



Hãy nói theo cách của bạn

VIETTEL GROUP

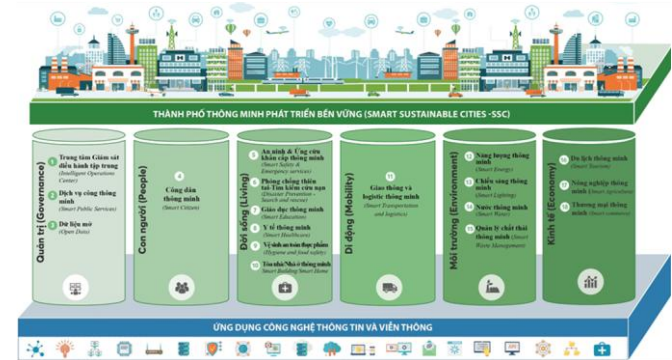
VIETTEL'S ICT ARCHITECTURE FOR SMART SUSTAINABLE CITIES & SOLUTION FOR INTELLIGENT OPERATIONS CENTER

**Training workshop on Accelerating the Development
Framework of Smart Sustainable Cities for ASEAN Countries
21st – 23rd Nov. 2018**

**Le Quoc Huu
Chief ICT Architect for Smart City**

Content

I. Viettel's ICT Architecture for and Smart & Sustainable Cities.



II. Viettel's Solution for Integrated Intelligent Operation Center





Say it your way

A person in a dark suit is shown from the chest up, holding a smartphone in their right hand. The background is a vibrant, illuminated cityscape at night, with numerous skyscrapers and lights reflecting on a body of water. The overall scene conveys a sense of modern technology and urban development.

I. Viettel's ICT Architecture for Smart & Sustainable Cities

1. Smart City development in Viet Nam

Decision **950/QD-TTg** on 1st Aug 2018 approving Scheme development of Smart sustainable cities in Vietnam period **2018-2025**, orientation to **2030**:

❑ 2018-2020:

- Development of **Legal Framework** for smart city development, **Master plan** to develop the National System of Standards for Smart City.
- Development & Pilot implementation of an **ICT Reference Framework for Smart City development**.
- Support minimum **3 cities** in approving the Total Project for Smart City development.
- Support minimum **3 urban areas** in Pilot implementation of Smart City solutions.

❑ 2021-2025: **6 cities & 6 urban areas**.

❑ **In fact, more than 30 provinces & central cities in Viet Nam have started Smart City development program.**

❑ 3 Vietnamese cities are joined in the **ASEAN Smart Cities Network (ASCN)**: **Ha Noi, Da Nang, HCM City**.

2. Viettel's Smart City Programme

Up to now Viettel has signed strategic MOU to develop smart cities with **22** provinces & central cities:

No.	Provinces	Signing Date
1	Đà Nẵng	9/7/2016
2	Phu Yen	6/12/2016
3	Hai Duong	8/12/2016
4	Binh Phuoc	20/12/2016
5	Hung Yen	21/12/2016
6	Thai Nguyen	25/12/2016
7	Thua Thien Hue	28/12/2016
8	Phu Tho	2/2/2017
9	Thai Binh	7/2/2017
10	Hoa Binh	29/3/2017
11	Lao Cai	18/5/2017

No.	Provinces	Signing Date
12	Son La	27/5/2017
13	Daklak	2/6/2017
14	Bac Giang	6/6/2017
15	Ha Tinh	5/9/2017
16	Bac Ninh	10/9/2017
17	Tay Ninh	30/10/2017
18	Ho Chi Minh City	17/11/2017
19	Quang Tri	18/11/2017
20	Quang Nam	12/1/2018
21	Dong Nai	12/1/2018
22	Quang Binh	27/8/2018

3. Smart City Definition & Guidelines

Viettel follows **ITU's Guidelines for Smart sustainable cities.**

*“A smart sustainable city is an innovative city that **uses information & communication technologies (ICTs)** and other means to **improve quality of life, efficiency of urban operation and services & competitiveness**, while ensuring that it meets the needs of present and future generations with respect to economic, social, environmental, as well as cultural aspects”.*



*Smart sustainable cities: an analysis of definitions
(ITU-T TR SSC Def)*

4. Smart sustainable cities Core pillars (Dimensions)

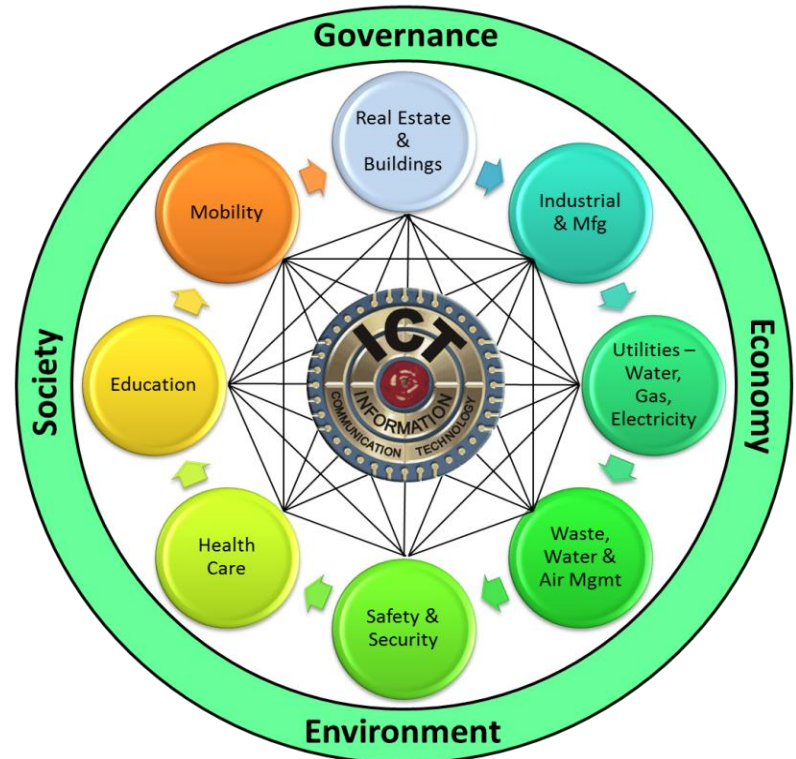
4 SSC Core pillars by ITU:

1. **Governance**
2. **Economy**
3. **Environment**
4. **Society/Living**

Viettel adds 2 more pillars:

5. **People**
6. **Mobility**

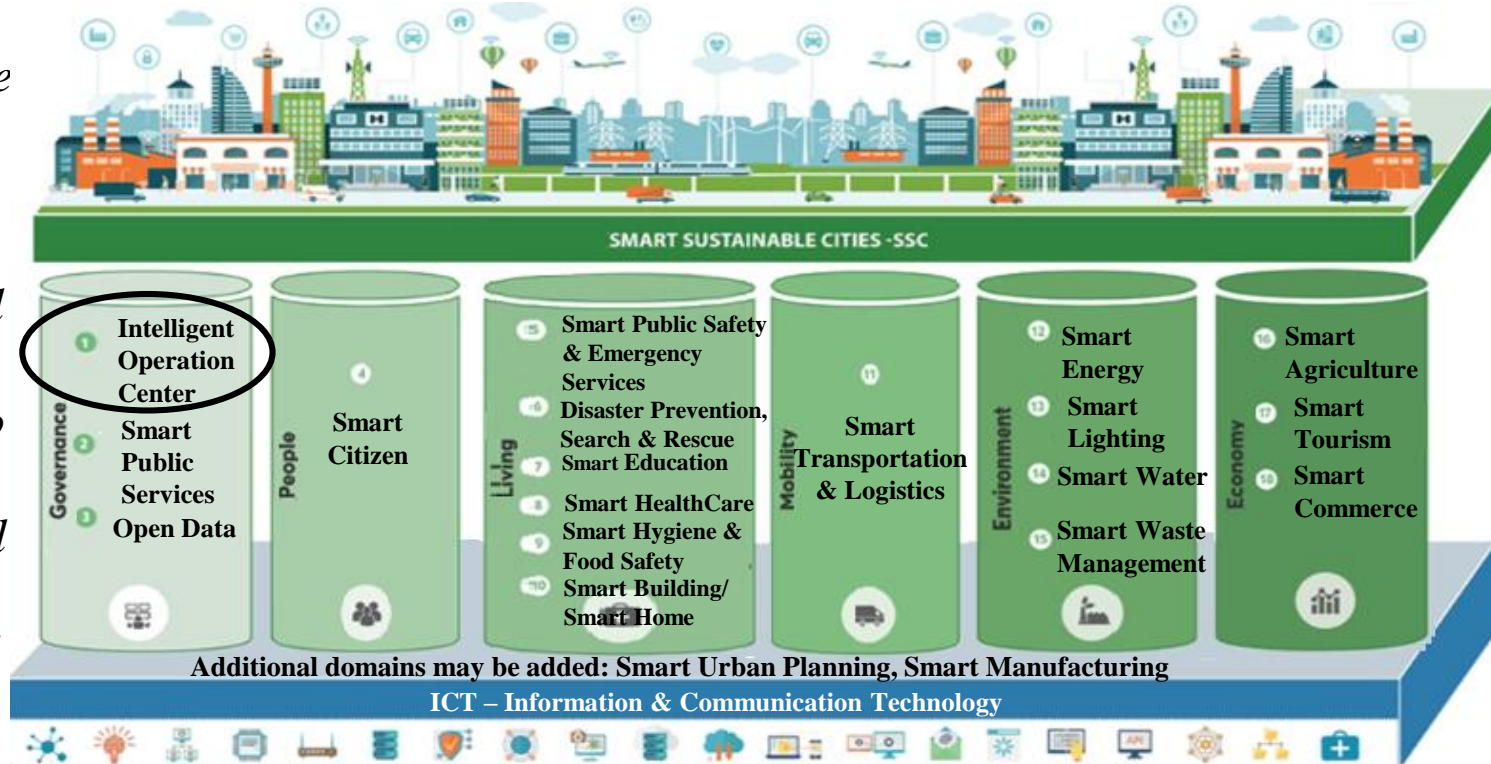
All the 6 pillars are based on an **ICT core**.



5. Viettel's Model for Smart Sustainable City ICT Architecture

A model of **18 smart domains** in the **6 pillars**:

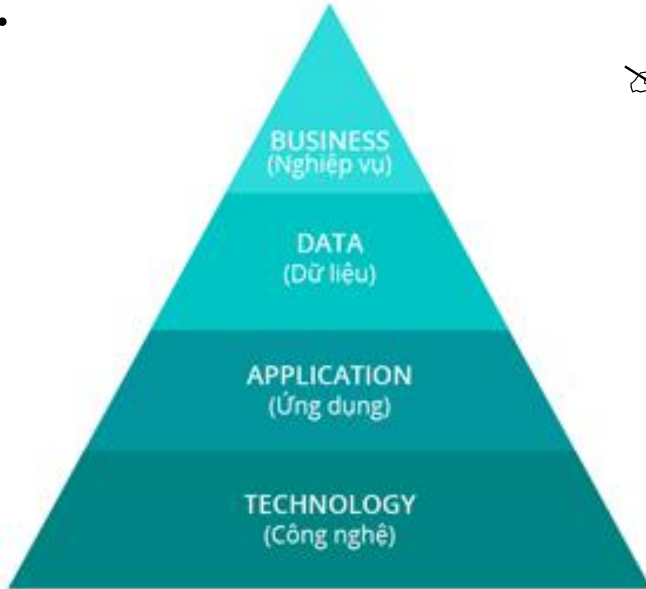
Depending on the real needs & investment capability, each province/city will choose their smart domains to be implemented in certain period in their Smart city General ICT Architecture.



6. ICT Architectures for Smart City

In order to build the Smart Cities:

- First of all, a **General ICT Architecture for Smart Sustainable City** should be built.
- After that, step by step the **ICT Architectures for smart domains in priority** should be built.



✎ All the ICT Architectures for Smart Sustainable City should be built following **Enterprise Architecture**, which includes:

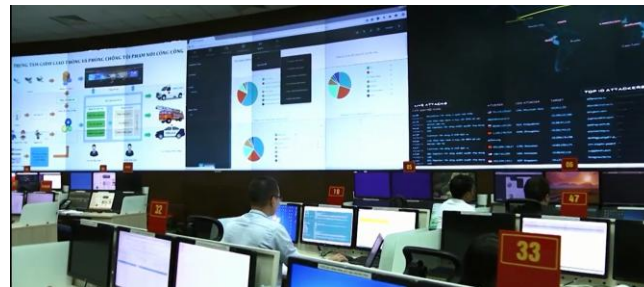
- **Business Architecture.**
- **Data Architecture.**
- **Application Architecture.**
- **Technology Architecture.**

7. The most interested Smart cities Domains

□ 6 most interested Smart cities Domains in Viet Nam:

1. **Smart Education:** 17 provinces.
2. **Smart Healthcare:** 16 provinces.
3. **Smart Transportation:** 16 provinces.
4. **Smart Public Services, Public Administration & e-Government:** 14 provinces.
5. **Smart Tourism:** 10 provinces.
6. **Intelligent Operation Center & Cyber Security:** 8 provinces. The interest is growing.

Smart
education



8. Smart City ICT Architecture developed by Viettel

□ Smart City ICT Architecture Framework:

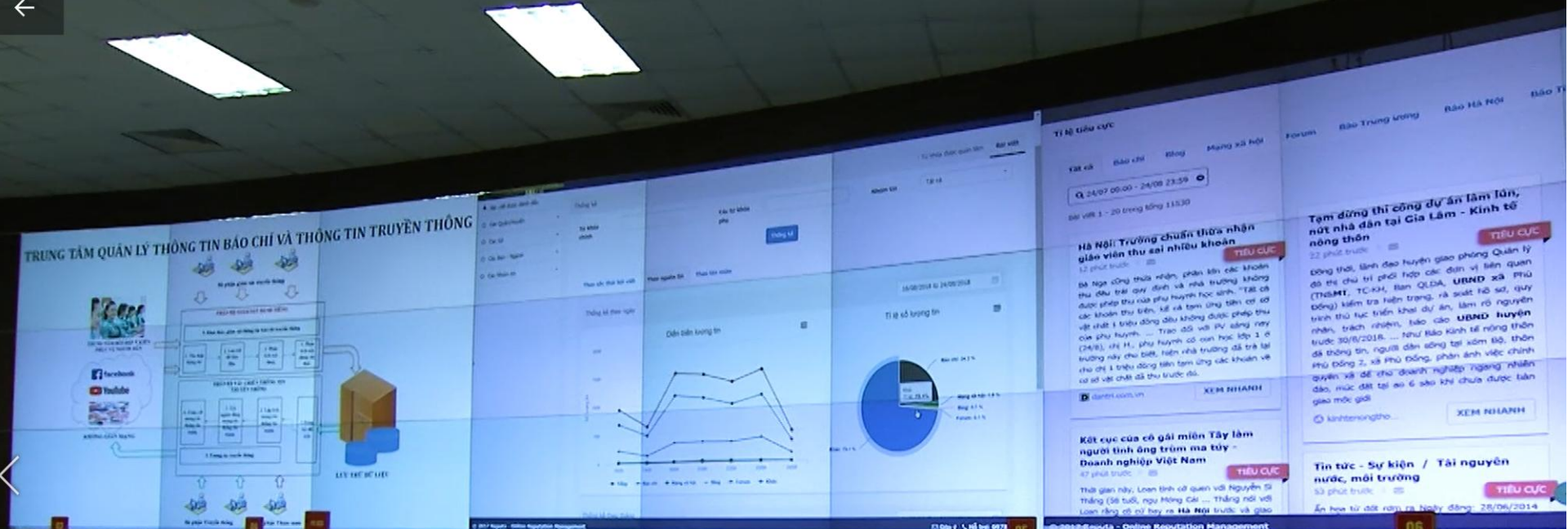
- Smart City ICT Architecture Framework for **Danang Smart Sustainable City**.
- Smart City ICT Architecture Framework for Smart City in Viet Nam (MIC ministry Task ĐT.034/17 «*Research & Proposal of a Smart City ICT Architecture Framework for Smart City in Viet Nam*»).

✎ Viettel is going to build a **Smart City ICT Architecture Framework for Smart Sustainable City in Thus Thien Hue Province** & some other provinces.

□ ICT Architecture for Smart City's Domains:

- ICT Architecture for **Education** in Da Nang.
- ICT Architecture for **Healthcare** in Da Nang.





II. Viettel's Solution for Integrated Intelligent Operation Center


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1. Intelligent Operation Center Concept

City Intelligent Operations Center (IOC): A place where supervisors & coordinators for domains directly related to urban activities like Traffics, Public safety, Emergencies... **to work together in a cooperative manner, using advanced ICT technologies** to effectively perform basic functions of IOC:

- 1. Real time monitoring** of urban activities directly related to social life via surveillance camera & IoT sensors networks, giving timely alerts about potential incidents.
- 2. Connecting, data sharing and coordinating with domain specific monitoring & control centers.**
- 3. Receiving emergency requests, coordinating emergency response activities** (traffic & public safety incidents, fire fighting, ambulance services, disaster prevention, search and rescue activities).
- 4. Ensure security for important, large scale events.**

Extended functions of Integrated IOC

- 1. Data Integration** from domain specific IT systems to form **Social-Economic Data Warehouse for City KPIs visualization & Analytics, Predictions & Decision making.**
 - 2. Information Security and Safety Center.**
 - 3. Open Data:** Provide open data sets for use to citizens, businesses & research institutes.
 - 4. Online interface with citizens:**
 - Integrated Call Center to support Public services. Reception the citizens reflects & opinions.
 - Citizen Portal & Mobile Application for citizens.
 - 5. Management of press & media information, Press and Television Center.**
-  **The demand for setting up the Integrated Intelligent Operations Center for both Smart City & E-Government.**

2. Intelligent Operation Centers implemented by Viettel

Viettel started to implement IOC for some provinces:

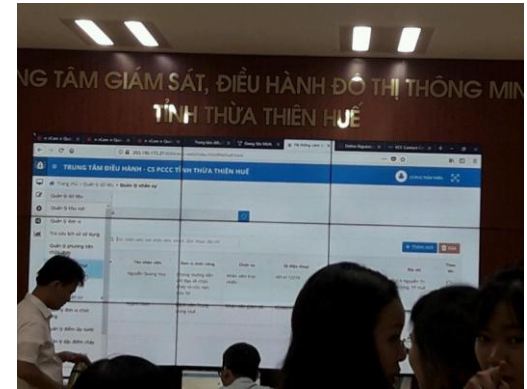
**IOC for Viet Tri City-
Phu Tho Province
(12/2017)**



**Security & Imaging Command
Center of District 12-HCM City
(5/2017)**



**Intelligent Monitoring &
Operation Center for Thua
Thien Hue Province (3/2018)**



Viettel is preparing prototypes for Intelligent Operation Centers of central cities like **Ha noi, HCM City** and some other provinces.

3. Intelligent Operation Center Architecture

❑ Functional centers:

1. **Traffic Monitoring & Control.**
2. **Public Safety Monitoring.**
3. **Emergencies Operation Center (EOC).**
4. **Disaster Prevention & Search & Rescue Center.**
5. **Public Service Monitoring.**
6. **Security Operation Center (SOC).**
7. **Media & Communication Management.**
8. **Call Center.**
9. **Data Analytics.**

❑ Technical Infrastructure for IOC:

- **Data Center - Video Wall, LAN, equipment for operators and dispatchers.**
- **Communication network: Optical Backbone.**
- **IOC Platform:** The core of the Smart City Platform.

❑ Should be implemented stage by stage in 2-3 years.

4. IOC Platform - The brain of the IOC

- ❑ The IOC will be really intelligent only when it's based on an *Intelligent Operations Center Platform*, which integrates the most advanced intelligent 4.0 technologies.
 - ❑ The component platforms:
 1. *IoT Platform.*
 2. *Integration Platform.*
 3. *Big Data Analytics Platform.*
 4. *Security, Platform Monitoring & Management.*
 - ❑ A set of **SOP** (*Standard Operation Procedures*) should be developed.
 - ❑ The IOC should be compliant with **international open standards** to ensure the **connectivity & integration capabilities** with other platforms in the system of Monitoring & Operation centers of the Smart City and with E-Gov Platforms.
- ✎ *IOC Platform is a core of the Smart City Platform* and is the most expensive component of the IOC.

Technologies used for The Intelligent Operation Center

1. **Smart Map:** GIS (*Geographic Information System*), integrating many domain specific data layers.
2. **Video Surveillance:** Surveillance cameras + Video Wall.
3. **IVA-Intelligent Video Analytics:** APNR (*Automatic Plate Number Recognition*), FR (*Face Recognition*), *Behavior Analytics*.
4. **IoT- Internet of Things:** *IoT sensors*, LPWA (*Mobile IoT, NB-IoT,....*)
5. **EAI:** *Enterprise Application Integration*.
6. **Big Data Analytics.**
7. **AI (Artificial Intelligence):** *Machine Learning. Deep Learning...*
8. **Infrastructure technologies:** *Cloud computing, SDDC (Software Defined Data Center), Network Virtualization,..*

5. R&D for Intelligent Operation Center

*Viettel is performing a heavy R&D for IOC
We are cooperating with many vendors: IBM, Cisco, Nokia, NEC,
Hitachi, Milestone, Winitech, Hexagon,...*



*Further cooperation with other vendors & solution providers
is Welcome*

Traffic & Public Security surveillance cameras



Emergencies Operation Center



Intelligent Video Analytics



Automatic Plate Number Recognition (APLR)

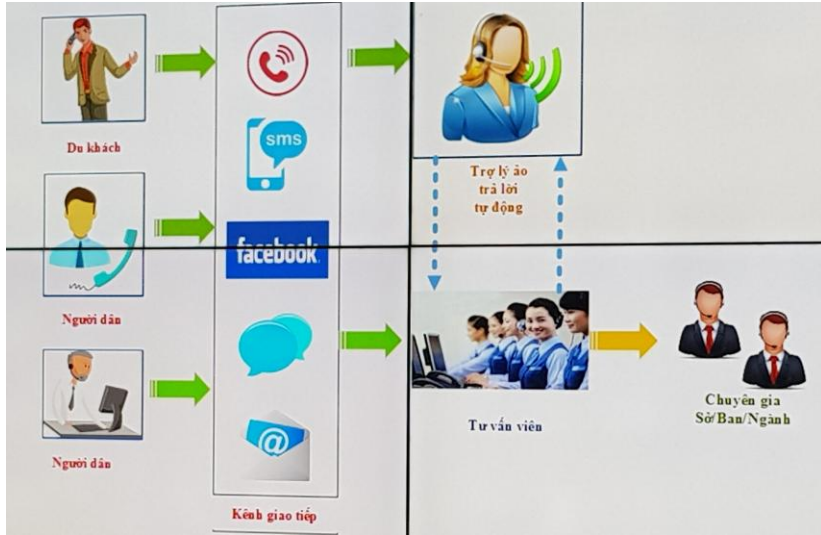


Crowd & fighting detection

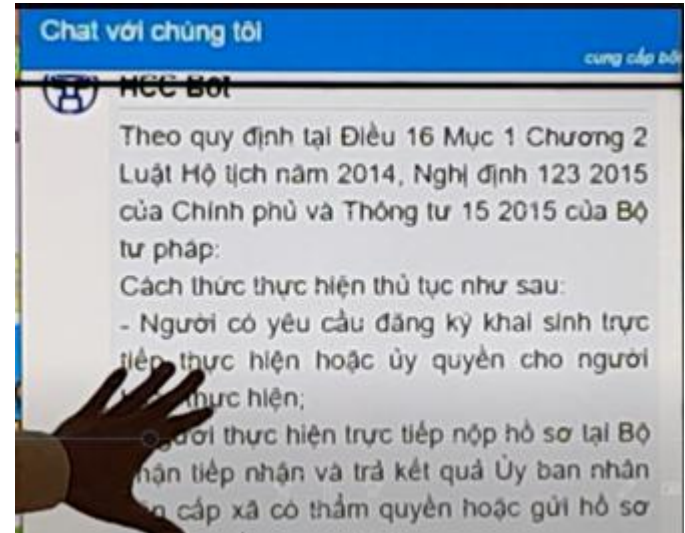
Face Recognition (FR)



Call Center to serve Citizens, using Chatbot

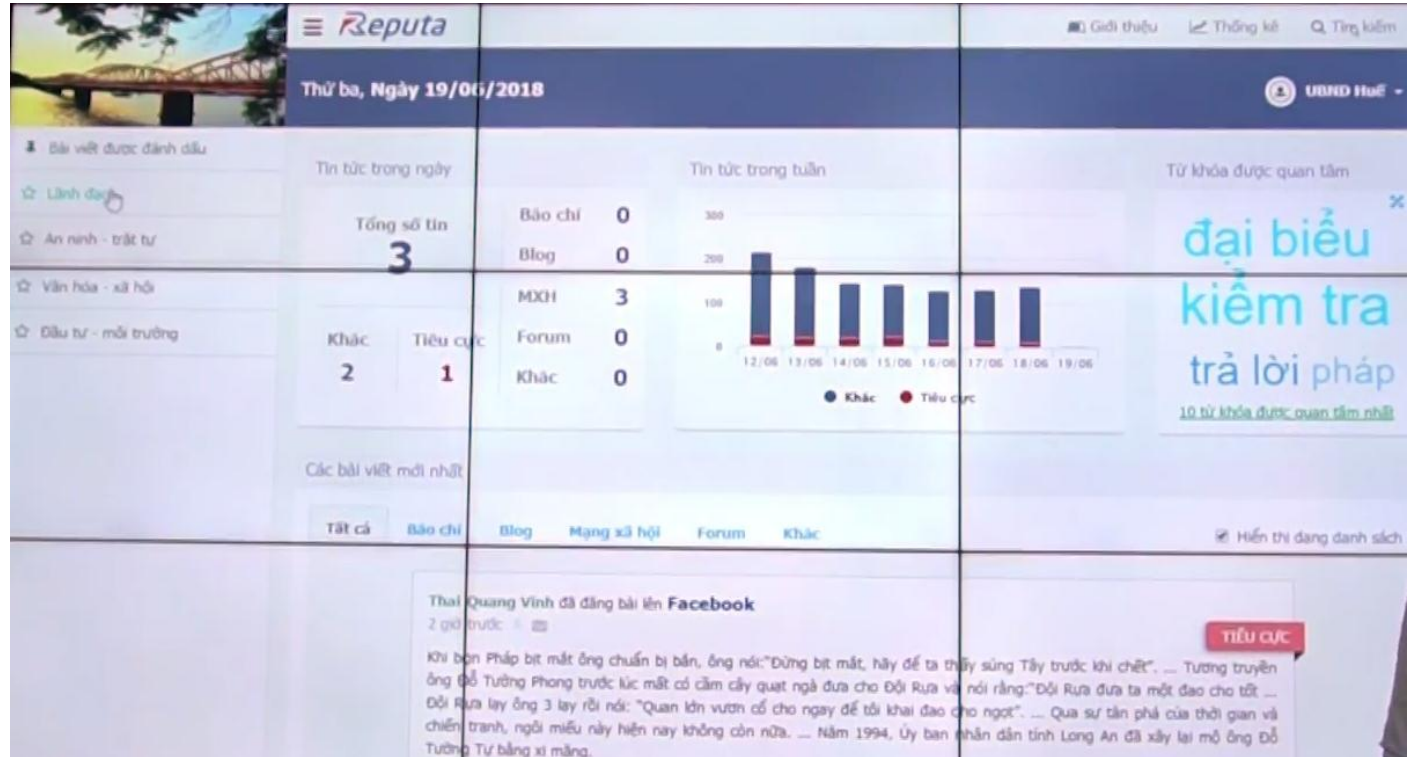


Virtual Agent using ChatBot Technology



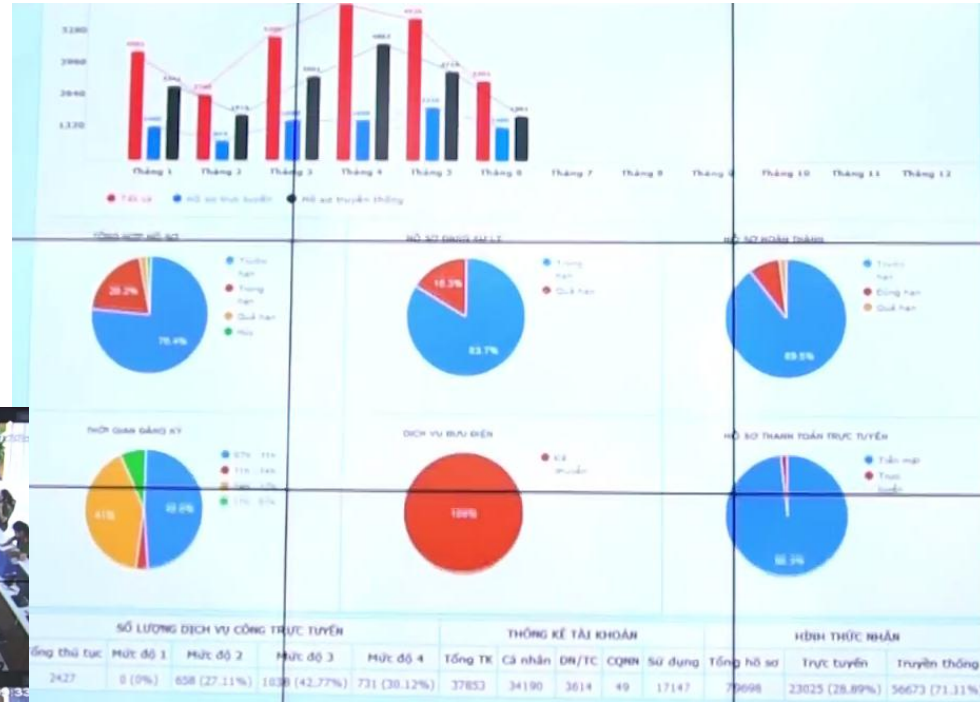
Media & Communication Management Center

Scan 24/7 in real time all sensitive information basing on key words on digital media, forums, blogs, social networks -> To classify & to give timely alerts to solve communication crisis.



Public Services Monitoring Center

*Camera surveillance
at Public Services Centers*



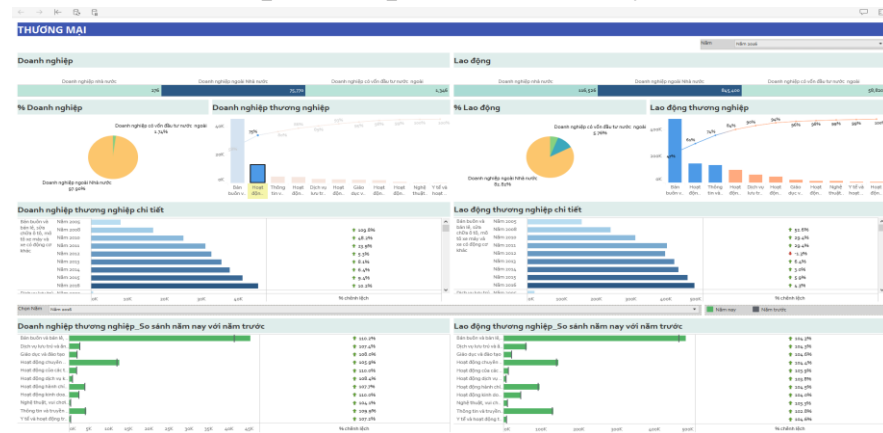
*Monitoring of Public Services KPIs
in real time*



Data Analytics Center



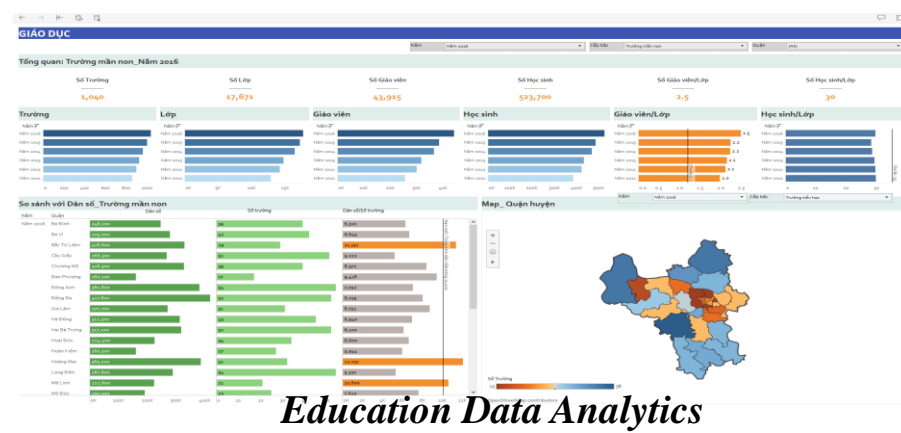
Import/Export Data Analytics



Business & Labor Data Analytics



Traffic, Electricity, Environment Data Analytics



Education Data Analytics

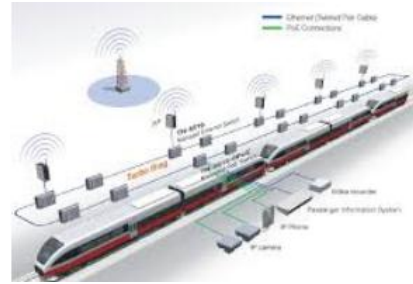
6. Demand for IOC

IOC has a great application potential in Viet Nam:

- 1. Integrated Intelligent Monitoring & Operation Centers for both Smart City & E-Government** for provinces & central cities, ministries & for the Government Cabinet.
- 2. Domain specific Intelligent Monitoring & Operation Centers for Traffic, Police.**
- 3. Monitoring & Operation Centers for Public service providers:**



IOC for high ways/urban trains



*IOC for Train stations,
long range bus stations*



Demand for IOC (2)



IOC for Airports



IOC for Sea Ports



4. **Monitoring & Operation Centers for Areas:** New urban areas, Tourism/Entertainment areas, Industrial areas, Trade Centers, Buildings...
5. **Business Monitoring & Operation Centers:** for big Groups, Corporations.



Video Clip about Viettel's Intelligent Operation Center Solution





Hãy nói theo cách của bạn

Viettel Group is ready to help Cities/Provinces to build ICT Architectures for Smart & Sustainable Cities and to implement modern Integrated Intelligent Centers!

Thank for your Attention!



For more information please contact: Le Quoc Huu – Chief ICT Architect for Smart City huulq@viettel.com.vn. Mb: 0965.996688