IETF-104 Hackathon for I2NSF Framework

IETF-104, Prague
March 24, 2019

Jaehoon Paul Jeong
pauljeong@skku.edu
Sungkyunkwan University

SUNG KYUN KWAN UNIVERSITY(SKKU)

Soongsil University

ETRI kt

Introduction (1/2)

Goals at IETF-104 I2NSF Hackathon

1. Registration Interface via NETCONF/YANG
2. NSF Database Management via Consumer-Facing Interface
3. NSF Database Model Auto-Adoption
4. NSF-triggered Traffic Steering in OpenStack SFC Function
5. I2NSF Policy Provisioning using Decision Tree

Introduction (2/2)

Build Environment

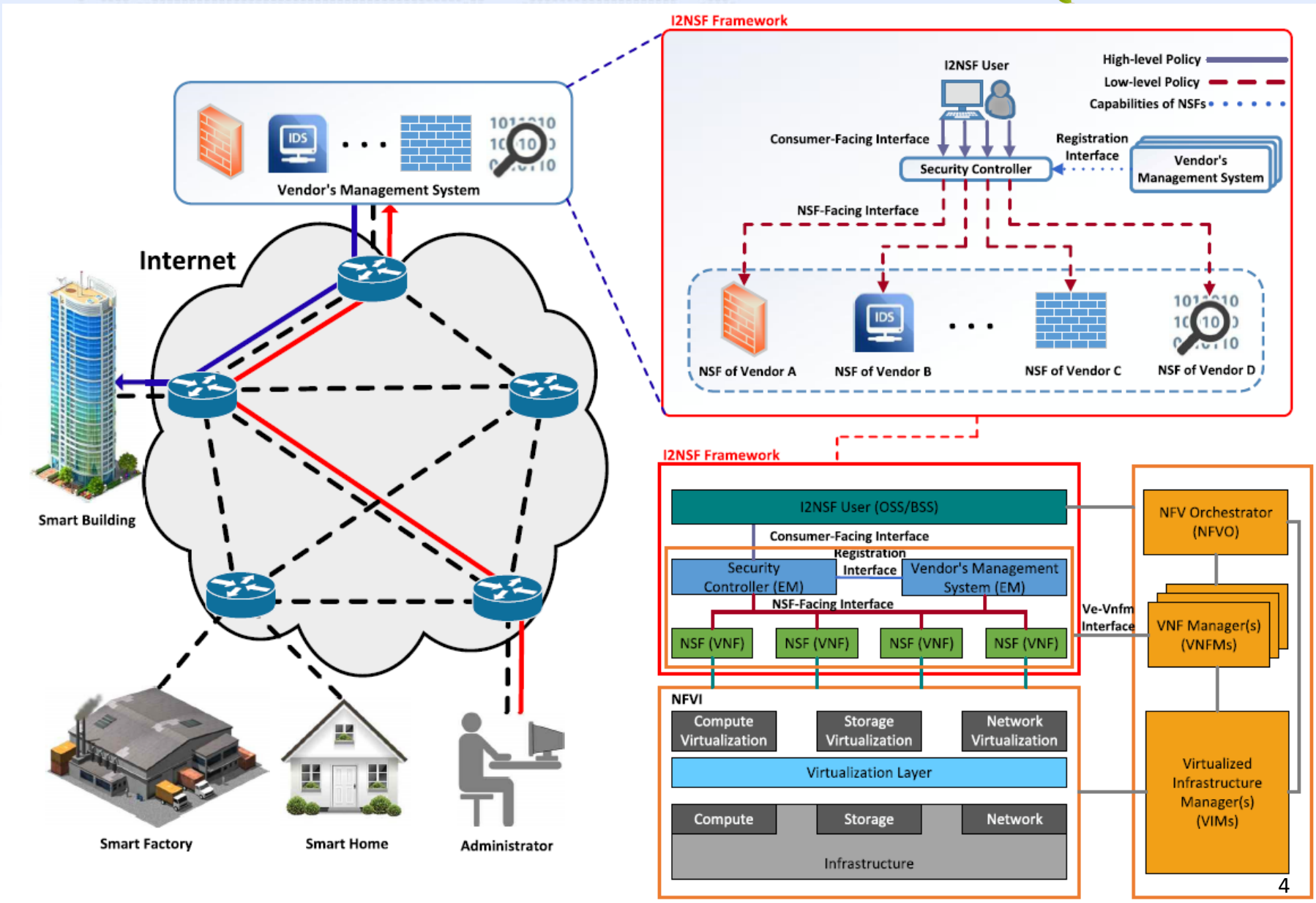
1. **OS**
   - Ubuntu 16.04 LTS
2. **ConfD**
   - 6.6 Version
3. **MySQL**
   - 14.14 Version

4. **OpenStack**
   - Networking-SFC, Tacker
5. **Suricata**
   - 3.2.1 RELEASE

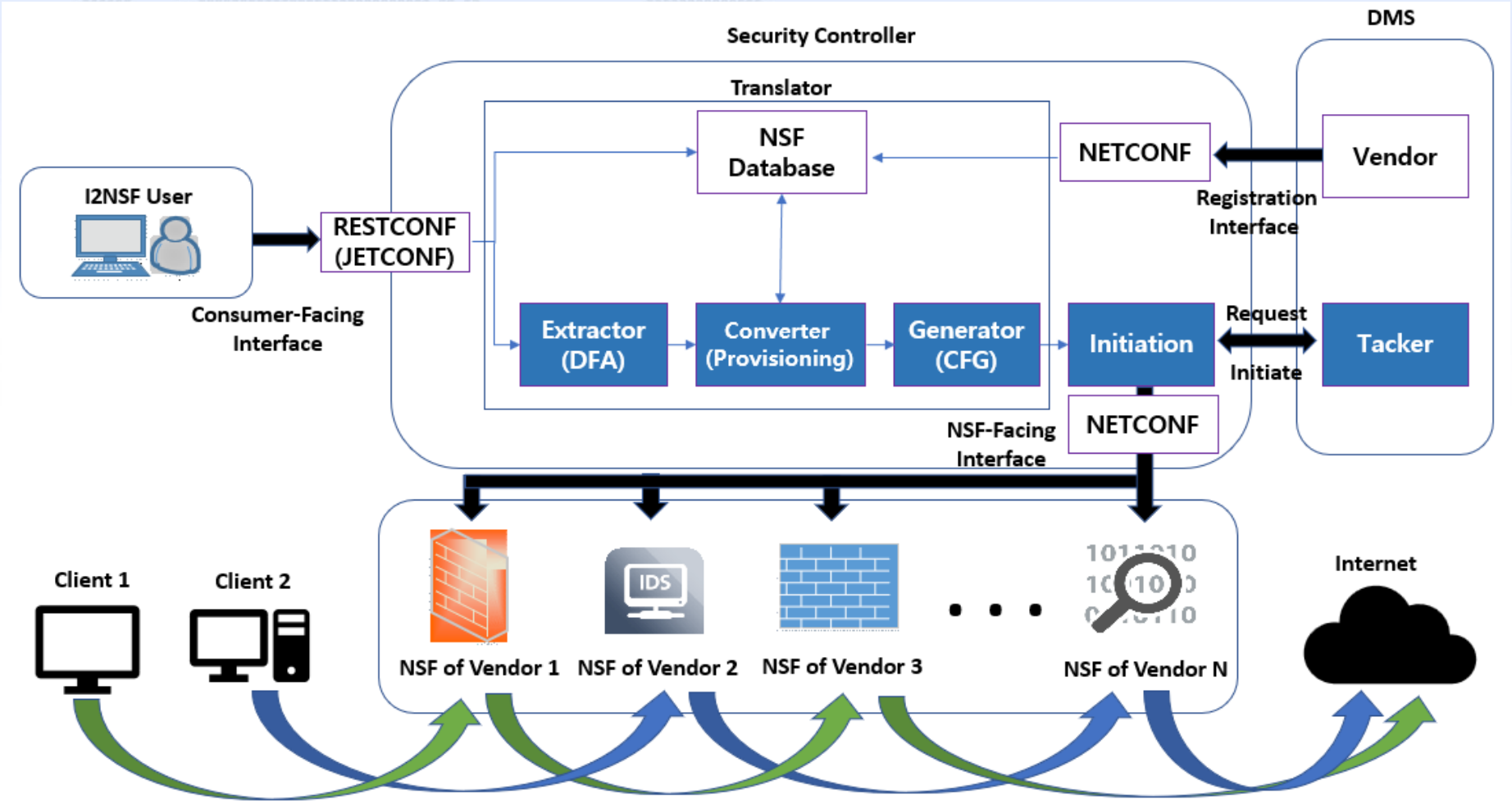
openstack®

TACKER
GIANT SQUID

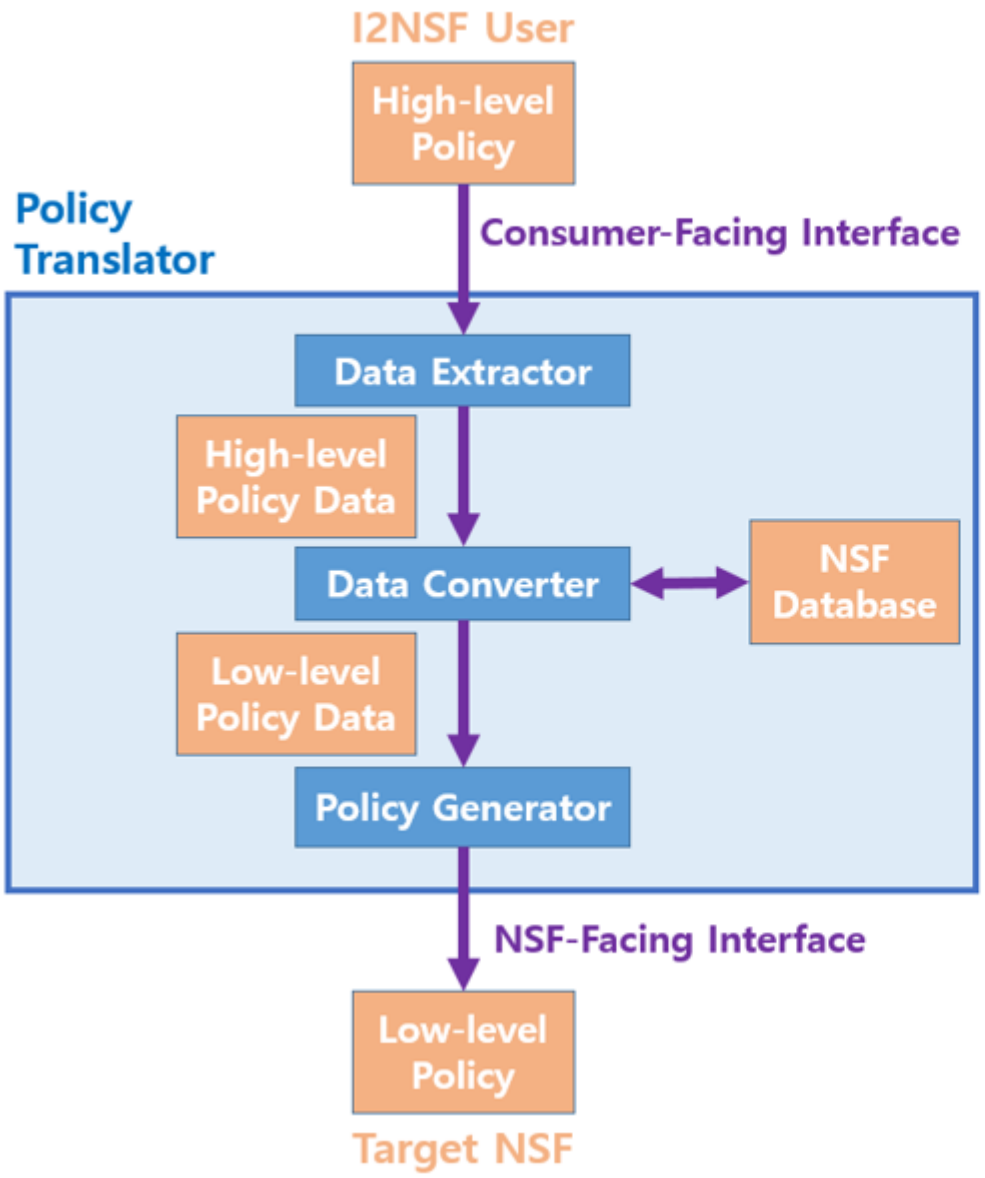
I2NSF System using NSF Framework



Implementation of I2NSF Hackathon Project



Security Policy Translation



High-level policy

```
<I2NSF>
    <name>block_web</name>
    <cond>
        <src>Son's_PC</src>
        <dest>malicious</dest>
    </cond>
    <action>block<action>
</I2NSF>
```

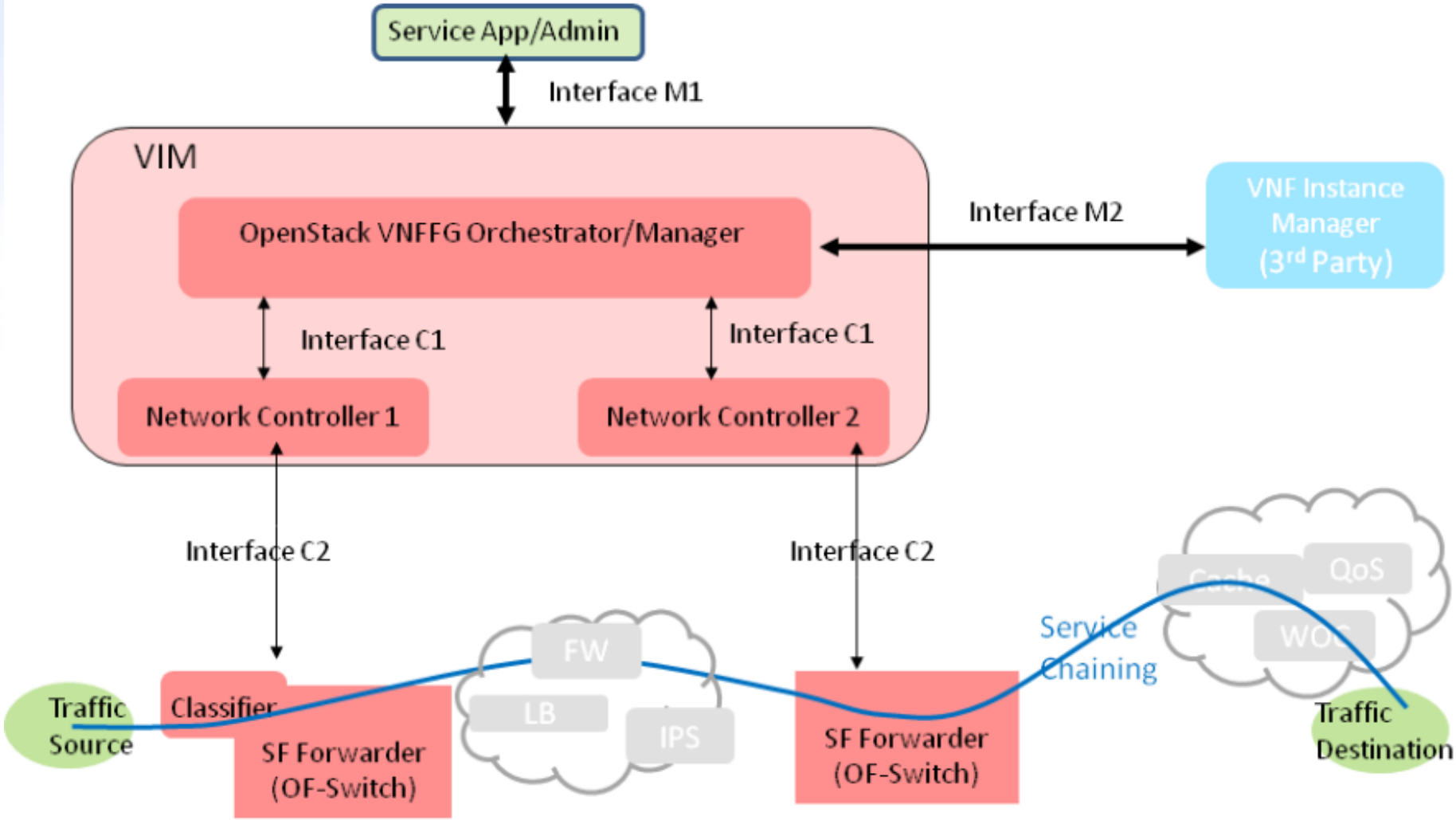
Translation

Low-level policy

```
<I2NSF>
    <rule-name>block_web</rule-name>
    <rules>
        <condition>
            <packet>
                <ipv4>10.0.0.1</ipv4>
                <ipv4>10.0.0.3</ipv4>
            </packet>
            <payload>
                <url>harm.com</url>
                <url>illegal.com</url>
            </payload>
        </condition>
        <action>drop</action>
    </rules>
</I2NSF>
```

Service Function Chaining for Security Services

VNF Forwarding Graph (VNFFG)



Lessons from IETF-104 Hackathon

- **Proof of Concept (POC) of I2NSF Framework**
  - **I2NSF Interfaces (Consumer-Facing, NSF-Facing, and Registration Interface)**
  - **I2NSF Security Policy Translator**
- **Design and Implementation of I2NSF in NFV**
  - **Registration Interface via NETCONF/YANG**
  - **NSF Database Management via Consumer-Facing Interface**
  - **Security Policy Translation from High-level Policy to Low-level Policy**
  - **NSF-triggered Traffic Steering in OpenStack-SFC**

Information of I2NSF Hackathon Project

Github for I2NSF Hackathon and
YouTube for Video Demonstration

1. **Documents and Source Code**
   https://github.com/kimjinyong/i2nsf-framework

2. **YouTube Videoclip**
   https://youtu.be/aa0jyrjRvHk