

EFP Kick Off Conference: Foresight and Forward Looking Activities - exploring New European Perspectives

Foresight and forward looking activities between local acting and
global thinking.

Claudio Chauke Nehme
Brasilia - Brazil
Chauke@cgee.org.br

- The environment for foresight in Brazil
 - Experiences.
 - CGEE purpose.
- Overview of foresight in Latin America
- Conclusions

SCENARIOS BRAZIL 2020 - Ministry of Science and Technology (MCT), 1997:

- ◆ **Exploratory Scenarios:** they were hypothetical and intended to offer subsidies for a wide debate which could produce the scenario wanted by the Brazilian society.
- ◆ 3 scenarios: **ABATIAPÉ**; **BABORÉ**; **CAAETÉ**.
- ◆ Contexts in consideration: “Political Paradigms/ New International Order”; “Globalization of Production”; “Controlling International Trade”; “Governance and Governability”; “Level of Economic Stability”; “Private Productive Investment”; “Investment and Government Expenditure”; “Capacity for Competition, Productive Sector and Open Economy”; “Pace of Economic Growth”; “Labour Market and Employment”; “Domestic Market”; “Spatial Distribution of Production”; and, “Management of Natural Resources”.

PROSPECTAR - 2000: technology trends and possible impacts.

- ◆ Main actors:
 - » National Council of S&T (CCT), MCT is the executive secretary.
 - » 8 anchor institutions.
 - » CNPq and FINEP, funding.
- ◆ Areas:
 - » Aeronautics; Agriculture; Energy; Space; Materials; Hydro resources; Health; ICT.
- ◆ Delphi application.
- ◆ Data:
 - » 1.652 technology topics.
 - » 10.939 participants, mainly Ph.D. (59%).
 - » 5.150 new technology topics suggested.

The Brazilian Program for Technology Foresight - 2002: Ministry of Development, Industry and Foreign Trade (MDIC)

- ◆ To contribute to development of the productive sector.
- ◆ Areas: Civil construction; Textiles & clothing; Plastics; and Wood & furniture.
- ◆ Main partners: UNIDO, EMBRAPA.

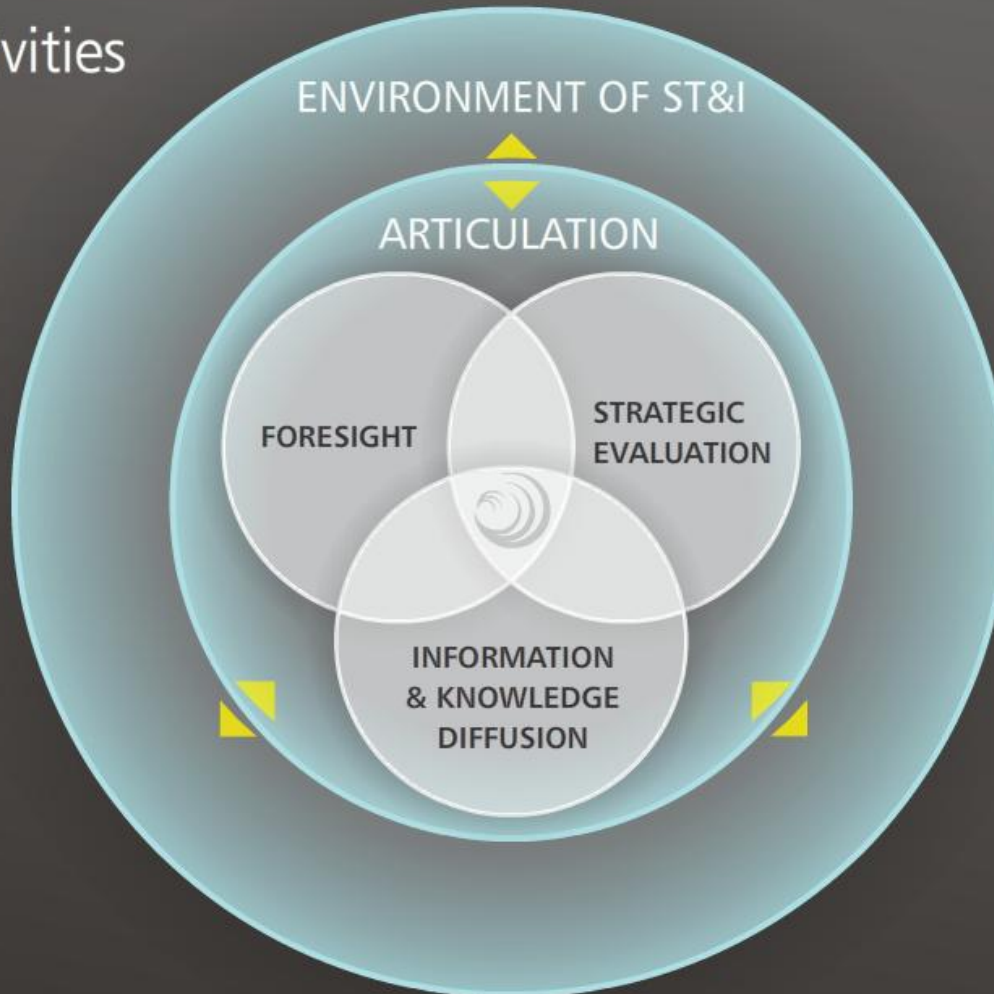
Main actors:

- ◆ Government funding:
 - » MCT; MDIC, FINEP, CNPq.
- ◆ Think tanks - National scope:
 - » CGEE.
 - » SAE.
- ◆ Universities:
 - » UFRJ.
 - » UNICAMP.
 - » USP.
 - » PUC-SP, among others.
- ◆ Brazilian companies:
 - » EMBRAPA.
 - » Petrobras.
 - » EMBRAER, among others.

Mission

To promote Science, Technology and Innovation development to advance economic growth, competitiveness and well-being in Brazil.

Scope of activities



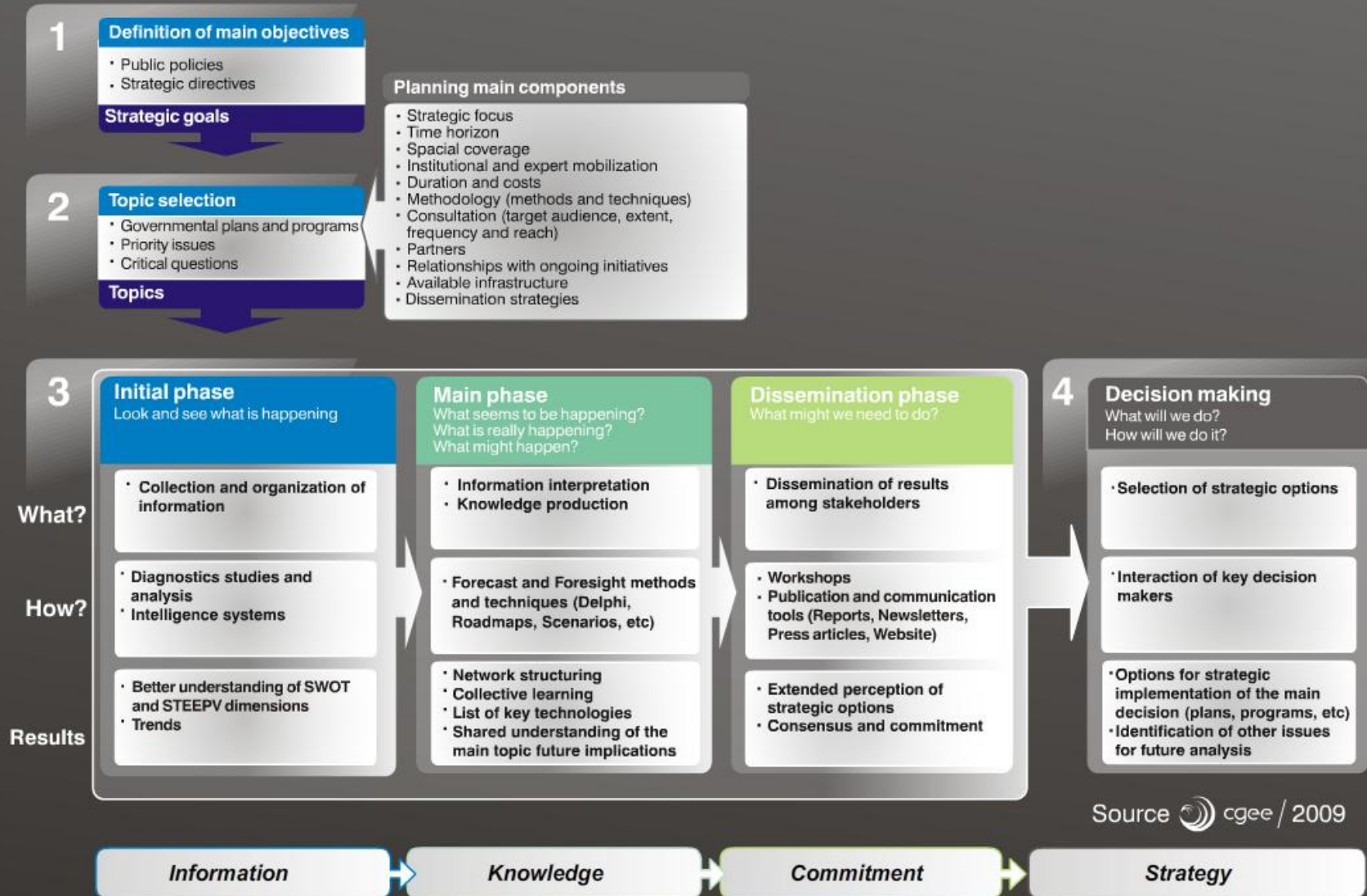
The methodological approach applied in these foresight exercises

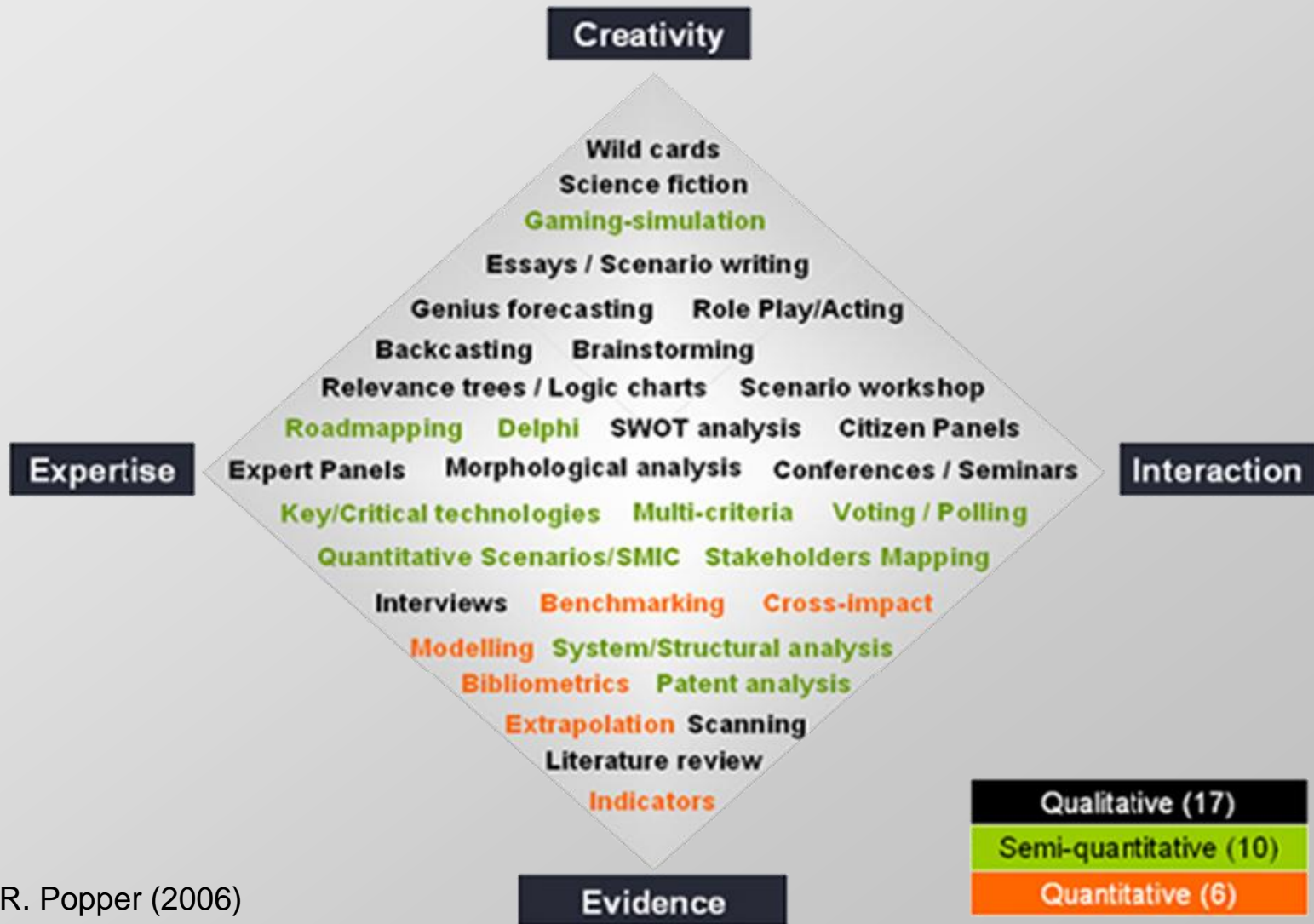


The way that CGEE conducts their foresight exercises:

- **Learning organization** practices, mainly focused on out-of-the-box reflections.
- **Systemic thought** (reasoning and cognition): some competences required for long-term planning are:
 - modeling and problem solving abilities for complex problem resolution.
 - strategic reasoning ability to connect ideas, influences and possible impacts on the overall analysis.
- **Communication** style is strategic for action effectiveness:
 - conceptual strategic intelligence does not have the power to change situations. Therefore, it must be oriented to the receiver, with suitable language to guarantee complete and clear understanding, and self-explanatory in its products of intelligence.

CGEE's Methodological Approach

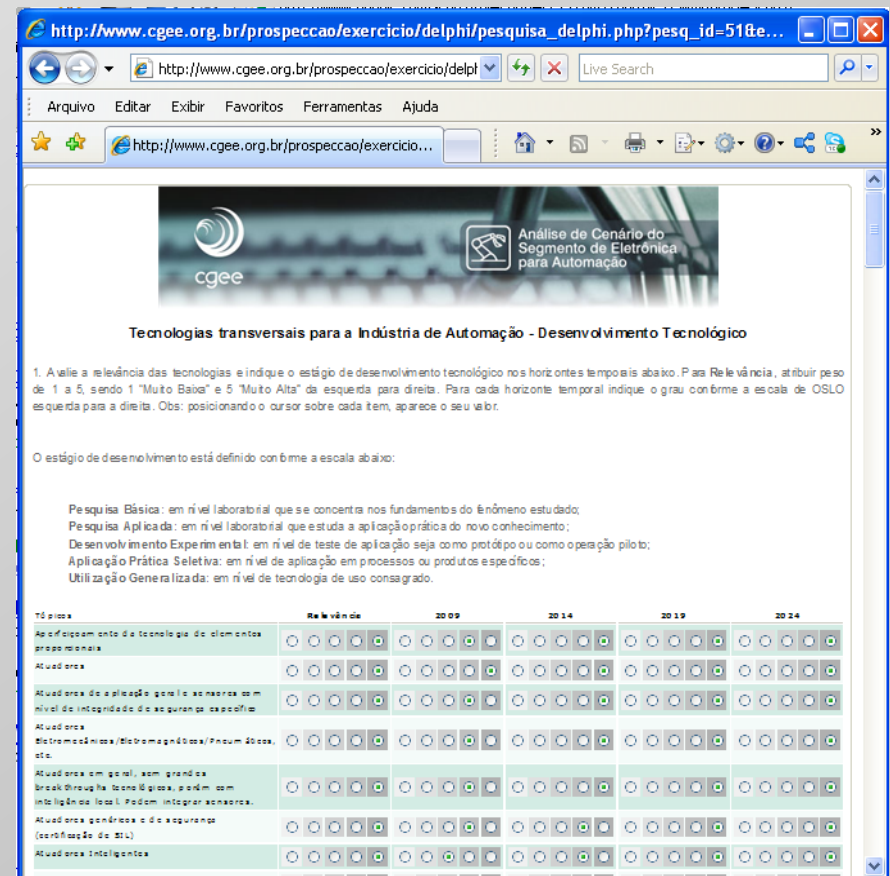




Innovation Portal (Portal Inovação)



Online Surveys



Tecnologias transversais para a Indústria de Automação - Desenvolvimento Tecnológico

1. Avalie a relevância das tecnologias e indique o estágio de desenvolvimento tecnológico nos horizontes temporais abaixo. Para a Relevância, atribuir peso de 1 a 5, sendo 1 "Muito Baixa" e 5 "Muito Alta" da esquerda para direita. Para cada horizonte temporal indique o grau conforme a escala de OSLO esquerda para a direita. Obs: posicionando o cursor sobre cada item, aparece o seu valor.

O estágio de desenvolvimento está definido conforme a escala abaixo:

Pesquisa Básica: em nível laboratorial que se concentra nos fundamentos do fenômeno estudado;
 Pesquisa Aplicada: em nível laboratorial que estuda a aplicação prática do novo conhecimento;
 Desenvolvimento Experimental: em nível de teste de aplicação seja como protótipo ou como operação piloto;
 Aplicação Prática Seletiva: em nível de aplicação em processos ou produtos específicos;
 Utilização Generalizada: em nível de tecnologia de uso consagrado.

Tópicos	Relevância	20 09	20 14	20 19	20 24
Atuação em desenvolvimento de tecnologia de elementos práticos	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
Atuação em aplicação geral no mercado em nível de integridade de segurança específica	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
Atuação eletromecânica/Eletrônica/Plasmática, etc.	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
Atuação em geral, com grande breakthrough tecnológico, porém com inteligência local. Podem integrar sistemas.	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
Atuação em processos e de segurança (certificação de SIL)	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
Atuação Inteligente	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○

- ◆ **“Brazil in 3 Times”**, conducted by The Brazilian Presidential Strategic Affairs Unit (Núcleo de Assuntos Estratégicos da Presidência da República), in conjunction with CGEE, 2005.
- ◆ **Evaluation Study on Territorial Dimension for the Four-Year National Plan**
- ◆ **The Program for Enhancing Competitiveness of Brazilian Industry Sectors**
- ◆ **The strategic foresight for FINEP - The Brazilian innovation agency**

In 2005, The Brazilian Presidential Strategic Affairs Unit (Núcleo de Assuntos Estratégicos da Presidência da República) conducted, in conjunction with CGEE, the Brazil in 3 Times study (Brasil 3 Tempos), **which leveraged scenario methodologies to envision the country's future in 2007, 2015, and 2022. Most importantly, the study sought out national potentialities, searching for key opportunity areas and players capable of implementing them in the Brazilian economy.**

The main objectives:

- **Generate the Nation's Project** that identifies future strategic objectives and appoint solutions that allow their realizations.
- **Subsidize a process of national concretization** (Constituted Powers and Brazilian Society) to commit to the realization of these objectives.
- Contribute towards the alignment of **National Strategic Planning**.
- Allow the **creation of a permanent process** to treat strategic themes of national interest.
- **Accelerate integrated and sustainable development** with the use of intense knowledge.

The Brazilian Government uses a four-year budgetary planning tool (Plano Plurianual) **to establish strategic directives and guidelines for government action in a four-year timeframe.** The plan provides government stakeholders with guidelines for **public expenditure and management.**

The Ministry of Planning, Budget and Management (Ministério do Planejamento, Orçamento e Gestão) hired CGEE to develop an evaluation study on the country's territorial dimension to design strategies for the 2008-2011 budgetary plan.

The goal of the study was **to structure the territorial planning Brazil while proposing evolutionary paths for each region.**

Seven strategic directives guided the development of the study:

- Reduce inter-regional inequalities in a sustainable way.
- Integrate the country with South America.
- Honor cultural diversity and regional development potentials.
- Strengthen regional capacities to foster innovation and competitiveness.
- Preserve the environment.
- Strengthen the interrelation between urban and rural regions.
- Build a balanced network among cities.

The results were divided into eight volumes, including:

- Methodological Approach.
- Strategic Vision for 2027.
- Regional References.
- Territorial Foresight Analysis.
- Investment Portfolio.
- Impact of Investments.
- Financial Sustainability Analysis.
- Geo-referenced Information System.

The Program for Enhancing Competitiveness of Brazilian Industry Sectors



- ◆ Main Goals

To envision what the industry sector could become in a 15-year time frame and **to define a long-term Strategic Plan for enhancing its competitiveness.**

- ◆ Specific Goals

To create **Strategic and Technological Roadmaps** for the purpose of creating synergies and fostering a strong ability for the industrial sector to attain the vision of the future.

Develop strategic recommendations for increasing global competitiveness in three time frames: short term (1-5 years), mid-term (5-10 years), and long term (10-15 years)












- ◆ Client

Brazilian Agency for Industrial Development (**ABDI**)

The Program for Enhancing Competitiveness of Brazilian Industry Sectors



Eleven Strategic Industry Sectors

 Medical Equipments	 Naval
 Furniture	 Automotive
 Leather Shoes	 Automation
 Textiles	 Construction
 Plastics	 Cosmetics
 Aeronautics	

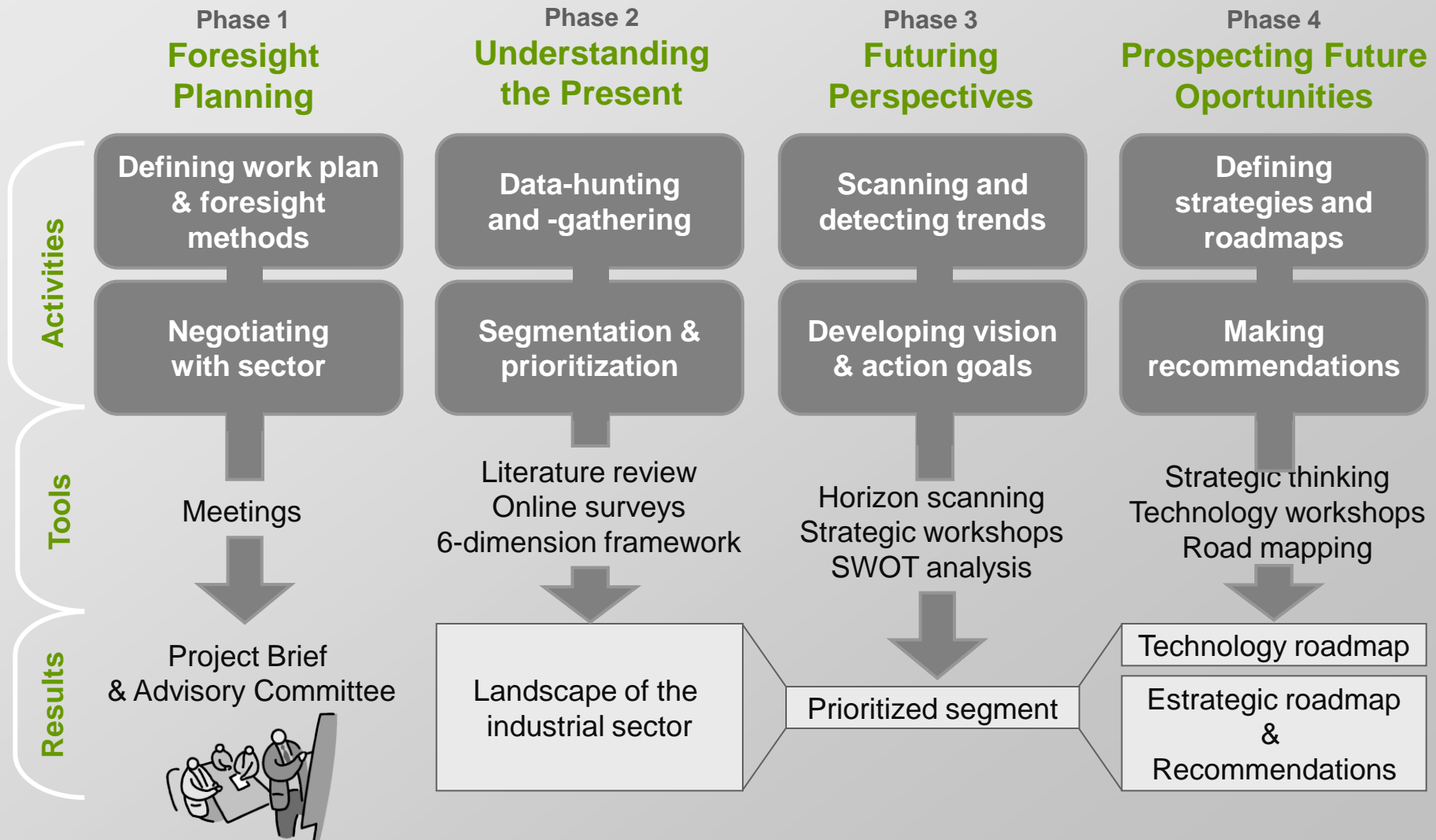
Criteria for choosing industry sectors:

- ◆ stage of production system
- ◆ competitive advantage with respect to the productive chain
- ◆ level of research and development initiatives
- ◆ capability to create positive synergy among government, science and technology institutions, universities, and industry

The Program for Enhancing Competitiveness of Brazilian Industry Sectors



Methodological approach



Lessons Learned and Results

Challenges in conducting the studies

- ◆ **At the organizational level:** differences between productive chains leading to differentiated strategies

Results

- ◆ Change in behavior, from disbelief to engagement
- ◆ Specific activities towards basic necessities as a first step in achieving a common desired vision
- ◆ Application to the new Brazilian Industrial Policy

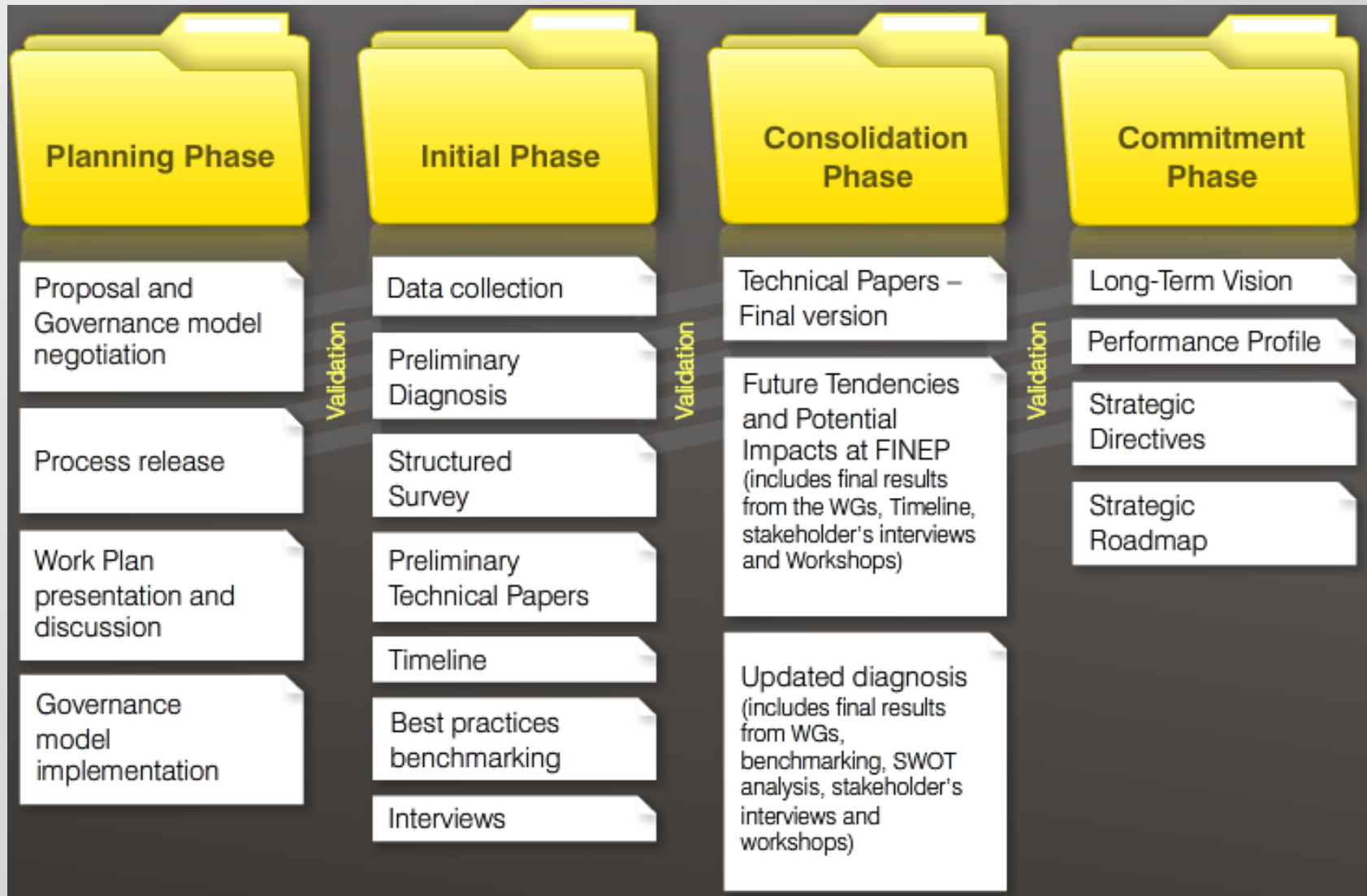
Key questions:

- What is **FINEP's future vision**, and its real business?
- Is it necessary to rethink FINEP's mission?
- What are **the future scenarios for FINEP** and how could it act proactively to be a major stakeholder?
- From a **scanning process over the global environment**, which **management model** could be applied or designed in order for FINEP to become a **global reference of excellence** among innovation agencies?
- How could **a bridge** be built from the present to the future, and a vice versa?
- How could a process be designed for **gathering external perceptions** to be useful for the elaboration of the future vision?
- Considering that it is a government institution, how could the concept of **competitiveness** be introduced in its management model?

Premises:

- **A participatory process**, involving the Board of Directors, FINEP Staff, and the main stakeholders.
- **Strategic foresight**: a strategic plan driven by the future (10 and 20 years ahead).
- **A governance model**, which must evolve with the whole process.
- **“Thinking out of the box” mentality**: open for understanding and acting differently when needed.
- **Clear identification of focus, scope, and responsibilities** in the FINEP environment.
- **The commitment of the Board of Directors.**

Methodology



Overview of foresight in Latin America

Main sources: Yuli Villarroel Núñez; Rafael Popper; Asdrúbal Lozano F.. PROSPECTIVA EN AMÉRICA LATINA. UNA VISIÓN SISTÉMICA EN ESPACIOS DE CATÁSTROFE. Pensamiento Divergente. Vol. 1. N° 1. Abril 2010. pp. 59-91.

And Rafael Popper's presentation, The University of Manchester: Overview of foresight in Latin America.

- ◆ Foresight entered the LA policy environment as a tool for anticipating possible futures
- ◆ However, there have been **many interpretations** and uses.
 - » Some refer to traditional futures studies
 - » Some focus on technology assessment
 - » Many focus on the French 'prospective tool box'
 - » And recently, **in part due to international initiatives – such as the UNIDO's Technology Foresight Programme for Latin America and the Caribbean (UNIDO TFLAC) and a number of European Commission's networks and projects** – some countries began to practice foresight as a combination of:
 - prospective thinking
 - wide participation
 - policy-making

... as a tool for building consensus & shaping the future

Historical landmarks (...the influence of the 1970s)



- ◆ The Bariloche Group
(Argentina)
- ◆ The Javier Barros Sierra Foundation (Mexico)
- ◆ CENDES
(Venezuela)
- ◆ The S&T Observatory
(Cuba)
- ◆ The S&T Office COLCIENCIAS
(Colombia)

... influence of International Organisations

- ◆ The role of IOs have been fundamental for dissemination and capacity building activities, in particular:
 - » UNIDO
 - » ECLAC
 - » UNESCO
 - » Andres Bello Agreement (CAB)
 - » Andean Development Bank (CAF)
 - » Organisation of American States (OAS)
 - » Latin American Economic System (SELA)
 - » European Union (EU)

- ◆ The Euro-Latin SELF-RULE network
- ◆ The S&T for Development (CYTED)
- ◆ The Quo Vadis network
- ◆ The RIAP Network

Current practices and exercises are more characterised by collaborative work between:

- » International organisations
- » Institutions
- » Networks

Country	State of Evolution *	Level +	Focus #	Objectives ~
Argentina	<i>A/I</i>	<i>R, Se, O, Ac</i>	<i>F/s, P</i>	<i>A, Ne, Act-P</i>
Bolivia	<i>Im</i>	<i>Se</i>	<i>F/s</i>	<i>A</i>
Brazil	<i>A/I</i>	<i>N, R, Se, O, Ac</i>	<i>F/s, P</i>	<i>A, Ne, Act, Act-P</i>
Chile	<i>Le</i>	<i>N, R, Se</i>	<i>F/s, P</i>	<i>A, Act, Act-P</i>
Colombia	<i>A/I</i>	<i>N, R, Se, O, Ac</i>	<i>F/s, P</i>	<i>A, Ne, Act, Act-P</i>
Cuba	<i>A/I</i>	<i>R, Se, Ac</i>	<i>F/s, P</i>	<i>A, Ne, Act, Act-P</i>
Ecuador	<i>Le</i>	<i>Se, Ac</i>	<i>F/s</i>	<i>A</i>
Panama	<i>Im</i>	<i>Se</i>	<i>F/s</i>	<i>A</i>
Paraguay	<i>Im</i>	<i>Se</i>	<i>F/s</i>	<i>A</i>
Peru	<i>Le</i>	<i>N, R, Se, O, Ac</i>	<i>F/s, P</i>	<i>A, Ne</i>
Mexico	<i>A/I</i>	<i>N, Se, O, Ac</i>	<i>F/s, P</i>	<i>A, Ne</i>
Uruguay	<i>Le</i>	<i>N,R, Se</i>	<i>F/s</i>	<i>A</i>
Venezuela	<i>A/I</i>	<i>N, R, Se, O, Ac</i>	<i>F/s, P</i>	<i>A, Ne, Act, Act-P</i>

- * **State of evolution:** position of foresight/future activities in the country along a spectrum from imitation [*Im*], via learning [*Le*] to adaptation/innovation [*A/I*]
- + **Level:** national [*N*], regional [*R*], sectoral [*Se*], organizational [*O*], academic [*Ac*]
- # **Focus:** foresight [*F/s*], policy action [*P*]
- ~ **Objectives:** anticipation [*A*], networking [*Ne*], action achieved [*Act*], action proposed [*Act-P*]

- ◆ TFP created in 1999
- ◆ Main actors
 - » UNIDO
 - » Governmental agencies and departments
- ◆ Main objectives
 - » Foresight culture
 - » High-level political awareness
 - » Industrial & technological development
- ◆ Main activities
 - » Capacity building / Training courses
 - » Seminars / conferences
 - » Sectoral / industrial exercises
 - » Publications
- ◆ Main countries
 - » Argentina, Brazil, Colombia, Ecuador, Peru, Uruguay, Venezuela

- ◆ **TFP created in 2000**
- ◆ **Main actors**
 - » Secretary for Science & Technology (SECyT) and UNIDO
- ◆ **Main activities**
 - » Learning from international experiences
 - » diagnostic studies in 3 sectors:
 - **Biotechnology**
 - **Chemical**
 - **Textile industries**
 - » Technology Foresight Observatory (created in 2000 but frozen in 2001)
 - » **Strategic Middle Term Plan of STI for 2015**
 - started in October 2003, completed in 2005
 - coordinated by the National Observatory of Science, Technology and Productive Innovation (ONCTIP)
 - Panels, Survey, workshops, prioritisation of key areas
 - Over 4,000 people involved
 - Main goals:
 - To strengthen & enlarge the National System of STI
 - To improve quality, efficiency & pertinence of S&T activities
 - To increase S&T expenditure to 1% of the GDP in 2007
 - To increase participation of the private sector to the 0.50% of the GDP

- ◆ TFP Created in 2001
- ◆ Main actor
 - » Ministry of Economy
- ◆ Main objectives
 - » discovery pathways toward a desired future
 - » identification of strategies or action plan for its achievement.
- ◆ Main methods
 - » Brainstorming
 - » Delphi
- ◆ Main activities
 - » 'e-ducation industry': ICT applied to Education
 - » aquaculture industry
 - » wine production and exports
 - » biotechnology applied to fruits and horticulture
 - » biotechnology applied to forest industry
 - » the Chilean software industry.

- ◆ **Main actor**
 - » Cuban Observatory of Science and Technology (OCCyT)
- ◆ **Main objectives**
 - » Monitoring emerging technologies
 - » developing foresight exercises in key strategic sectors
 - » developing human capital with proactive attitudes as opposed to reactive
- ◆ **Main methods**
 - » Technology watch (trends & disruptions)
 - » Brainstorming
 - » Delphi
- ◆ **Main activities**
 - » Health
 - » Biotechnology
 - » Information technology

- ◆ **Main actors**
 - » UNIDO since 2001
 - » CONCYTEC since 2002
 - » Consortium Prospective Peru (CPP) since 2002
- ◆ **Main objectives**
 - » Build foresight capabilities
 - » Support exercises in strategic sectors
 - » Strengthen links with international foresight practitioners
- ◆ **Main methods**
 - » Brainstorming
 - » SWOT
 - » Scenarios
 - » Cross-impact
- ◆ **Main activities**
 - » textile and clothing, biotechnology and agriculture, sea products and water, new materials, energy, housing and construction and tourism

- ◆ **Main actors**
 - » Presidency
 - » UNIDO (2000)
 - » Various ministries
- ◆ **Main objectives**
 - » competitive industrialization of the country
 - » integration of knowledge in the value chain
- ◆ **Main methods**
 - » Brainstorming
 - » Surveys
 - » Panels
 - » Delphi
 - » Scenarios & recommendations
- ◆ **Main activities**
 - » Energy
 - » Transport and logistic
 - » Biotechnology & agriculture

- ◆ **Main actors**
 - » Colciencias, National Centre of Productivity (CNP), SENA
 - » UNIVALLE, Externado
 - » CAF, CAB, UNIDO
- ◆ **Main objectives**
 - » Building capabilities & foresight culture
 - » Fund and execute exercises
- ◆ **Main methods**
 - » Brainstorming, Surveys, Panels, SWOT, Delphi, cross-impact
 - » Scenarios & recommendations
- ◆ **Main activities**
 - » Electric Sector
 - » Food Packaging Sector
 - » Lacteous Sector
 - » Export potential of the health sector cluster in the Cauca Valley
 - » Agro-industrial productive chain of Fique in Santander
 - » Making Cartagena a tourist destiny
 - » Horticulture productive chain of the Bogotá plains
 - » Among others...

◆ Main actors

- » MCT
- » MPD
- » CENDES
- » IESA
- » PDVSA
- » LUZ, ULA, UCV, UNEFM, UNEFA

◆ Main objectives

- » Building capabilities & foresight culture + execute exercises
- » Promote endogenous development, social inclusion & technological sovereignty

◆ Main methods

- » Brainstorming, Surveys, Panels, SWOT, focus groups, community dialog, Interviews

◆ Main activities

- » Yucca in Gondola; Shared Vision of the Future of the Gas Industry; Scenarios for the Agro-biotechnological Development of the Country; and Foresight on Biotechnology for Agro-Food Security by 2011
- » **National Plan for STI 2005-2030**
 - Main actors
 - FONACYT, IVIC, INTEVEP, CDCH, MCT, FUNDACITES, universities
 - Main objectives:
 - To build an evaluation & promotion system for new stakeholders
 - To relate STI results to the needs of most excluded people
 - To promote a selective assimilation of technologies
 - To promote pertinent technological developments
 - To build S&T networks on priority areas
 - To create and strengthen R&D centres
 - To promote priority research areas
 - To build S&T capabilities

Conclusions

Thank You!

Claudio Chauke Nehme, CGEE Senior Adviser - chauke@cgee.org.br
Full Professor at Catholic University of Brasilia