



PUC  
RIO



# Tecgraf/PUC-Rio

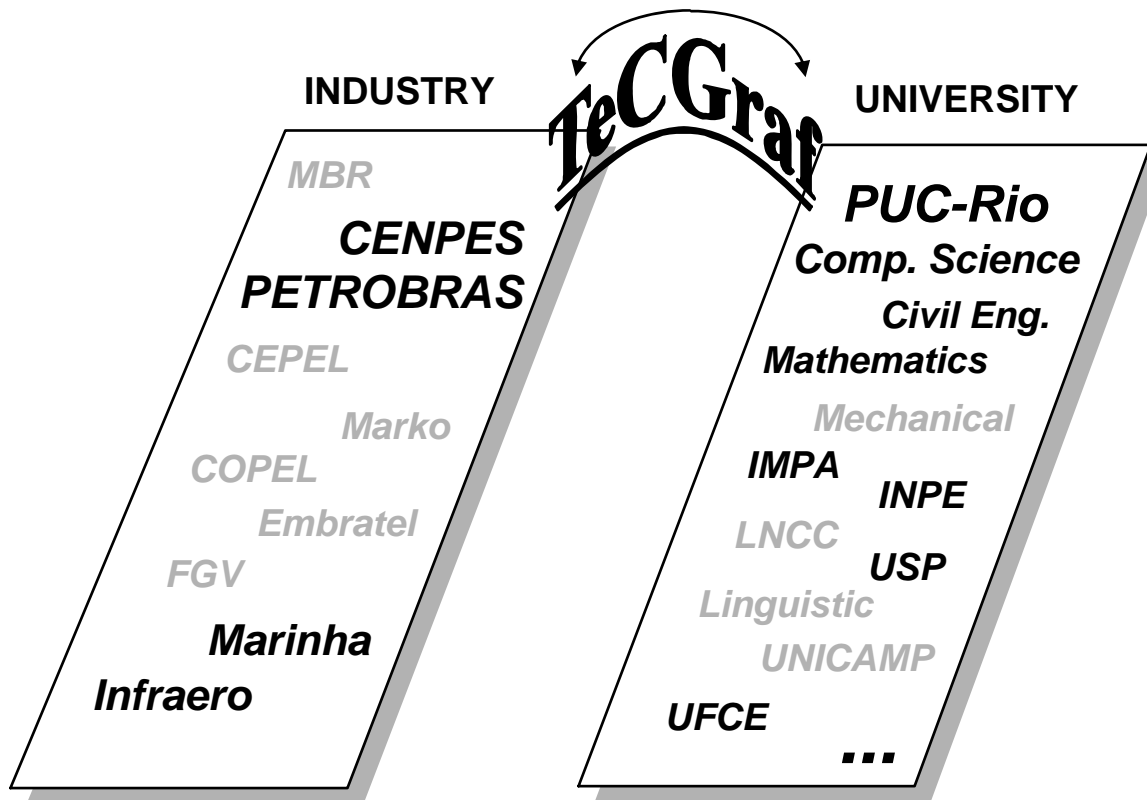
## Spreading ISO15926 in Brazil

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2010

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Rio de Janeiro, Brasil

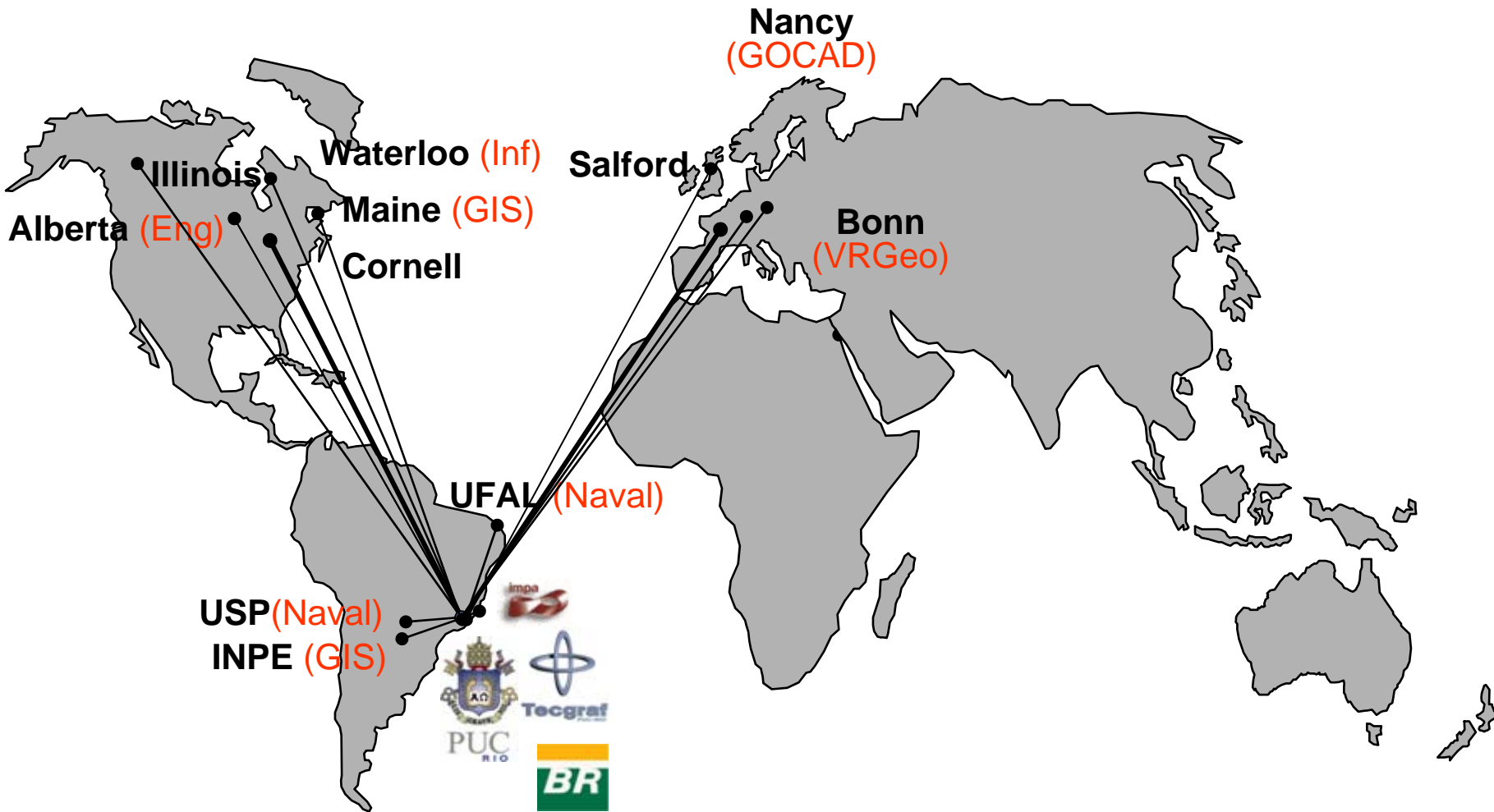


# The Idea



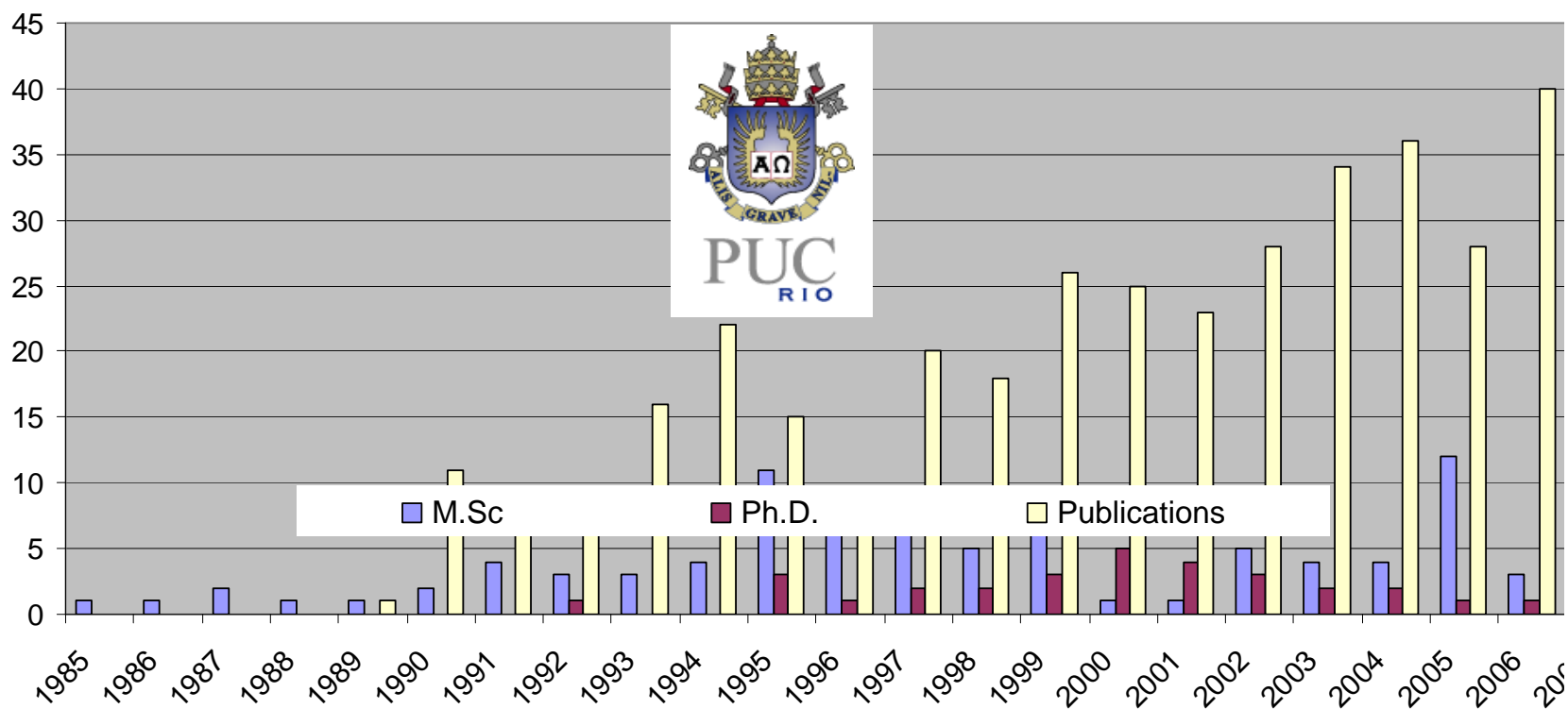
Continuous support from Petrobras since May 1987  
- 23 years of partnership -

# Cooperations



# Academic production

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
M.Sc	1	1	2	1	1	2	4	3	3	4	11	8	7	5	7	1	1	5	4	4	12	3
Ph.D.								1			3	1	2	2	3	5	4	3	2	2	1	1
Publications					1	11	9	8	16	22	15	9	20	18	26	25	23	28	34	36	28	40

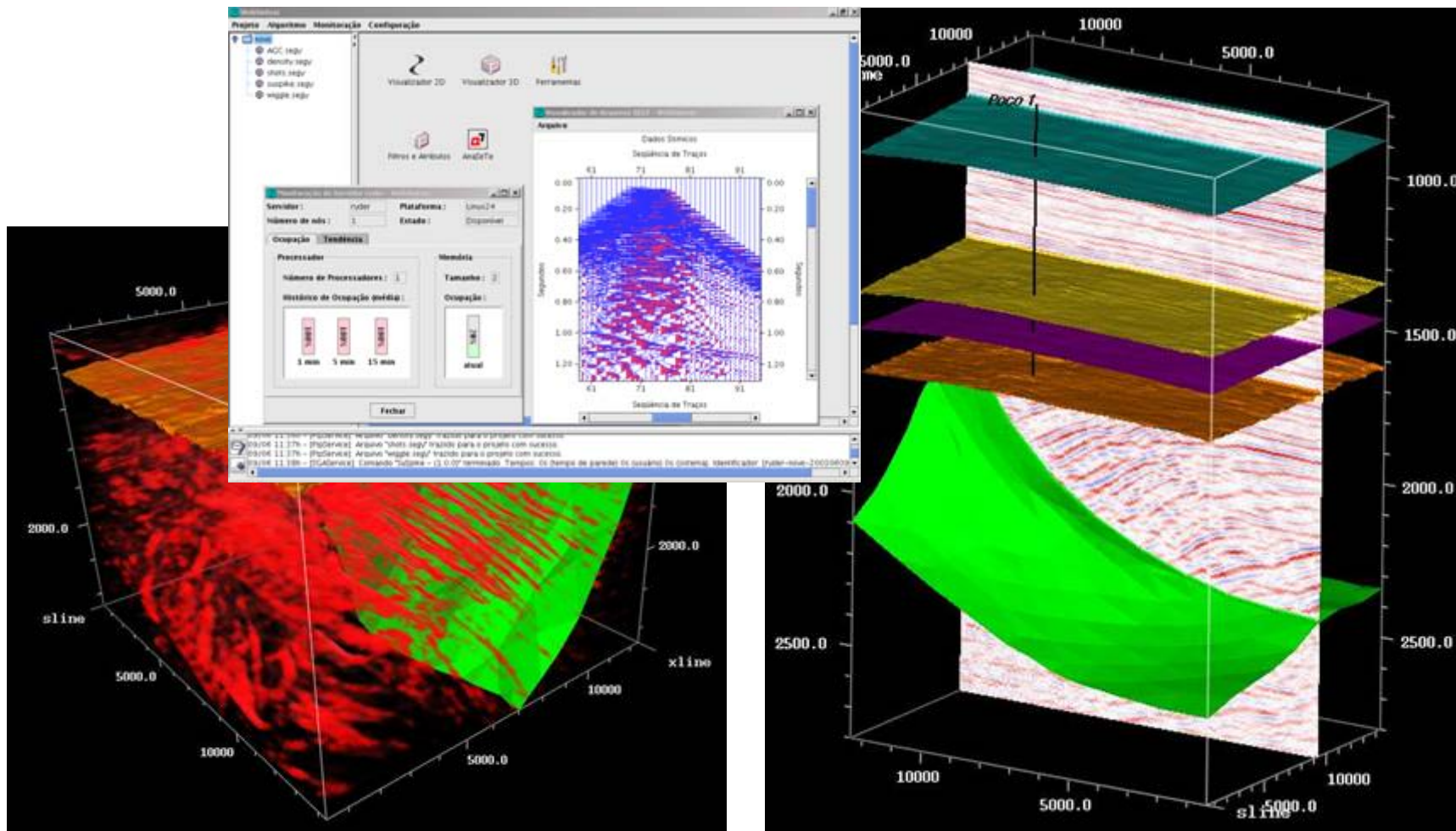


# Human Resources (2008)

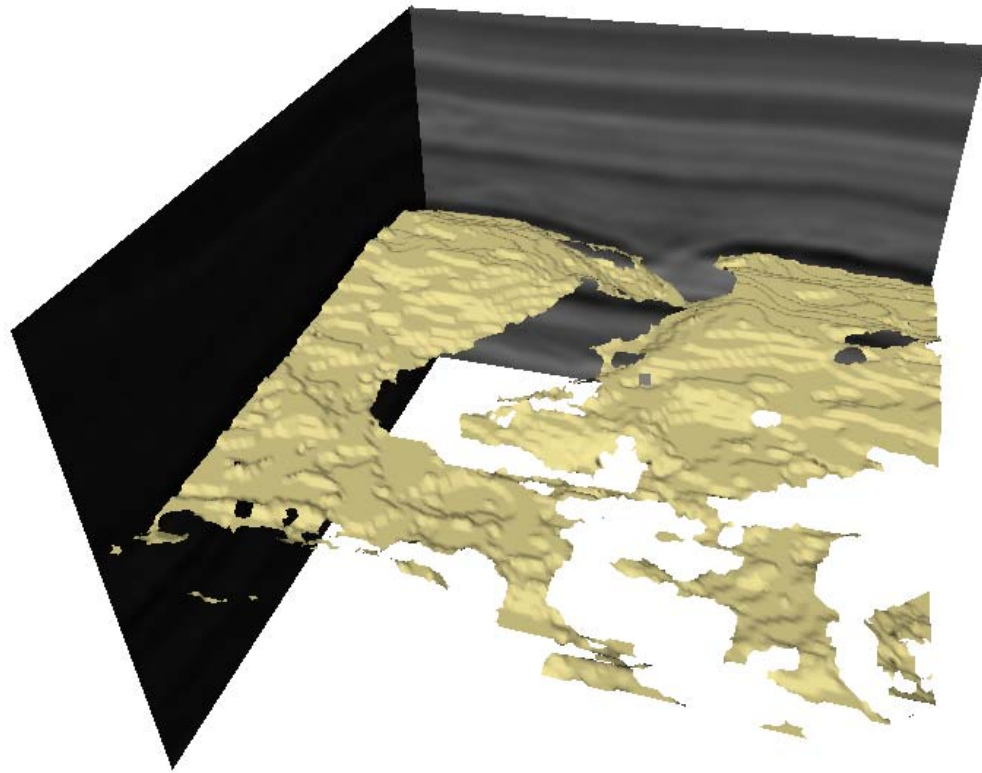


Professors	11
PhD. Full Time at Tecgraf.	40
PhD. Students	16
MSc. Students	26
Undergrad Students	20
Analists (MSc.)	32
Analists (MSc. Students)	3
Analists (Graduated)	87
Administration	8
TOTAL	243

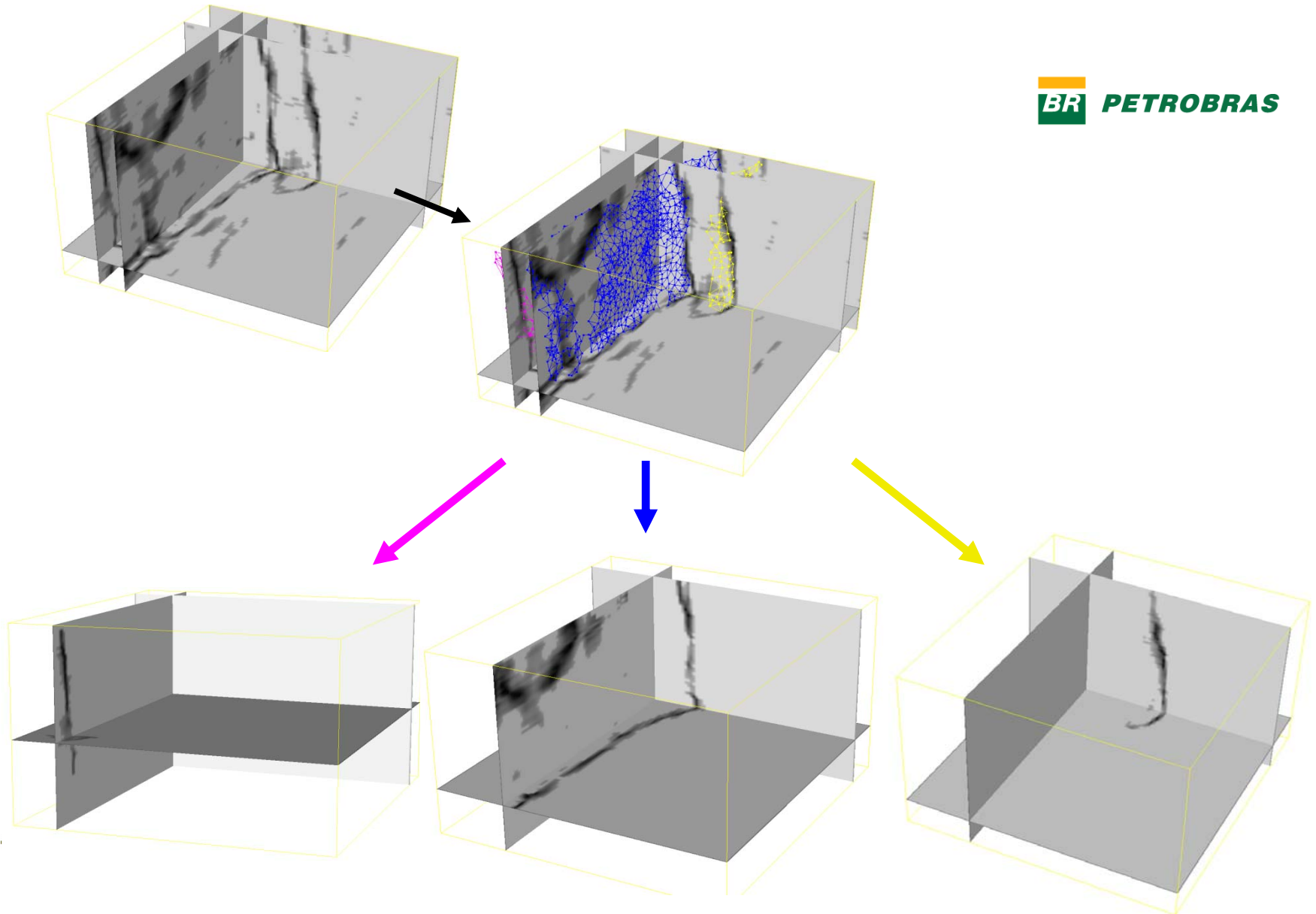
# Seismic Data Analysis



# Automatic horizon identification

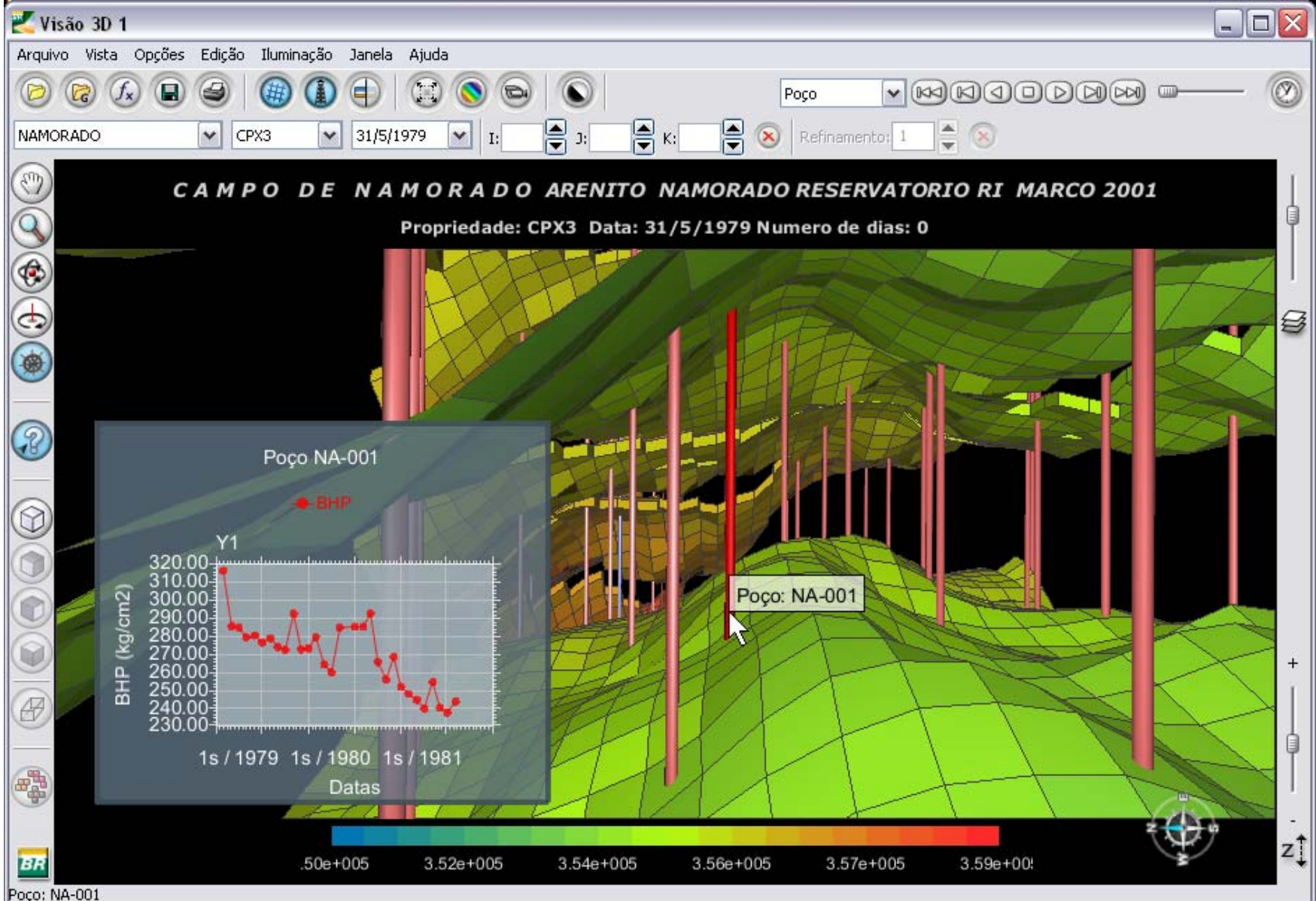


# Automatic fault identification





# Reservoir Engineering

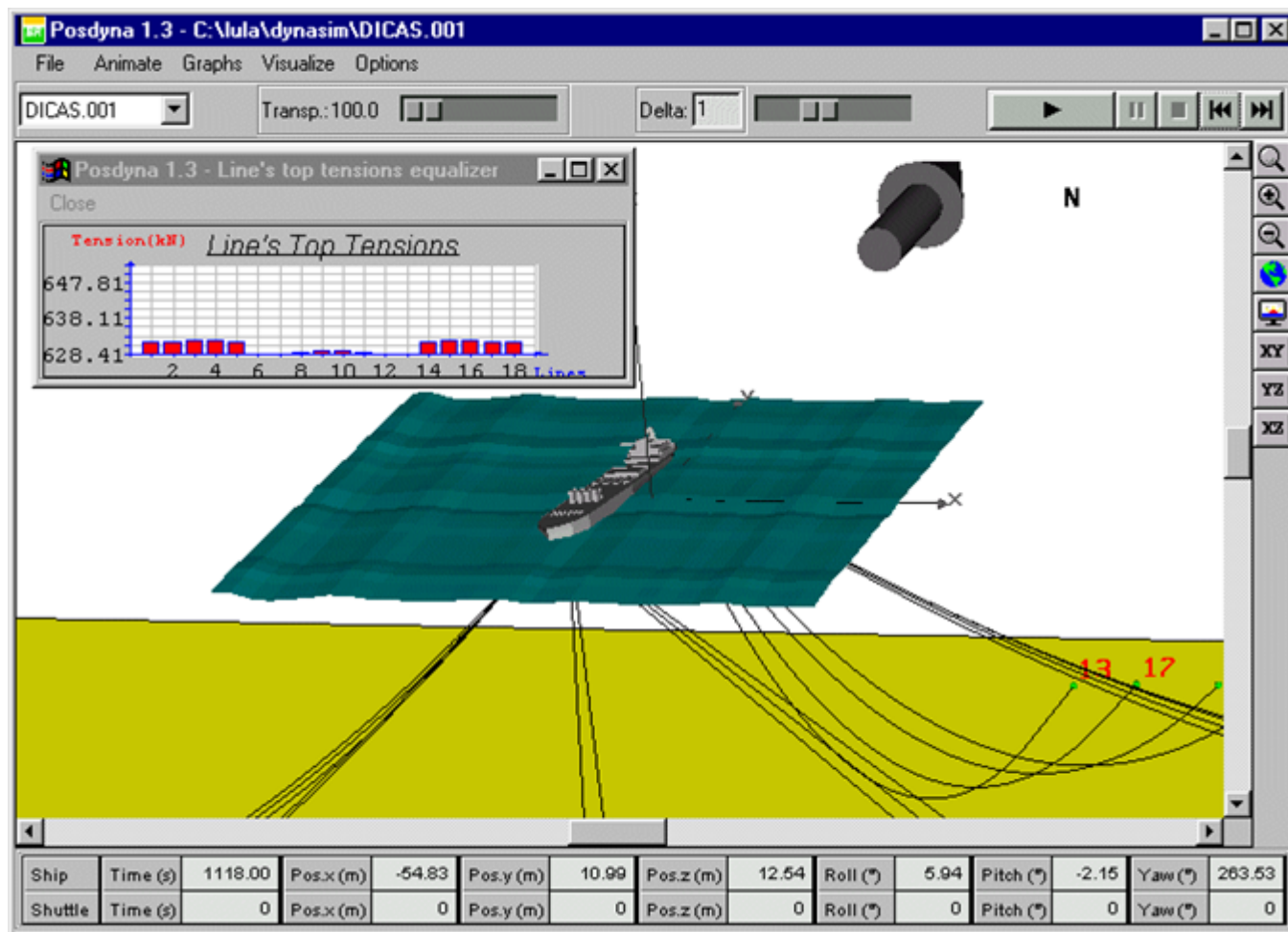




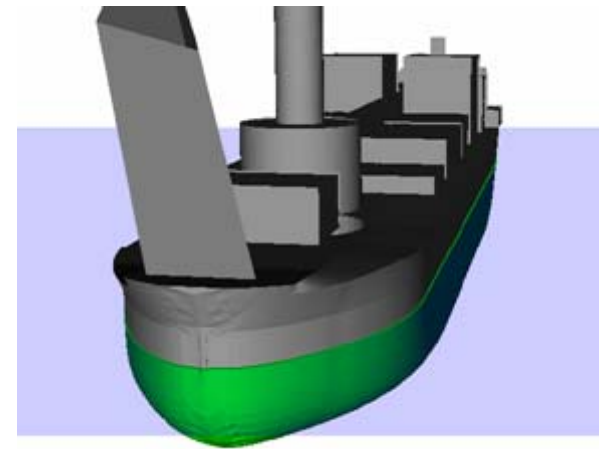
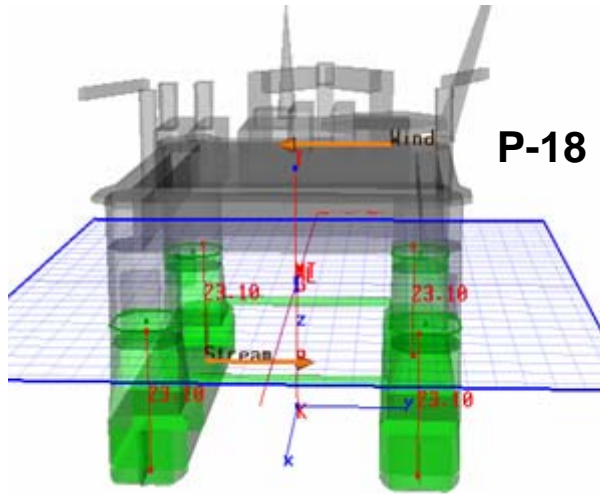
- Originally designed for enabling detailed analysis of well drilling data at Petrobras
- Nasa: Space shuttle hazardous gas detection system
- Games: LucasArts, Simcity 4, World of Warcraft, FarCry – AI, UI
- Digital Fusion: Automation for special effects in motion picture post production



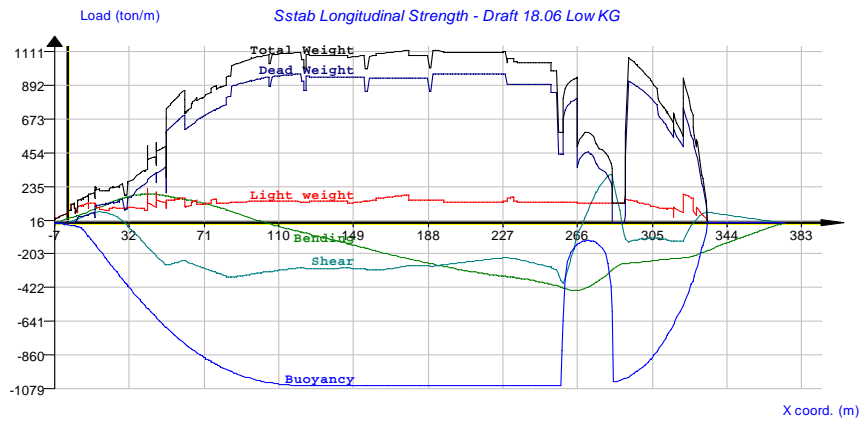
# Anchoring Systems and Naval Structures



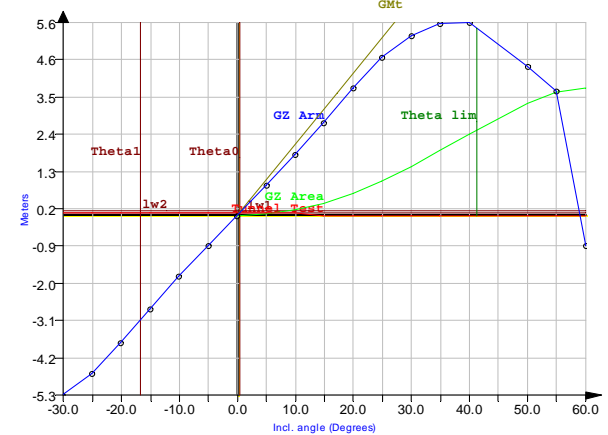
# Stability of Floating Systems



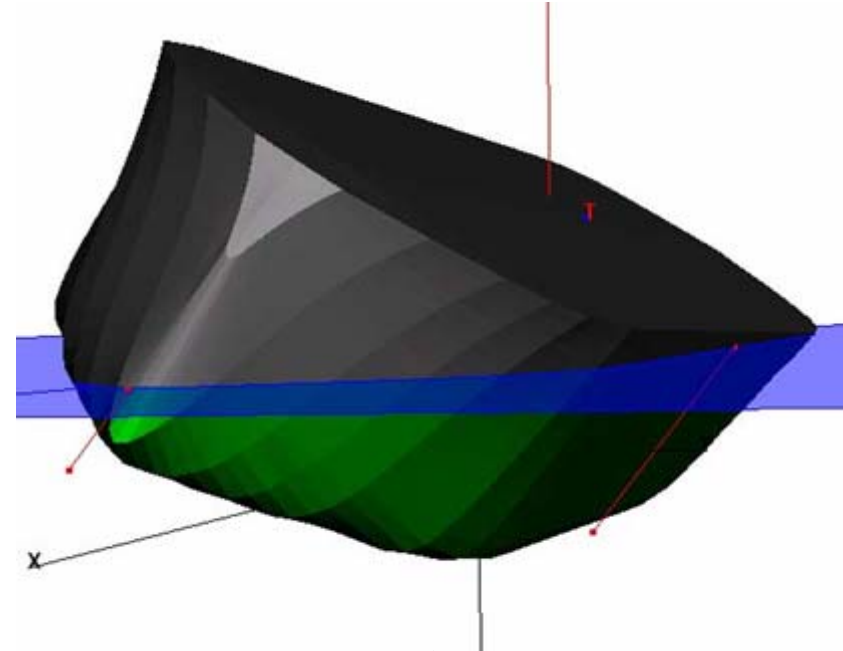
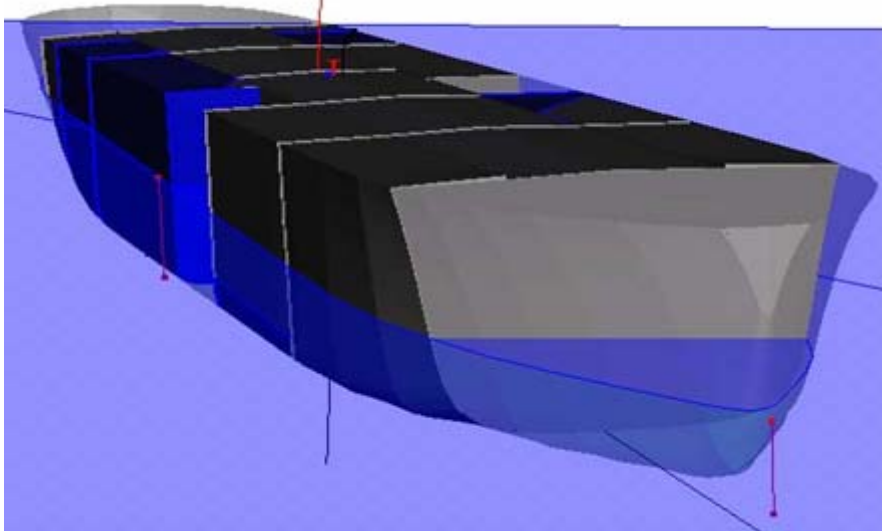
P-53



P53\_ESTAB\_INT.SST Displ.=279073.1 Azim.=0.00 KG=12.26 Intact FS var. Draft 18.06 Low KG



# P-34 Inclination Accident



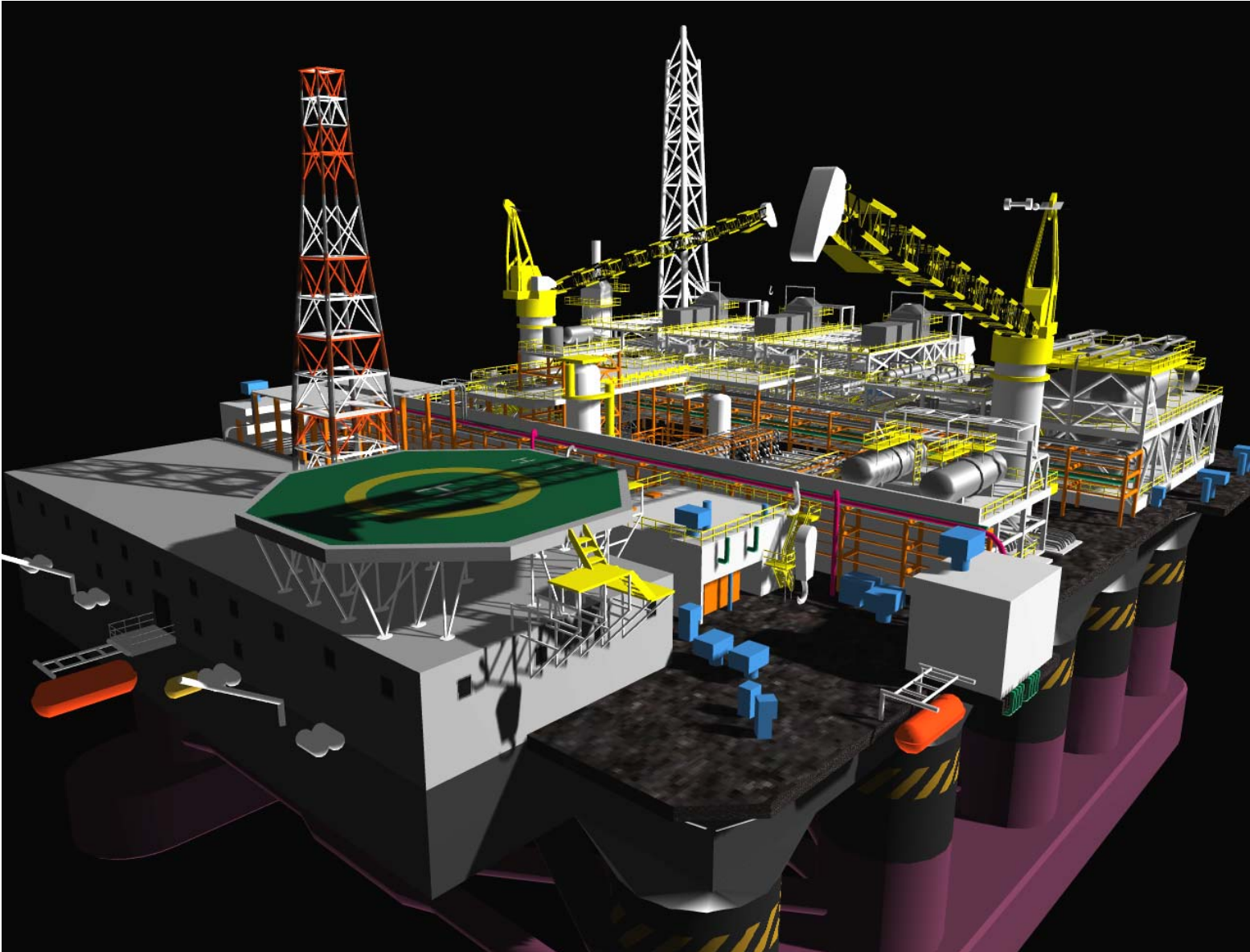
*Initial inclined position*

*Two days of work*

# Modeling and Visualization with Virtual Reality



# High quality real-time visualization of real structures



# GIS and the Environment

**Dados de campo do segmento - Ilha do Tavares**

Informações gerais | Fotos

Descrição

Área de estudo  
Baía da Guanabara

Nome local  
Ilha do Tavares

Sensibilidades

Sensibilidade costeira - Nível 4  
Praias de areia grossa; praias intermediárias, de areia fina a média, expostas

Sensibilidade fluvial

Comentários  
Informação de pescador de camarão de que este ar deu mais camarão do que no ano passado.  
Ilha ocupada por instalações da RÁDIO Globo

Ponto de observação  
Coordenada N: 1.000000  
Coordenada E: 1.000000

Coordenadas do segmento (UTM)

Inicial	Final
N 7474193.00	N 7471706.00
E 694593.000	E 695417.000

Datum

Meridiano: -1

Extensão: 1 metros

Fechar

Dados | Relatórios

Parâmetros | Cálculos da barreira | Conama | Estratégia | Produtos



- Imagem Noroeste Ilha Dágua
- Imagem Ilha Dágua
- Imagem Norte Ilha Dágua
- Imagem Guanabara Etm7
- Carta Guanabara (1501)
- Bairros - Rio de Janeiro

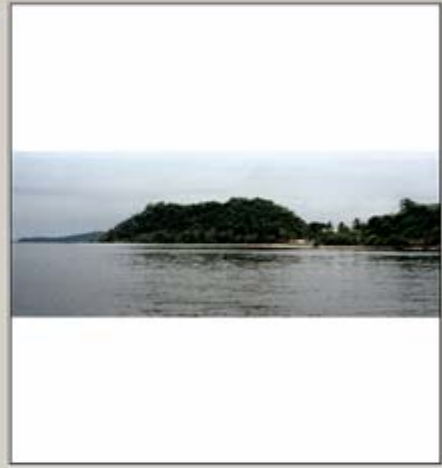
**Dados de campo do segmento - Ilha do Tavares**

Informações gerais | Fotos

Lista de fotos

- RJBG0931017F
- RJBG0931018F
- RJBG0931019F
- RJBG0931020F
- RJBG0931021F
- RJBG0931022F

Fechar

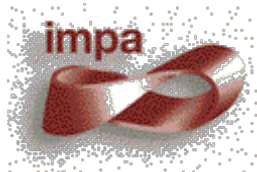
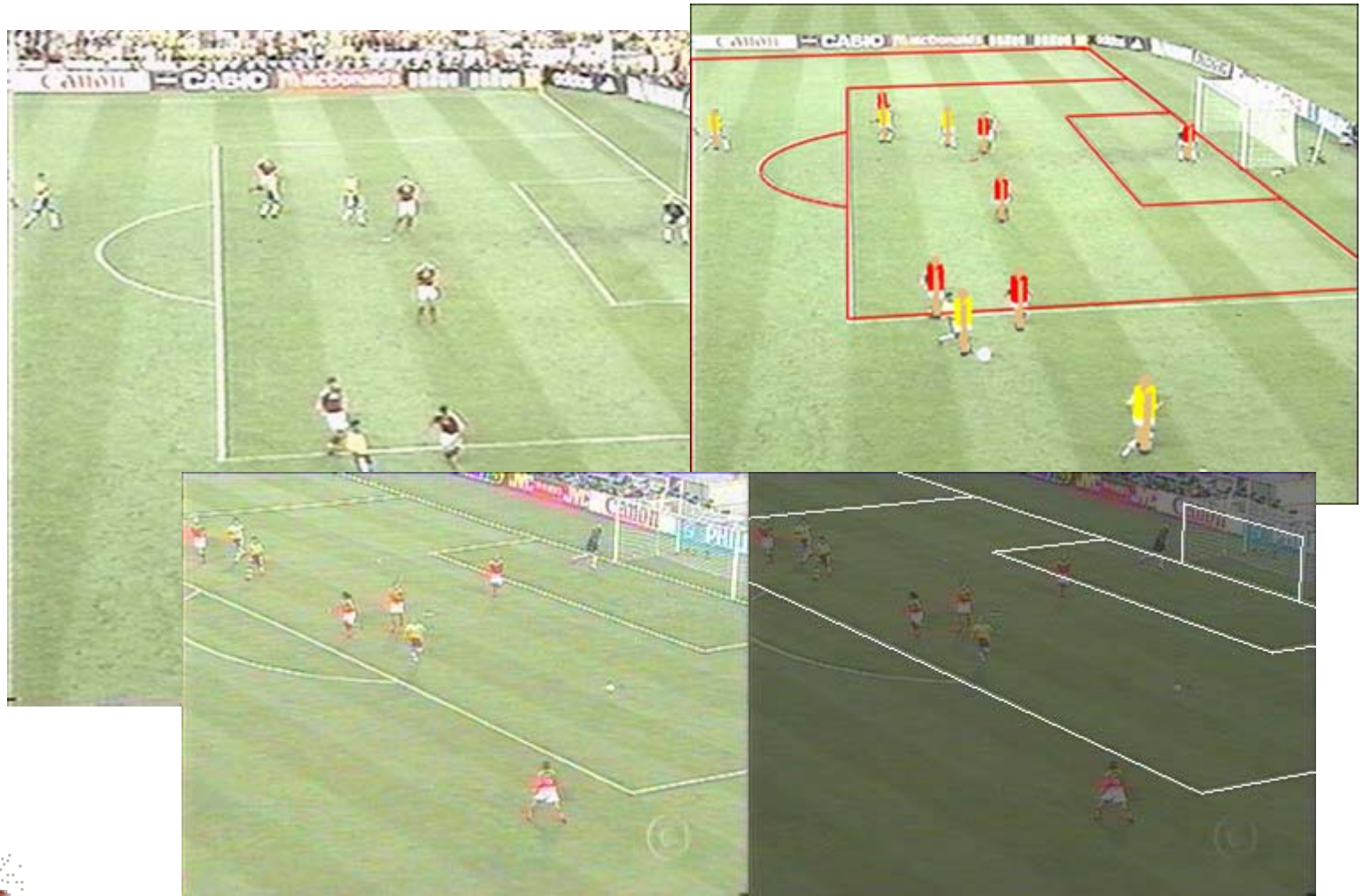


Scale: 1/53728.300000

The toolbar contains standard GIS navigation tools: pan, zoom in, zoom out, home, and print. It also includes a scale bar and a coordinate display area.

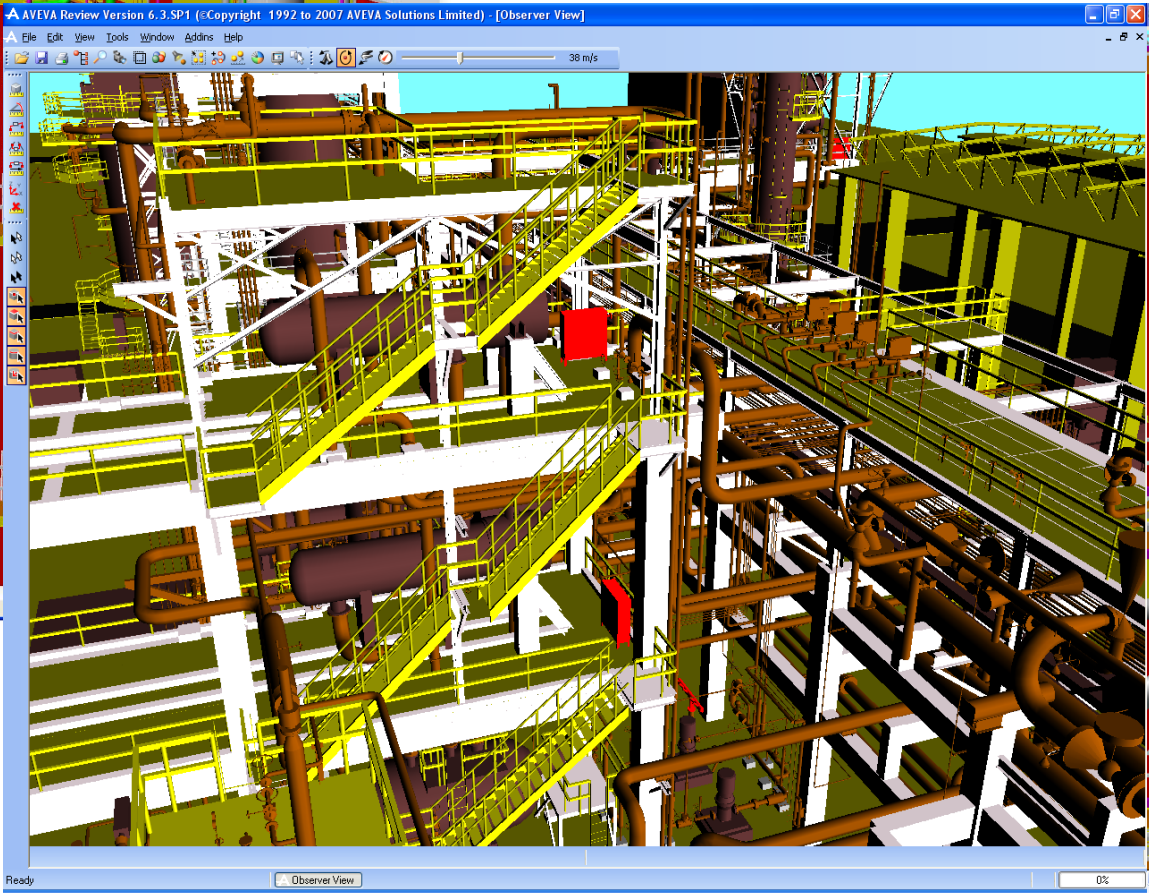
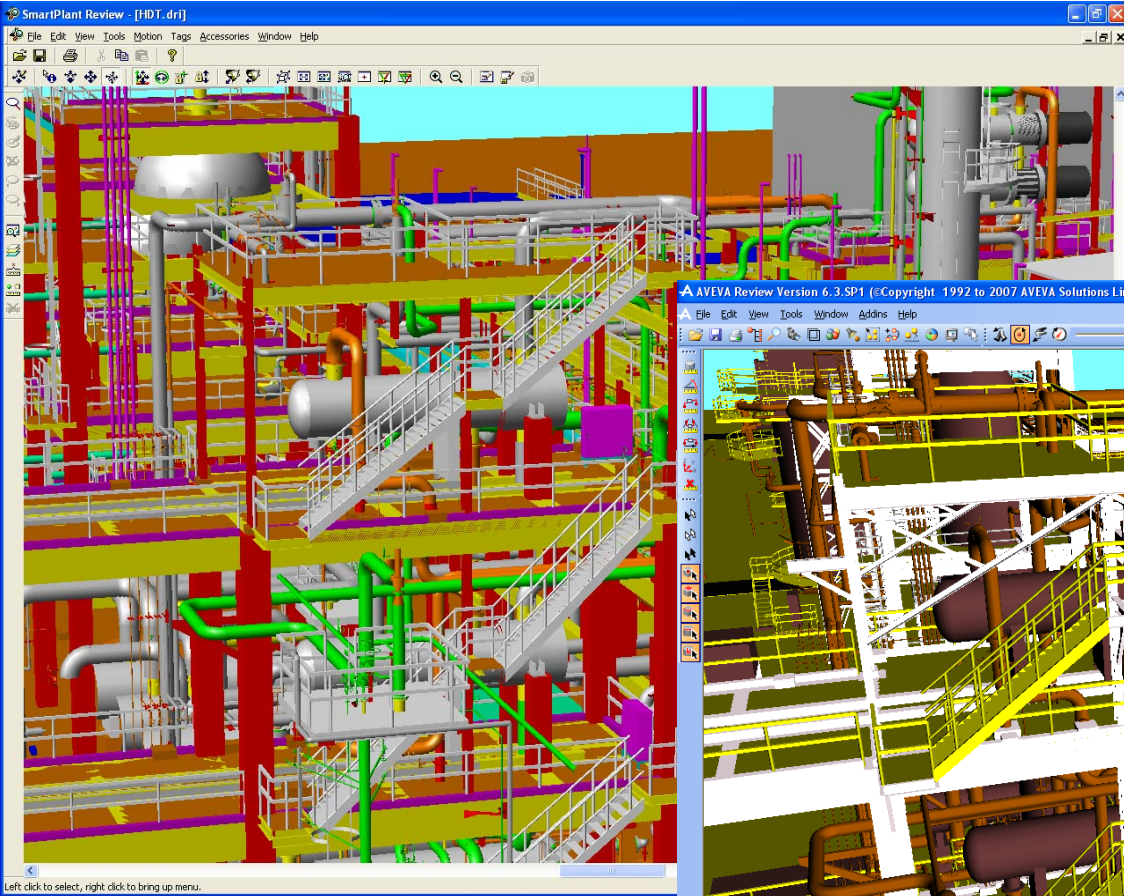


# Our contribution to the FIFA World Cup – France 1998



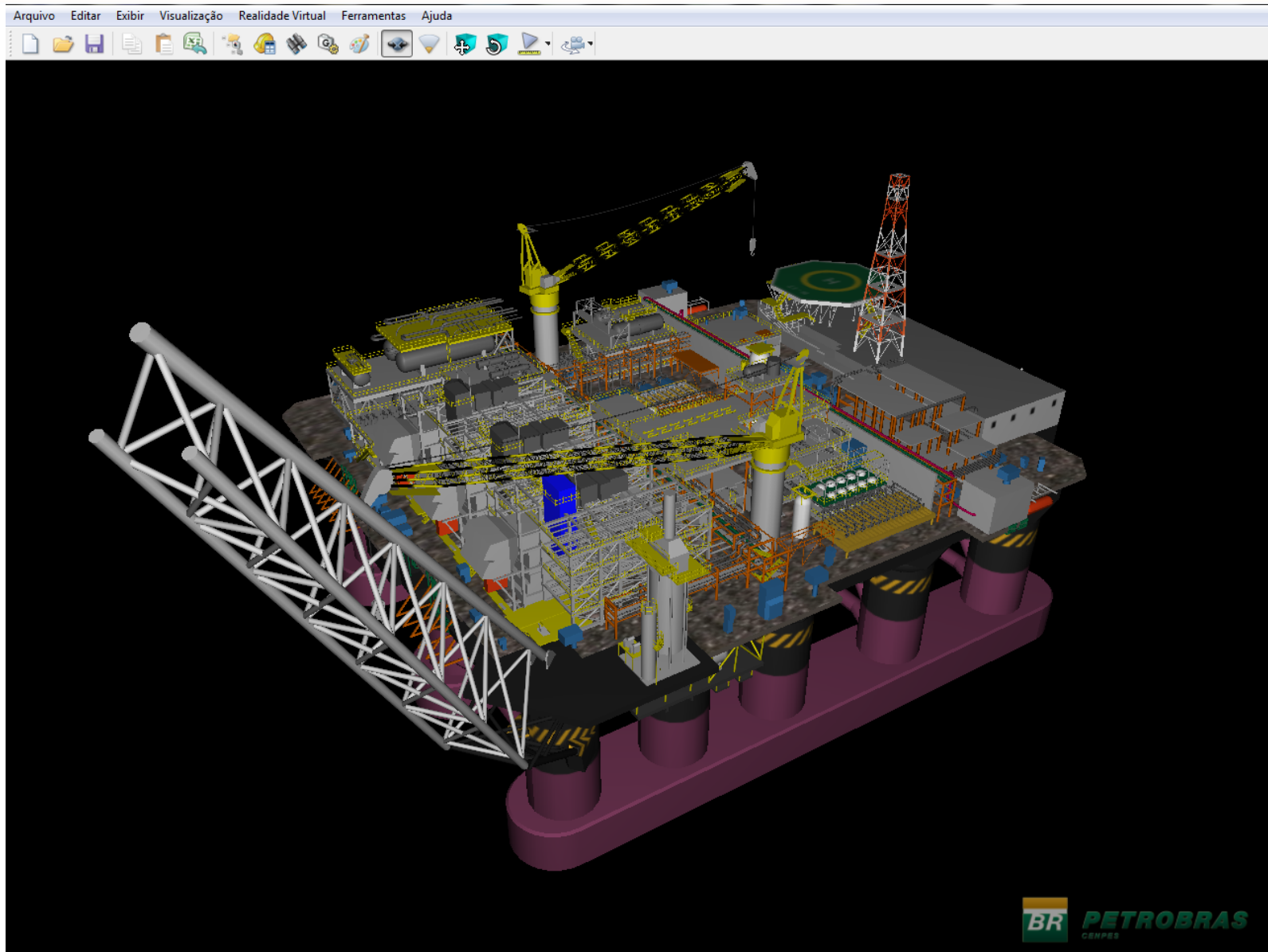
<http://www.tecgraf.puc-rio.br/juizvirtual/>

# CAE - PDS to PDMS Conversion



- From PDS or PDMS\* to:
  - Intergraph SmartPlant Review
  - PTC ProductView, Division Reality
  - Bentley ModelStreaming, ProjectWise Navigator
  - VRContext Walkinside
  - Petrobras Environ

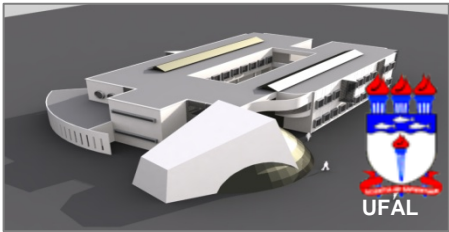
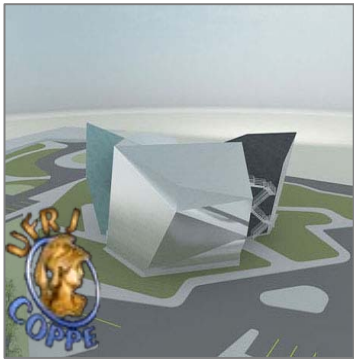
# CAE – Environ: A Petrobras 3D model Visualizer





- **SIAP** – Automatic spool generation from PDMS 3D and isometrics
- **WebViewer** – Web based 3D visualizer based on the google open source O3D API
- **Management of excess materials**
- **AuditOR** – Automated project auditing (PDS, PDMS, SP, Intools, SINDOTEC – Petrobras EDM)
- **ISO15926**

# Gallileu Network



# Petrobras and the near future (We care)



## ➤ **Production**

- **Now** ~ 2 Mboed
- **By 2020** ~ 5 Mboed

## ➤ **Total investments up until 2013/2014**

- **Upstream: US\$ 78 Billion**
- **Downstream: US\$ 104 Billion**

## ➤ **Need to standardize (Window of opportunity)**

## ➤ **Political motivation will make adjusting the course a challenge**



- Research began in early 2009
- In August 2009 Tecgraf became a member of FIATECH
- Tecgraf began attending ISO15926 webconferences
- Tecgraf got access to the PCA Trac
- With information – a realistic view of the status of ISO15926





- Petrobras has no specific area handling Data Integration or Interoperability
- Upstream & Downstream: Misconception regarding the norm
- **Solution providers claiming ISO15926 compliance**
- Rumors: “ISO15926 is really a **comercial** battle”

## CAE – What does ISO15926 represent for Tecgraf?



- Opportunity to deal with problems we face on a daily basis
- Opportunity to augment Semantic Web Technology research in Brazil using Oil & Gas funding
- Opportunity to give Petrobras control over its data and over its choice for software solutions
- Opportunity to drive the adoption of ISO15926 in Brazil

# CAE - What is Tecgraf doing about ISO15926?



- Building expertise through colaboration with the ISO15926
  - Learning template methodology
  - Helping in modeling templates for geometry in the GSIG
  - Prototyping Part 8 OWL for geometry
  
- **Coming here**
  
- Replicating the wiki/open source work philosophy in Brazil
  - Aimed initially at brazillian research institutes
  - Later Petrobras and Brazillian EPC's and Suppliers
  - Tecgraf as a link between Brazil and the ISO15926 community

# CAE - What is Tecgraf doing about ISO15926?



- Promoting high level ISO15926 workshops in Petrobras
- Prospecting ISO15926 pilot project opportunities in Petrobras
- Promoting an **ISO15926 / Semantic Web Technologies event in Brazil**
  - PCA Support
  - FIATECH Support
  - iRING user group support
  - Statements from O&O`s, EPC`s and Suppliers
  - Demos
  - Hosted by PUC-Rio
  - Presence of decision makers from Petrobras

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