Development of Supply Chains in Bahia

Luc de Ferran
July 18, 2007
Brazil

Population: 187 million

Area: 8.5 million Km²

GNP: R$ 2.155 billion

Bahia

Population: 14 million (7.4 %)

Area: 0.564 million Km² (6.6 %)

GNP: R$ 101 billion (4.7 %)

2006 data: SEI / IBGE
# Growth data

<table>
<thead>
<tr>
<th>Year</th>
<th>Brasil</th>
<th>Var real (%)</th>
<th>Bahia</th>
<th>Var real (%)</th>
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<td>1.101</td>
<td>4.4</td>
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<td>3.9</td>
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<td>2007*</td>
<td>4.5</td>
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* Estimativa

*Fonte: SEF/IGE*
Camaçari Plant

- **Total area**: 4.7 million m²
- **Industrial area**: 1.6 million m²
- **Under roof**: 230,000 m²
- **Env. protection**: 7.0 million m²

- **Ford employees**: 3,500
- **Training**: 900 hours
- **Brazil content**: 95%

- **Social achievement**: 8,500 jobs created
- **35 suppliers, 26 on site**
- **Engineering and manufacturing teams**
- **Production of 250,000 vehicles in 2006**

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# Camaçari Plant Suppliers Partners

## Body Shop
- **Ferrolene**: Blanking
- **Sodecia**: Small stampings, X-car beam

## Paint Shop
- **DuPont**: Paint materials
- **Colauto**: Small parts painting

## Final Assembly
- **Faurecia**: Door panel ans ass’y
- **Visteon**: Instrument panel, HVAC
- **Pelzer**: Soft trim
- **Intertrim**: Headliner
- **Lear**: Seats
- **Mapri**: Fasteners distribution
- **Valeo**: FEM and cooling system
- **Benteler**: Suspensions
- **Arvin**: Exhaust system
- **Cooper**: Piping systems
- **Pirelli**: Wheels and tires
- **Yazaki**: Wiring harness dist.

## Components Manufacturing
- **DOW**: Large plastic parts, injection, painting
- **Autometal**: Small plastic parts, injection, painting
- **SaarGummi**: Weatherstrips
- **Pilkington**: Glass ass’y module
- **Kautex**: Fuel tank system

## Service Providers
- **ABB**: Maintenance, ind. materials, condominium
- **Premier**: Paint maintenance
- **Exel**: Logistic provider
- **MSX**: Product development
- **TPC**: Logistic provider

## External Suppliers
- **SIAN**: Lighting system
- **Pirelli**: Tires manufacturing
- **Krupp**: Heavy stampings
- **Pelzer**: Insulators
- **Yazaki**: Wiring harness
- **TWE**: Seat foams
- **Faurecia**: Plastic parts injection
- **Met. Jardim**: Small heavy stampings
- **Vibrac**: Deadners
Examples of Major Industrial Firms

• Brasken
• Bridgestone
• Bosch
• Continental
• Dow
• Gerdau
• Monsanto
• Odebrecht
• Petrobras
• Pirelli
• Siemens
• Tigre

Also:
• Appliances
• Cellulose
• Furniture
• Shoe industry
95% of parts and materials are from Brazil

Cost Structure of the Ford Complex

Imported 35%

Bahia 60%

Others 5%

Opportunity of R$ 150 million per year revenue
Priority Areas

- Mechanism
- Rubber parts
- Attachment parts
- Mechanical parts
- Plastic components (injected, blow molded, extruded)
- Tooling and tool maintenance
- Logistics
Program Structure

- FIEB Coordinatrion
- Partners: SICM / SECTI / FORD / SEBRAE / GTZ / IAW
- Confirm demand for product
- Identify possible offers
- Develop local firms
- Bring technology with German firms
- Assure sustainability:
  - Social responsibility
  - Environment responsibility
Support Structure

FIEB, GTZ, SECTI, SICM, FORD, SEBRAE, IAW

Counseling Board

Management Team

Jorge Lima
(Coordination - FIEB)

Nívea Almeida
(Coord. of APL)

Luc de Ferran
(Industrial Consult)

Cristiano Vasconcellos
(Vice-Coord. FIEB)

Lars Ziegler
(International Consultant)

Luciano Pisanu

Nívea Almeida

Verena Jezler

Paulo Barreto

Ângelo Cavalcanti

Luciano Pisanu

Nívea Almeida

Verena Jezler

Paulo Barreto

Product, Quality, Specifications

Manufacturing, Engineering and Processes

Human Resources

Financial Analyst

Project Management
Vision
Contribute to establish firms in Bahia as centers of technology to supply the automotive sector and other transformation industries.

Mission
Create conditions for the development of talented human resources, regional technology, and economical wealth, utilizing best practices, and warrant sustainable businesses and the longevity of the involved firms, through the generation of cash flow and profits, resulting into benchmark firms in the management of quality, cost and delivery.
Team Structure and Costs

- Work Started in June 2006
- Team 100% operational in December 2006
- 9 specialists
- 9 projects and business cases simultaneously
- 18 months for each project
- Delivery of one project every 2 months
- Team maintenance cost of R$ 2.5 millions, equivalent to R$ 180,000 per project
# Quality Function Deployment - QFD

<table>
<thead>
<tr>
<th>SUCCESS FACTORS</th>
<th>CUSTOMER</th>
<th>SPONSOR</th>
<th>ORGANIZATION SUPPORT</th>
<th>LOCAL COMPANY</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXPERTISE IN HUMAN RESOURCES</td>
<td></td>
<td>Create conditions for technical, social and economical development of human resources</td>
<td>The best practices in human resources</td>
<td>Qualification, training and social responsibility</td>
</tr>
<tr>
<td>ROBUSTINESS OF THE BUSINESS</td>
<td></td>
<td>Financial, social and environment</td>
<td>The best practices in product, process and logistic</td>
<td>Generation of cash flow and longevity</td>
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<tr>
<td>COMPETITIVE IN QCT</td>
<td>benchmarking, consultancy, audits</td>
<td>project management</td>
<td>Management of QCT</td>
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## Balanced Scorecard

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<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>Create a safe work environment</td>
<td>Minimize costs</td>
<td>Maximize revenue</td>
<td>Develop innovative products</td>
<td>Ensure customer satisfaction</td>
<td>Improve overall commitment</td>
<td>Increase business priorities</td>
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### Metrics

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<thead>
<tr>
<th>Objective</th>
<th>Metric</th>
<th>2007</th>
<th>2007 Target</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Year</th>
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</table>

### Priorities

<table>
<thead>
<tr>
<th>Customer</th>
<th>Product</th>
<th>Process</th>
<th>Learning &amp; Growth</th>
<th>Financial</th>
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</tr>
</tbody>
</table>

### Stakeholders

- Cristiano
- Ettilia
- Jorge
- Lars
- Luc
- Nivea
- Paulo
- Barro
- Pisanu
- Verana
Initiative Progress

- Develop work methodology and implement support structure
  - Team competence certification, Development of QFD e BSC, business case template

- Meet Tier 1 FSS
  - Tier 1 group meetings, 20 individual firms interview (Ford, Visteon, Valeo, Lear, Yazaki, DHL, ArvinMeritor, Benteler, Kautex, Saargummi, Dow, Autometal, Intertrim, …)

- Unveil demand
  - 150 parts catalogue (weight, material, process, cost, quantities, …) > 150 millions $R/year
## Analysis of Demand

### Step 1: Meet Tier 1 suppliers and validate the project methodology

### Step 2: Collect from Tier 1 suppliers parts to be sourced and requirements

### Step 3: Specifications, drawings, materials, etc. And Zero Base Cost analysis

### Digital Teardown

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**Peças Injetadas**

<table>
<thead>
<tr>
<th>Peça</th>
<th>Cliente</th>
<th>Consumo</th>
<th>Material</th>
<th>Peso</th>
<th>Processo</th>
<th>Utilidade</th>
<th>Código</th>
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</thead>
<tbody>
<tr>
<td>Lock Asy Glove Comp. Door</td>
<td>Visteon</td>
<td>293.000 pç/ano</td>
<td>PA</td>
<td>22.53g</td>
<td>Injeção</td>
<td>Puxador Brasil- Espelho</td>
<td>91AG-A06072-AB</td>
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<tr>
<td>Lever A/C and HTR A</td>
<td>Visteon</td>
<td>86.000 pç/ano</td>
<td>PBT GF 30</td>
<td>6.55 g</td>
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<td>Alavanca da Máscara</td>
<td>VP2S6H-18K542-DA</td>
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<tr>
<td>BRKT- A/C EVP TUB SUPT</td>
<td>Visteon</td>
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<td>PA 66 (GF+M)38</td>
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<td>Injeção</td>
<td>Espaçador</td>
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<tr>
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<td>Visteon</td>
<td>250.000 pç/ano</td>
<td>Não especificado</td>
<td>4.10 g</td>
<td>Injeção</td>
<td>Engrenagem maior</td>
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<tr>
<td>Reinf. A/C Mounting Bracket</td>
<td>Visteon</td>
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<td>PP(P) 40</td>
<td>2.86 g</td>
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<td>Reforço do Housing</td>
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<tr>
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<td>Visteon</td>
<td>250.000 (menos modelo Blower) pç/ano</td>
<td>PBT GF 30</td>
<td>8.67 g</td>
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<tr>
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<td>3.56 g</td>
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<td>Engrenagem menor</td>
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<tr>
<td>Bracket Heater Mount</td>
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<td>43.000 pç/ano</td>
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<td>Bracket do Aquecedor</td>
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*Digital Teardown Analysis of Demand*
Initiative Progress

Local firms certification

28 firms visited (Tool rooms, machining, plastic injection, blow molds, rubber parts, extrusions, automation, 14 firms pre-approved)

Search for German partner firms

11 firms visited in September 2006 (Tool rooms, injected parts, rubber, surface treatment, machining)
Search for Bahian Firms

October 2006: Data bank with 330 firms (FIEB, SECTI, IEL)

November 2006: Selection of 57 firms:
- Firms engaged in mechanical and metals related businesses
- Firms engaged in plastic injection and blow molding
- Entrepreneurial and technical expertise

December 2006: Questionnaire survey

January to June 2007: Analysis, visits and final selection
German Firms Contacted

-  Bosch Formenbau (Tool room)
-  Schaal Oberflaechen & Systems (Plastic injection, surface treatment)
-  Mueller Gruppe (Precision machining, mold making, plastic injection, surface treatment)
-  Deuschle (Tool room and plastics components manufacturing)
-  KWO (High speed precision parts molds)
-  Wurth (Major distributor of chemical and fasteners)
-  Tecnaro (Natural resins and fibers)
-  Kaechele (Rubber components)
-  Roos & Kuebler (Plastic and rubber parts tools, injection tools, atamping tools)
-  Hack (Specialist in most tool making)

Next round starts September 17, 2007
Success Factors

- Start small – grow with business
- Positive cash flow at all times
- On-site management presence
- Secure a business
- Grow technology with local competence
- Develop within regional culture and people
- Secure regional partnerships
Initiative Progress

- **Business cases development**
  - 9 Business cases en route, maturity expected by:
    - 4 in July /August
    - 5 thru Year end 2007

- **Technology agreements**
  - 1 Partnership in progress (Saga Nordeste e Schmalz - automation)

- **Cultural workshops**
  - 3 Workshop (April – 2006, May and August 2007)
### Firms Selection Prioritization

<table>
<thead>
<tr>
<th>Visited firms</th>
<th>Core business</th>
<th>First Selected Group</th>
<th>Firms appointed for the Business Plan</th>
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<tbody>
<tr>
<td>1 Fortik</td>
<td>Injeção de Plástico</td>
<td>Fortik</td>
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<td>2 Outline</td>
<td>Ferramentaria</td>
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<td>3 IMF</td>
<td>Usinagem</td>
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<td>4 MPB</td>
<td>Ferramentaria</td>
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<td>5 Hober</td>
<td>Injeção de Plástico</td>
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<td>6 Etep</td>
<td>Usinagem e Caldeiraria</td>
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<td>7 Fixar</td>
<td>Fixadores</td>
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<td>8 Rosita</td>
<td>Injeção de Sopro</td>
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<td>9 Forja Bahia</td>
<td>Forjaria</td>
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<td>Tratamento de Superfície</td>
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<td>11 Newsul</td>
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<td>12 Novel</td>
<td>Injeção de Plástico</td>
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<td>Borrachas</td>
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<td>Usinagem</td>
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<td>15 Fundmeta</td>
<td>Fundição e Usinagem</td>
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<td>16 Fresita</td>
<td>Usinagem</td>
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<td>18 Aroza</td>
<td>Válvulas vedação</td>
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<td>19 Apaerv</td>
<td>Caldeiraria e Usinagem</td>
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<td>20 Saga Nordeste</td>
<td>Automação</td>
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## Potential Business Cases

<table>
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<th>Germain firms</th>
<th>Local firms</th>
<th>Customers</th>
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<tbody>
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<td>Fixadores</td>
<td>Wuerth</td>
<td>Fixar / Saga NE</td>
<td>Todos Sistemistas</td>
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<tr>
<td>Soprados</td>
<td>Roos&amp;Kuebler / Mollerplast</td>
<td>Rosita / Newsul</td>
<td>Ford / Valeo / Visteon</td>
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<td>Revestimentos e Mantas</td>
<td>Tecnaro</td>
<td>Toro</td>
<td>Ford / Lear / Pelzer / Faurecia / Intertron</td>
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<tr>
<td>Ferramentaria Grande</td>
<td>Deuschle / Roos&amp;Kuebler / Bosch</td>
<td>MPB / Etep / Outline</td>
<td>Ford / Dow / Sodecia / Faurecia / Visteon / Valeo / Sian / TWE</td>
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<td>Ferramentaria Pequena</td>
<td>Mueller / Hack</td>
<td>Outline / Etep</td>
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<td>Fortik / Rosita / EBF</td>
<td>Ford / Dow / Faurecia / Visteon / Valeo / Sian / TWE</td>
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<td>Valeo, Visteon</td>
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<td>Injetados Alumínio</td>
<td>Roos&amp;Kuebler / Bosch</td>
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<td>Ford / Ford Taubaté / Outros Sistemistas</td>
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<td>Schmalz</td>
<td>Saga NE</td>
<td>Benteler</td>
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</tbody>
</table>
Business Case Content

1) Project
2) Organization competence
3) Project management process
4) Market potential
5) Differentiation elements
6) Partnerships
7) Quality of products and services, and technology
8) Production processes, services, and technology
9) Investment and variable costs
10) Financial analysis
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Thank You