I2NSF Use Cases in Access Networks

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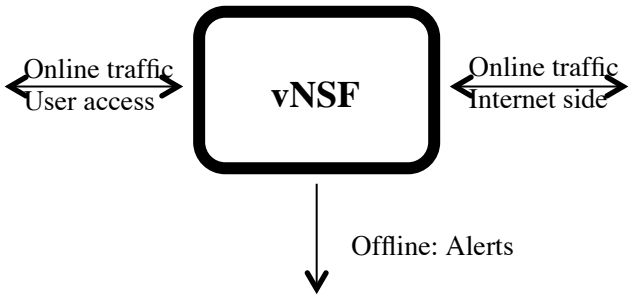
Seeking an Open OAM Interface

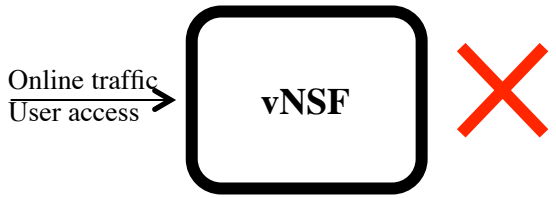
- **What?: Open OAM interface for virtualized network security services (vNSF)**
- **Who?: Actors:**
  - Network operator
  - Customer(s)
- **Where?: Access network**
  - Residential (and SME) landline network access: xDSL, FTTH
  - Mobile network Access: 2G, 3G, 4G, 5G…

A Few Examples of vNSFs

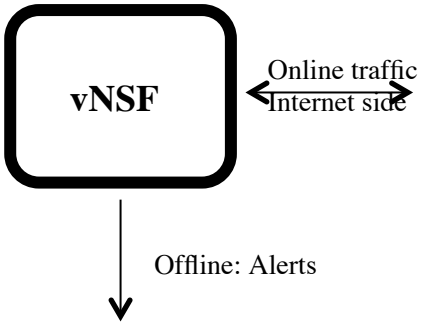
- **Traffic inspection**
  - All services that copy/analize traffic
  - E.g.: IDS,DPI,DLP



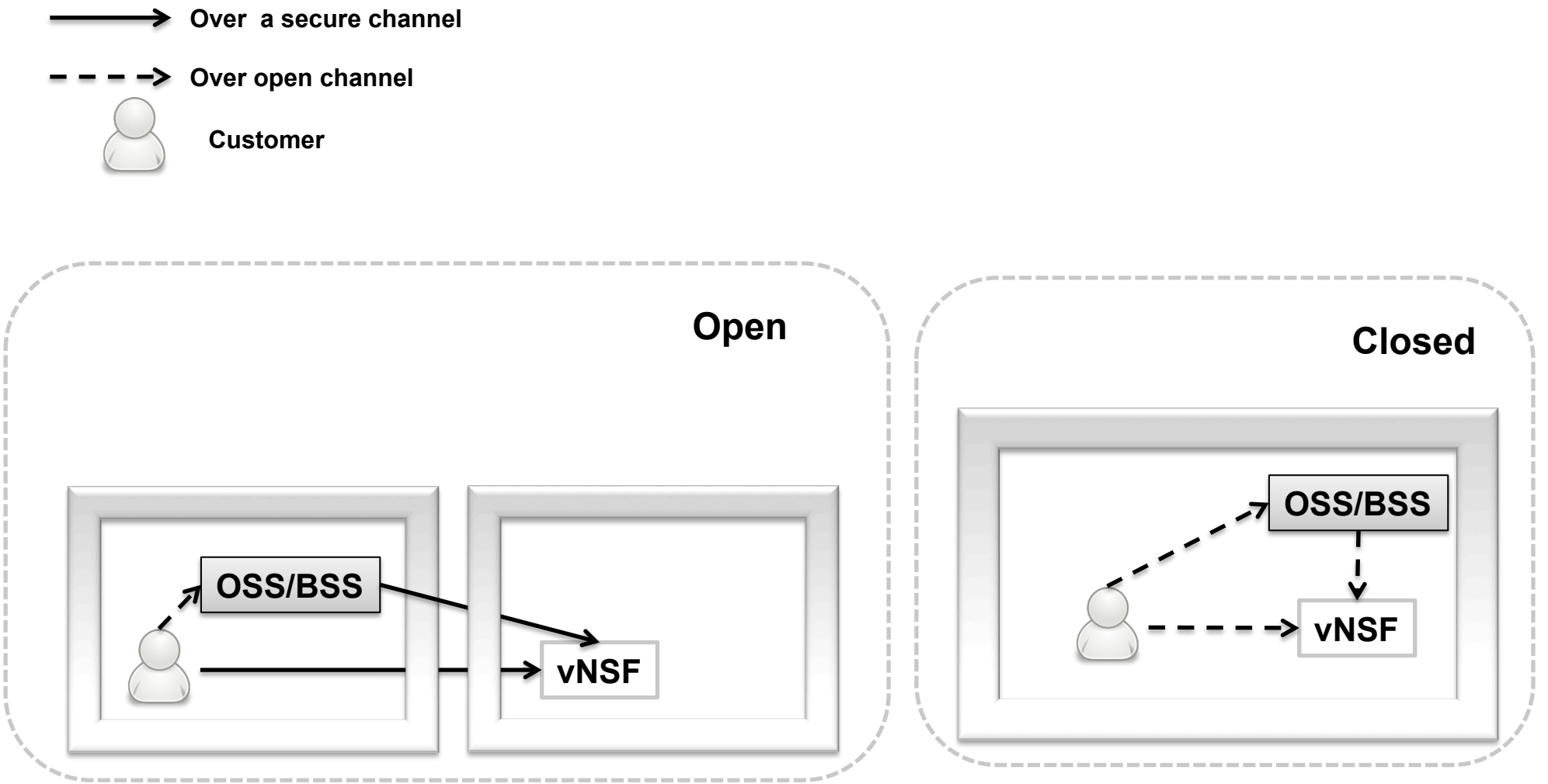
- **Traffic Manipulation**
  - Alteration of the original traffic
  - E.g.: IPS,ACL,FW,VPN



- **Traffic Impersonation**
  - Impersonate a customer device or service
  - E.g.: Honeypot



OAM Environments



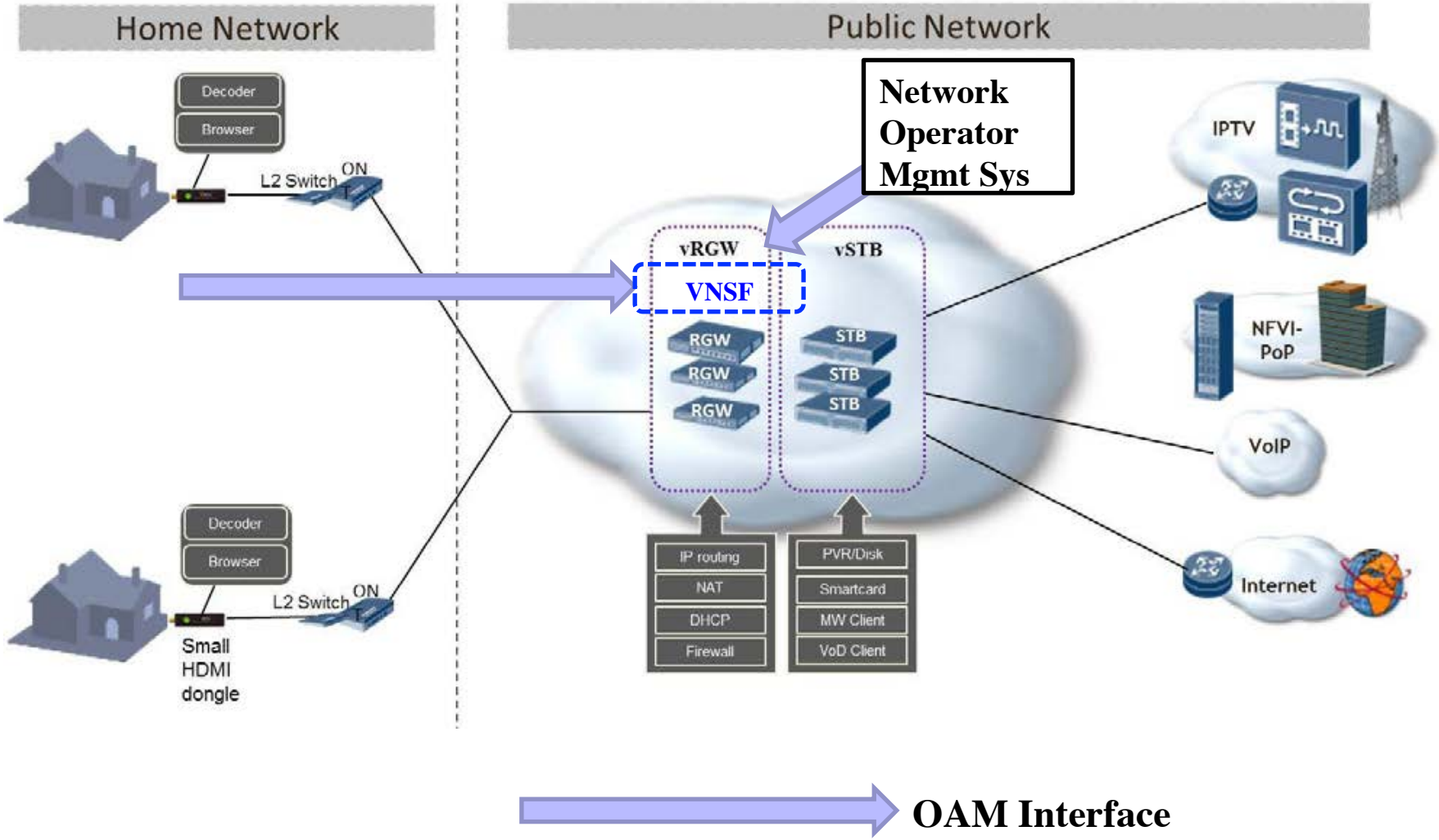
Operator-Managed

- **Network Operator interactions**
  - vNSF deployment
    - instantiating a vNSF on a NFVI
  - vNSF Customer provisioning
    - List vNSF functionalities
    - enroll/cancel subscriptions
    - vNSF configuration
      - By policy language.
      - By configuration templates/files

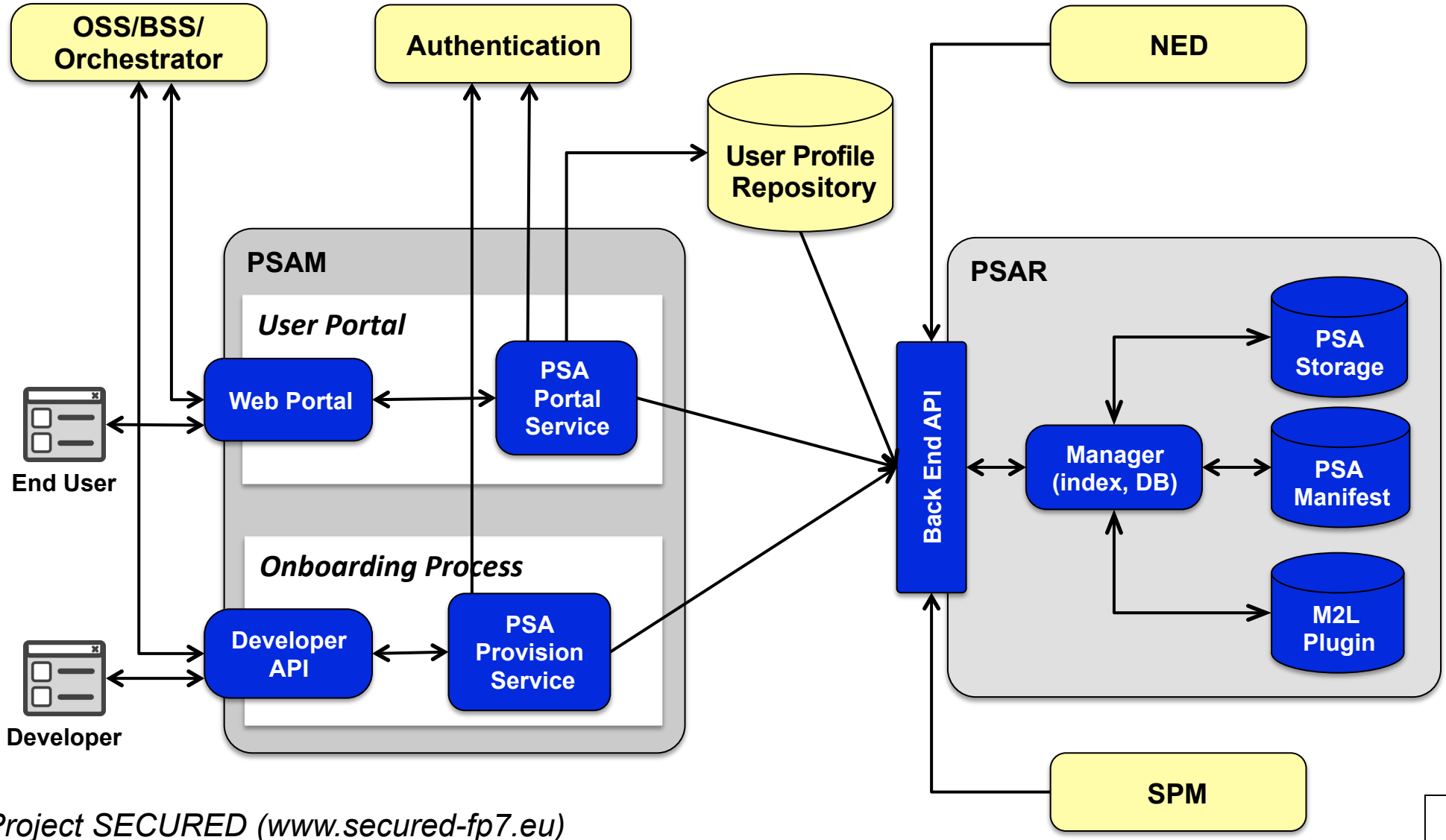
Customer-Managed

- **Customer direct interactions**
  - vNSF self-provisioning
    - enroll/cancel subscriptions
    - Probably also need a vNSF configuration
  - vNSF validation
    - Customer could require a proof of correct vNSF execution:
      - Integrity
      - Isolation & privacy
      - Confidentiality?

Example: The NFV #7 Use Case for vCPE

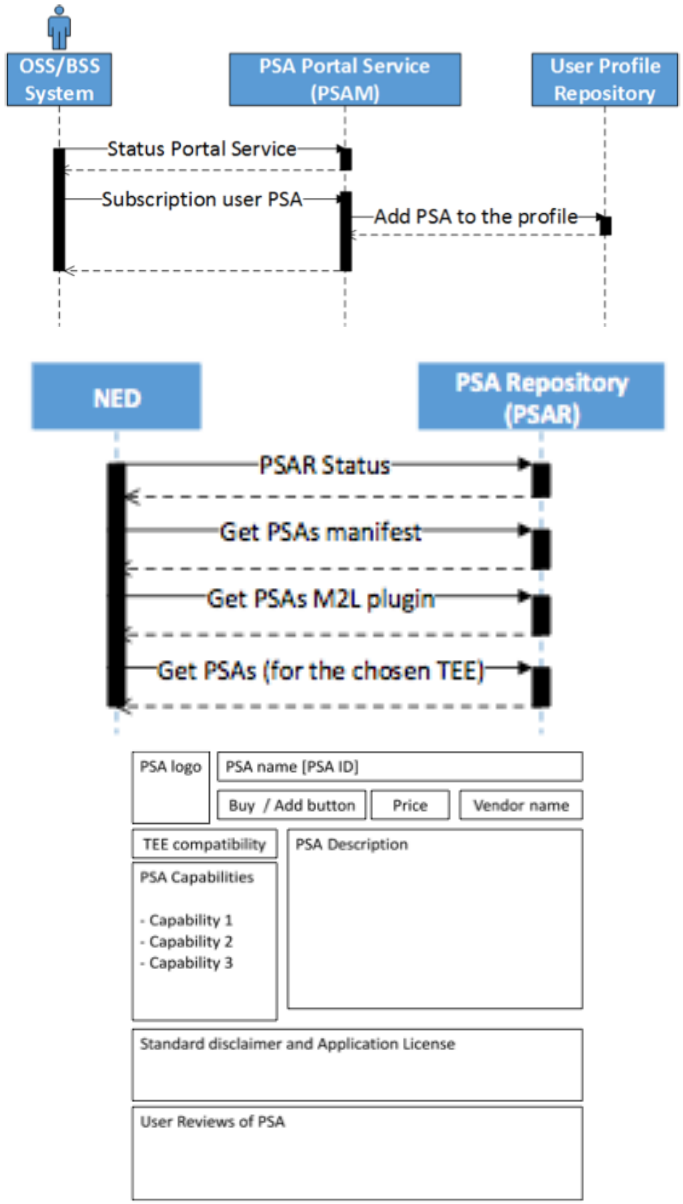


Bringing This into Reality: The SECURED Architecture



Specifying PSAM and PSAR in SECURED

- **Programmatic interfaces**
  - PSAM API
    - User provisioning
    - Load PSA in the system
  - PSAR API
    - Service support (information manager)
    - Deployment of PSA
- **User Portal**
  - Public eye area



Expressing Policies

- **vNSF configuration language**
  - Set by Operator or by Customer itself

<sbj> <*act*> <*obj*> [<(*field_type,value*)>...<(*field_type,value*)>]

- **<sbj> the subject of the policy**
  - **(e.g., employee, family member)**
  - **subject may be implicit (e.g., all devices of a customer)**
- **<*act*> the action of the policy**
  - **(e.g., block, allow, protect…)**
- **<*obj*> *the object of the policy that undergoes the action***
  - ***(e.g., email, web traffic, DNS request)***
- **[<(*field_type,value*)> condition that characterize actions**
  - **(e.g., time, type of traffic...)**

- **Examples:**

enable basic parental control
enable ”school protection control”
allow Internet traffic from 8:30 to 20:00 *[time = 8:30-20:00]*
scan email for malware detection *[check type = malware]* protect traffic to corporate network with integrity and confidentiality *[protection type = integrity AND confidentiality]*
remove tracking data from Facebook *[website = *.facebook.com]*
my son is allowed to access facebook from 18:30 to 20:00

THANK YOU !

Project SECURED (www.secured-fp7.eu)

SEVENTH FRAMEWORK
PROGRAMME

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