



**UFRJ  
SCIENCE  
PARK**  
Innovation and  
entrepreneurship

Seminário Setorial de Plástico  
Rio de Janeiro, November 22, 2017

## ***Importance of Innovation and Entrepreneurship for Brazil***

**José Carlos Pinto**

***Executive Director  
Science Park  
Universidade Federal do Rio de Janeiro  
Rio de Janeiro – Brazil***

***pinto@parque.ufrj.br***

  
**PARQUE  
TECNOLÓGICO  
UFRJ**

Universidade  
Federal do  
Rio de Janeiro

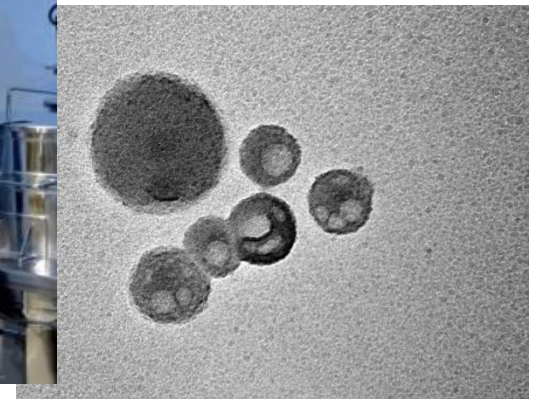
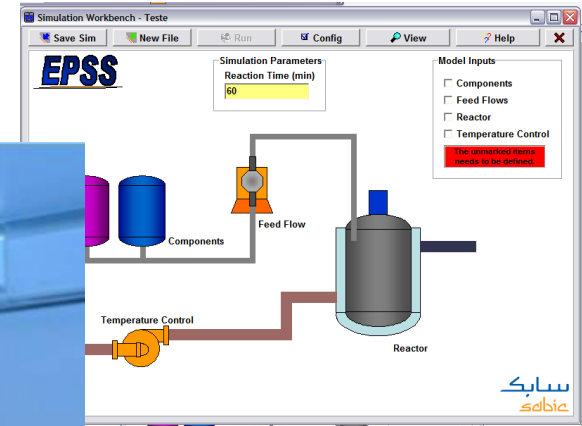
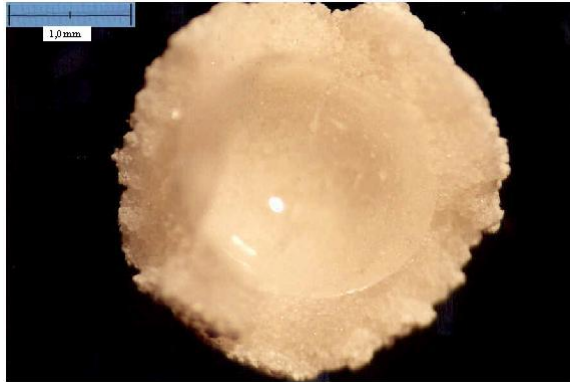
## **Special thanks to:**

**Elaine Silva (FIRJAN) – for the kind invitation**

**Many thanks to all colleagues who work at the Science Park of UFRJ for the many taught lessons and enthusiastic support.**

**Special thanks to Carolina, Daniele, Ismael, Leonardo, Lindalva, Lucimar and Teresa.**

- 1. Science Park of UFRJ**
- 2. The General Brazilian Innovation Scenario**
- 3. Some Points for Discussion**
- 4. General Conclusions**



## OUTLINE

# **1. Science Park of UFRJ**

2. The General Brazilian Innovation Scenario

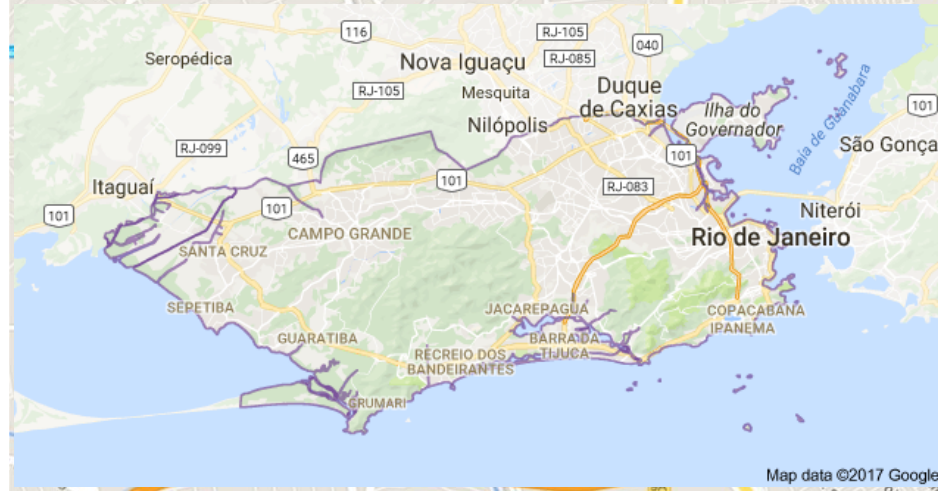
3. Some Points for Discussion

4. General Conclusions



350,000 m<sup>2</sup> in the University City Island

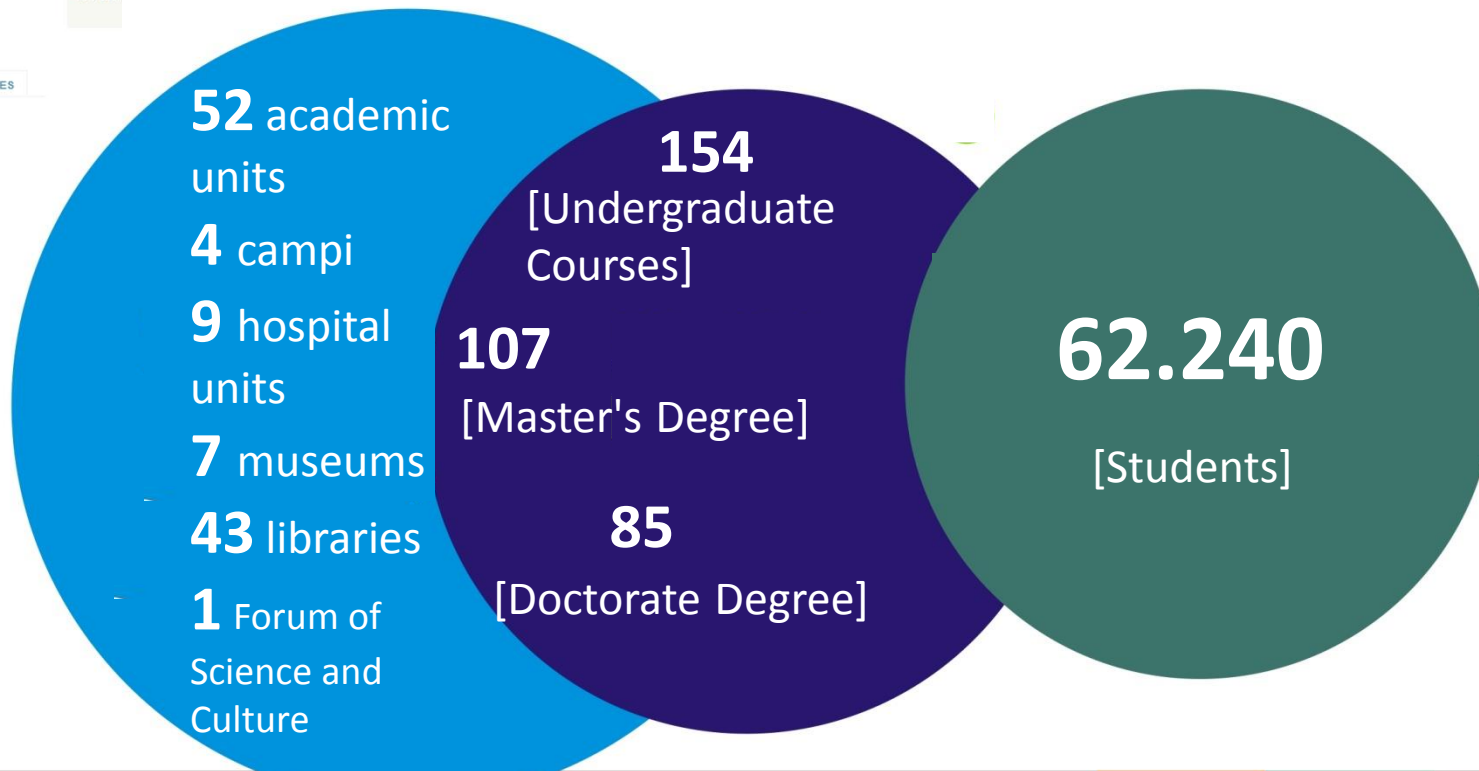
Ilha do Fundão has approximately the same size of Copacabana



WHERE WE ARE



Universidade Federal do Rio de Janeiro





2003



2016



UFRJ SCIENCE PARK



Universidade  
Federal do  
Rio de Janeiro





Transform innovation into products and services for the welfare of society

1



We contribute to the innovation cycle: study, research and work at UFRJ

2



The Park hosts Coppe/UFRJ Business Incubator, which has aided in creating over 80 technology-based companies so far

3



Cooperation between academia and companies so as to foster entrepreneurship and access to high technology products and services

4

OUR MISSION

**57** RESIDENT  
INSTITUTIONS

16 LARGE COMPANIES  
8 SMALL AND MEDIUM-SIZED COMPANIES  
9 LABORATORIES  
24 STARTUPS

**R\$ 144 MILLION**

TOTAL AMOUNT INVESTED IN  
CONTRACTS BETWEEN  
COMPANIES, UFRJ, SCHOOLS AND  
FACULTY

**R\$ 1,3 MILLION**

TOTAL AMOUNT INVESTED IN  
PROJECTS SPONSORED BY UFRJ  
SCIENCE PARK

**112** DEPOSITS FOR INTELLECTUAL PROPERTY

COMPANIES INVESTED MORE THAN  
**R\$ 900 MILLION** IN THE  
CONSTRUCTION OF THEIR CENTERS

MORE THAN **2000**  
**PEOPLE** WERE  
HIRED BY THE COMPANIES  
LOCATED IN THE PARK.  
400 HAVE A MASTER'S  
DEGREE AND/OR A PH.D

**24** RESIDENTS START UPS  
AT COPPE/UFRJ BUSINESS  
INCUBATOR

**63** GRADUATED START  
UPS SINCE 1994

**2016**  
residents had revenues of  
**R\$ 12 million**

SOME NUMBERS



Universidade  
Federal do  
Rio de Janeiro



open labs



RESIDENT COMPANIES



# Chemistry for Industry Innovation – 46th World Chemistry Conference – São Paulo, July 10, 2017



RESIDENT COMPANIES

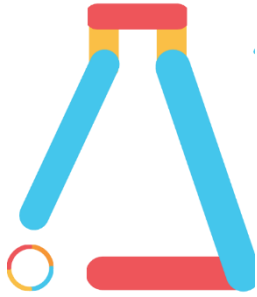




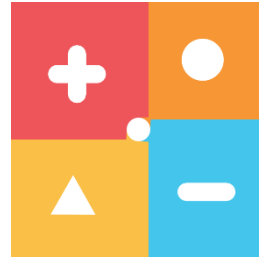


2017 PROJECTS – INTERNATIONAL SOFTLANDING





BIOHACKING



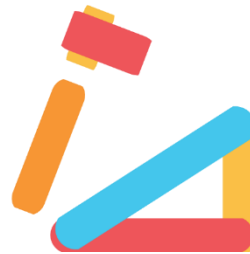
GAMES  
DEVELOPMENT



ELETRONICS



FOOD



METAL AND WOOD  
WORK



SUSTAINABILITY



## LARGE COMPANIES

- Interaction between companies and R&D groups from UFRJ;
- Activities, conferences and workshops on relevant topics for the institutions;
- Expansion of networking;
- Development of activities for institutional relations;
- Monitoring of the relation with UFRJ;
- Shared support services.

## SMALL AND MEDIUM-SIZED COMPANIES

- Management diagnosis;
- Planning Innovation and Cooperation with UFRJ;
- Monitoring the development of companies;
- Image management;
- Shared support services.



## SERVICES





THE FUTURE CHALLENGES

1. Science Park of UFRJ

**2. The General Brazilian Innovation Scenario**

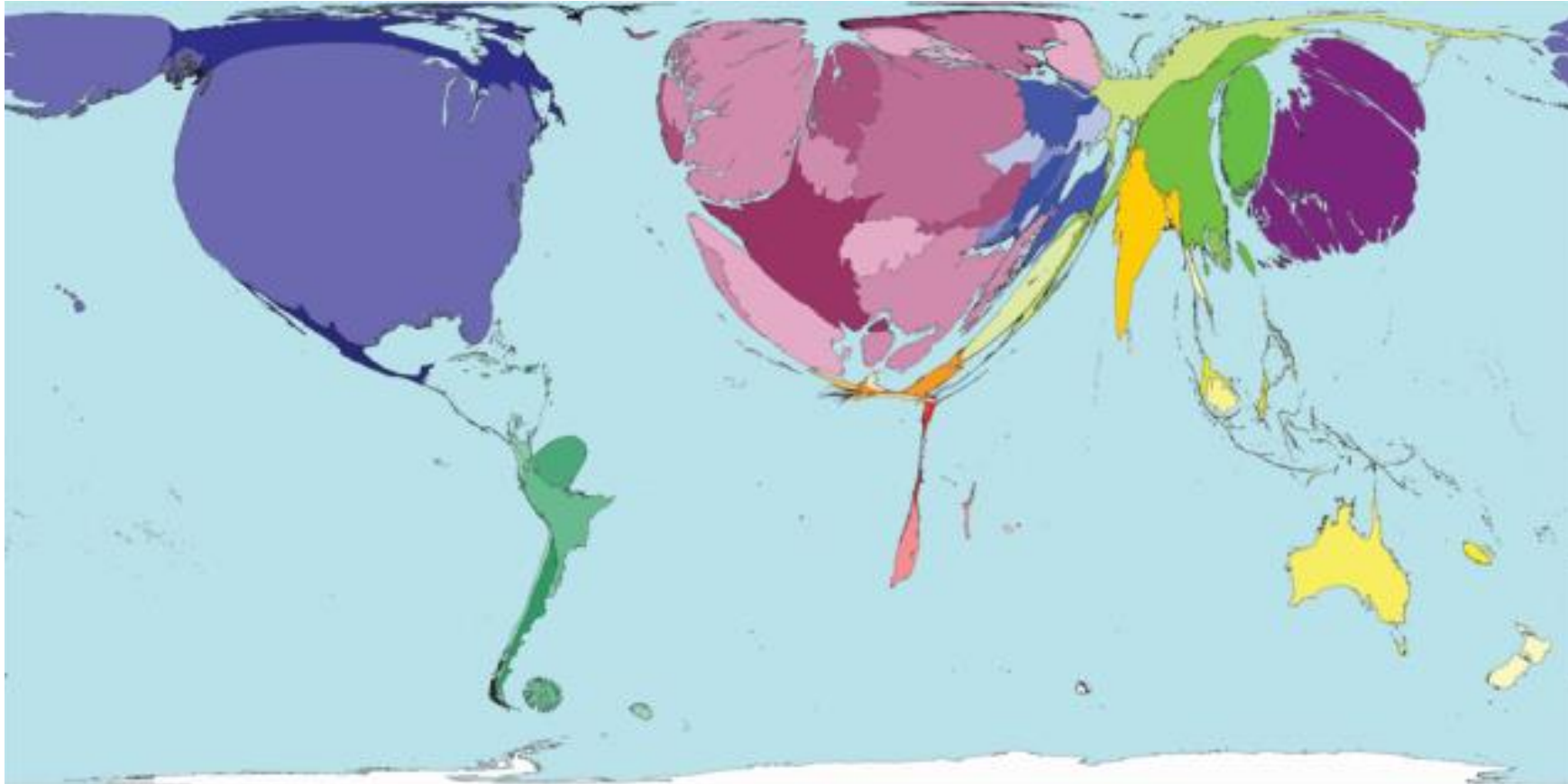
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OUTLINE

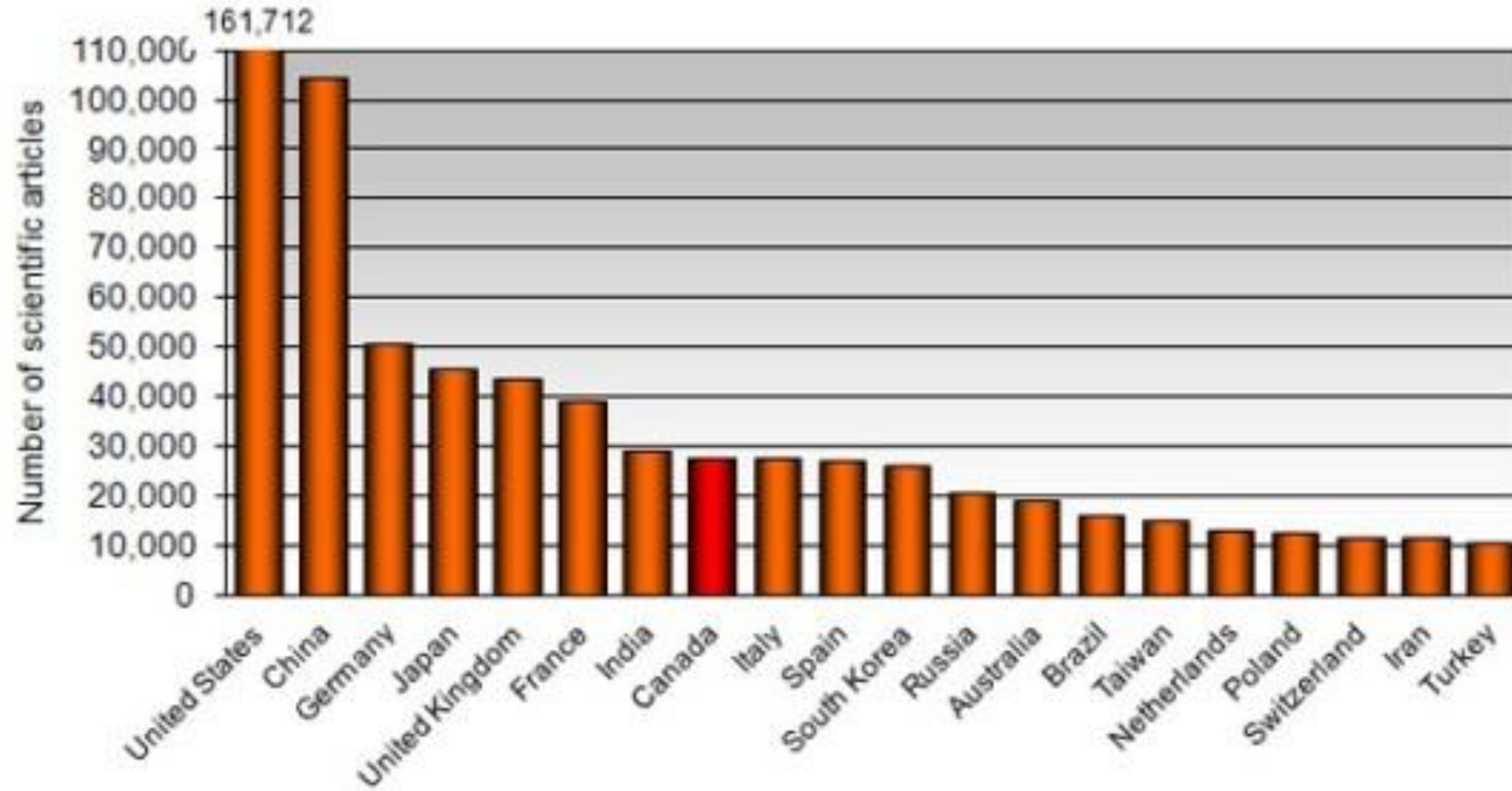


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<http://historiablog.org/2015/07/16/mapa-da-producao-cientifica-mundial/>

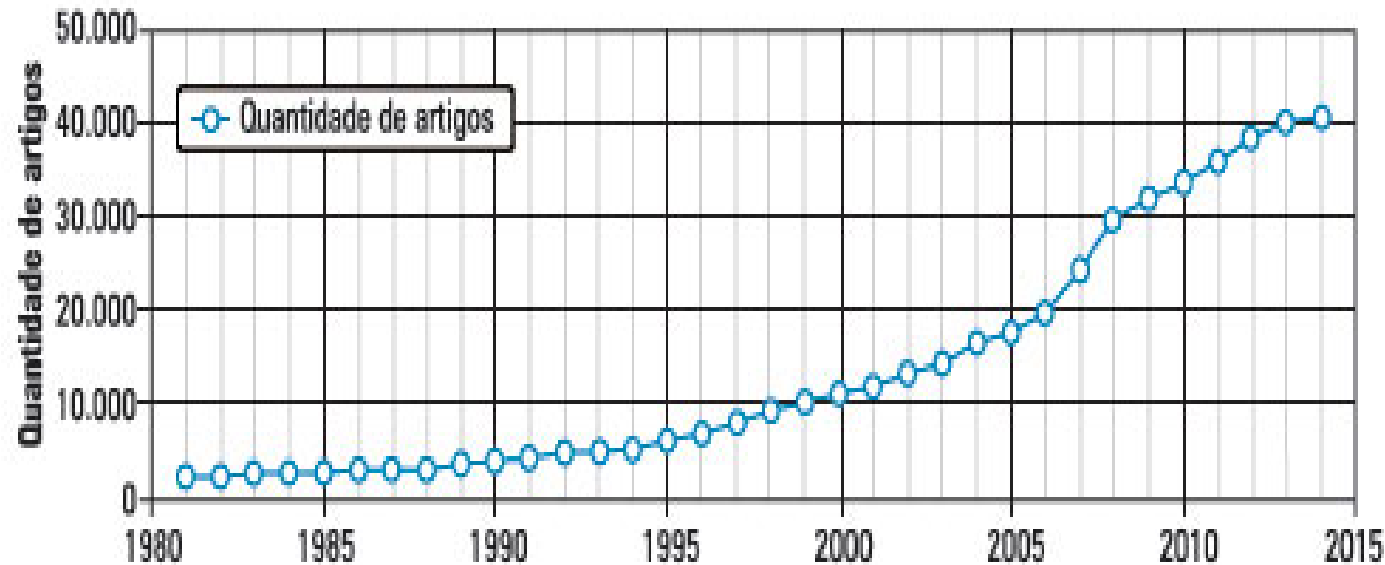
WORLDWIDE SCIENTIFIC PRODUCTION (2014)



Source: Observatoire des sciences et des technologies.



## Artigos publicados e seu impacto - Brasil, 1981-2013



## Evolution of the Scientific Production in Brazil.

(Barata, G., Cienc. Cult. vol.67 no.4 São Paulo Oct./Dec. 2015)

Global Innovation Index 2016 rankings (continued)

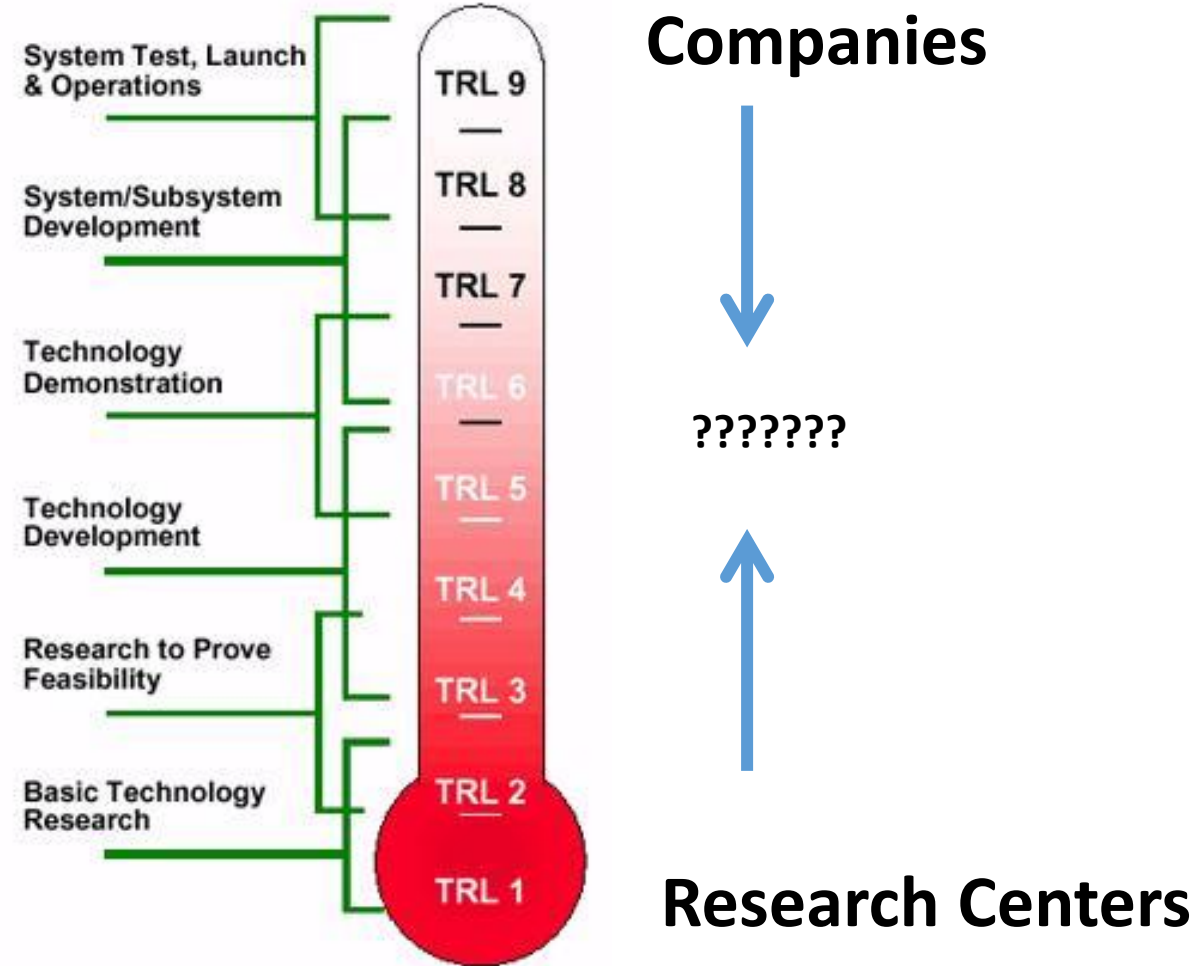
Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank	Efficiency Ratio	Rank	Median: 0.65
Serbia	33.75	65	UM	15	EUR	36	0.65	70	
<b>Panama</b>							<b>33.49</b>		<b>68</b>
<b>Brazil</b>							<b>33.19</b>		<b>69</b>
<b>Lebanon</b>							<b>32.70</b>		<b>70</b>
Oman	0.66	61							
Philippines									
Kazakhstan	0.55	100							
Dominican Republic	0.55	100							
Tunisia									
Iran, Islamic Rep.	0.73	41							
Belarus									
Kenya	30.36	80	LM	9	SSF	3	0.76	30	
Argentina	30.24	81	HI	48	LCN	10	0.56	98	
Jordan	30.04	82	UM	25	NAWA	15	0.67	58	
Rwanda	29.96	83	LI	1	SSF	4	0.38	123	
Mozambique	29.84	84	LI	2	SSF	5	0.73	45	

The screenshot shows a web browser with multiple tabs. The active tab is 'g1.globo.com/bemestar/noticia/2013/12/em-10-anos-estrangeiros-pedem-97-das-patentes-para-cancer-no-pais.h'. The page header includes 'globo.com | g1 | globoesporte | gshow | famosos & etc | vídeos' and 'ASSINE JÁ'. The main content area features a teal banner with 'MENU' and 'G1' logos, and the title 'BEM ESTAR'. The article text reads: '06/12/2013 06h00 - Atualizado em 11/12/2013 08h23', 'Em 10 anos, estrangeiros pedem 97% das patentes para câncer no país', 'Pesquisa do Inpi e da Fiocruz analisou dados entre 2001 e 2011 no país. Instituições estrangeiras foram responsáveis por 88 dos 91 pedidos.', 'Clara Velasco', 'Do G1, em São Paulo', and social media sharing buttons for Facebook, Twitter, Google+, and Pinterest. A small image of pills is visible. A sidebar on the right contains related article teasers: 'Bem Est veja tudo sobre', 'Campina Gra pessoas que', 'HÁ 3 HORAS', 'Hospital recr pesquisa do', 'HÁ 3 HORAS'.

## Patent Rankings (where is Brazil ?).

BRAZILIAN PATENTS





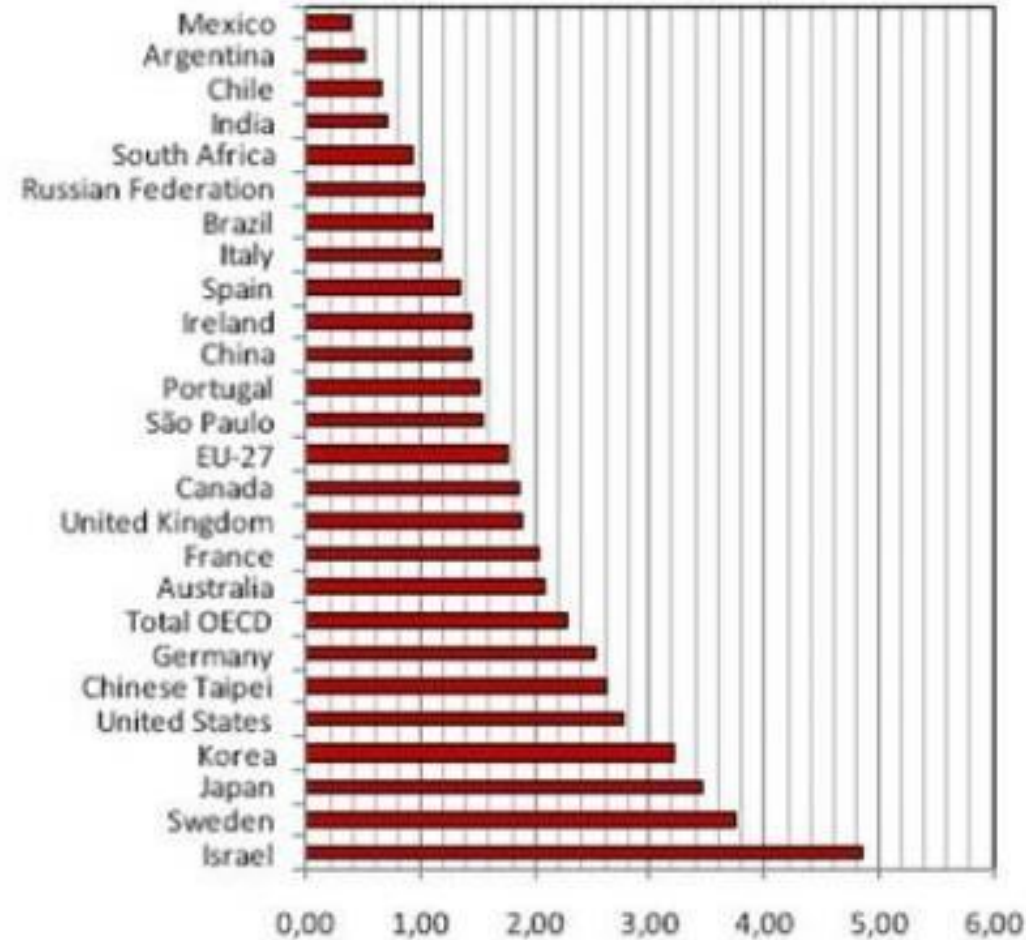
The Innovation Scale (NASA) (Technology Readiness Level).



**We do not transfer the baton during the technology race.  
Why is that ??**

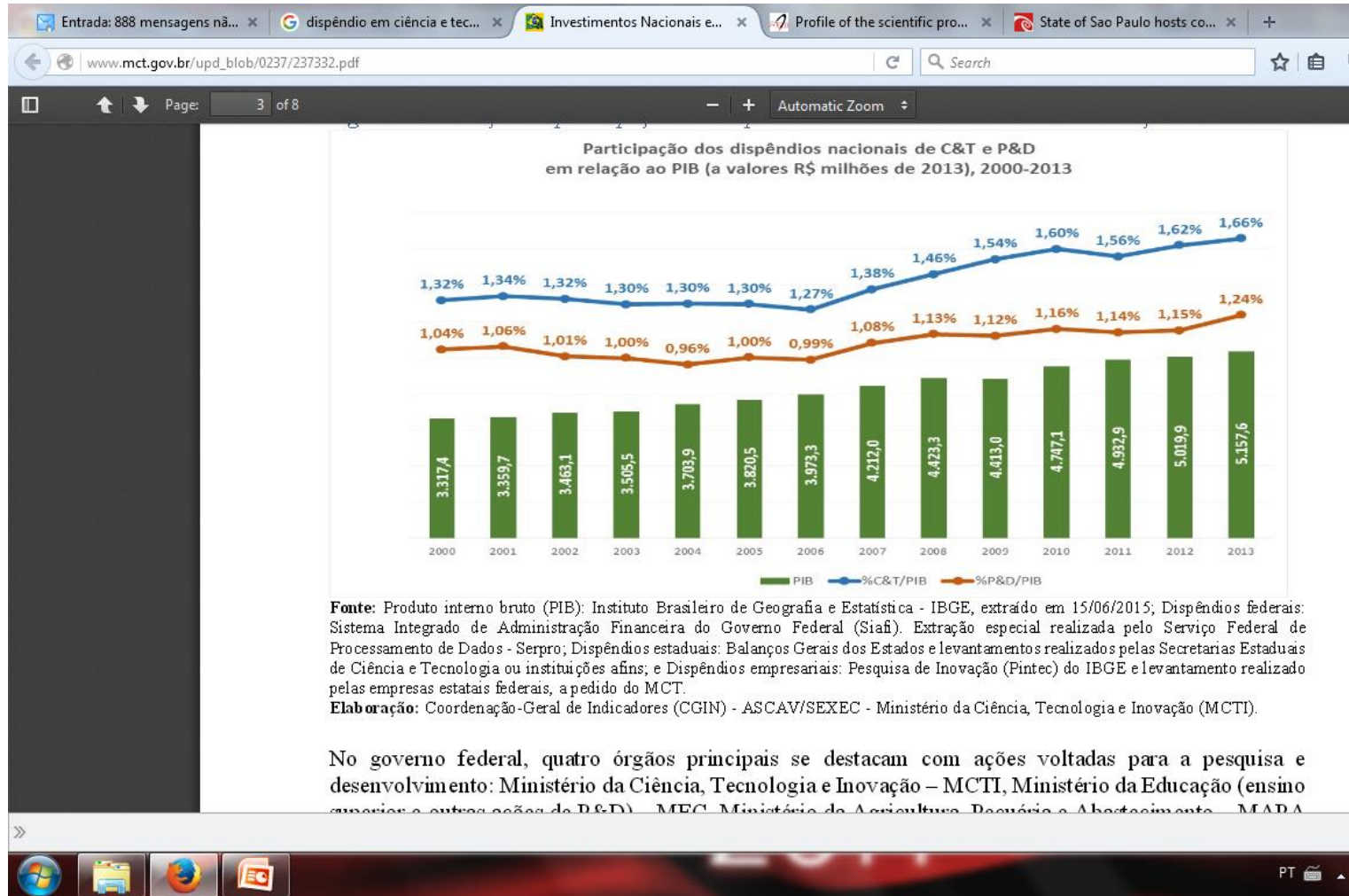


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Total expenditure in R&D (%GDP)

## Investment in Science and Technology (FAPESP).



## Investment in Science and Technology (MCTI).

INVESTMENT IN C&T



Exhibit 11: **The 10 Most Innovative Companies**

Innovation executives we surveyed voted overwhelmingly for Apple, Google, and 3M as the most innovative companies. Votes for the next seven were much more modest.

		R&D Spending		Sales	Intensity
		2009 \$US mil.	Rank	2009 \$US mil.	(Spending as % of sales)
1	<b>Apple</b>	<b>\$1,333</b>	81	\$42,905	<b>3.1%</b>
2	<b>Google</b>	<b>\$2,843</b>	44	\$23,651	<b>12.0%</b>
3	<b>3M</b>	<b>\$1,293</b>	84	\$23,123	<b>5.6%</b>
4	<b>GE</b>	<b>\$3,300</b>	35	\$155,777	<b>2.1%</b>
5	<b>Toyota</b>	<b>\$7,822</b>	4	\$204,363	<b>3.8%</b>
6	<b>Microsoft</b>	<b>\$9,010</b>	2	\$58,437	<b>15.4%</b>
7	<b>P&amp;G</b>	<b>\$2,044</b>	58	\$79,029	<b>2.6%</b>
8	<b>IBM</b>	<b>\$5,820</b>	12	\$95,759	<b>6.1%</b>
9	<b>Samsung</b>	<b>\$6,002</b>	10	\$109,541	<b>5.5%</b>
10	<b>Intel</b>	<b>\$5,653</b>	13	\$35,127	<b>16.1%</b>

Source: Booz & Company

Rank		Rank	Company	Geography	Industry	Spend (\$Bn)*
1	▶	1	Apple	United States	Computing and electronics	8.1
2	▶	2	Alphabet	United States	Software and internet	12.3
3	▲	6	3M	United States	Industrials	1.8
4	▼	3	Tesla Motors	United States	Automotive	0.7
5	▶	5	Amazon	United States	Software and internet	12.5
6	▼	4	Samsung	South Korea	Computing and electronics	12.7
7	▲	NA	Facebook	United States	Software and internet	4.8
8	▶	8	Microsoft	United States	Software and internet	12
9	▼	7	General Electric	United States	Industrials	4.2
10	▲	9	IBM	United States	Computing and electronics	5.2

\* R&D spend data is based on the most recent full-year figures reported prior to July 1st.

2016: Top 20 R&D Spenders

2016 Rank		2015 Rank	Company	Geography	Industry	R&D Spend (\$Bn)*
1	▶	1	Volkswagen	Germany	Automotive	13.2
2	▶	2	Samsung	South Korea	Computing and electronics	12.7
3	▲	7	Amazon	United States	Software and Internet	12.5
4	▲	6	Alphabet	United States	Software and internet	12.3
5	▼	3	Intel Co	United States	Computing and electronics	12.1
6	▼	4	Microsoft	United States	Software and internet	12
7	▼	5	Roche	Switzerland	Healthcare	10
8	▲	9	Novartis	Switzerland	Healthcare	9.5
9	▲	10	Johnson & Johnson	United States	Healthcare	9
10	▼	8	Toyota	Japan	Automotive	8.8



- 1. We invest little in S&T&I (and this is getting worse).**
- 2. We are doing well in terms of scientific production, but very bad in terms of innovation (and this is not getting any better).**
- 3. As one might expect, we are not innovative, despite the efforts to improve our scientific system.**
- 4. The knowledge we produce does not reach the market at reasonable rates.**



A photograph of a cluttered desk with various office supplies. In the foreground, there are several paper clips scattered across a surface covered with a grid pattern. To the right, a black keyboard is partially visible. In the center, there are several stamps with different colored handles (red, yellow, blue, black, and wood). A large red 'X' is drawn across the entire image, and the words 'BRAZILIAN PLAGUE' are written in bold red capital letters across the middle. In the background, there are more stamps and a black box with the word 'MOVING' on it. On the right side, there is a document with some text, including 'Il Capo... Scienza...', 'AGENZIA DELLE BARRICAZIONI', and 'UFFICIO DI LAVORO...'.

**BRAZILIAN PLAGUE**



**BIG PROBLEM** – We are killing competitiveness and innovation capacity in Brazil. **This is URGENT !!!!!!!!!!!!!!!!**

**We need to focus on the results, instead of focussing on balances and accounting.**

**Some people believe this is needed to avoid corruption. Corrupts thank !!!  
When difficulties are created (in cascades), some people offer facilities and solutions ...**

**(computers, maintenance, soap ... not funny stories)**

**Brazil had a Ministry of Debureaucratization between 1979 e 1986.**

BUREAUCRACY

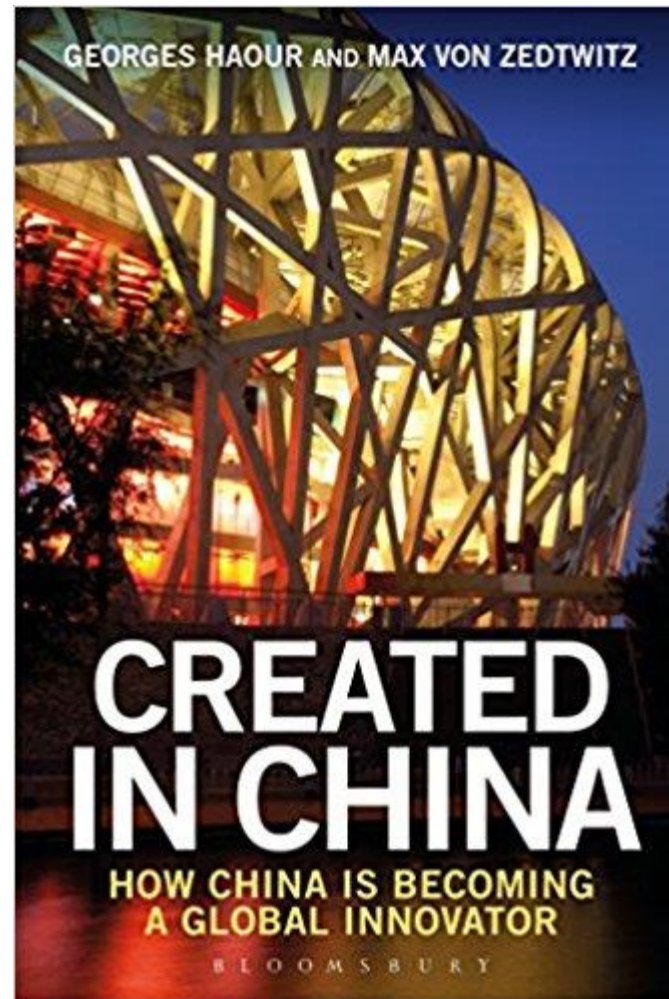
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**BIG PROBLEM** – We are hostages of a **FALSE** dilemma in some public research centers and funding agencies (the biggest ones in Brazil) – private and public activities should be kept apart.

The **OBVIOUS** fact is that we need both sides cooperating and working together !!! (The TRL)

Is it sufficient to manufacture  
in Brazil ??



<https://www.amazon.com/Created-China-Becoming-Global-Innovator/dp/1472925130>

OLD POLITICAL SPEECH



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**369 Business Incubators.**  
**2.310 incubated enterprises.**  
**2.815 graduated enterprises.**  
**53.280 jobs.**  
**Total revenues of R\$ 15 billions.**  
**(ANPROTEC, 2016)**

**We need industrial scale (and connections) for this business. They are creating Brazilian technology and making it available for the Brazilian society.**

## Do we have an Innovation Policy ? The Constitution says this is mandatory.

### EMENDA CONSTITUCIONAL Nº 85, DE 26 DE FEVEREIRO DE 2015

**Art. 218.** O Estado promoverá e incentivará o desenvolvimento científico, a pesquisa, a capacitação científica e tecnológica e a inovação.

**Parágrafo único.** O Estado estimulará a formação e o fortalecimento da inovação nas empresas, bem como nos demais entes, públicos ou privados, a constituição e a manutenção de parques e polos tecnológicos e de demais ambientes promotores da inovação, a atuação dos inventores independentes e a criação, absorção, difusão e transferência de tecnologia.

# Are we stimulating the cooperation between private and public institutions ?

## The Law says we should.

### CÓDIGO NACIONAL DE CIÊNCIA E TECNOLOGIA - LEI 13245/2016

**Art. 3.** A União, os Estados, o Distrito Federal, os Municípios e as respectivas agências de fomento poderão estimular e apoiar a constituição de alianças estratégicas e o desenvolvimento de projetos de cooperação envolvendo empresas, ICTs e entidades privadas sem fins lucrativos voltados para atividades de pesquisa e desenvolvimento, que objetivem a geração de produtos, processos e serviços inovadores e a transferência e a difusão de tecnologia.

**Parágrafo único.** O apoio previsto no caput poderá contemplar as redes e os projetos internacionais de pesquisa tecnológica, as ações de empreendedorismo tecnológico e de criação de ambientes de inovação, inclusive incubadoras e parques tecnológicos, e a formação e a capacitação de recursos humanos qualificados.

**Art. 3º-B.** A União, os Estados, o Distrito Federal, os Municípios, as respectivas agências de fomento e as ICTs poderão apoiar a criação, a implantação e a consolidação de ambientes promotores da inovação, incluídos parques e polos tecnológicos e incubadoras de empresas, como forma de incentivar o desenvolvimento tecnológico, o aumento da competitividade e a interação entre as empresas e as ICTs.

# Are Research Centers of Private Companies strategic for Brazil ? A proposal says they are !!!

## [PL 5752/2016](#)

**Declara como de especial interesse para a geração de conhecimento, tecnologia, inovação, bem como para o desenvolvimento brasileiro, nos termos do parágrafo único do art. 219 da Constituição Federal, os Centros de Pesquisa e de Inovação de Empresas (CPIEs)**

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- 1. We invest little in S&T&I (and this is getting worse).**
- 2. We are doing well in terms of scientific production, but very bad in terms of innovation (and this is not getting any better).**
- 3. We must cooperate and strongly support and encourage cooperation, as wisely recommended by the legal structure, but not practiced at all.**
- 4. We need national policies for S&T&I.**
  
- 5. We are humbly doing our part at the Science Park of UFRJ. But Brazil needs industrial scale, not only successful examples.**
- 6. We must protect cooperation initiatives, as the country must be able to carry out activities in the whole TRL scale.**

CONCLUDING REMARKS

# Muito Obrigado !!!!!!!!!!!!!!!

[pinto@peq.coppe.ufrj.br](mailto:pinto@peq.coppe.ufrj.br)

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CONCLUDING REMARKS



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