



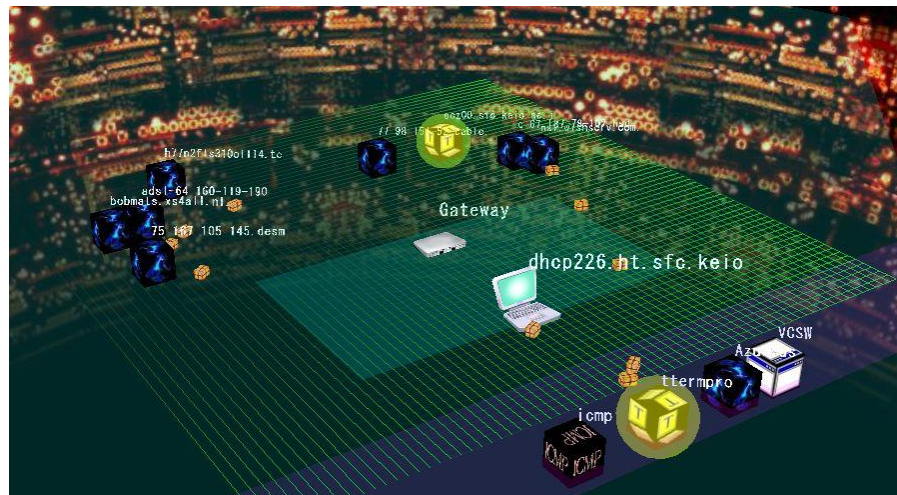
# Ubiquitous Network Browser (UNB)

Masato SAITO

Ph.D. candidate, Graduate School of  
Media and Governance, KEIO University

# Ubiquitous Network Browser (UNB)

- The internet communication visualizer
  - **network browser**
- Novel real-time traffic visualization
- For general computer users and daily-use **ubiquitous PCs**.
- Simple, easy-to-understand, entertainment-oriented
- An endhost-centric stand-alone software



# What can UNB realize?

1. Users (including Administrators) can
  - See and learn the Internet activities of various applications **when they want**.
    - E.g. when connecting wireless APs of neighbors.
  - See and track the illegal network access or invisible information leakages from applications.
2. The ICT literacy of PC users can be advanced.
3. The network activities of applications (including Personal F/Ws, anti-virus software) can be visually checked.
  - As a comm. validation or compliance check tool.

# Demonstration of UNB



Application Icons of the PC

# Previous visualization of Internet

visualcomplexity

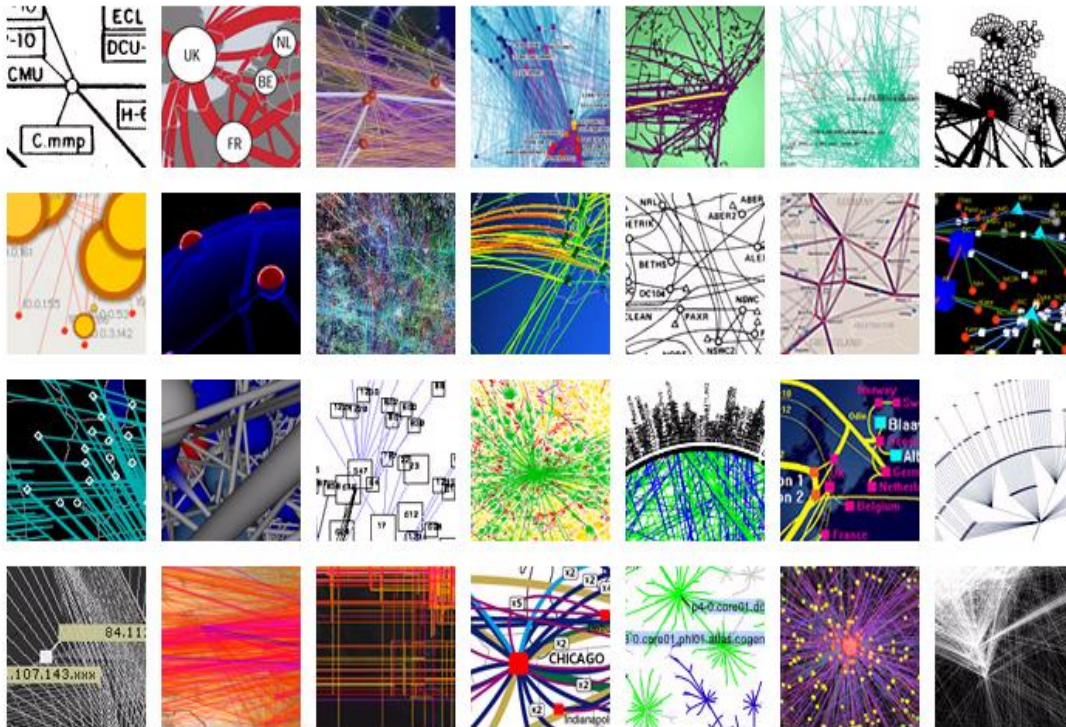
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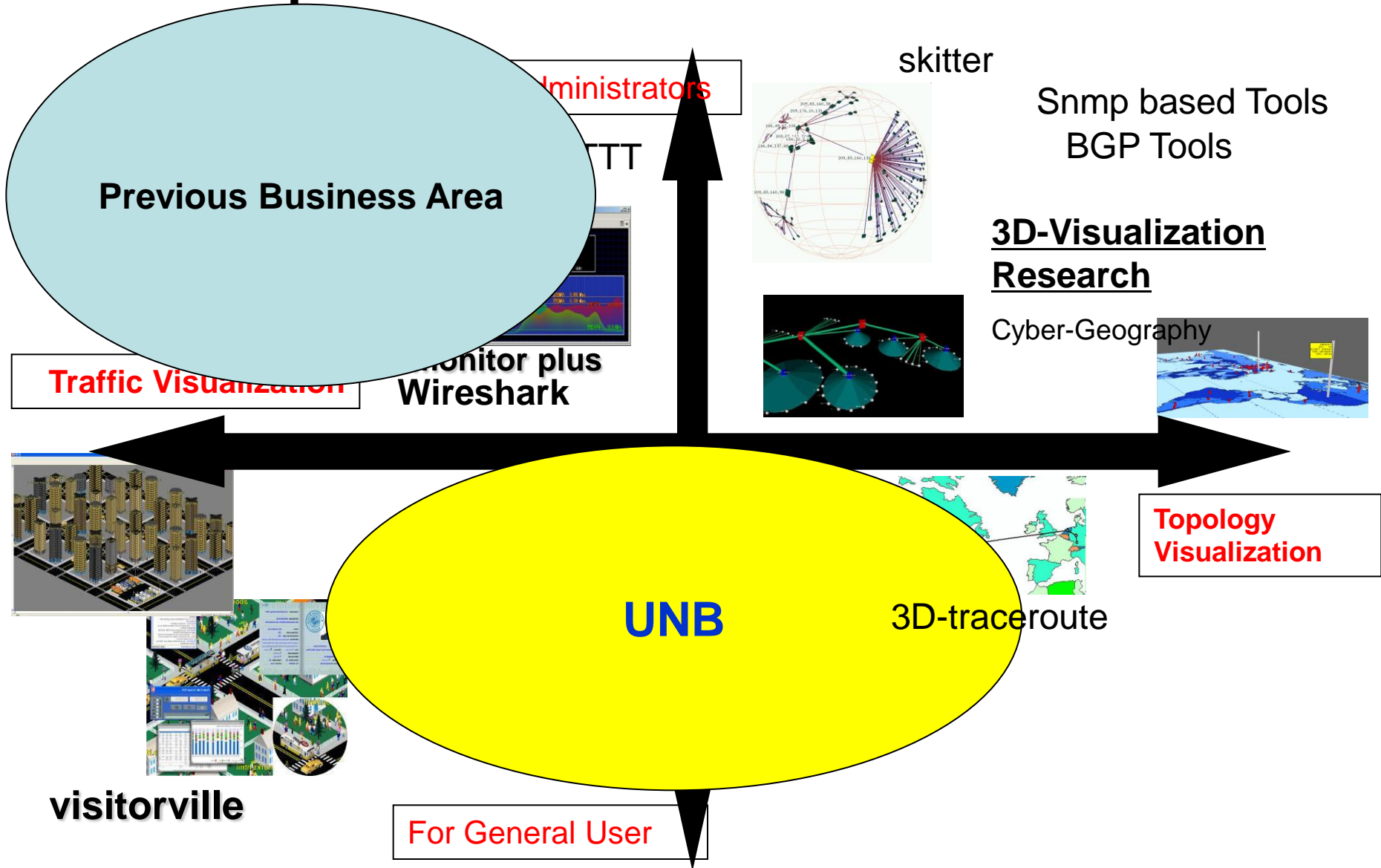
Subject: Internet (28)



- Professional use
- Relatively Static
- Large-scale
- Router level
- Topology based
- Complex

<http://www.visualcomplexity.com/vc/index.cfm?domain=Internet>

# UNB position & related solutions



# Other screenshots of UNB

The screenshot shows the UNB interface with a 3D visualization of network traffic. A graph in the top right corner displays traffic volume over time, with peaks around 13:30:50 and 13:30:30. Below the graph, there is a 'TraceRoute' section showing a path through several hops. At the bottom, an 'ObjectInfo' table lists network objects with their source IP, destination IP, port, protocol, application name, rate, and alert status.

Src IP Addr	Src Port	Dst IP Addr	Dst Port	Protocol	AppName	Rate	Alert	Stop Flow
dhcp226.ht.sfc.keio	1856	www.asahi.com	80	http	explore	0	false	
dhcp226.ht.sfc.k	2033	www.asahi.com	80	http	explore	0	false	
www.asahi.com	80	dhcp226.ht.sfc.keio.ac	2033	http	explore	0	false	
dhcp226.ht.sfc.k	2080	www.bryve.com	80	http	firefox	506	false	
dhcp226.ht.sfc.k	2079	www.bryve.com	80	http	firefox	510	false	
dhcp226.ht.sfc.k	2081	www.bryve.com	80	http	firefox	3951	false	
dhcp226.ht.sfc.k	2082	www.bryve.com	80	http	firefox	7710	false	
www.bryve.com	80	dhcp226.ht.sfc.keio.ac	2081	http	firefox	6455	false	
www.bryve.com	80	dhcp226.ht.sfc.keio.ac	2082	http	firefox	6455	false	

This screenshot shows a different view of the UNB interface, focusing on a 3D visualization of network traffic. A table at the bottom of the window lists network objects with their destination port, protocol, application name, rate, alert status, and stop flow.

Dst Port	Protocol	AppName	Rate	Alert	Stop Flow
80	http	firefox	394	false	
80	http	firefox	506	false	
80	http	firefox	0	false	



This screenshot shows a 3D visualization of network traffic. A large, prominent red sphere is visible in the foreground, surrounded by other network objects and data points. The background shows a complex network structure with various nodes and connections.

This screenshot shows a 3D visualization of network traffic. A large blue square is visible in the center, surrounded by various network objects, including a large blue sphere and several smaller objects. The background shows a complex network structure with various nodes and connections.

# Two components of UNB architecture

Java3D & SWT GUI



Visualization

Flow Analysis

Packet capturing from NICs & Gathering Process Info.



# Non-IT applications of UNB

Java3D GUI, Flash, Google Earth,  
2D GUI, Cocoa Framework

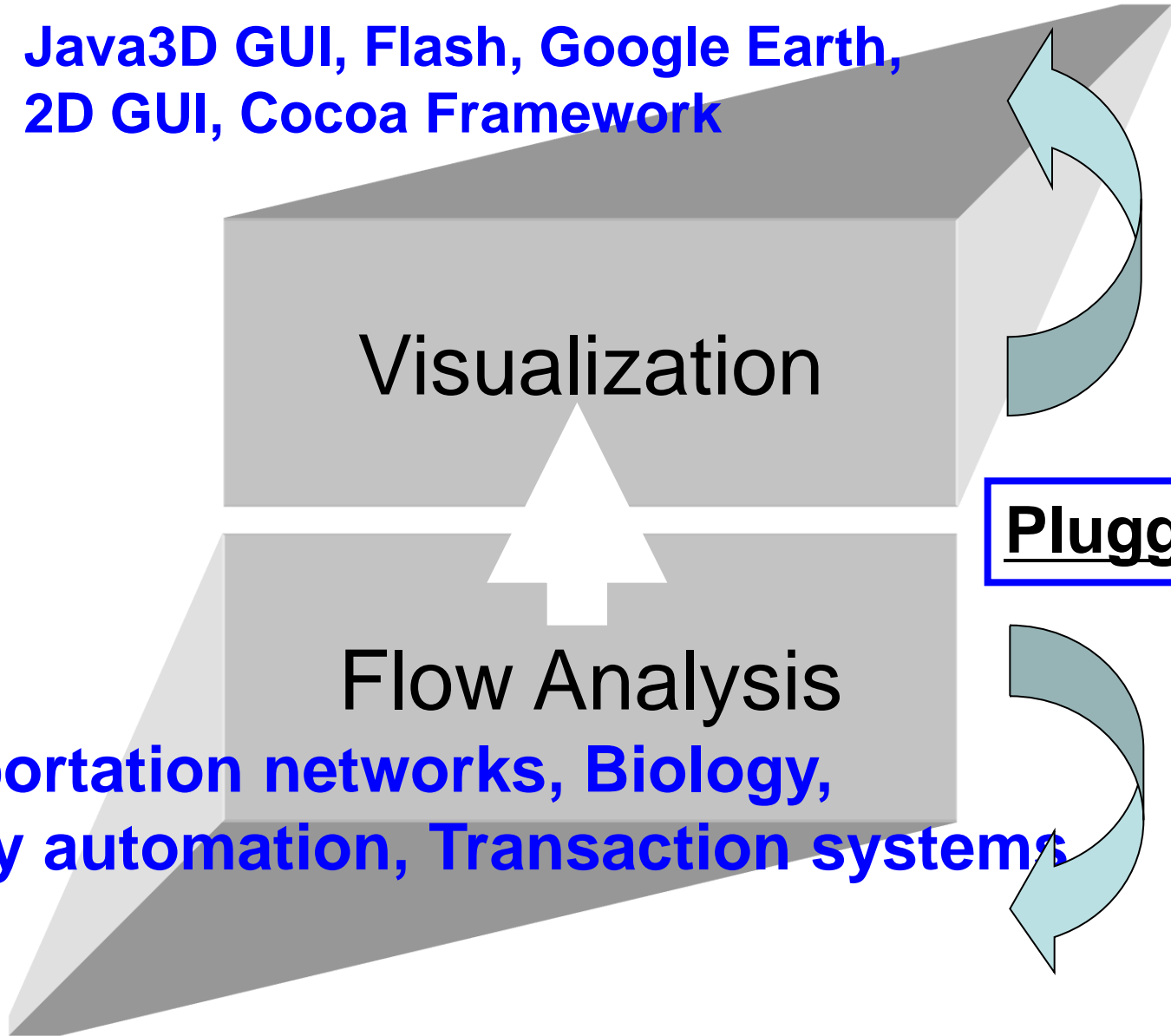
Visualization



Flow Analysis

Transportation networks, Biology,  
Factory automation, Transaction systems

**Pluggable**



# IT applications of UNB

1. **A front-end visualization software for various antivirus software or Personal F/Ws.**
  - Coordinated with Internet security companies
2. **A reporting and info. gathering client software** installed on enterprise or home PCs
  - Towards IT management department of middle & large companies or ISP providing software
3. **A graphical LOG analysis software** of the network dump (character) info.
  - For specific ICT companies

# Future plans of UNB

- As a “serious game”
  - for learning the Internet or ICT literacy
  - A novel area converging the game contents technology and the Internet applications.
- Towards ICT (networking) education
  - for children or teenager to learn the Internet
  - The Internet security or network simulator



Thank you for listening.

Ubiquitous Network Browser  
(UNB)

Masato SAITO

# The e2e + n visualization model

## 1. Default View

- E2E + 1 = end-to-end + a default router
- IP Subnet Model (Catenet Model)
  - SALTZER, J. H., et. al. 1984. "End-To-End Arguments In System Design." *ACM Trans. on Computer Systems*
- Like the connection model of Home Networks

## 2. Advanced Views

- E2E + N = end-to-end + Multiple Routers

