MACHINE VISION IN BRAZIL

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10th EMVA Business Conference

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## BRAZIL KEY FACTS

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
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<tbody>
<tr>
<td>Area</td>
<td>8.5 million km²</td>
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<tr>
<td>Population</td>
<td>190 million</td>
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<tr>
<td>GDP in 2011</td>
<td>Size: US$ 2.5 trillion (6(^{th}) largest)</td>
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<td>Growth: 2010 - 7.5% / 2011 – 2.5%</td>
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<td></td>
<td>Ind. 27% / Agric. 6% / Serv. 67%</td>
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<td>Currency</td>
<td>Real US$ 1.00 = R$ 1.80</td>
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<td>Unemployment</td>
<td>5.7% (lowest in 10 years)</td>
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<tr>
<td>Credit Rating</td>
<td>Investment Grade since 2008 (BBB-)</td>
</tr>
<tr>
<td>Upcoming Events</td>
<td>World Cup (2014)</td>
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<td>Olympic Games (2016)</td>
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# 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**

- International reserves allow for the safe fluctuation of the exchange rate.
- Oct 29th: 284.9
- Aug 08: 205.1

**Market Rate > Inflation**

- Market rate (360 days) above inflation:
- Jan 03: 18
- Jan 04: 16
- Jan 05: 14
- Jan 06: 12
- Jan 07: 10
- Jan 08: 8
- Jan 09: 6
- Jan 10: 4
- Trend line: 5.75

**Individual Credit Increasing**

- Outstanding credit operations over R$ 5,000:
- Dez 04: 8
- Jan 05: 10
- Dez 05: 12
- Jan 06: 14
- Dez 06: 16
- Jan 07: 18
- Dez 07: 20
- Jan 08: 22
- Dez 08: 24
- Jan 09: 26
- Jul 10: 26

**Direct Foreign Investment > $30 bn**

- 2002-03: 15.8
- 2004-05: 15.8
- 2006: 35.2
- 2007-09: 37.1
- Market forecast 2010-14: 37.1
- 2010-14: 37.1
## 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 |
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 world production is quickly moving to emerging markets
25 different vehicle manufacturers are present in Brazil running 50 plants, with several other under construction.
In 2010 Brazil internal market accounted for 3.52 million vehicles (+11.9%), becoming the 4th 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.
• 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.
• 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
• 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
• 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
International leading suppliers of automation components and technology have been in Brazil for decades.
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
• 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

- Bureaucracy and complex regulations
- Lack of local team and suppliers
- Very demanding process (time and resources)
- Language and culture

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

- Instant access to the market
- Client installed base
- Suppliers structure in place
- Fully running operations
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 develops automated assembly, inspection, robotics, and identification & traceability solutions.
POLLUX OFFERS EVOLUTION

- Machine Vision
  - 1996-2002

- Test Machines
  - 2003-2006

- Assembly Machines & Lines
  - 2007-2010

- Products – Standard Machines, Platforms, Software Packages
  - 2011->
Pollux has a team of 80 skilled employees

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<tr>
<th>Area</th>
<th>Competences</th>
<th># of People</th>
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<tbody>
<tr>
<td>Administration</td>
<td>• Finance&lt;br&gt;• Accounting&lt;br&gt;• Imports &amp; exports&lt;br&gt;• Legal&lt;br&gt;• HR</td>
<td>15</td>
</tr>
<tr>
<td>Sales &amp; Marketing</td>
<td>• Consultative selling&lt;br&gt;• Marketing strategy – Seminars, trade shows, web presence, database marketing</td>
<td>15</td>
</tr>
<tr>
<td>Engineering</td>
<td>• Mechanical engineering&lt;br&gt;• Electronics and automation engineering&lt;br&gt;• Software programming and database&lt;br&gt;• Machine vision&lt;br&gt;• Robotics</td>
<td>50</td>
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Pollux has offices in the cities of São Paulo, Joinville, Americana and Porto Alegre.
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 has implemented over 500 systems for over 200 blue-chip clients in Brazil
Pollux has been recognized as a high caliber professional organization

José Rizzo Hahn, Pollux’s CEO, receives the FINEP award from the hands of Brazilian President Fernando Henrique Cardoso
Thank you!
Obrigado!

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