Circle of Innovation:
“The VISGRAF Lab Experience”

Luiz Velho
IMPA

Outline

• Research & Development
  - The VISGRAF Lab Experience

• Technology Transfer
  - The Circle of Innovation

The VISGRAF Lab Experience
1989 - 2019

Computational Applied Mathematics
for New Media
**Digital Printing**
- Halftoning with Space Filling Curves
- 1991 - 1996
- MCT
- Casa da Moeda do Brasil
- 3 Patents

**Special Effects**
- Virtual Sets and Compositing
- 1994 - 1996
- CNPq
- TV Globo
- Technology Transfer

**Virtual Reality**
- Visorama
- 1997 - 2010
- FiNEP / Faperj Rio Inovação
- Digitok
- Registro de Produto

**Medical Imaging**
- VisMed
- 2000 - 2002
- Faperj
- DRV
- Technology Transfer
Digital Animation

- MUAN - Stop Motion Animation
- 2002 - 2005
- IBM Brasil
- Anima Mundi
- Open Source

Computational Photography

- Video 4D
- 2003 - 2007
- FINEP CT Info
- IME USP
- Open Source

Multiresolution Models

- Terra 3D
- 2004 - 2005
- CNPq
- INPE - PRODEC
- Technology Transfer

Games

- FutWeb
- 2004 - 2006
- FINEP
- Olympia
- Registro de Software
Natural Interfaces

• iTable / Lattice
• 2010 - 2014
• CAPES
• Apple / Ableton
• 3 Patents

360 Panoramas

• Multi-Layer Omnidirectional Panoramas
• 2010 - 2011
• CNPq
• Blender Foundation
• Open Source

Augmented Reality

• PlanoVision - Mesa 3D
• 2010 - 2012
• MCTI
• IME / Design Center
• 3 Patents

Data Visualization

• Rapid Reservoir Exploration
• 2012 - 2013
• U. Calgary
• Petrobras
• MOU
Mobile Computing

- Expo Framework / Exploratorium
- 2013 - 2014
- Faperj
- Eyllo
- Registro de Software

Computer Music

- Web Orchestra
- 2017
- BNDES
- Festival da Matemática
- Open Source

The Circle of Innovation

The Mechanisms

- Patent
- Registration of Intellectual Property
- Technology Transfer
- Open Source
The Players

- Government
- Big Business
- Medium Companies
- Start-Ups

Lessons Learned

- The (not so) Easy Way
  - Unidirectional Transfer
- The Virtuous Way
  - Bidirectional Integration

“Now What?”