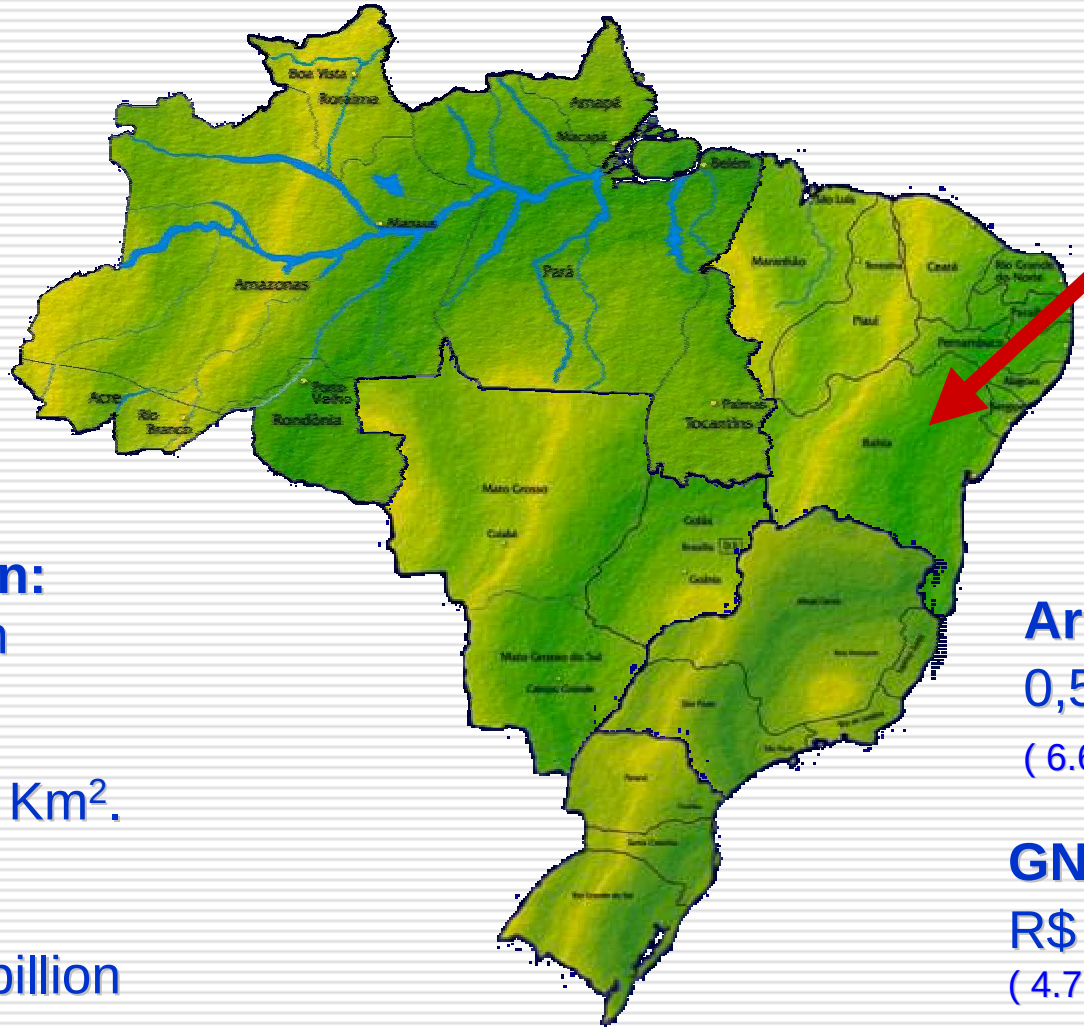
Development of Supply Chains in Bahia

Luc de Ferran

July 18, 2007



Brazil

Population:
187 million

Area:
8.5 million Km^2.

GNP:
R$ 2.155 billion

Bahia

Population:
14 million
(7.4 %)

Area:
0,564 million Km^2.
(6.6 %)

GNP:
R$ 101 billion
(4.7 %)

2006 data: SEI / IBGE

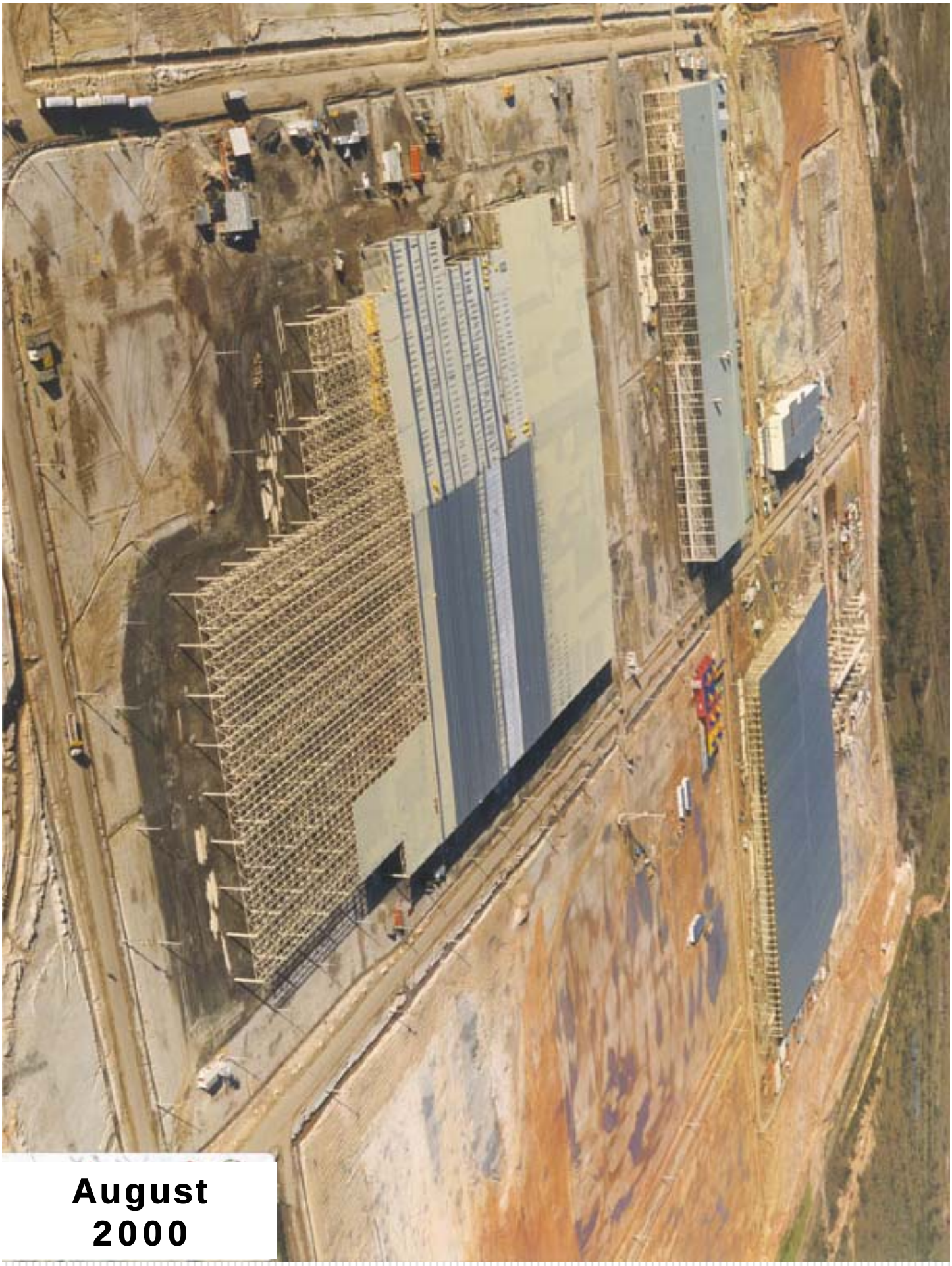
Growth data

GNP (billion R$)

	Brasil	Var real %	Bahia	Var real %
2000	1.101	4.4	48	3.9
2001	1.198	1.3	52	1.0
2002	1.346	1.9	62	1.2
2003	1.556	0.5	73	2.3
2004	1.766	4.9	88	9.8
2005	1.938	2.3	97	4.9
2006	2.155	2,9	101	2,4
2007*		4,5		5

* Estimativa

Fonte: SEI / IBGE



August
2000

February
2001

Camaçari Plant

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

Ford employees	3.500
Training	900 hours
Brazil content	95%

Total area	4.7 million m²
Industrial area	1.6 million m²
Under roof	230.000 m²
Env. protection	7.0 million m²

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

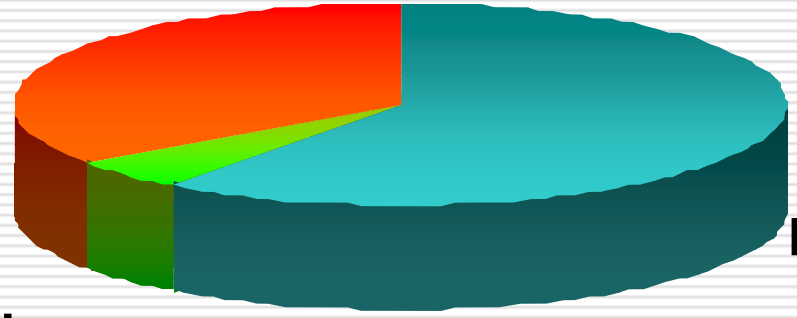
- Brasken
- Bridgestone
- Bosch
- Continental
- Dow
- Gerdau
- Monsanto
- Odebrecht
- Petrobras
- Pirelli
- Siemens
- Tigre

Also:

- Appliances
- Cellulose
- Furniture
- Shoe industry

Cost Structure of the Ford Complex

95% of parts and materials are from Brazil



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
  - Environement responsibility

Support Structure

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

Counseling Board

Management Team

Jorge Lima
(Coordination - FIEB)

Nívea Almeida
(Coord. of APL)

Cristiano Vasconcellos
(Vice-Coord. FIEB)

Luc de Ferran
(Industrial Consult)

Lars Ziegler
(International Consultant)

Ângelo Cavalcanti	Luciano Pisanu	Nívea Almeida	Verena Jezler	Paulo Barreto
Product, Quality, Specifications	Manufacturing, Engineering and Processes	Human Resources	Financial Analist	Project Management

Vision

Contribute to establish firms in Bahia as centers of technology to suply the automotive sector and other transformation industries

Mission

Create conditions for the development of talented human resources, regional tecnology, and economical wealth, utilizing best practices, and warant sustainable businesses and the longevity of the involved firms, through the generation of cash flow and profits, resulting into 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

		CUSTOMER		
		SPONSOR	ORGANIZATION SUPPORT	LOCAL COMPANY
SUCCESS FACTORS	EXPERTISE IN HUMAN RESOURCES	Create conditions for technical, social and economical development of human resources	The best pratices in human resources	Qualification, training and social responsibility
	ROBUSTINESS OF THE BUSINESS	Financial, social and environment	The best pratices in product, process and logistic	Generation of cash flow and longevity
	COMPETITIVE IN QCT	benchmarking, consultancy, audits	project management	Management of QCT

Balanced Scorecard

	Business Priorities	Objectives	Metric	2007 Status	2007 Target				Latest Status	Progress			Owner								
					Quarter 1	Quarter 2	Quarter 3	Quarter 4		R	Y	G	Cristiano	Estagiário	Jorge	Lars	Luc	Nivea	Paulo Barreto	Pisanu	Verena
													C = Champion S = support								
Overall Commitment	18	Aprovação da iniciativa pelos stakeholders	nº de iniciativas aprovadas		2	2	3	2				G	S		S	S	C	S	S	S	S
Quality & Customer Satisfaction	17	Identificar métricas de QCT do cliente	lead time														C		S	S	S
			nº de peças reprovadas									G									
Product Programs & Execution	14	Gerar plano de produto (TQC)	nº de produtos desenvolvidos									G	S	S		S	S			C	
	15	Gerar plano de processo (TQC)	nº de processos implantados									G	S	S		S	S			C	
	16	Gerar plano de logística (TQC)	nº de processos logísticos desenvolvidos									G	S	S	C			S	S		
Volume, Revenue & Market Share	10	Identificar o volume da indústria	nº de peças consumidas	0	5	15	40	30	0		Y					S	C		S	S	
	11	Levantar preços praticados (custo Ford)	nº de componentes precificados	0	5	15	40	30	0		Y						C	S	S		S
	12	Identificar capacidade de penetração (qto pode capturar)	% do mercado a ser capturado	0	0	0	2	3	0		Y		C							S	S
	13	Necessidade de investimento	Volume a ser investido (R$)	0	0	0	7	7	0			G	S		C	S	S	S			C
Cost & Business Structure	5	Identificar os negócios	nº de negócios identificados	9	9	+2	+2	+2	9			G	S		S	S	C	S	S	S	
	6	Analisar qualidade/tecnologia atual das empresas	nº de empresas analisadas	0	2	2	3	2	0		Y		S	S		S	S			C	
	7	Analisar custo atual	nº de empresas analisadas	0	2	2	3	2	0		Y		S		S		S		S		C
	8	Analisar logística	nº de empresas analisadas	0	2	2	3	2	0		Y		S		S	S	S		S	C	
	9	Avaliar a robustez de cada negócio (valor = CoT/C)	nº de negócios avaliados	0	1	2	3	3	0		Y		S		S	S	C	S		S	S
People & Safety	1	Prover estrutura organizacional	nº de pessoas contratadas	7	9				7			G			C						
	2	Criar um ambiente físico	nº de postos de trabalho	4	6						Y				C						
	3	Prover alinhamento institucional	nº de instituições envolvidas	6	6							G			C			S			
	4	Capacitar o time (técnica/gestão)	nº de treinamentos	2	3	1	1	1				G	S		C	S	S				

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

Peças Injetadas

Peça:	Lock Asy Glove Comp. Door
Cliente:	Visteon
Consumo:	293.000 pç/ano
Material:	PA
Peso:	22.53g
Processo:	Injeção
Utilidade:	Puxador Brasil- Espelho
Código:	91AG- A06072-AB

Peça:	Lock Asy Glove Comp. Door
Cliente:	Visteon
Consumo:	293.000 pç/ano
Material:	PA
Peso:	13.66g
Processo:	Injeção
Utilidade:	Puxador Brasil - interno
Código:	91AG- A06072-AB

Peça:	Lever A/C and HTR A
Cliente:	Visteon
Consumo:	86.000 pç/ano
Material:	PBT GF 30
Peso:	6.55 g
Processo:	Injeção
Utilidade:	Alavanca da Máscara
Código:	VP2S6H- 18K542-DA

Peça:	Lever Heater Air Temp.
Cliente:	Visteon
Consumo:	250.000 (menos modelo Blower)
Material:	PBT GF 30
Peso:	8.67 g
Processo:	Injeção
Utilidade:	Alavanca Maior
Código:	VP2S6H- 18K376-BE

Peça:	BRKT- A/C EVP TUB SUPT
Cliente:	Visteon
Consumo:	43.000 pç/ano
Material:	PA 66 (GF+M)38<
Peso:	5.32g
Processo:	Injeção
Utilidade:	Espaçador
Código:	VP2S6H- 19A579-AC

Peça:	Lever Heater Air Temp. Contr. VA
Cliente:	Visteon
Consumo:	43.000 pç/ano
Material:	PBT GF30
Peso:	3.56 g
Processo:	Injeção
Utilidade:	Alavanca menor
Código:	VP2S6H- 18K376-AD

Peça:	Gear Heater Control Long
Cliente:	Visteon
Consumo:	250.000 pç/ano
Material:	Não especificado
Peso:	4.10 g
Processo:	Injeção
Utilidade:	Engrenagem maior
Código:	VP2S6H- 18K572-AC

Peça:	Gear Heater Control Long
Cliente:	Visteon
Consumo:	250.000 pç/ano
Material:	Não especificado
Peso:	3.12 g
Processo:	Injeção
Utilidade:	Engrenagem menor
Código:	VP2S6H- 18K572-AC

Peça:	Reinf. A/C Mounting Bracket
Cliente:	Visteon
Consumo:	250.000 pç/ano
Material:	PP(P) 40
Peso:	2.86 g
Processo:	Injeção
Utilidade:	Reforço do Housing
Código:	VP5S6H- 19C861-AA

Peça:	BracketHeater Mount
Cliente:	Visteon
Consumo:	43.000 pç/ano
Material:	PP - TD33
Peso:	16.92g
Processo:	Injeção
Utilidade:	Bracket do Aquecedor
Código:	VP2S6H- 18A457-BA

Initiative Progress

- **Local firms certification** → **28 firms visited** (Tool rooms, machining, plastic injection, blow molders, 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 experise

- **December 2006**: Questionnaire survey

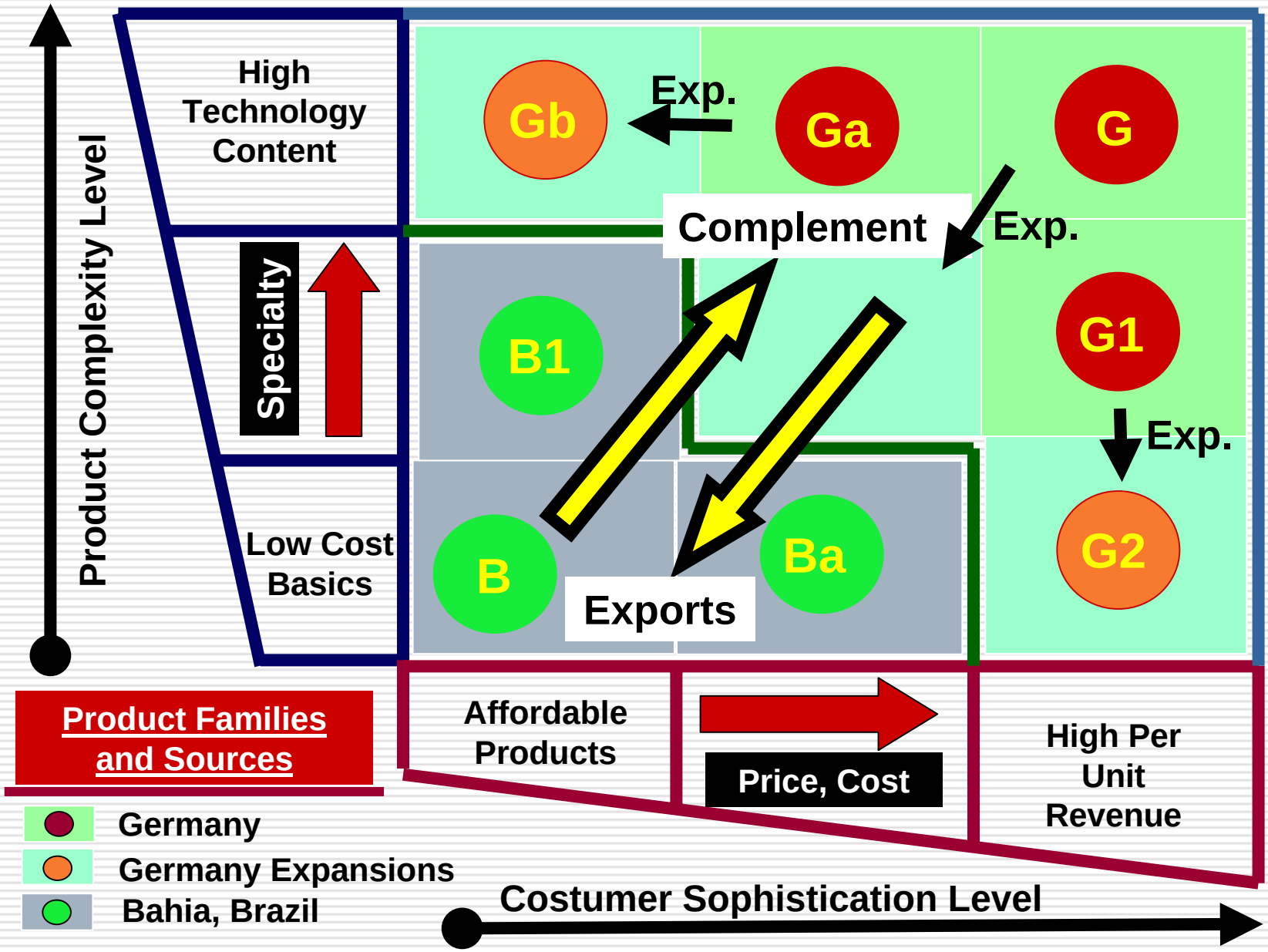
- **January to June 2007**: Analysis, visits and final selection

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

Business Case Model



Product Families and Sources

- Germany
- Germany Expansions
- Bahia, Brazil

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 Partenership in progress** (Saga Nordeste e Schmalz - automation)

Cultural workshops → **3 Workshop** (April – 2006, May and August 2007)

Firms Selection Prioritization

Visited firms		Core business	First Selected Group	Firms appointed for the Business Plan
1	Fortik	Injeção de Plástico	Fortik	Fortik
2	Outline	Ferramentaria	Outline	Outline
3	IMF	Usinagem		
4	MPB	Ferramentaria	MPB	
5	Hober	Injeção de Plástico	Hober	
6	Etep	Usinagem e Caldeiraria	Etep	Etep
7	Fixar	Fixadores	Fixar	Fixar
8	Rosita	Injeção de Sopro	Rosita	Rosita
9	Forja Bahia	Forjaria	Forja Bahia	
10	Tecquímica	Tratamento de Superfície		
11	Newsul	Sopro de Plástico	Newsul	Newsul
12	Novel	Injeção de Plástico		
13	Grupo IPB	Borrachas	Grupo IPB	Grupo IPB
14	Indopec	Usinagem		
15	Fundmeta	Fundição e Usinagem		
16	Fresita	Usinagem		
17	Croman	Tratamento de Superfície		
18	Aroza	Válvulas vedação		
19	Apaerv	Caldeiraria e Usinagem		
20	Saga Nordeste	Automação	Saga Nordeste	Saga Nordeste
21	Produmaster	Compostos Polímeros	Produmaster	Produmaster
22	EBF	Injeção de plástico	EBF	EBF
23	Artespumas	Espumas Engenharia	Artespumas	Artespumas
24	OndaSport	Confecção	OndaSport	OndaSport

Potential Business Cases

Business Case	Germain firms	Local firms	Customers
Fixadores	Wuerth	Fixar / Saga NE	Todos Sistemistas
Soprados	Roos&Kuebler / Mollerplast	Rosita / Newsul	Ford / Valeo / Visteon
Revestimentos e Mantas	Tecnaro	Toro	Ford / Lear / Pelzer / Faurecia / Intertrin
Ferramentaria Grande	Deuschle / Roos&Kuebler / Bosch	MPB / Etep / Outline	Ford / Dow / Sodecia / Faurecia / Visteon / Valeo / Sian / TWE
Ferramentaria Pequena	Mueller / Hack	Outline / Etep	Todos Sistemistas
Suporte a Ferramentaria			
Injetados Plásticos	Schaal / Mueller	Fortik / Rosita / EBF	Ford / Dow / Faurecia / Visteon / Valeo / Sian / TWE
Extrudados Plásticos		Produmaster	Valeo, Visteon
Espumas PU, EVA		Artespumas	Lear, Benteler
Borracha	Kaechele	Grupo IPB	Ford / Benteler
Injetados Alumínio	Roos&Kuebler / Bosch		Ford / Ford Taubaté / Outros Sistemistas
Manipuladores de carga	Schmalz	Saga NE	Benteler

Business Case Content

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

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Thank You