Towards Global Knowledge Economy: Recent Achievements and Challenges
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Brazil: 191 million people, 8th GNP
State of São Paulo, Brazil

41 Million people
34% of Brazil’s GDP
50% of Brazilian science
13% of State budget to HE and R&D
1.68% 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 is another country'\textsuperscript{93} The state of São Paulo in South Eastern Brazil is home to over 20 per cent of the country’s population. Almost 11 million of these people live in metropolitan São Paulo, one of the world’s five largest cities.\textsuperscript{94} The state contributes over a third of Brazil’s GDP. As a result of its demographic and economic power, São Paulo dominates Brazilian science and innovation. The state spends more on research and development than any Latin American country apart from Brazil. Of the eight best Brazilian universities, five are in São Paulo. One university, USP, accounts for more than a quarter of the scientific publications produced by the country, and the state has the highest number of innovative companies.
Science and Technology in São Paulo, Brazil

• Sustained growth in the number of scientific articles for the last 30 years
• Strength in the education of graduate students
  - PhD’s graduated yearly: USP 2,200/Unicamp 800/Unesp 800
• Challenges
  - Increase the impact of the scientific production
  - Intellectual (citations) and socio-economic (wealth and well being)
  - Increase international cooperation
  - Increase the number of scientists in academia and industry
**SP: target R&D expenditure for 2020**

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<th>2008</th>
<th>2020</th>
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<tbody>
<tr>
<td>R&amp;D Expenditure (% State GDP)</td>
<td>1.52%</td>
<td>2.30%</td>
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<tr>
<td>Public R&amp;D Expenditure (% State GDP)</td>
<td>0.56%</td>
<td>0.80%</td>
</tr>
<tr>
<td>Business R&amp;D Expenditure (% State GDP)</td>
<td>0.96%</td>
<td>1.50%</td>
</tr>
<tr>
<td>SP GDP (Billion US$; &gt;4.5% a year)</td>
<td>566</td>
<td>960</td>
</tr>
<tr>
<td>R&amp;D Expenditure SP (US$ b)</td>
<td>8.6</td>
<td>22.1</td>
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SP, R&D Expenditure
International standing

% expenditure in R&D Ref. GNP

June 2012
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Brazil: growing number of scientific articles in international journals

![Graph showing the growth of scientific articles in Brazil, São Paulo, and Brazil as a percentage from 1975 to 2010. The graph indicates a significant increase in the number of articles for Brazil and São Paulo, with São Paulo showing a particularly steep rise towards the end of the period.]
• Mission: support research in all fields
• All proposals are peer reviewed (20,000 proposals in 2011)
• Funded by the State of São Paulo with 1% of all state revenues
  – Started in 1962
• Annual budget: $PPP 560 M in 2011
  – **Fellowships** (3,000 SI, 2,600 MSc, 3,700 DrSc, 1,600 Post-docs)
  – **Academic R&D** (Thematic, Regular, Young Investigators)
  – **University-Industry Joint R&D**: Microsoft, Agilent, Braskem, Oxiteno, GSK, SABESP, VALE, Petrobrás, Embraer, Padtec, Biolab, Cristalia, Whirlpool, Boeing, GSK ...
  – **Small bussiness R&D**: 1,200 SBE’s (close to two awards per week in 2010)
FAPESP: Basic Science Focus

• In the World and in Brazil there is in an “utilitarian” view about Science
  – Science that makes business more competitive
  – Science that heals the sick
  – Science that makes the poor rich

• In addition, FAPESP also values a not so “utilitarian” item
  – Science that makes mankind wiser
    • In all fields there are fundamental questions
    • Philosophy, Archeology, Literature, High Energy Physics, Cosmic Rays, Astronomy, Evolution,..
      • http://agencia.fapesp.br/en/
The FAPESP's Small Business Innovative Research (PIPE) was established in 1997 and is intended to support the implementation of scientific research and / or in small technology companies headquartered in the State of Sao Paulo.
PIPE: 1.281 projects contracted from 1997 to 2009

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<tr>
<th>Municipal district</th>
<th>Quantity</th>
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<tbody>
<tr>
<td>São Paulo</td>
<td>347</td>
</tr>
<tr>
<td>Campinas</td>
<td>220</td>
</tr>
<tr>
<td>São Carlos</td>
<td>201</td>
</tr>
<tr>
<td>S.J. dos Campos</td>
<td>83</td>
</tr>
<tr>
<td>Ribeirão Preto</td>
<td>42</td>
</tr>
<tr>
<td>Outros</td>
<td>388</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1281</strong></td>
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2/week since 1998
Location of financed PIPE projects in the State of São Paulo, Brazil
Spin-off start-ups: 206
2005

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Evaluation of the PIPE Program: main conclusions

- PIPE has funded companies that were: small (average total revenues of $3.2 million and median of $281,000 in 2007); relatively young (average 6 years of life); technology-based (all have internal R & D).

- PIPE fostered the development of new products, processes and software (60% of projects achieved innovations).

- The mortality rate of PIPE supported companies after the end of the project was 8%, far below the 70% appointed by SEBRAE for TBCs in Brazil. Rate was higher for companies created to submit projects to the PIPE (22%).
Evaluation of the PIPE Program: economic impact

- The calculation of the economic impacts of the PIPE pointed to a return of 11 times the amount invested by FAPESP.
- Considering the revenue and investments (by FAPESP and by other sources) this program has shown high and increasing returns.
- The impact on employment levels of the companies involved was significant: 40% increase in mass of human resources (contractors, subcontractors and grantees) and an increase of almost 30% in staff employed directly.
Omnisys: São Caetano, SP, BRAZIL
Radars, 250 employees

Operates in 9 countries
250 employees
70 technicians and engineers in R&D
15% annual investment in R&D
Sales 2011 US$ 35 Million

Collaborations with:
- Unicamp
- IPT; USP
- ITA; FEI
- CTA; IPqM
- CLA, INPE

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Embraer/FAPESP: Fluid Dynamics
R&D to build an innovative jet

CFD simulation and real test: landing in very wet landing strip.
Aim: on landing keep water out of the jet engine.
Research co-funded by FAPESP, using several universities

Model

Data, after 2 years
Hvala,
Thanks,
Gracias,
Obrigado,
Merci,
Grazie

Konec, FIM, The END, FIN, C´est Finit, Fine