

*Inatel*

# *Inatel*

# INATEL

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1965

**Founded in 1965**



**Higher Education  
Institution,  
maintained by a  
Nonprofit Foundation**



**1st Telecommunication  
Engineering Course in  
Latin America**



**Home of great  
Prodigies**

## Education:



**Undergraduate  
Education**



**Graduate Education**



**Master's Degree**



**Specialization Courses  
and Distance-learning  
Extension Courses**

# Inatel



## Centre of Excellence in Digital Radiocommunication

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- Inatel is a Digital Radiocommunication Excellence Centre in Americas
- Unique Brazilian ITU-R partner institution
- Act to strengthening human and institutional capacity in Digital Radiocommunication

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## Radiocommunications Reference Center

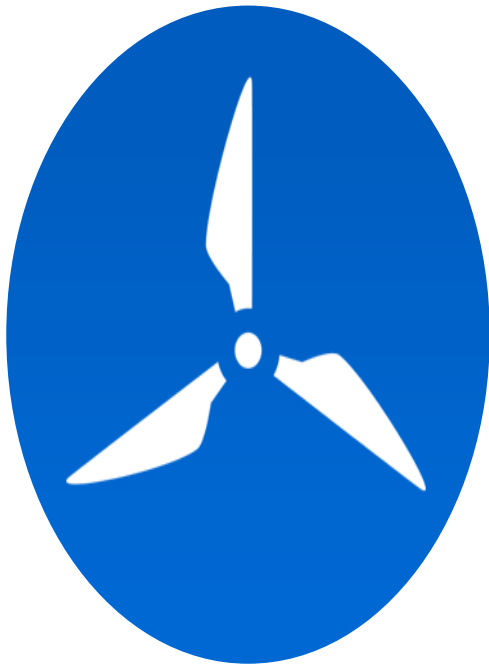


- Inatel was selected to receive a investment of R\$ 20 million from Ministry of Science and Technology Research and Projects Financing institution (FINEP)
- This financial support is to run the Radiocommunication Reference Center to 5G(5th generation mobile networks) and Satellite Communications researches



# INTERACTION

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**Triple Helix**



**Academia**



**Industry**



**Government**

# CAMPUS SANTA RITA DO SAPUCAÍ



Building V Frontage



Biomedical Engineering Laboratory



Antenna Complex



Central Building



Hardware and Embedded System Laboratory



Library Studies Wing

# Inatel

## SANTA RITA DO SAPUCAÍ



Vale da Eletrônica  
"Electronic Valley"



40.000 Inhabitants



US\$ 1 bi  
Sector Revenues  
in 2013



+13.700  
products



+150  
Business in  
Electronic Sector



+10.000  
Work Positions



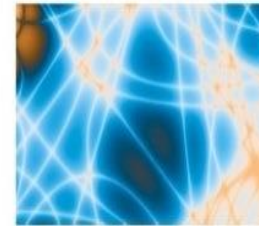
# ICT LAB

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***Intel Labs***

***Information and  
Communications  
Technologies***

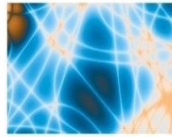


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Communications  
Technologies*

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# NOVAGENESIS

**WHAT CHANGES?  
WHAT ARE THE BENEFITS?**



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# Naming

**Natural language** names: Portuguese, English, etc.



Wilfredor



```
0101010101010101010110001010010101010101010101
10101010111101000010100111111111010101010000000
1001010101000101010101011111100000000000000000
10101010101010101010000100101010101010101010101
11111101010101000010100101001010100010101010
01000001000000100000000100000100000010000010000
11100000100000010000001011010111100001110000000
111111010101010000101001010010101010000101010
01000000010000000100000010000001000000100000
000100000010110101111000011100000000
1101111101111101111101111011110111111
```

- **Unique** names generated from existences' immutable patterns.



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# Naming



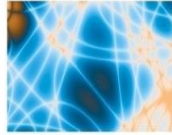
- **Connected names** to create a network of relationships.

# Identification and Localization

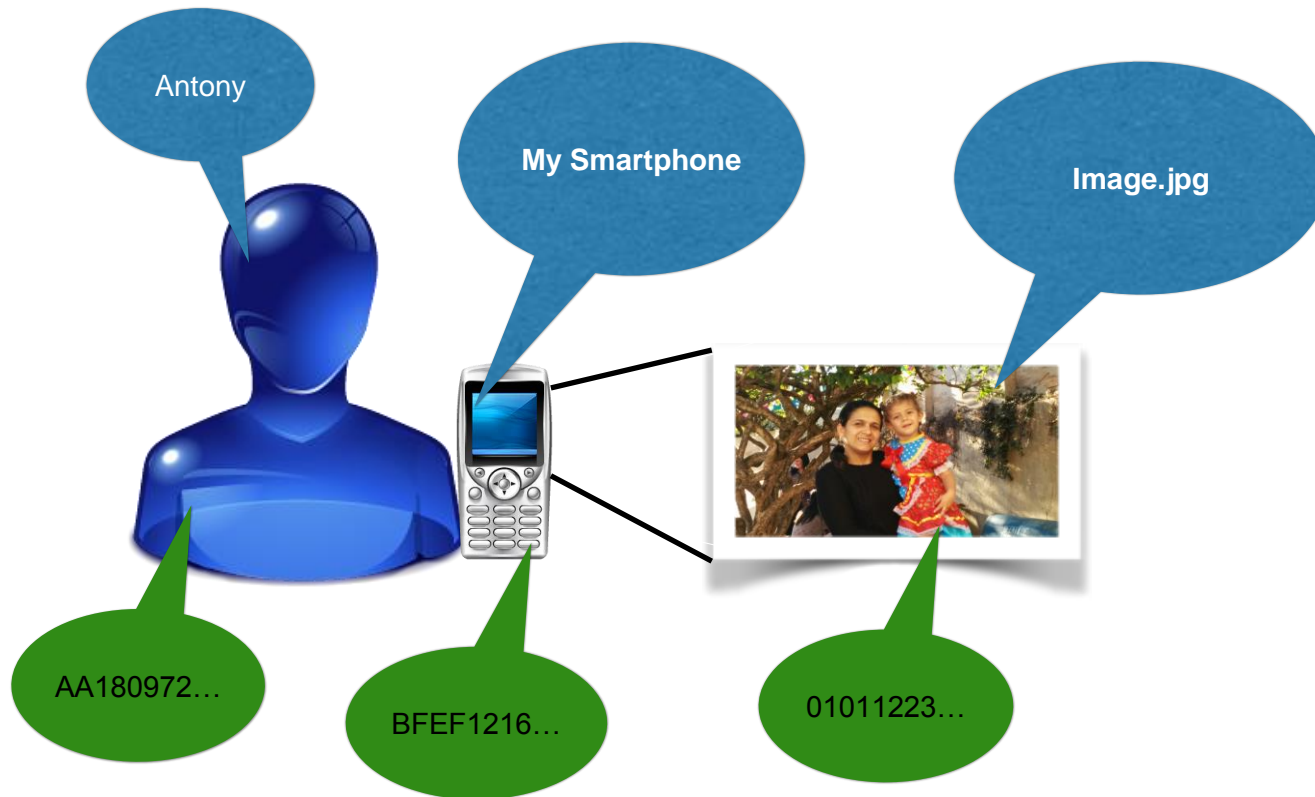


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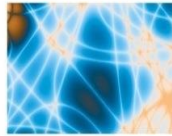
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# Discovery

Antony



I have Antony photos!



App 1

My smartphone

I have Antony photos!



App 2

My tablet

I store Antony photos!

My photos repository app

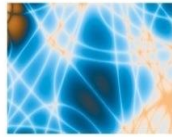


Scalifax



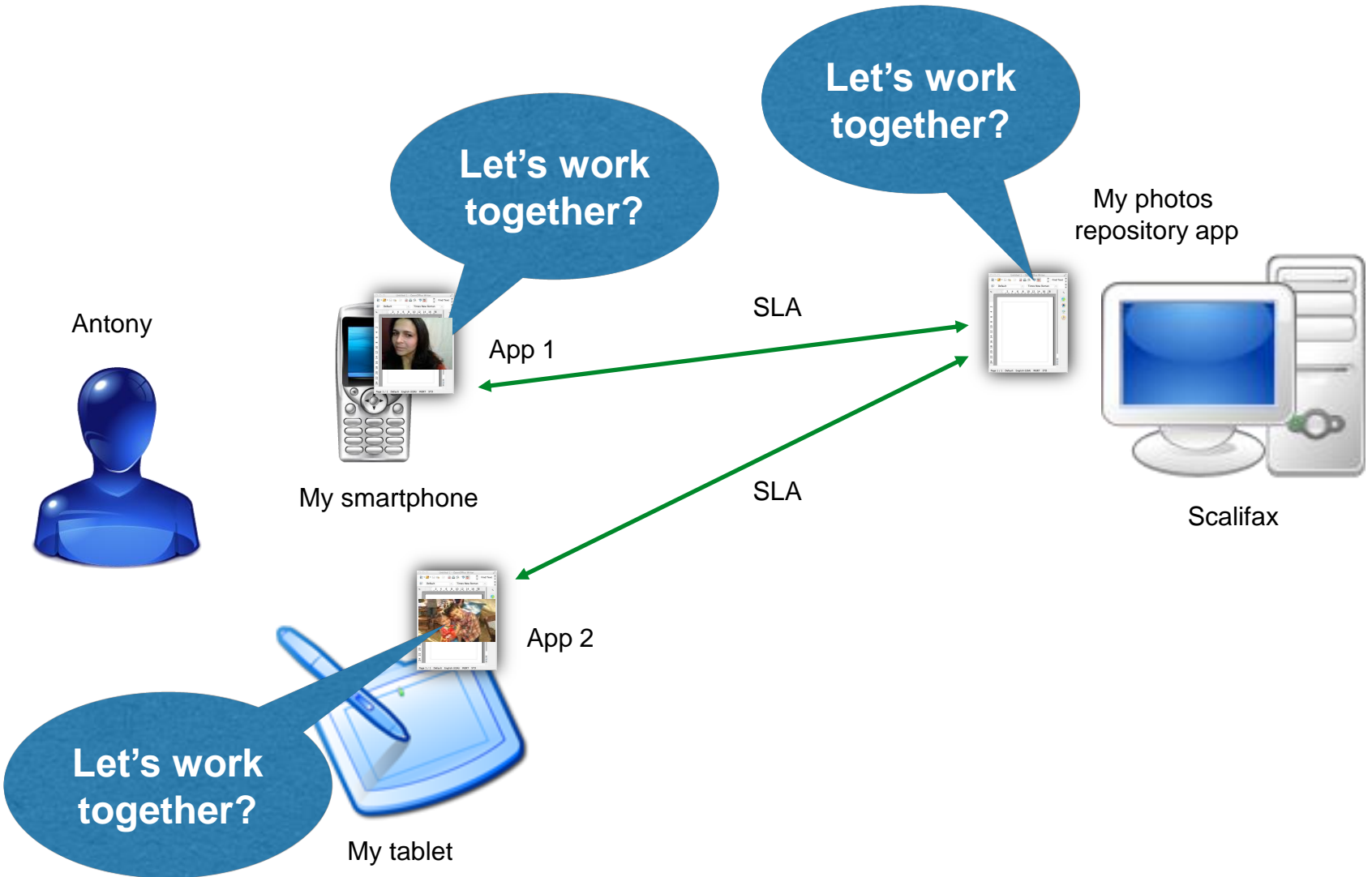
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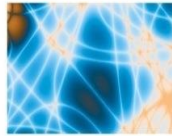
# Negotiation





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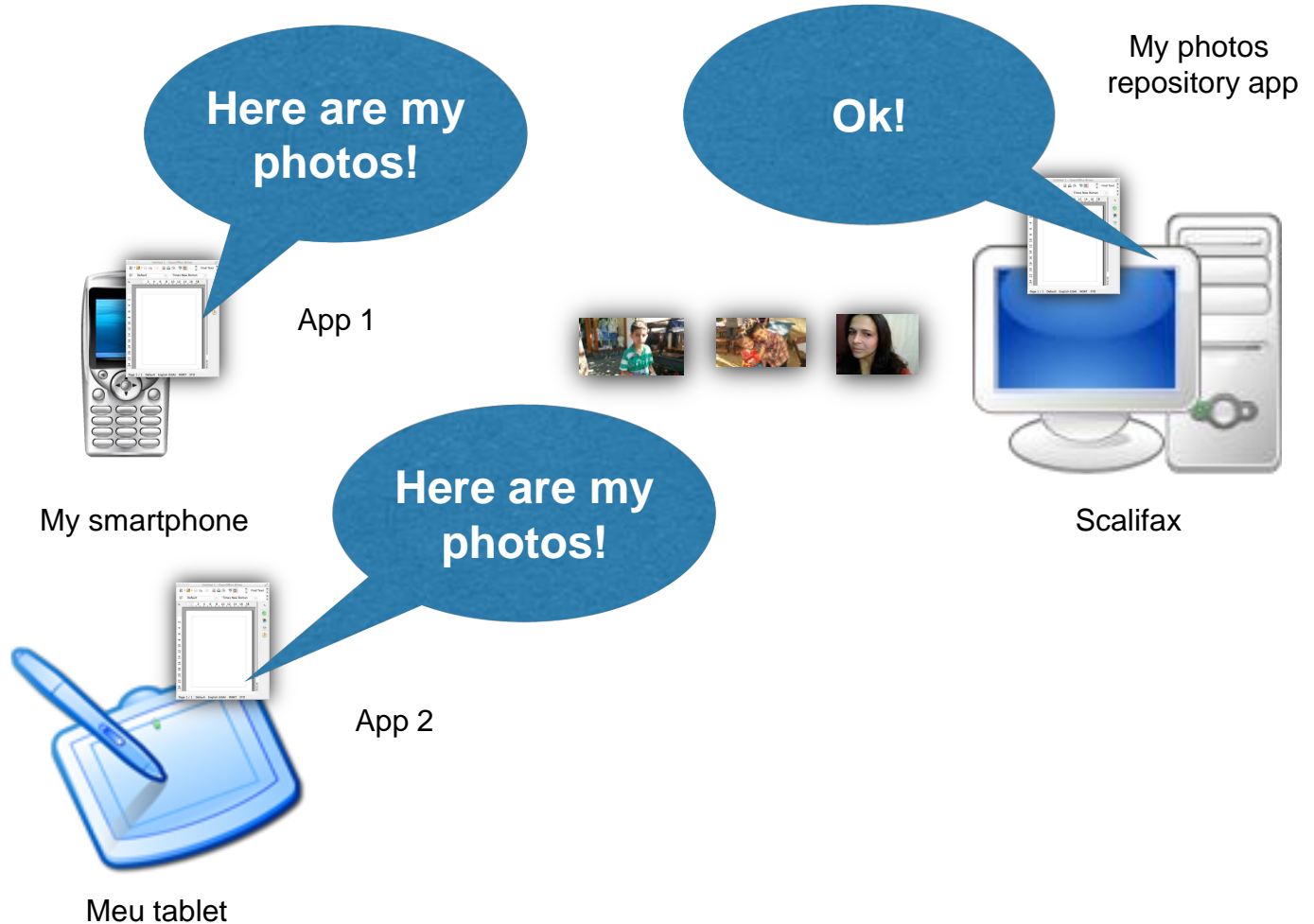


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# Information Exchanging



Antony

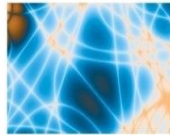






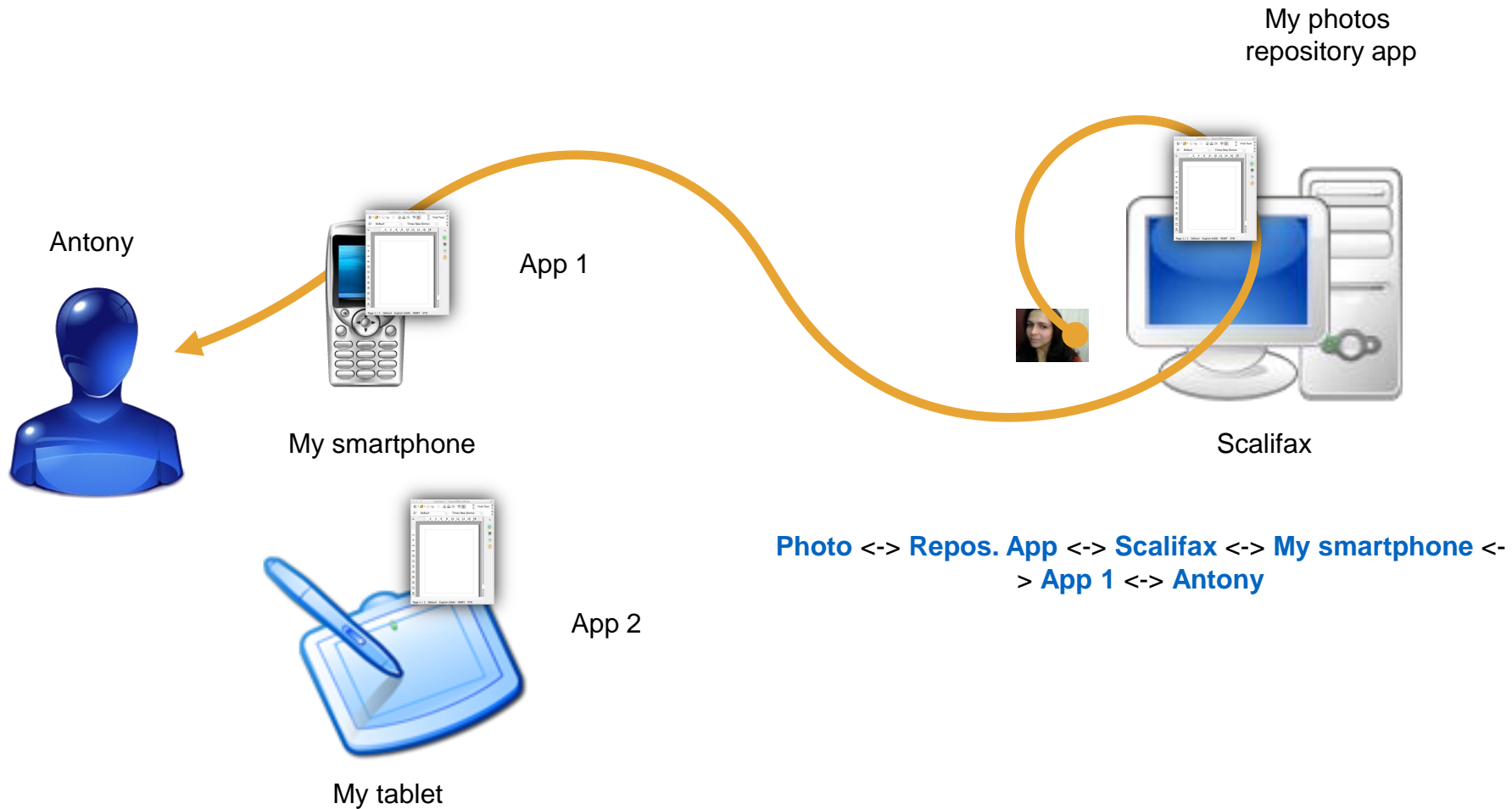
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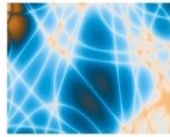
# Traceability





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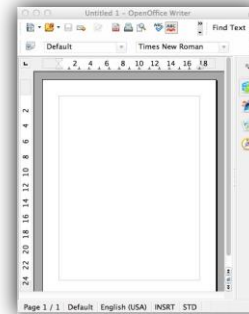
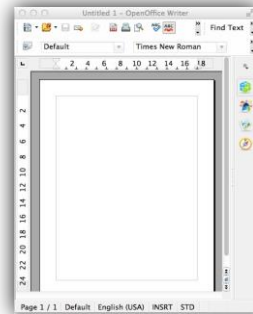
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# Trust and Reputation

Trustworthy!



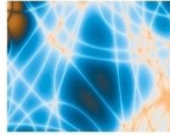
Unreliable!

"Collaboration logo V2" by Berdea - Own work. Licensed under Creative Commons Attribution-Share Alike 3.0 via Wikimedia Commons - [http://commons.wikimedia.org/wiki/File:Collaboration\\_logo\\_V2.svg#mediaviewer/File:Collaboration\\_logo\\_V2.svg](http://commons.wikimedia.org/wiki/File:Collaboration_logo_V2.svg#mediaviewer/File:Collaboration_logo_V2.svg)



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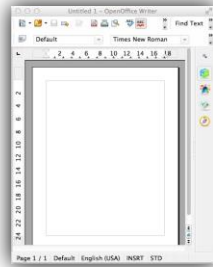


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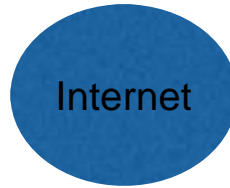
# Communication Model

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Today

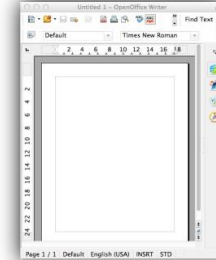


Owner  
sends



Internet

The  
receiver  
accepts all



Facilitates  
spam!



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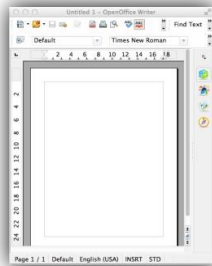
**Information and  
Communications  
Technologies**



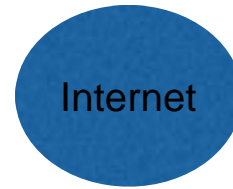
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# Communication Model

Future

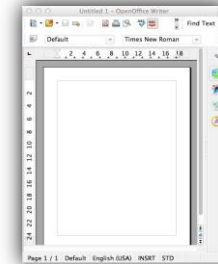


Owner  
publishes



Internet

Receiver  
subscribes  
only the  
desired  
content.



Minimization of  
spam problem!



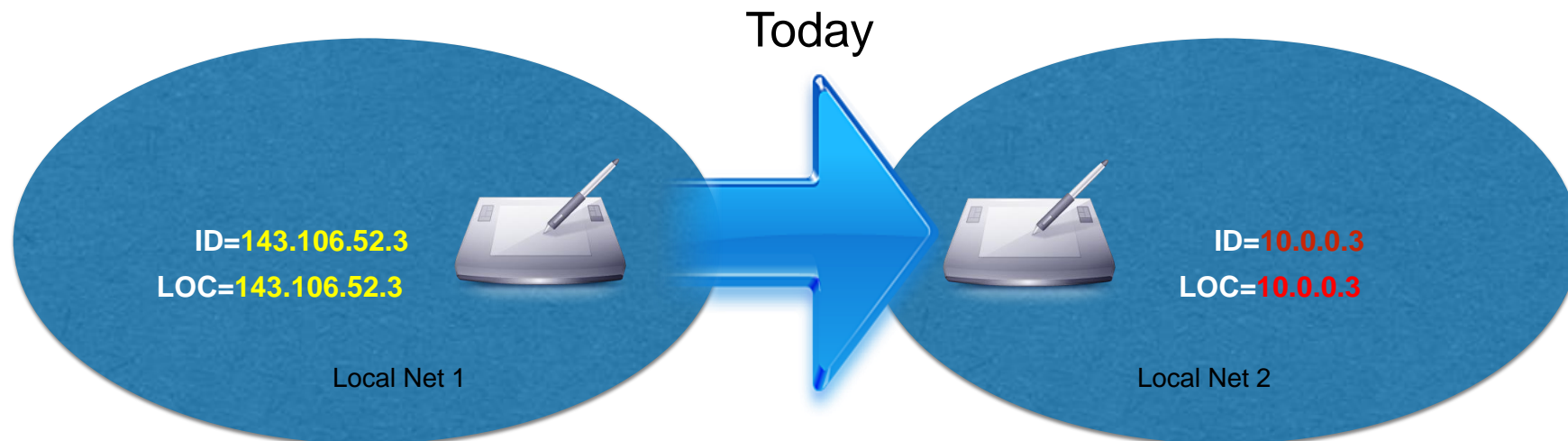
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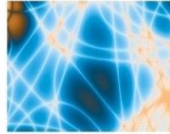
# Mobility





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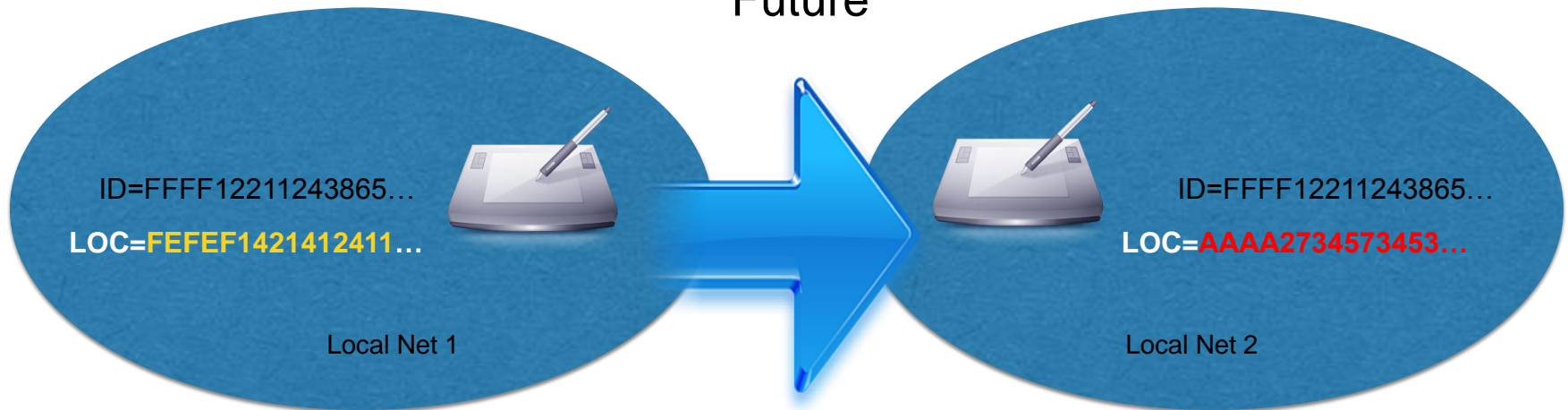
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# Mobility

Future





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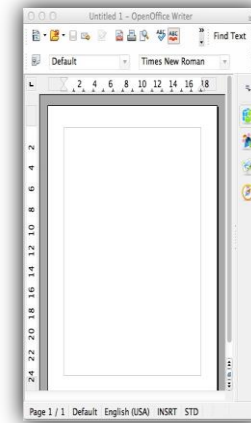


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# Social Devices



Social Devices



Proxies

Interact one another through proxy services



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# The Proposal Essence

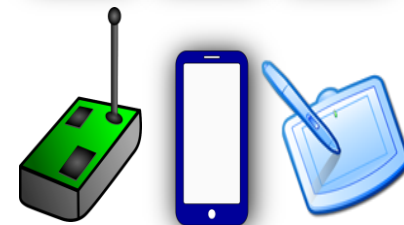
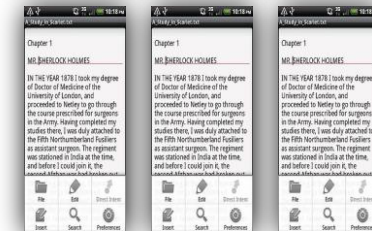
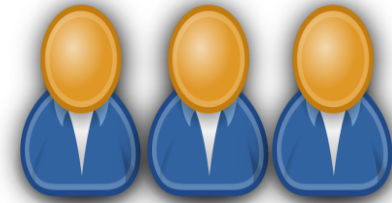
## Smart Future Internet Architecture

People  
Policies, Rules, Regulations,  
etc.

Self-Organizing  
Assistants, Controllers, Managers,  
etc.

Self-Organizing  
Physical World  
Representatives

Physical  
World



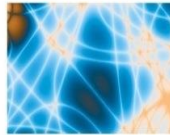


# Joint Content and Services Orchestration

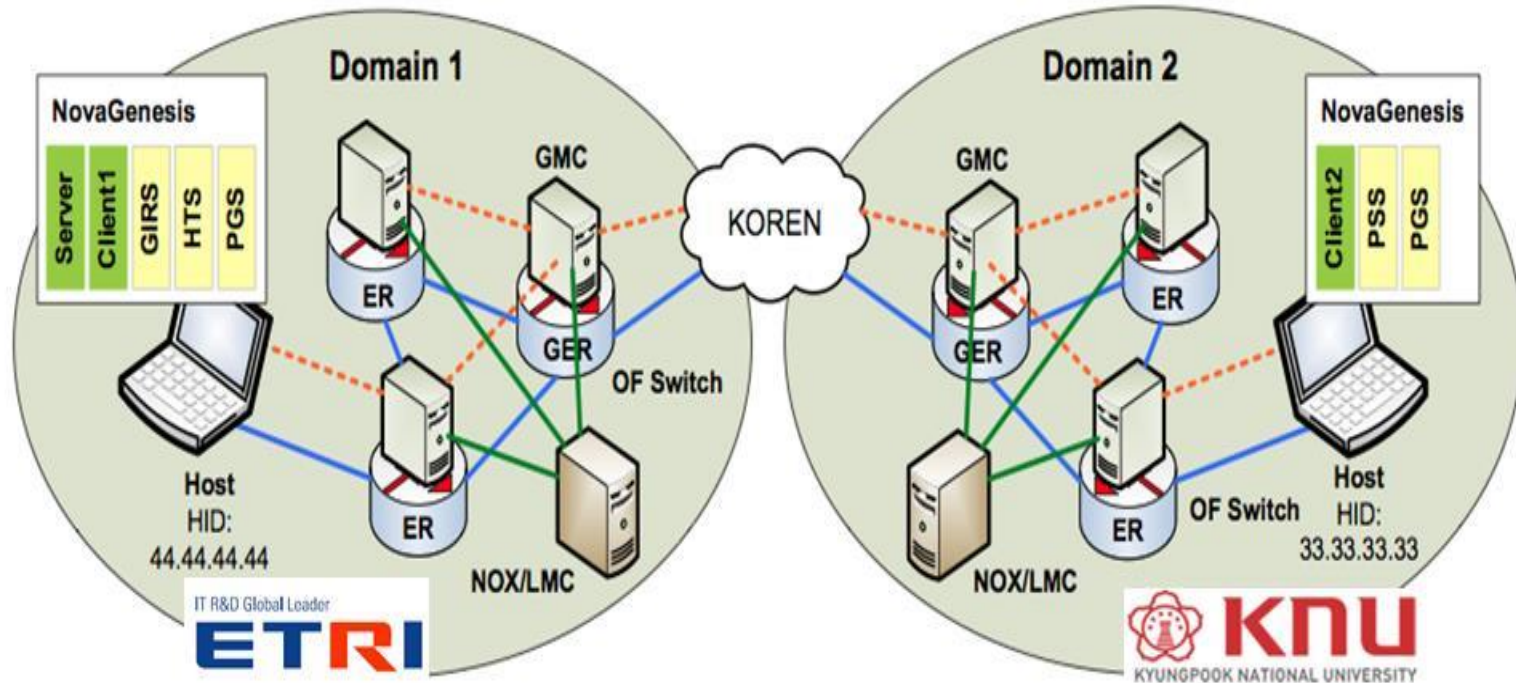


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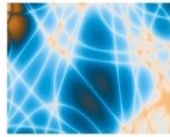


- ▶ Clients e servers discover each other, publish SLAs and exchange named-content based on user policies.
- ▶ Provides check for content provenance, integrity, and coherence of content.
- ▶ MOFI provided transparent connectivity change.

# Joint Content and Services Orchestration

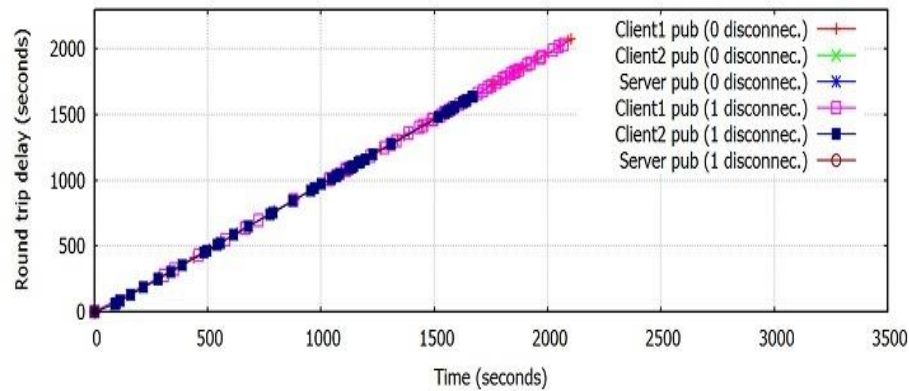


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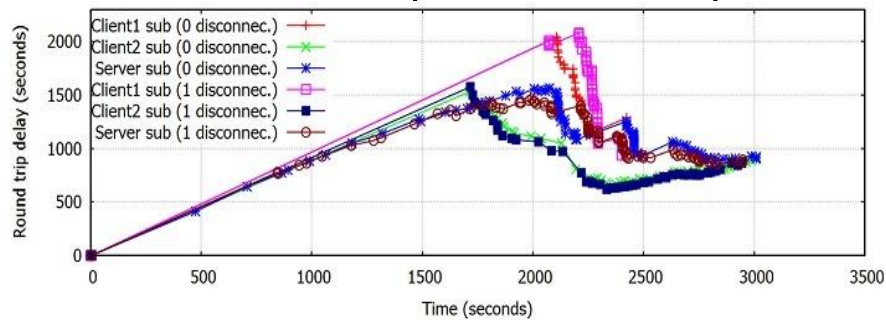


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## ▶ Content publishing round trip time



## ▶ Content subscription round trip time

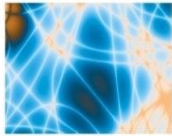


# Cognitive Radio over Fiber with NG Services

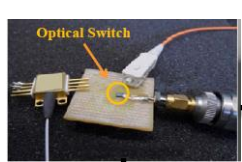


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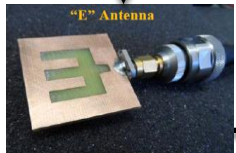
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Optical Switch

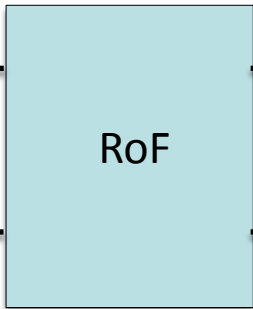


"E" Antenna



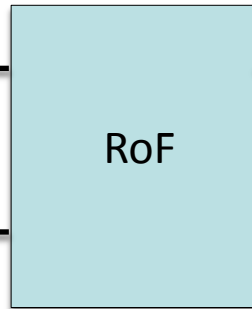
From "H"

To "E"



Antenna Control Link

Results



From "H"

To "E"



Access Point

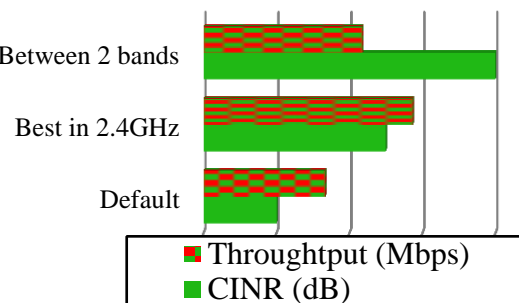
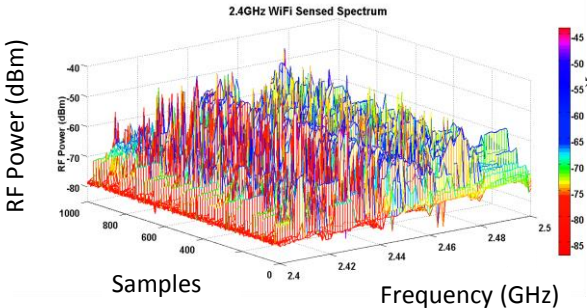


Splitter

NovaGenesis Services for Proxy/Gateway/Control of:

- ✓ Spectrum Sensing
- ✓ Optically Controlled Antenna
- ✓ Access Point
- ✓ Wi-Fi VLAN

Spectrum Analyzer



Wireless and Optical Convergent Access



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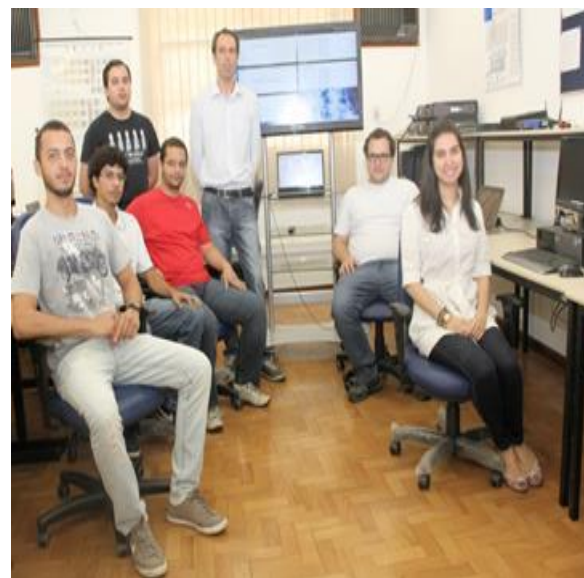


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# The Team



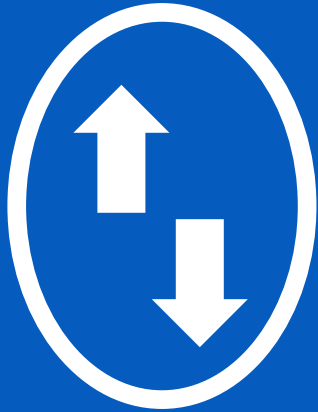
2014 (people missing)



2013

# Inatel

## INATEL COMPETENCE CENTER



### Technology Transfer

Perfect interaction between technology, research, development and teaching. The ICC is the platform used to transfer the technology to the market.



### Customized Service

The ICC relies on its specialized Business Development team. Those professionals provide a customized interface between the institution and the market.



### "Time"

The academic and the market rhythm are different. Inatel understand this, and develops projects within your market team, using powerful Project Management methodologies.



### Dedicated Professionals

More than 250 full time dedicated professionals that work in the development of custom-made projects for partner enterprises

**Antônio M. Alberti** (antonioalberti@gmail.com)

**Victor H. de O. Fernandes** (victorh@gee.inatel.br)

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[www.inatel.br](http://www.inatel.br)

[www.inatel.br/novagenesis](http://www.inatel.br/novagenesis)

