainable Chemistry and Centre of Excellence for Research on Target Discovery
- Medium and long term (up to ten years) challenges
- High impact exploratory research on themes proposed by industry
- Co-funding and co-management

Research for Technological Innovation in SBs (PIPE)

- Initiated in 1997
- Two phases
- Up to R$ 1,200,000 per project, non refundable funding
- FAPESP can review the proposal of a company to be created
- More than one project per week approved since its creation
  - Three per week last year

Call for proposals – small business



Research for Technological Innovation in SBs (PIPE)

- PIPE also increases U-I interaction
  - Universities act as consultants to PIPE companies' projects
  - Many PIPE companies are spin-offs from universities
- A more demand-driven approach: "Structured PIPE"
  - The Sirius CfP with Finep

Challenges and opportunities

- State funded schemes are important – the example of Fapesp is remarkable – but other initiatives are necessary
- The need of increasing the level of business R&D expenditure in Brazil
  - In SP the level of business R&D expenditure is fairly competitive (1% of GDP) but the results still lag behind (patents, export share) -> focus on the quality of R&D

Challenges and opportunities

- The need of reversing the “inward looking”
  - Fixing bolder objectives for industrial R&D projects, targeting international markets
  - Connecting SB to international expertise in start-up development (Fapesp and RAE/UK)
- Fostering entrepreneurship in the research universities
- Exploring research partnerships with large firms, including multinationals

Thank you

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