



# MACHINE VISION IN BRAZIL

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# BRAZIL KEY FACTS

Area	8.5 million km <sup>2</sup>
Population	190 million
GDP in 2011	Size: US\$ 2.5 trillion (6 <sup>th</sup> largest) Growth: 2010 - 7.5% / 2011 – 2.5% Ind. 27% / Agric. 6% / Serv. 67%
Currency	Real US\$ 1.00 = R\$ 1.80
Unemployment	5.7% (lowest in 10 years)
Credit Rating	Investment Grade since 2008 (BBB-)
Upcoming Events	World Cup (2014) Olympic Games (2016)



# RECENT BOOM FACTORS

## Political Stability

- Democracy reinstated in 1985
- 100 million voters participated in 2010 election
- Peaceful transition of power to Dilma Rousseff

## Economical Stability

- Correct macroeconomic measures: inflation targeting, fiscal responsibility, exchange rate flexibility
- Tight bank regulations, international reserves buildup

## Huge Natural Resources

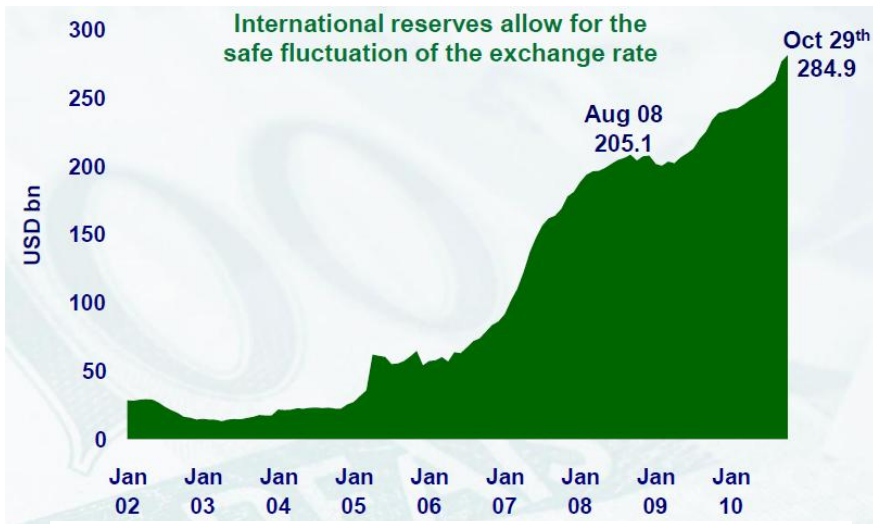
- Largest producer of iron ore, beef, chicken, orange juice, sugar, coffee, tobacco... worldwide
- Abundant energy resources: oil, ethanol, hydropower

## Domestic Market

- Very large manufacturing base (automobiles, planes, electronics, pharmaceuticals, chemicals)
- Sharp domestic consumption increase due to social mobility and strong credit increase

# BRAZILIAN ECONOMY SELECTED DATA

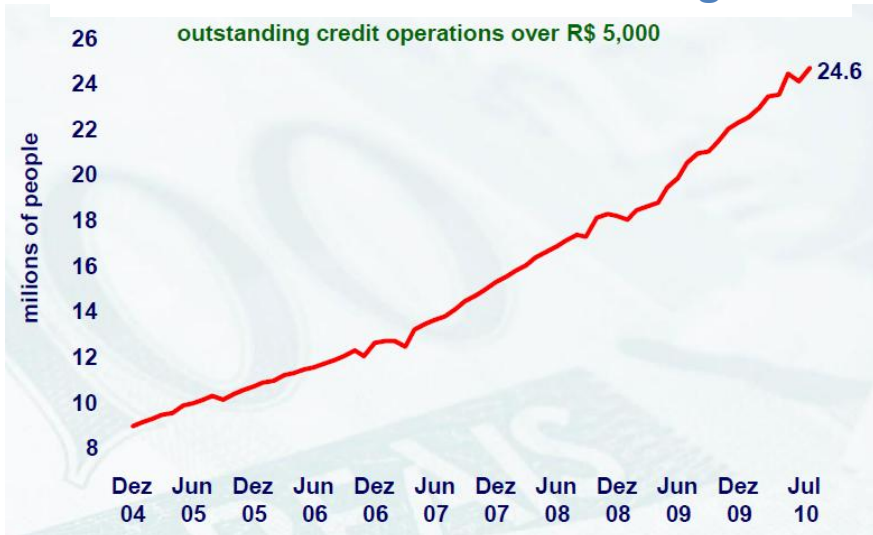
## Large Cash Reserves



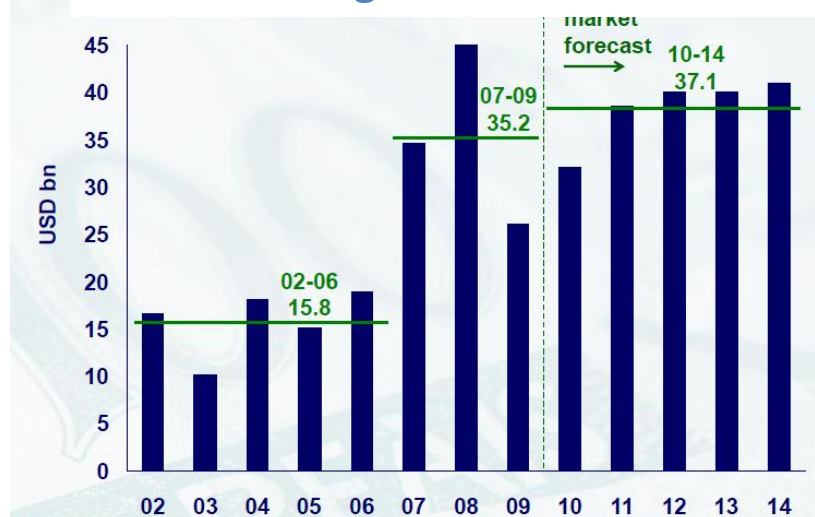
## Market Rate > Inflation



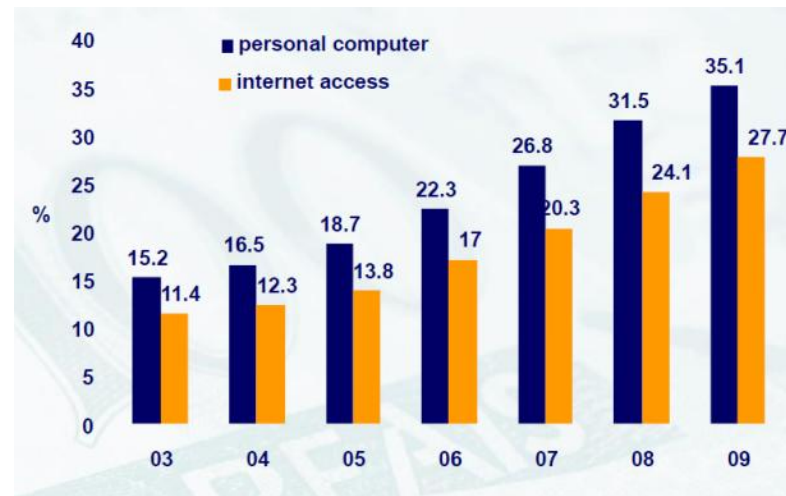
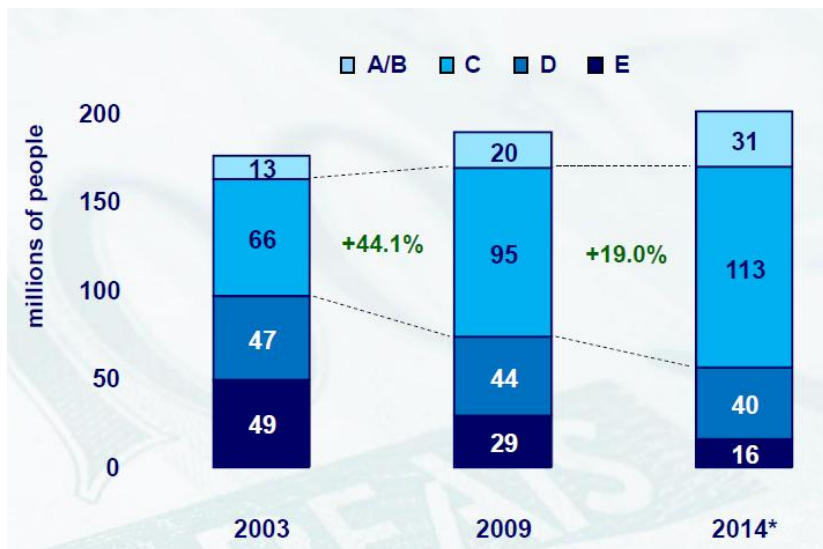
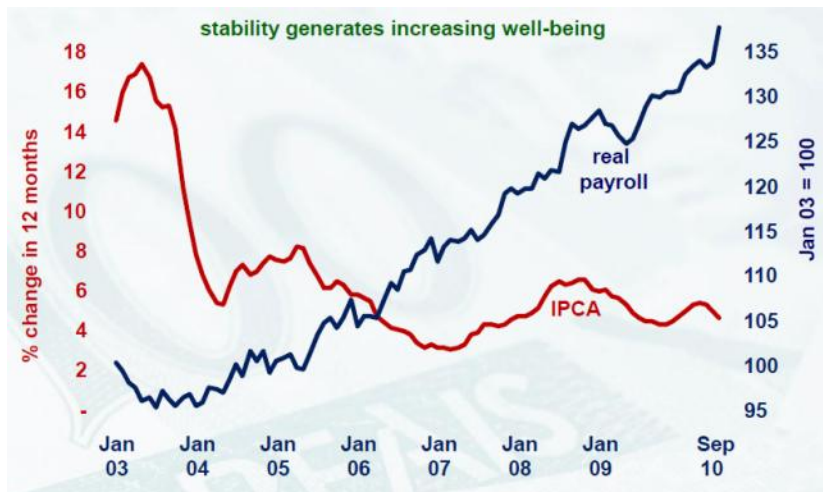
## Individual Credit Increasing



## Direct Foreign Investment > \$30 bn



# BRAZILIAN ECONOMY SELECTED DATA





# BRAZIL CHALLENGES

## Infrastructure

- Only 2.2 % of GDP invested in 2010 (China – 7.3%)
- Investments are required in airports, highways, railways, ports, energy production

## Education

- Quality improvements are necessary
- Brazil is already lacking skilled labor

## Government

- Increasing government cost worries
- Very complex tax and legal system and extremely high taxes impair competitiveness

## Public Security

- Control on drugs and arms needs to improve
- Pacification of “favelas” is showing some progress

# ENERGY AND MINING

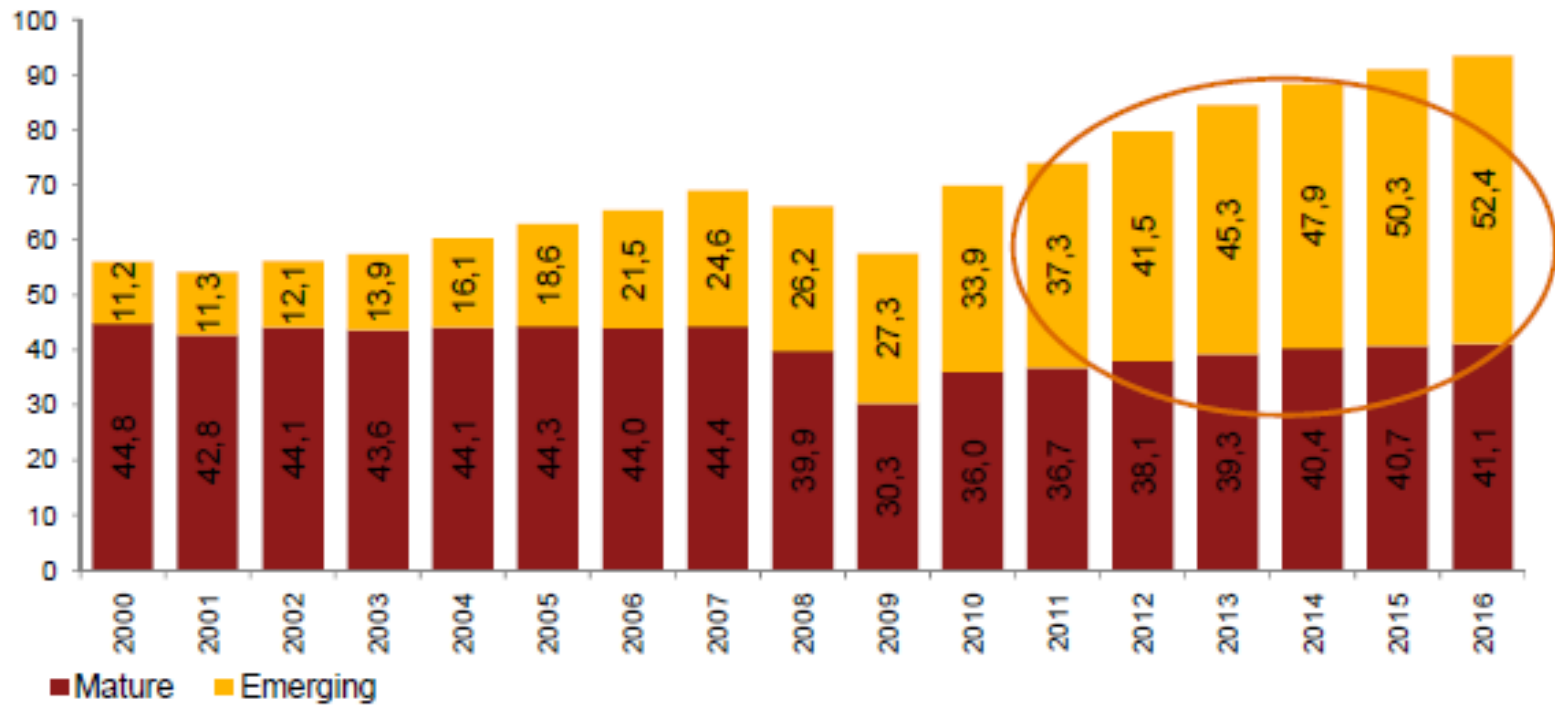


- The oil & gas segment will receive over US\$ 220 billion in investments from 2011 to 2014 to tap into the new found reserves, including pre-salt
- This industry alone will generate 700,000 new jobs until 2020
- The mining sector has estimated investments of US\$ 54 billion until 2014
- The ethanol business requires US\$ 50 billion investments to keep up with demand within the next 5 to 6 years



# AUTOMOTIVE INDUSTRY

Automotive world production is quickly moving to emerging markets



Millions of Units



# AUTOMOTIVE INDUSTRY

25 different vehicle manufacturers are present in Brazil running 50 plants, with several other under construction



# AUTOMOTIVE INDUSTRY



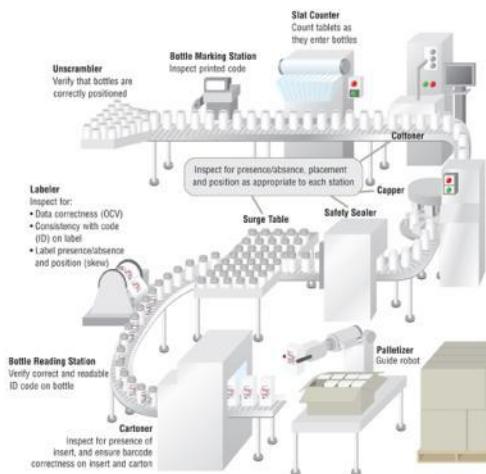
- In 2010 Brazil internal market accounted for 3.52 million vehicles (+11.9%), becoming the 4<sup>th</sup> largest in the world
- The total 2010 production was 3.64 million vehicles (+14.3%)
- Auto part manufacturers revenues reached US\$ 47 billion (+23%) with 91,2% capacity utilization
- Additional investments of US\$ 11.2 billion expected until 2012



# PHARMACEUTICAL INDUSTRY



- The pharmaceutical industry in Brazil reached sales of US\$ 22 billion in 2010 and is forecasted to continue growing by 10% a year into the future



- New traceability regulations require technology and automation upgrades in the 4,500 existing packaging lines over the next 2 years

# DEMAND FOR AUTOMATION ACCELERATED



- The unprecedented levels of consumption in the country generated the need for industries to boost production dramatically
- The rapid increase in production created quality issues in industries lacking the appropriate degree of automated assembly and control
- Fast increasing labor costs are also pushing companies to reduce headcount and adopt automated processes (Brazil - \$ 5.96/h, Russia - \$ 2.93/h, China - \$ 1.28/h, India – \$ 0.58/h)
- Sales of industrial automation and industrial machines and equipment increased 16.0%, reaching US\$ 55.9 billion in 2010



# INNOVATION, SCIENCE AND TECHNOLOGY

- The Brazilian Government has significantly expanded the budget to finance technology development
- In 2010, the FINEP agency alone has financed technology projects totaling US\$ 2.5 billion using its diverse portfolio of funds, subvention and loan instruments
- The Development Bank (BNDES) has created a specific credit line just for innovation projects
- In the past 10 years the country has seen a proliferation of incubators and tech parks and several international companies, such as GE, IBM and GM, are installing R&D centers in Brazil



# ENGINEERING AND TECHNICAL EDUCATION

- Brazil is graduating 30,000 engineers per year, generating an estimated **deficit** of 150,000 professionals by 2012
- SENAI, the largest industrial technology education institution in Brazil, had 2.4 million enrollments for its 781 operational units in 2009, serving 28 different industrial sectors



# AUTOMATION TECHNOLOGY IN BRAZIL

International leading suppliers of automation components and technology have been in Brazil for decades

Vision and Code Readers

**COGNEX**

Robotics



**FANUC**  
Robotics



**ABB**

Automation and Control

**Rockwell Automation**

**SIEMENS**

**elipse**  
software

Pneumatics

**FESTO**



Industrial Informatics

**Rockwell Automation**

**SIEMENS**

Presses

**TOX**  **PRESSOTECHNIK**

Power Tools



Motors & Drivers



**SEW**  
EURODRIVE

 **BONFIGLIOLI**

Measuring Systems



Leak Testers



Markers & Printers



**Willett**



Transporters



Adhesives

**LOCTITE**

Sensors and Components



**OMRON**

**BALLUFF**

Telemecanique

**SICK**

# AUTOMATION TECHNOLOGY IN BRAZIL

Import duties and sales taxes for components, products and equipment are quite high in Brazil



## Apple iPad

- USA – US\$ 540
- Brazil – US\$ 970 (+ 80%)



## Smart Camera

- USA – US\$ 4,765
- Brazil – US\$ 8,590 (+80%)



## BMW 135i

- USA – US\$ 72,230
- Brazil – US\$ 113,000 (+56%)

# MACHINE VISION IN BRAZIL – THE POLLUX EXPERIENCE

1993 - 1996

- Pre-Pollux Experience
- PC Based systems at the refrigeration compressor industry

1996 - 1998

- Pollux Foundation as a Machine Vision Integrator
- Use of Systech technology
- Focus on the Pharmaceutical Segment

1998-2000

- First VC investment
- Pharmaceutical segment leadership
- Expansion to Automotive segment
- Expansion to Mexico

# MACHINE VISION IN BRAZIL – THE POLLUX EXPERIENCE

2000 - 2003

- Second VC investment
- First contract with Cognex – In-Sight 1000
- Development of Pollux Vision System (Euresys electronics and software library)

2003 - 2007

- Strong crisis in Brazil forces Pollux to downsize
- Development of test machines and traceability solutions
- Strong growth in the Automotive segment

2007 - 2010

- End of PC Based Vision Solutions
- Addition of Automated Assembly Lines
- Development of the V-PAK Product Line



# MACHINE VISION IN BRAZIL – MARKET CHARACTERISTICS

- Vision generally implemented by a large number of small integrators – **very fragmented**
- Complete domination of **smart cameras** over PC based vision systems
- Preference for **turn-key solutions** – no internal vision experts
- **Pharmaceutical segment** – blister inspection somewhat saturated, opportunities for identification and traceability
- **Automotive segment** – more opportunities, but clients much more cautious about the use of vision
- **Consumer Goods segment** – recent vision expansion with growing need for productivity improvement and quality control

**Are you interested in operating in the  
Brazilian market?**

**Is geographic  
expansion key for  
your growth?**

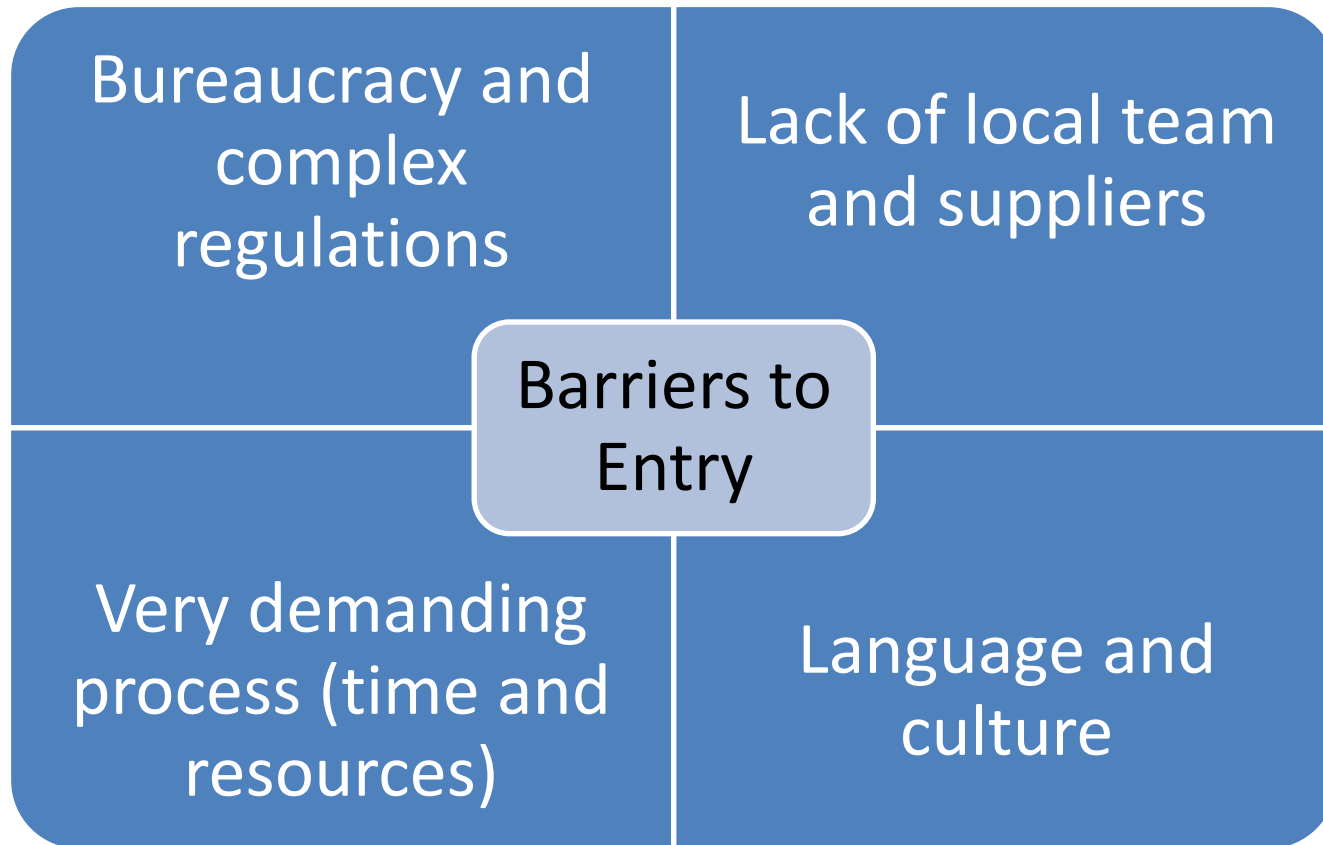
**Is Brazil an  
attractive market?**

**Is there a way to  
enter the Brazil  
market?**

**Are there local  
companies available  
for partnering?**

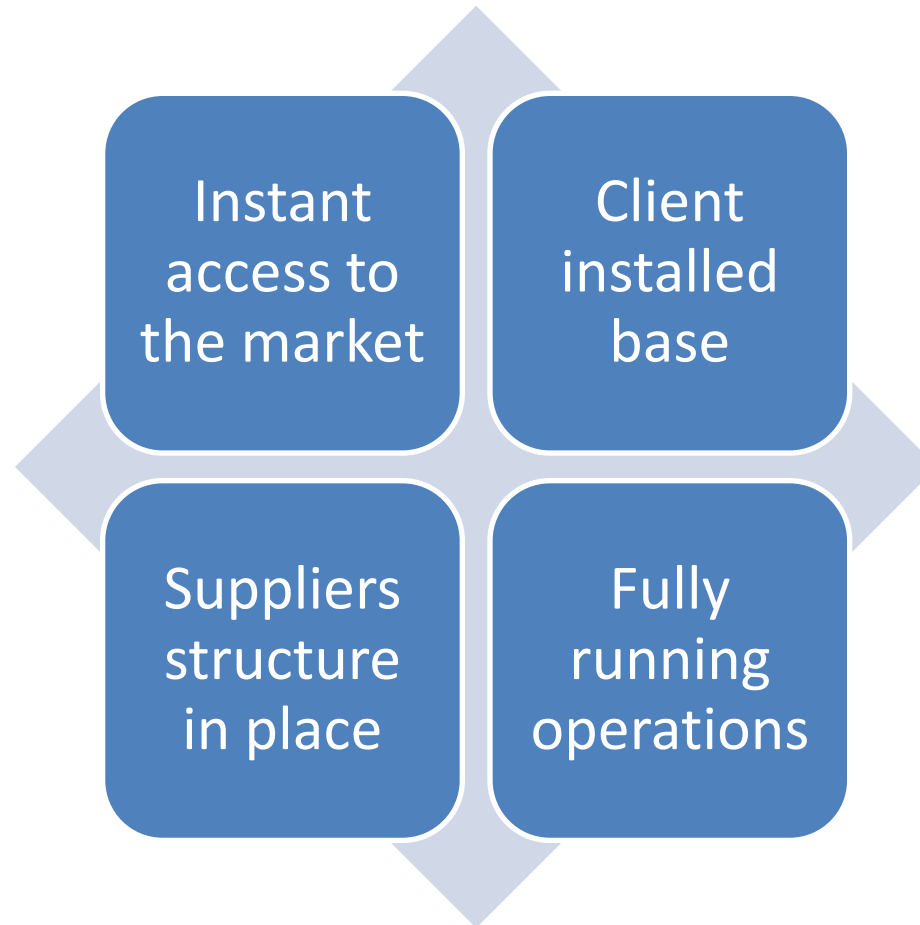
# PARTNERING ADVANTAGES

Speed and support to bypass barriers to entry



# PARTNERING ADVANTAGES

Quickness to operate in the region and capture current business opportunities and value



# PARTNERING ADVANTAGES

The local partner in Brazil will also benefit from the innumerable synergies

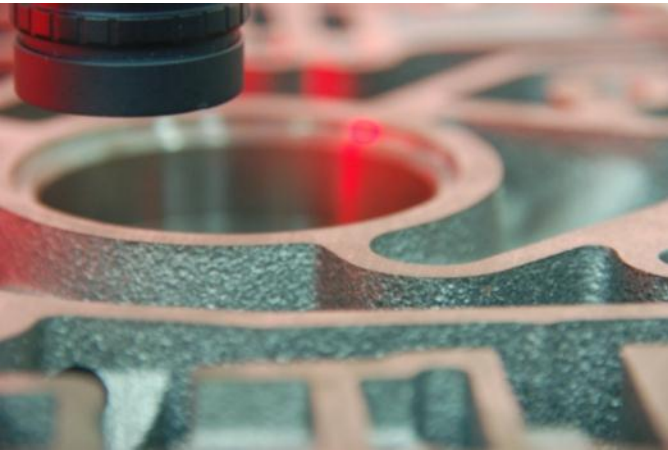
## Technology

- Access to new products and technology platforms
- Joint developments with experienced engineers and technicians
- Broader technology suppliers base

## Business

- Expanded market and product offer
- Shorter sales cycle
- Alternative capital sources
- Shared best practices
- Resources balancing and increased implementation capacity
- Co-Branding





**Pollux**  
Automation

# POLLUX OFFERS

Pollux develops automated assembly, inspection, robotics, and identification & traceability solutions



## Automated Assembly

- Fastening
- Pressing
- Soldering
- Riveting
- Adhesive dispensing

## Inspection & Test

- Machine vision
- Laser measuring
- Eddy current
- Leak testing
- Torque

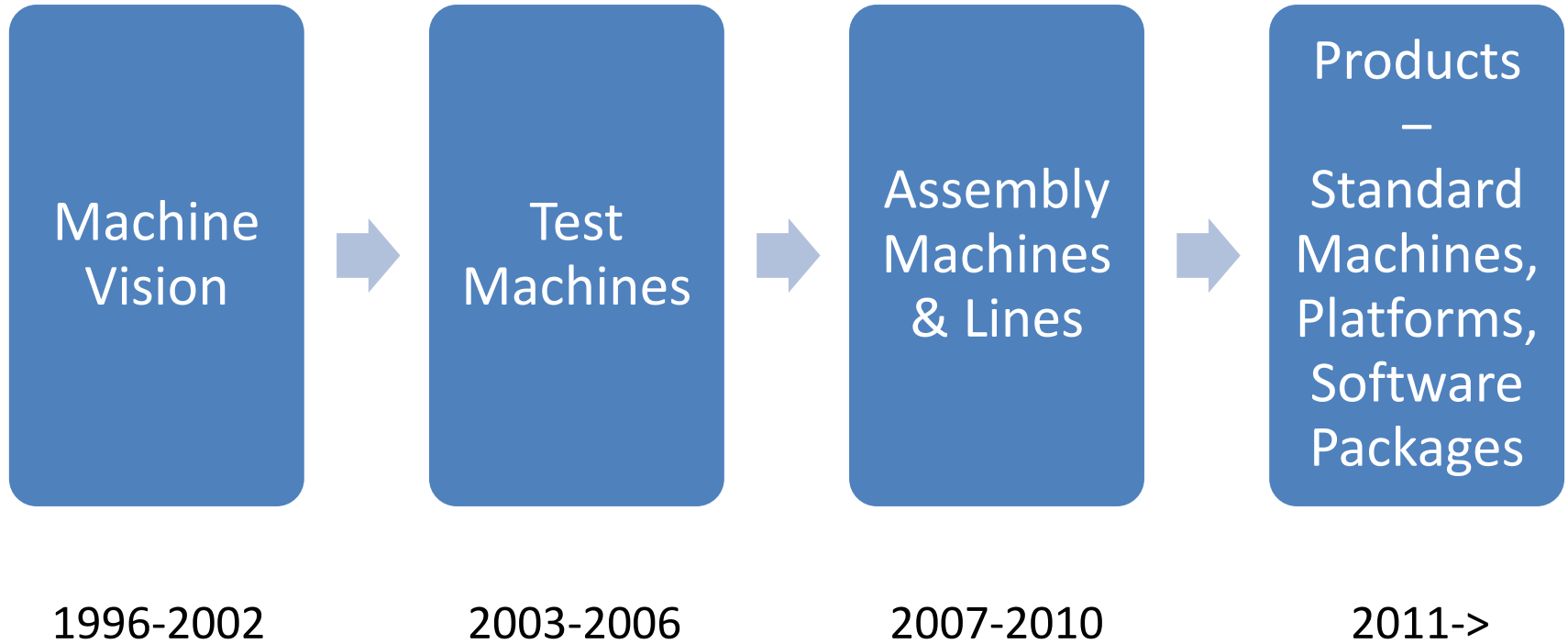
## Identification and Traceability

- 2D Codes
- Marking
- Reading
- Data Base

## Robotics

- Handling
- Loading
- Unloading
- Assembly
- Vision Guided

# POLLUX OFFERS EVOLUTION





Pollux has a team of 80 skilled employees

Area	Competences	# of People
Administration	<ul style="list-style-type: none"><li>• Finance</li><li>• Accounting</li><li>• Imports &amp; exports</li><li>• Legal</li><li>• HR</li></ul>	15
Sales & Marketing	<ul style="list-style-type: none"><li>• Consultative selling</li><li>• Marketing strategy – Seminars, trade shows, web presence, database marketing</li></ul>	15
Engineering	<ul style="list-style-type: none"><li>• Mechanical engineering</li><li>• Electronics and automation engineering</li><li>• Software programming and database</li><li>• Machine vision</li><li>• Robotics</li></ul>	50

# POLLUX LOCATIONS

Pollux has offices in the cities of São Paulo, Joinville, Americana and Porto Alegre



Joinville – 64 people  
São Paulo – 12 people  
Americana – 2 people  
Porto Alegre – 2 people



# POLLUX MARKET ACCESS



## Industries Served

- Automotive
- Pharmaceutical
- Consumer Goods



## Regions Served

- São Paulo
- Rio Grande de Sul
- Santa Catarina
- Paraná
- Minas Gerais
- Rio de Janeiro
- Bahia
- Amazonas



## Marketing Reach

- Seminars
- Tradeshows
- Newsletters
- Emails
- Website

# POLLUX CLIENTS

Pollux has implemented over 500 systems for over 200 blue-chip clients in Brazil

**Pollux**  
Automation



**Pollux**  
Automation

# POLLUX RECOGNITION

Pollux has been recognized as a high caliber professional organization

Pollux – Winner of FINEP National Technology Innovation Award



José Rizzo Hahn, Pollux's CEO, receives the FINEP award from the hands of Brazilian President Fernando Henrique Cardoso



Endeavor Entrepreneur



CNI's Quality and Productivity Award



Finep Technology Innovation Award



Celso Ramos Entrepreneurship Award



Ernst & Young Entrepreneur of the Year

Thank you!  
Obrigado!

## Contact information

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