NEC

Orchestrating a brighter world

# *New Approaches To Challenges Facing Enterprise ICT*

**April 7, 2015**

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**Director, Advanced Storage**

**NEC Corporation of America**

# Contents

- Introduction to NEC
- Challenges faced by enterprises today
- NEC's approach to software defined storage (SDS)
- Big data infrastructures for new forms of businesses
- NEC's approach to social infrastructures

# NEC – Technology Innovation

\Orchestrating a brighter world

## Corporate Profile

- Founded 1899 (115 Years)
- Annual Revenue: $30 billion*
- Employees: 101,000* Worldwide
- $1.4B/yr in Research and Development
- Five R&D Centers Worldwide
- Patents: >50,000 Worldwide

## Global Presence

- Fortune Global 500 Corporation
- >55 Years in Servers & Storage (1958)
- Top 10 Branded and OEM Storage Sales
- Top 100 Manufacturer Globally

*As of March 31, 2014

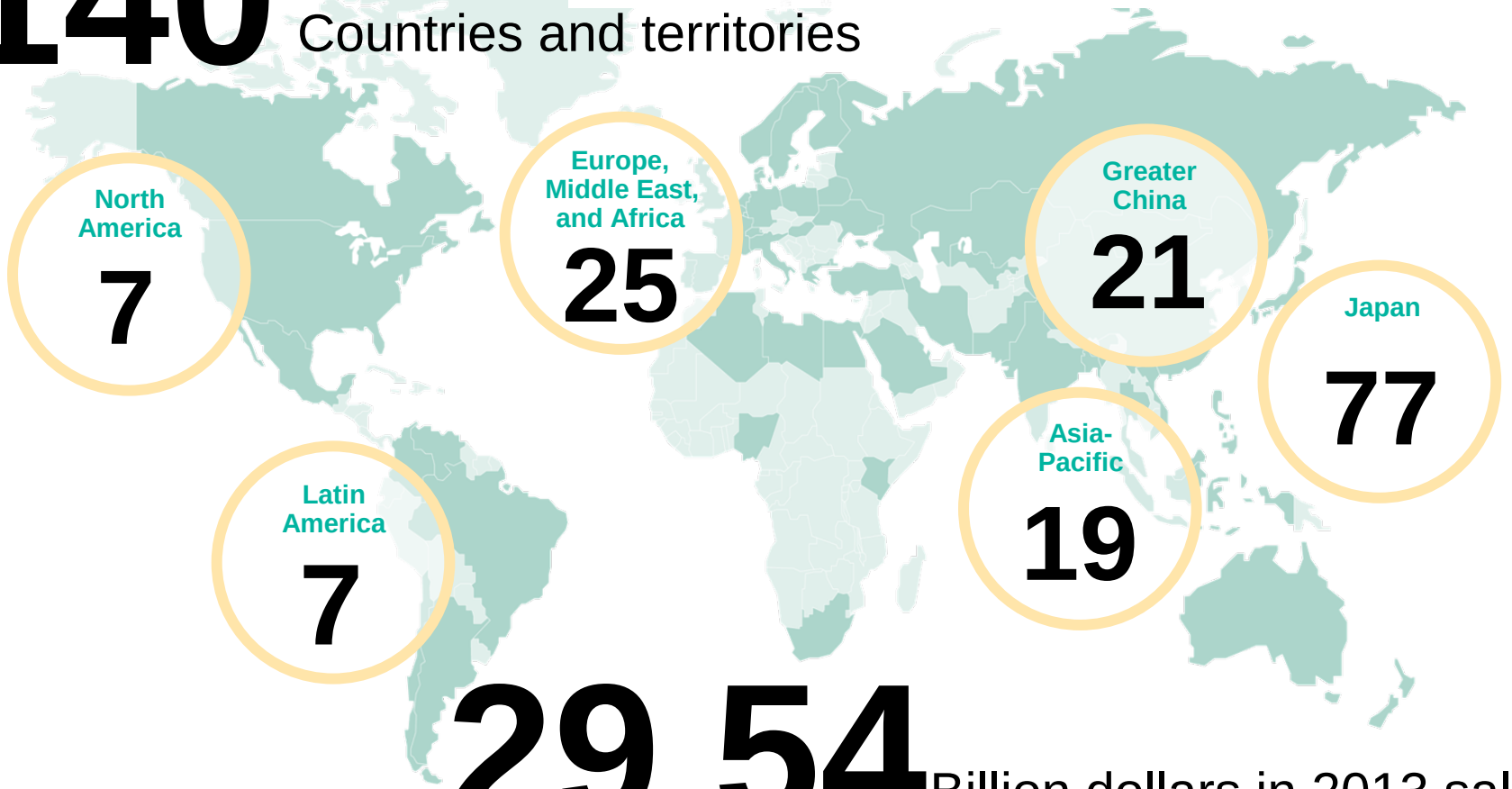
# NEC Worldwide: “One NEC”

Business activities in over

**140** Countries and territories

**Our affiliates, offices and laboratories: 58 countries and territories**

**North America** / Canada-USA / **Latin America** / Argentina-Brazil-Chile-Colombia-Mexico-Venezuela / **Europe** / **Middle East** / **Africa** / Algeria-Belarus-Denmark-Egypt-Estonia-Finland-France-Germany-Greece-Hungary-Iceland-Italy-Kazakhstan-Kenya-Latvia-Libya-Lithuania-Netherlands-Nigeria-Norway-Poland-Portugal-Russia-Saudi Arabia-South Africa-Spain-Sweden-Switzerland-Turkey-Ukraine-United Kingdom-UAE-Uzbekistan / **Asia Pacific** / Australia-Bangladesh-India-Indonesia-Japan-Malaysia-Myanmar-New Zealand-Pakistan-Philippines-Singapore-Thailand-Vietnam / **Greater China** / China-Hong Kong-Taiwan-Korea



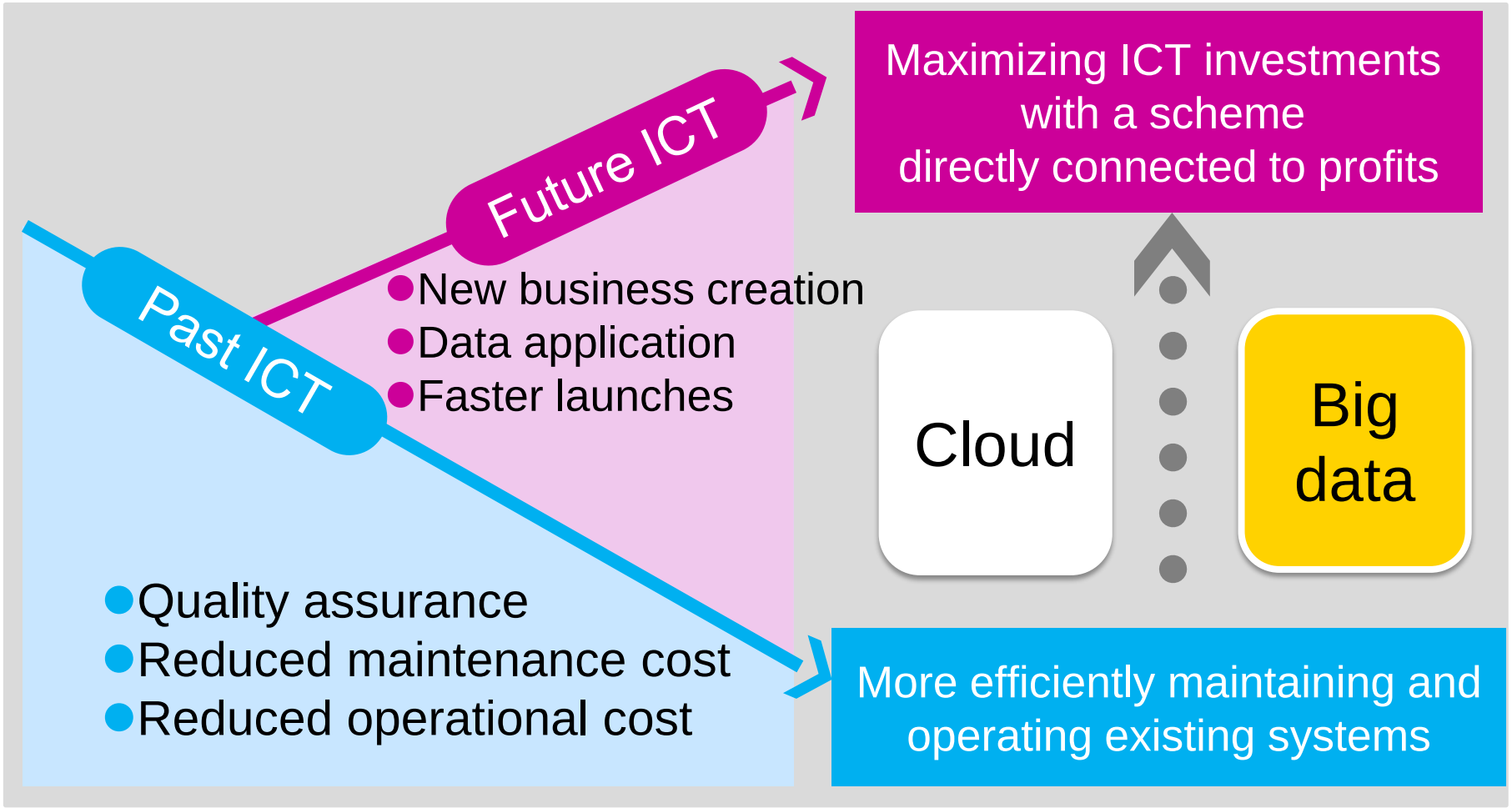

**29.54** Billion dollars in 2013 sales

(As of June. 6, 2014)

*U.S. dollar amounts are translated from yen, for convenience only, at the rate of ¥103 = U.S.$1.(As of March.31, 2014)

# Challenges faced by enterprises today

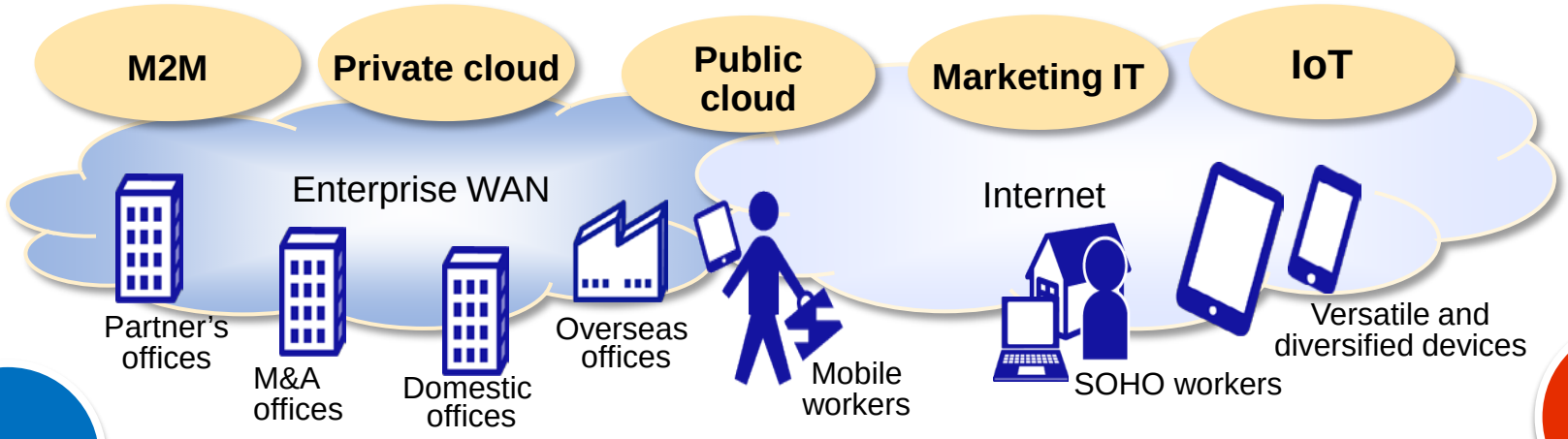
# Changes in ICT Investments



# Problems Surfacing through Rapidly Growing Cloud

Volume

Too many ICT devices to handle




Distance

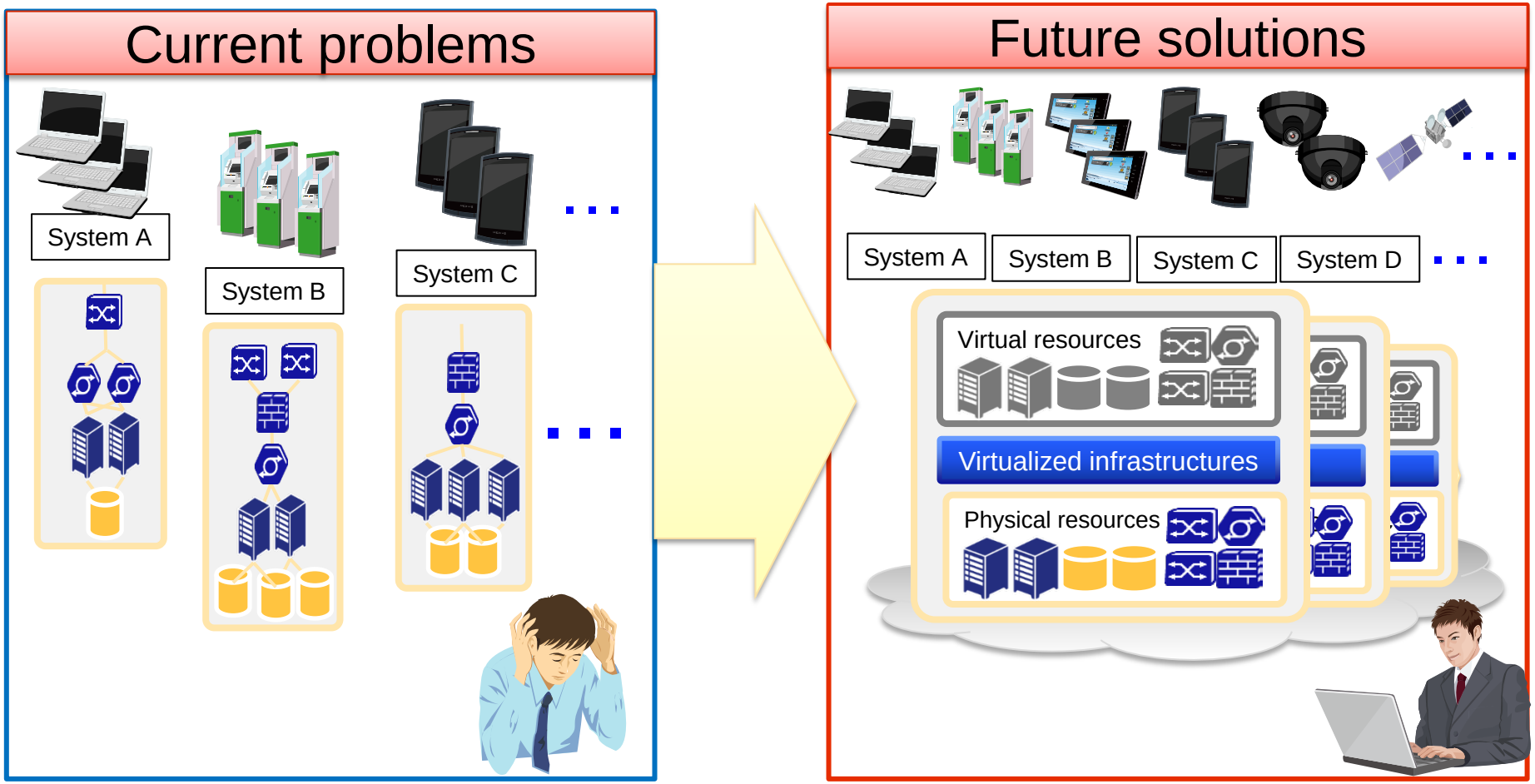
Globalization

Time

Flexibility

# Too many ICT devices to handle

Volume



# Flexibility

Time

## Current problems

System planning

Negotiation with SIer

System designing
by SE of SIer

Server Storage Switch

Device preparation

System construction

AP development
& service launches

A few months or more

## Future solutions

User

Request for
resources

In a few
minutes

Resource provisioning


Flexibility

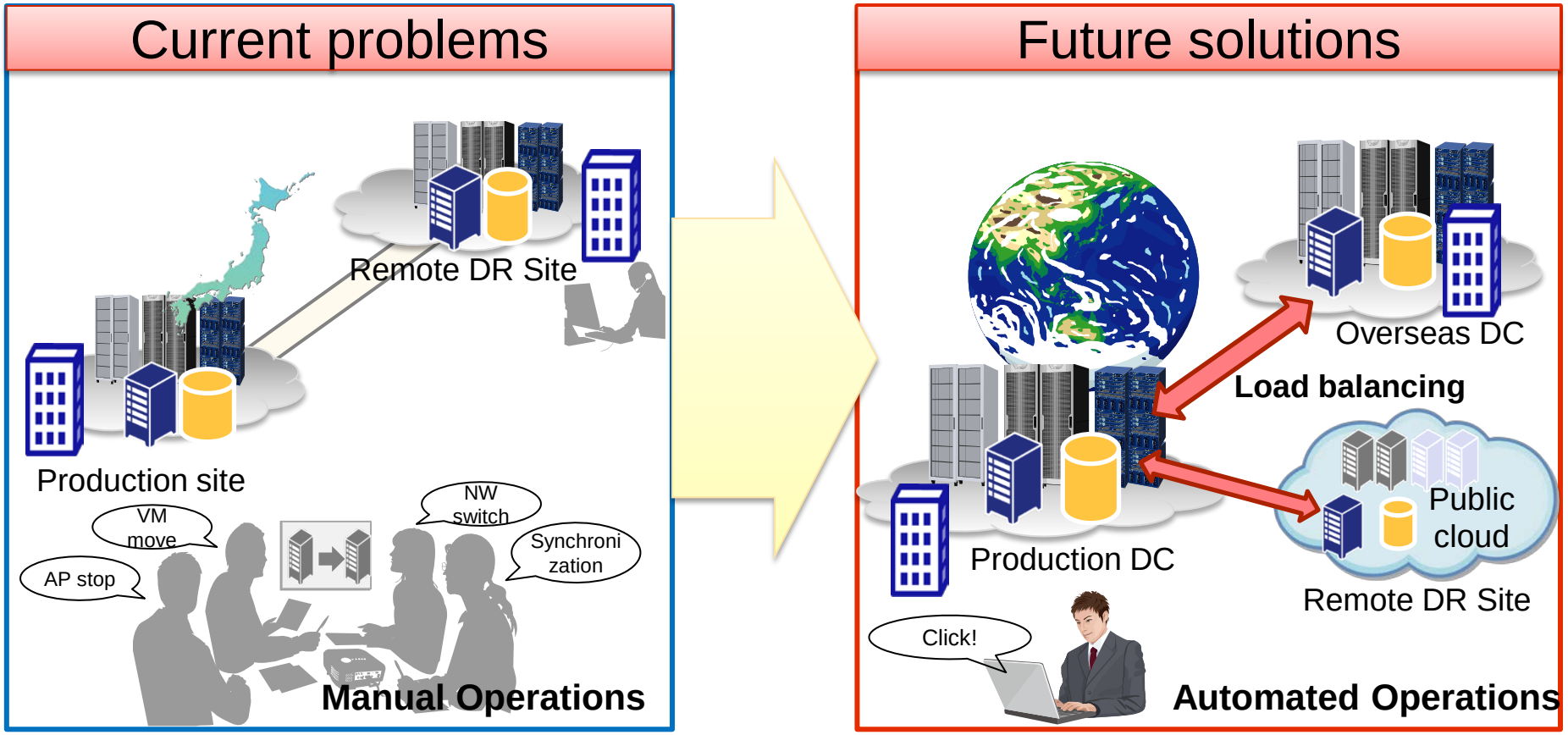




Empowered by Innovation NEC

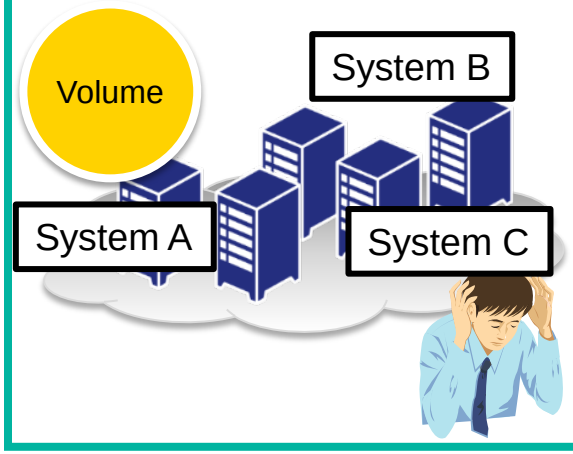
# Globalization

Distance



# ICT and Software-Defined Infrastructure (SDI)

## I. Too many ICT devices to handle




Offloading administration burden on system operations

## II. Flexibility


Quick resource delivery

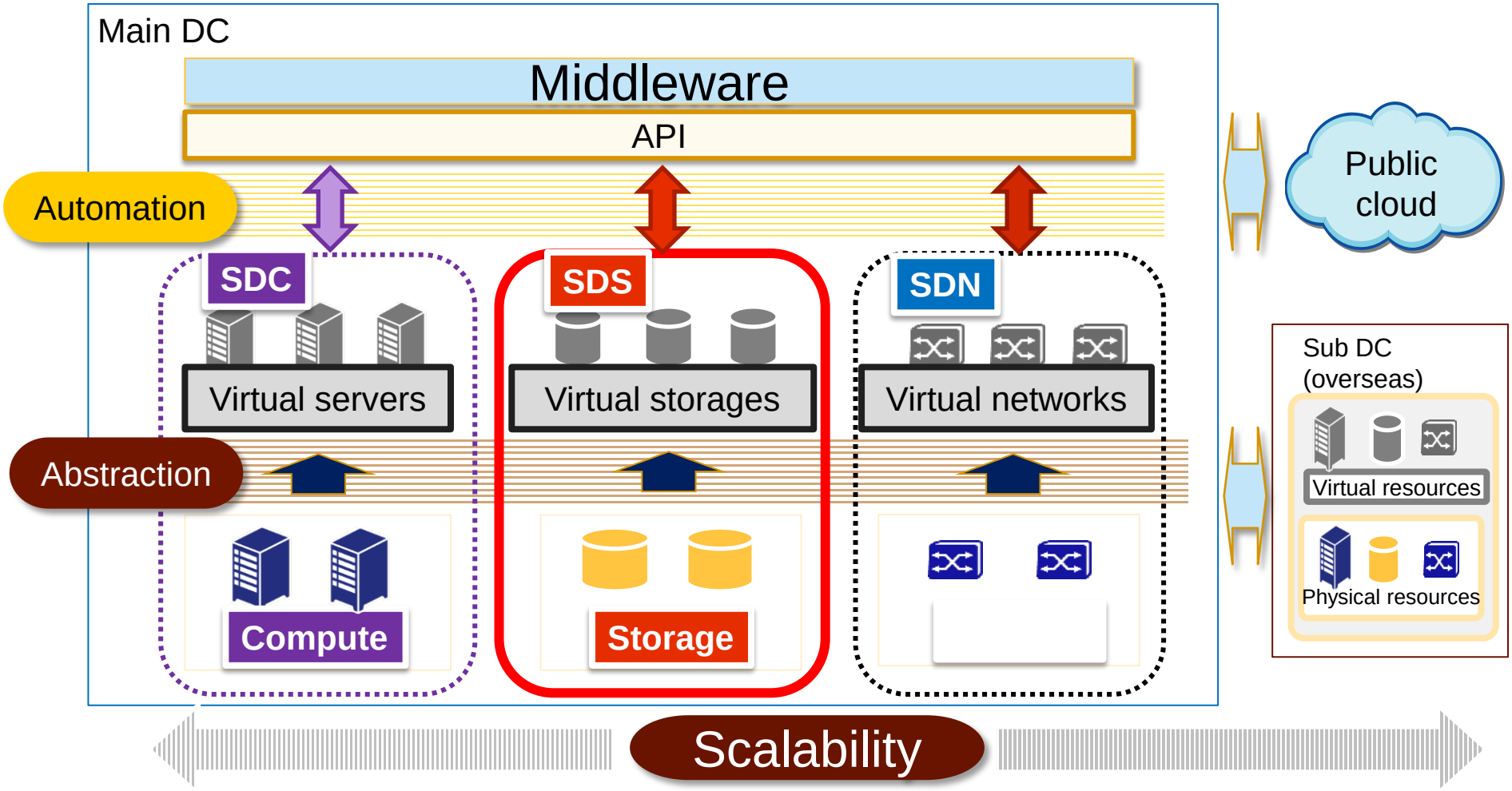
## III. Globalization


Load balancing between DCs
Simplified disaster recovery

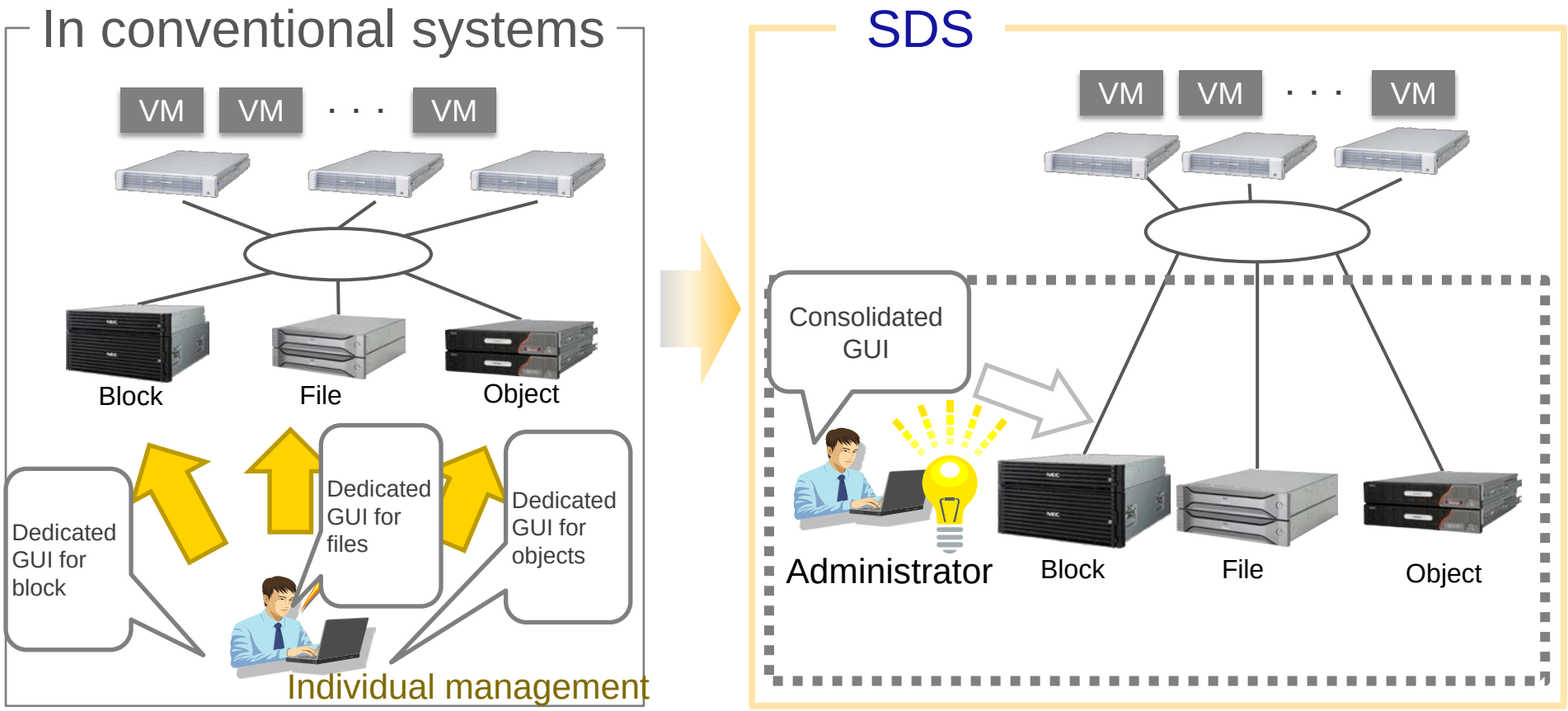
Abstraction, Automation, and Scalability

**Software-Defined Infrastructure (SDI)**

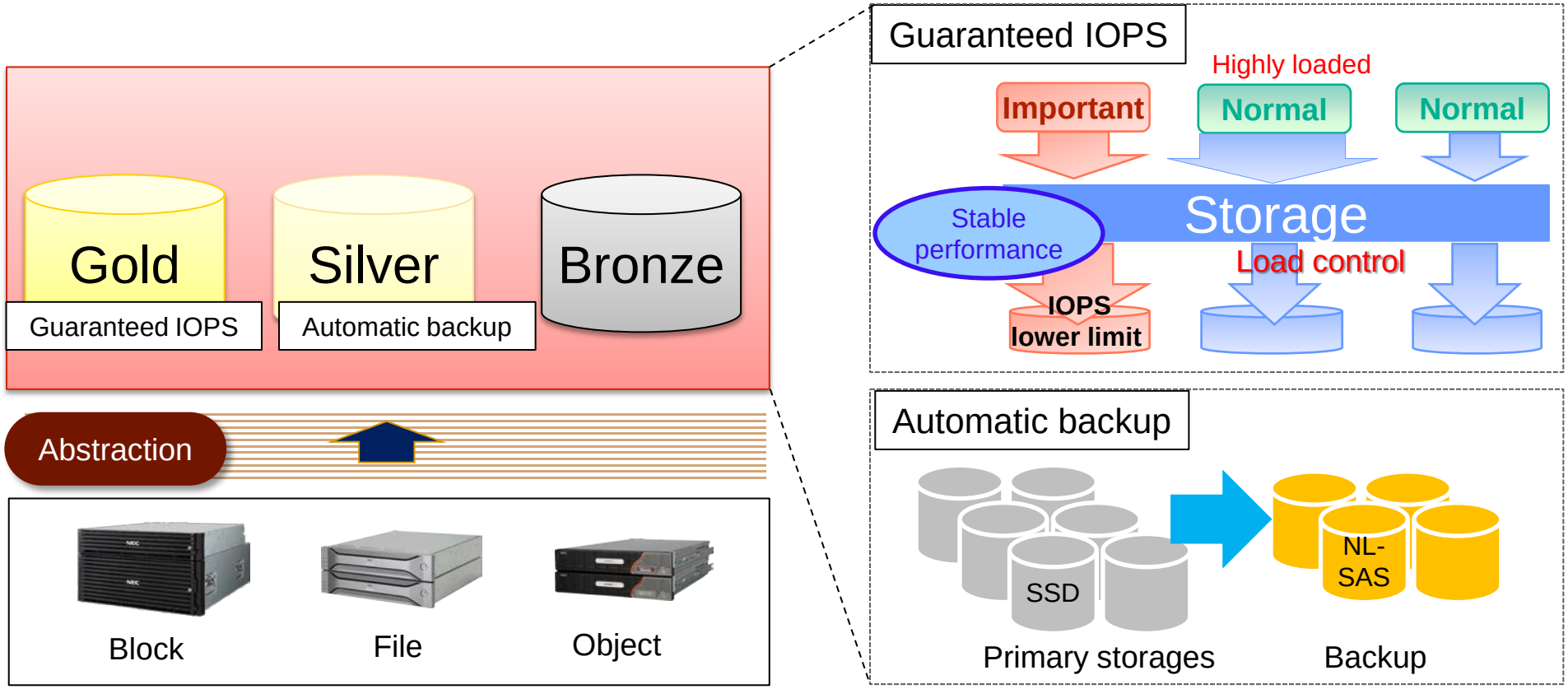
# What is Software-Defined Infrastructure (SDI)?



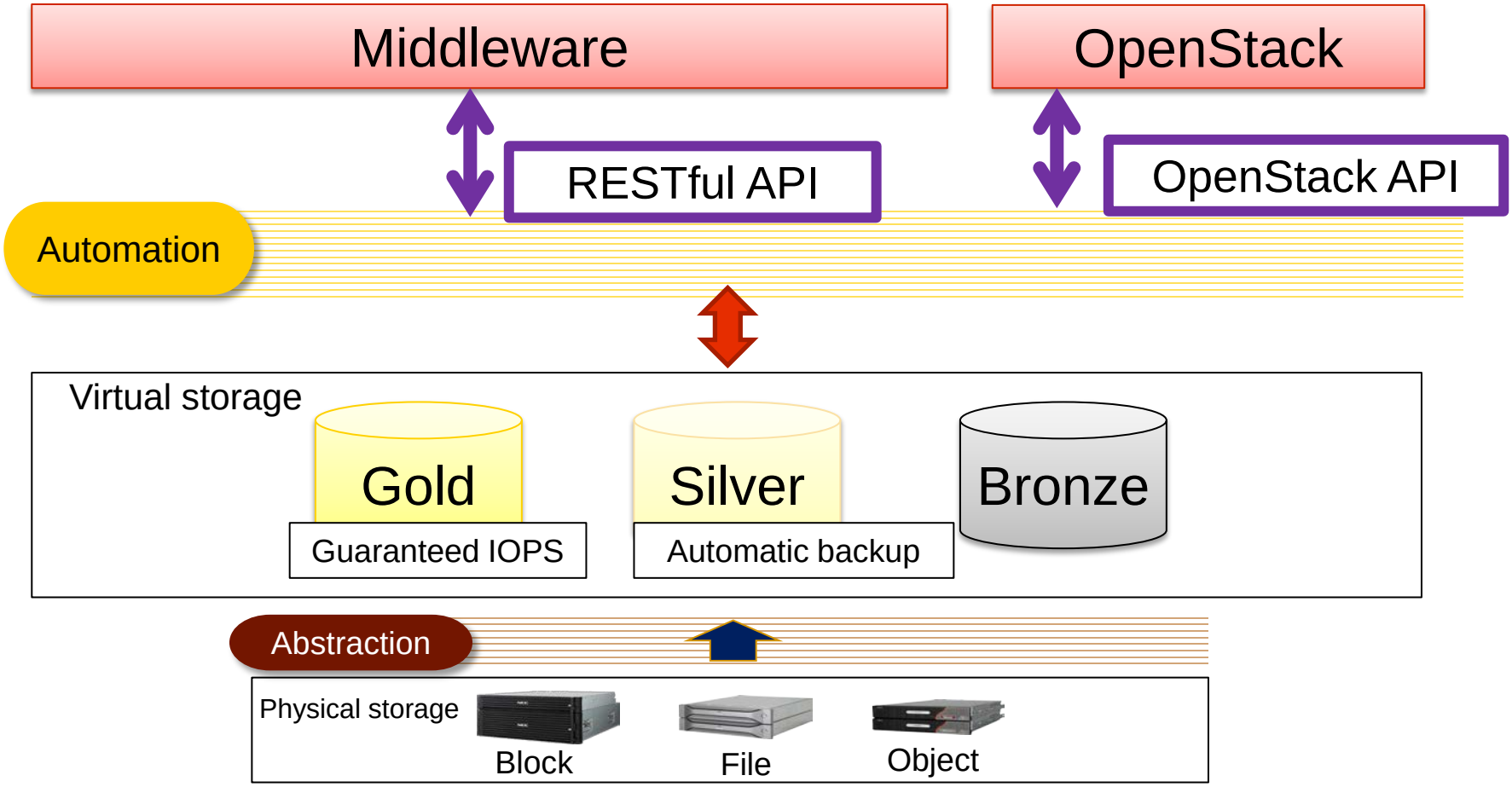
# Abstraction: Centralized management



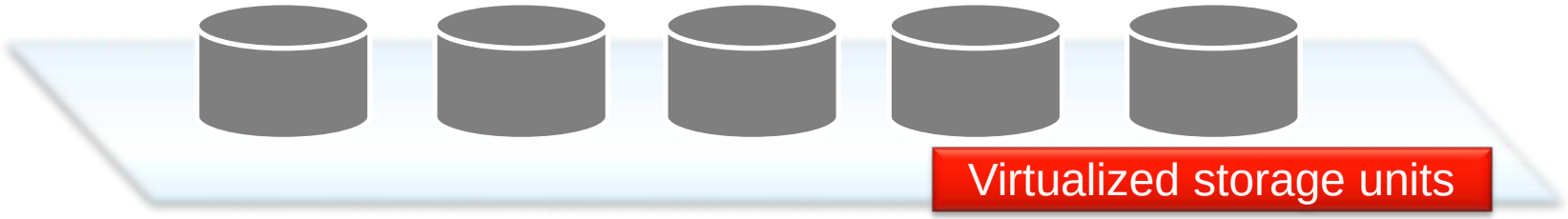
# Abstraction: Policy-based management & QoS

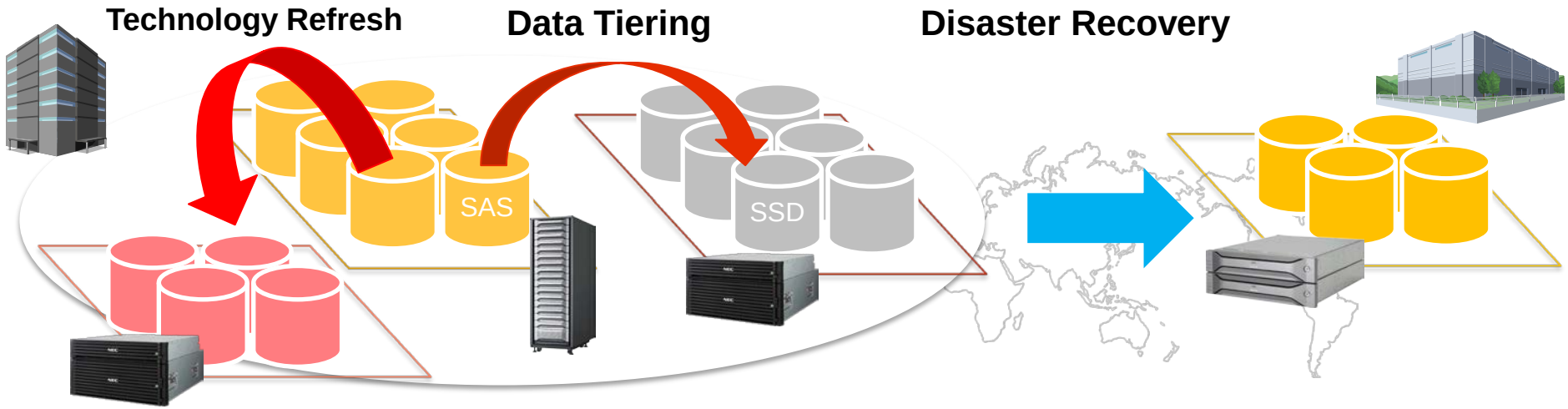


# Automation: Automated operations by API



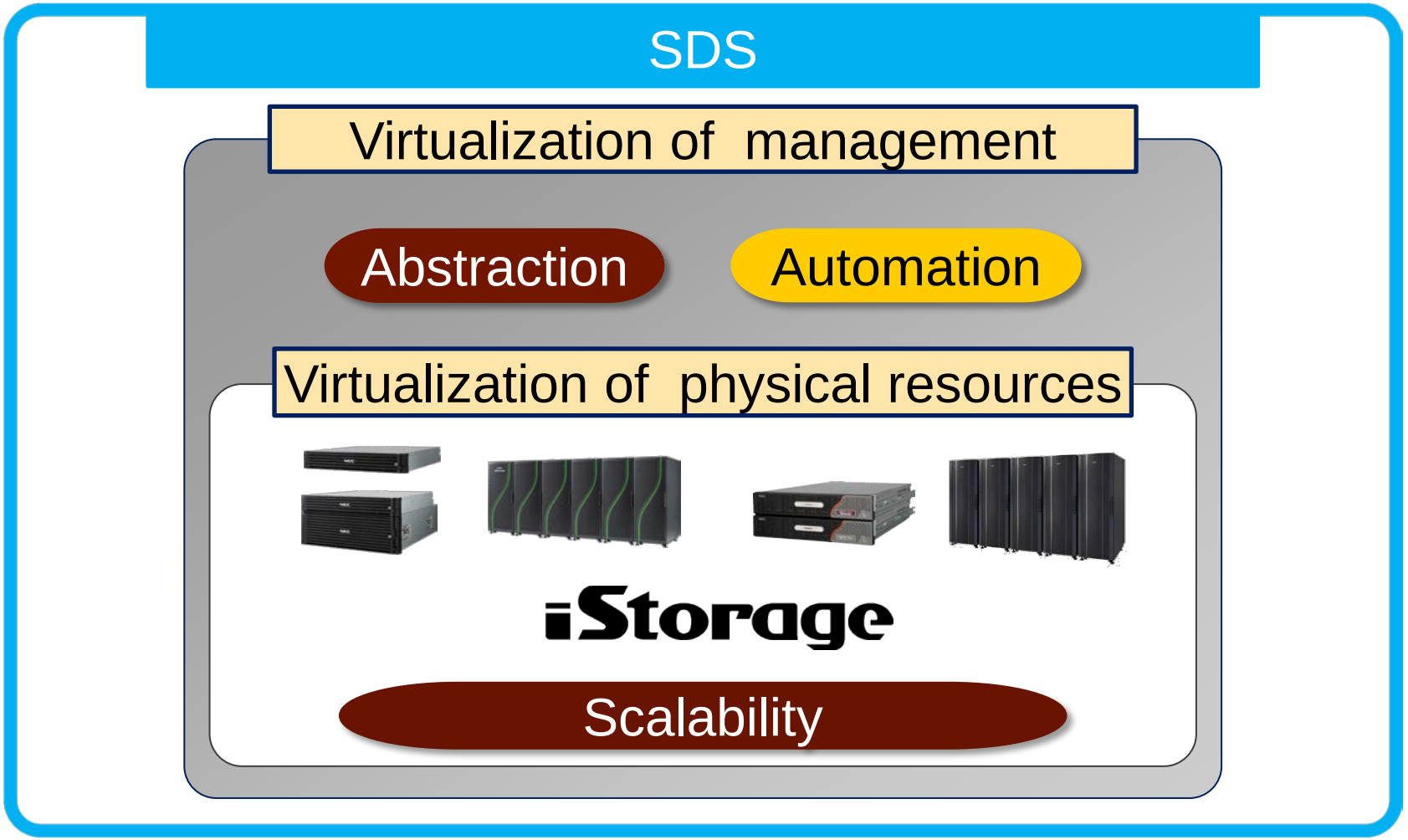
# Automated Virtualized Management



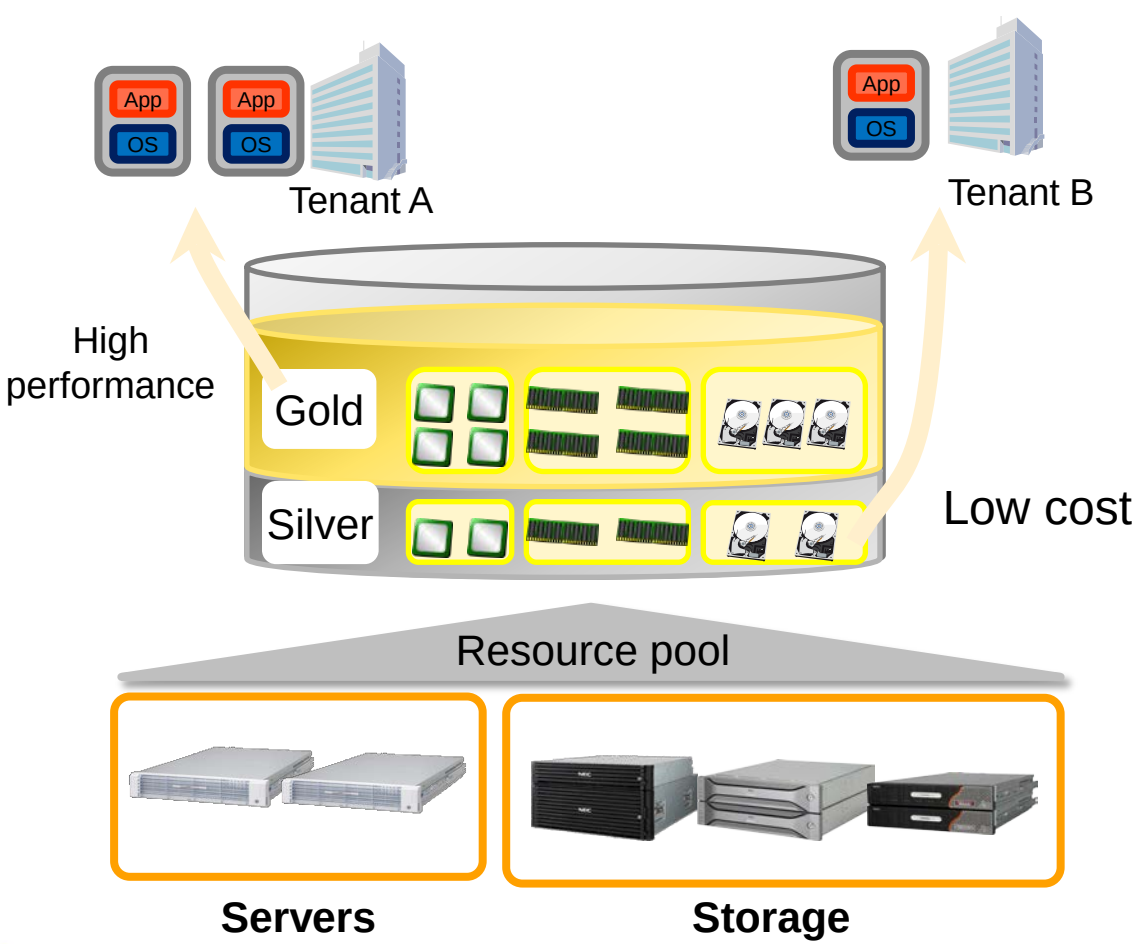
# NEC’s approaches to SDS

# NEC's Software-Defined Storage (SDS)



# Policy-based management

Abstraction

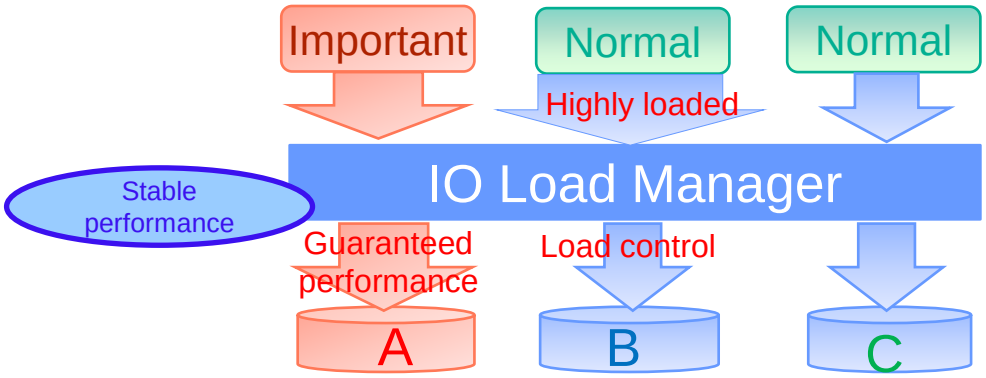



**Central management of various resources**

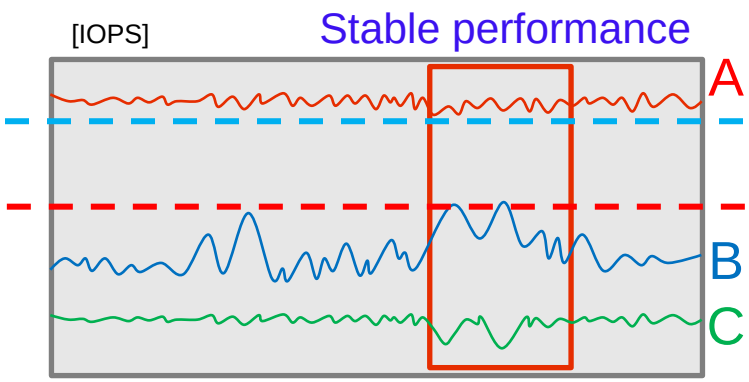
SigmaSystemCenter

# Guaranteed Performance QoS

Abstraction




M series

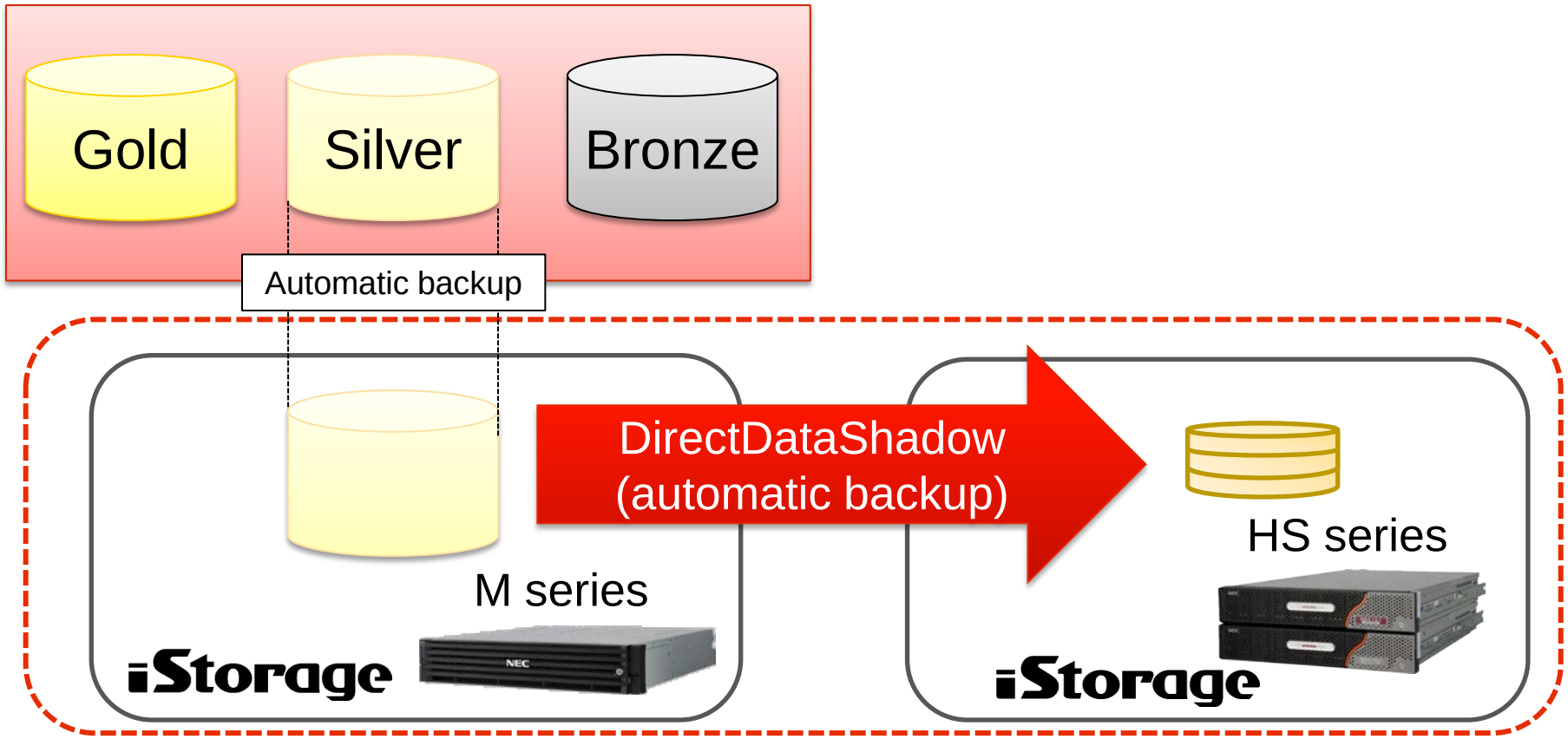



A: IOPS lower limit QoS

B: IOPS upper limit QoS

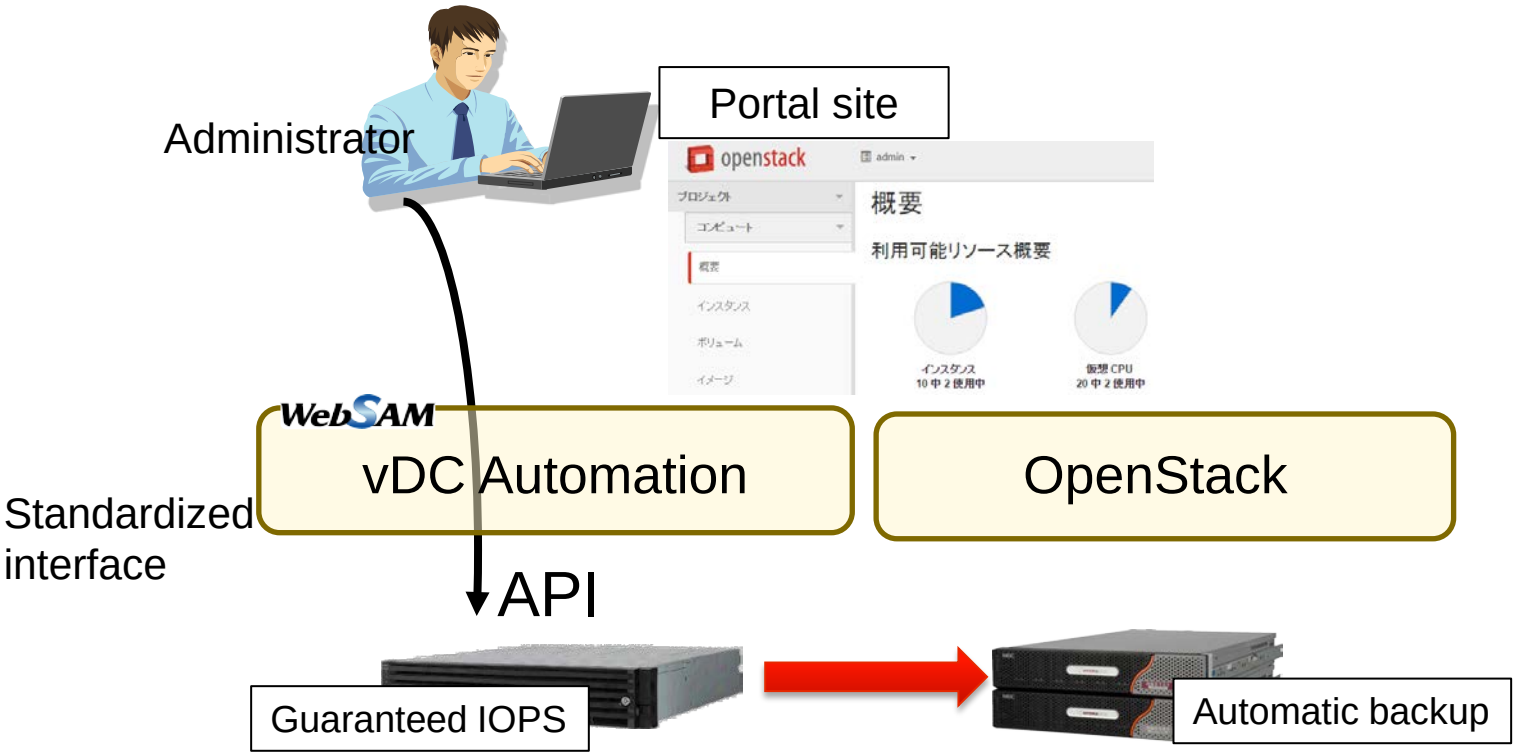
# Automatic backup

Abstraction



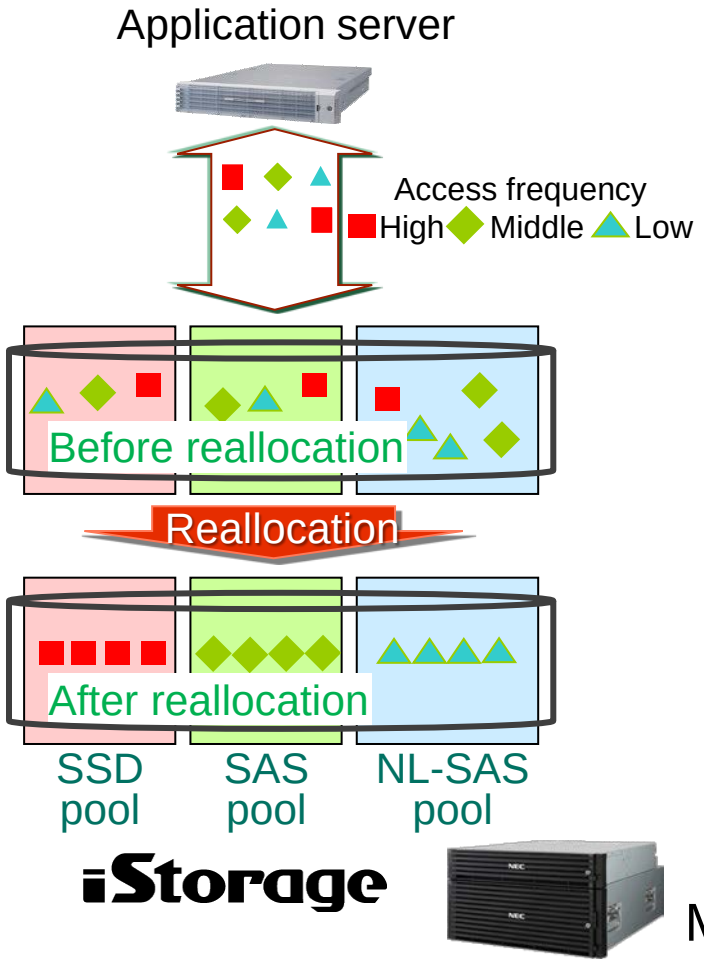
# Automated operations by API

Automation

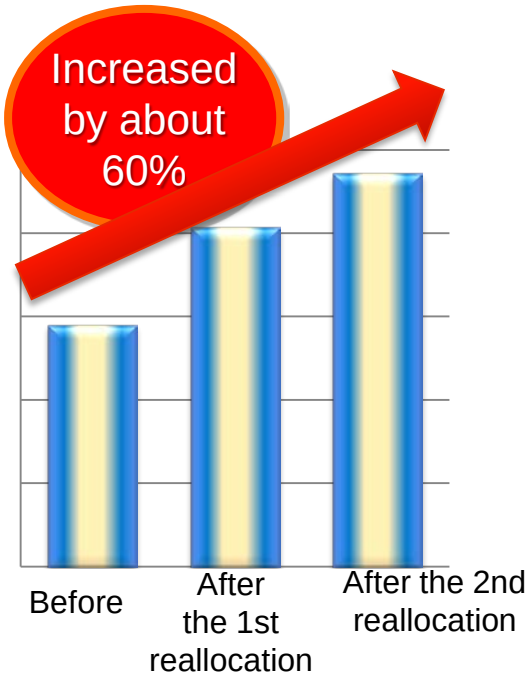


# Resource Allocation Optimization

Scalability

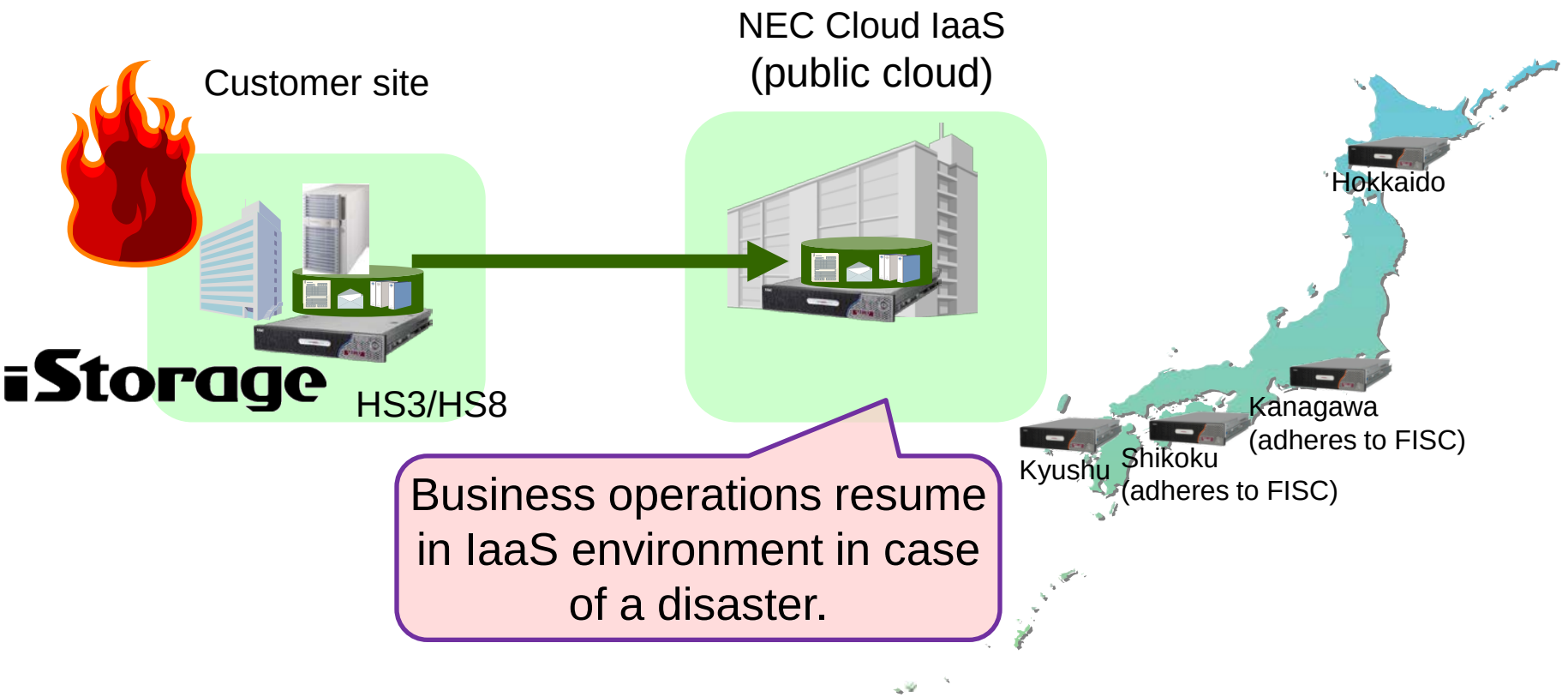



(An example of effect)



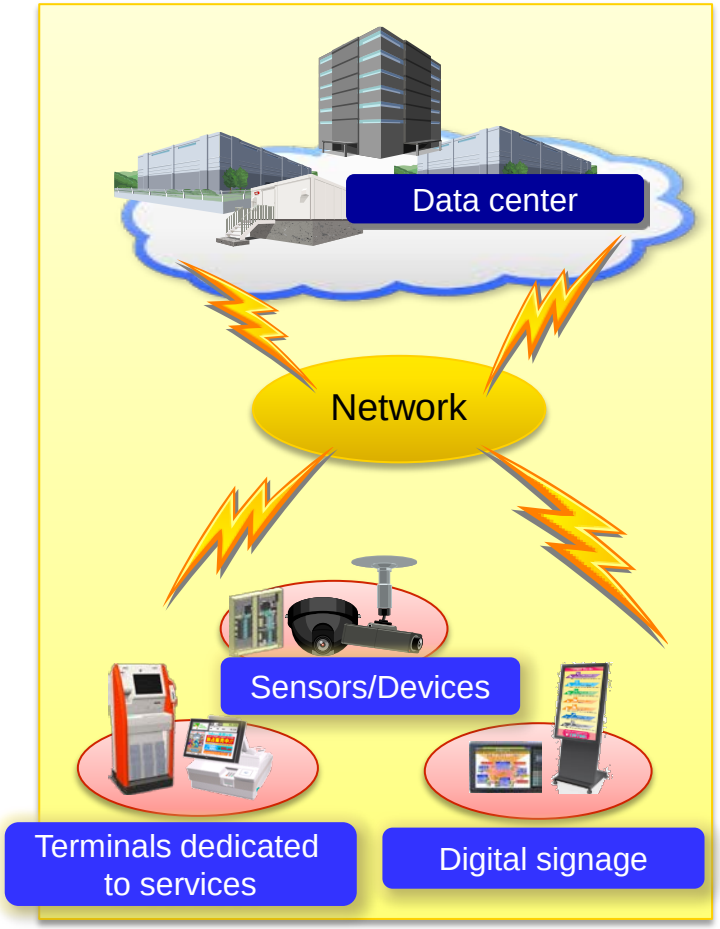
# Disaster Recovery and Cloud

Scalability

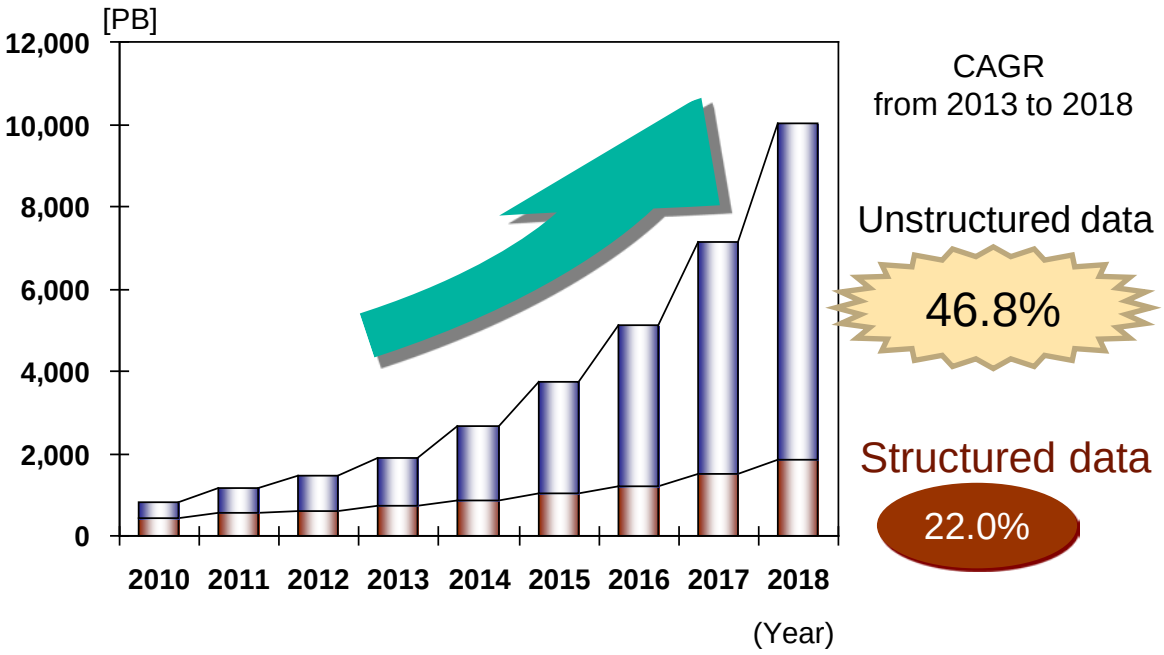


# Big data infrastructures for new forms of businesses

# Increasing Unstructured Data

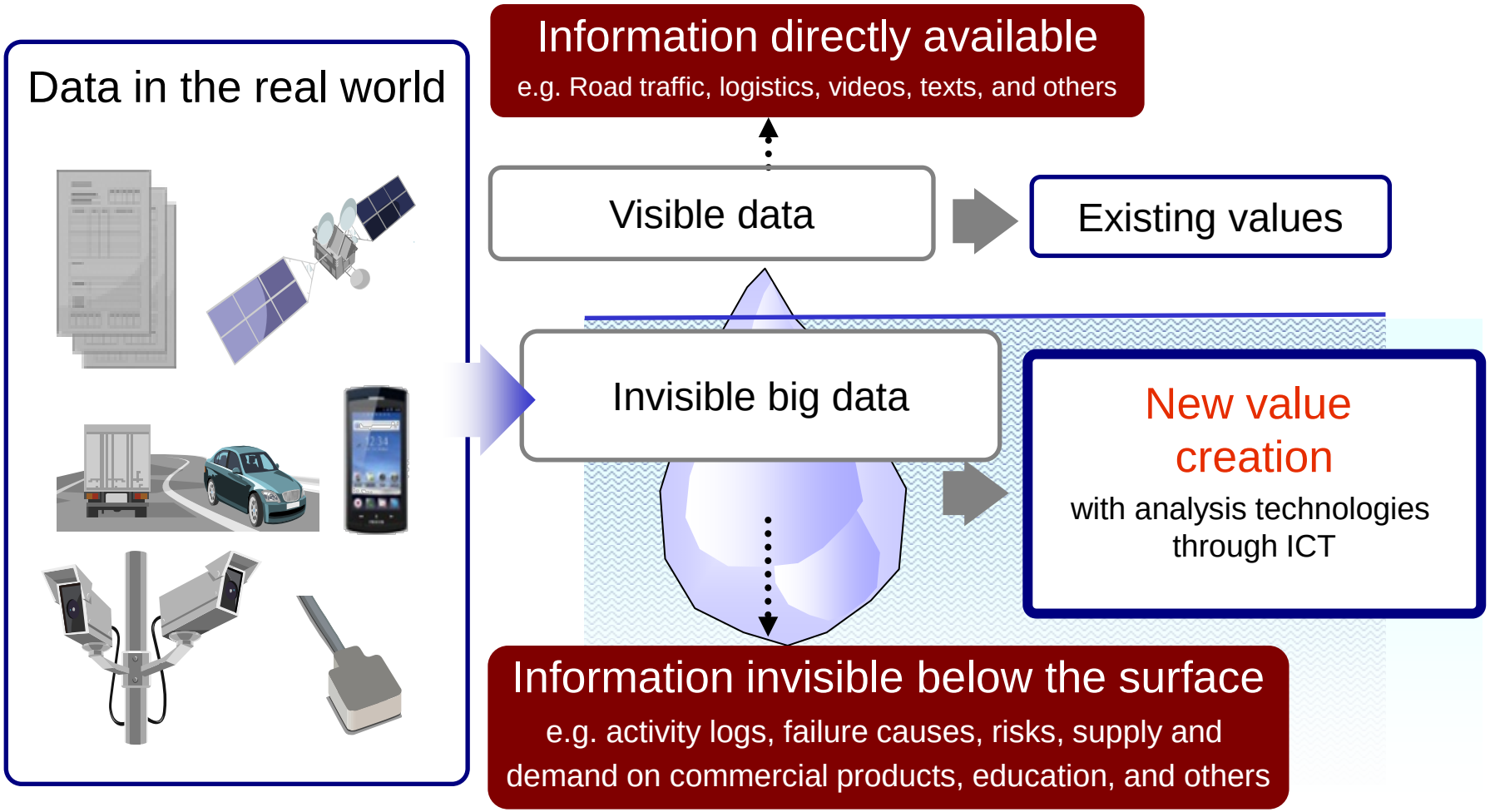



The market of disk storage systems in Japan
Structured and unstructured data volumes shipped and forecasted

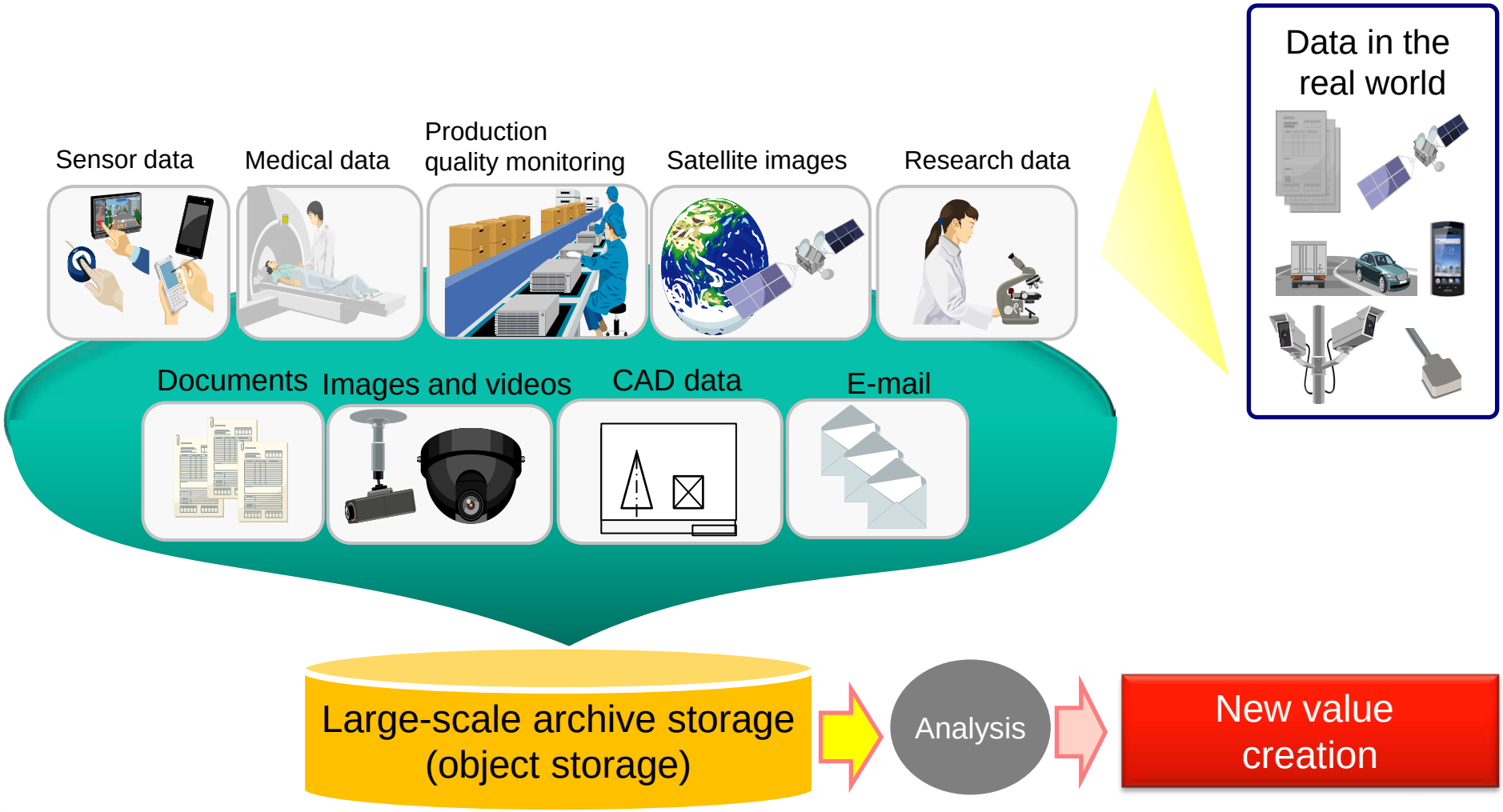



Source: IDC Japan, July 2014
Japan Storage for Unstructured Data Demands Analysis 2014 (J14440108)

# Value creation by big data analysis



# Making Use of Invisible Unstructured Data

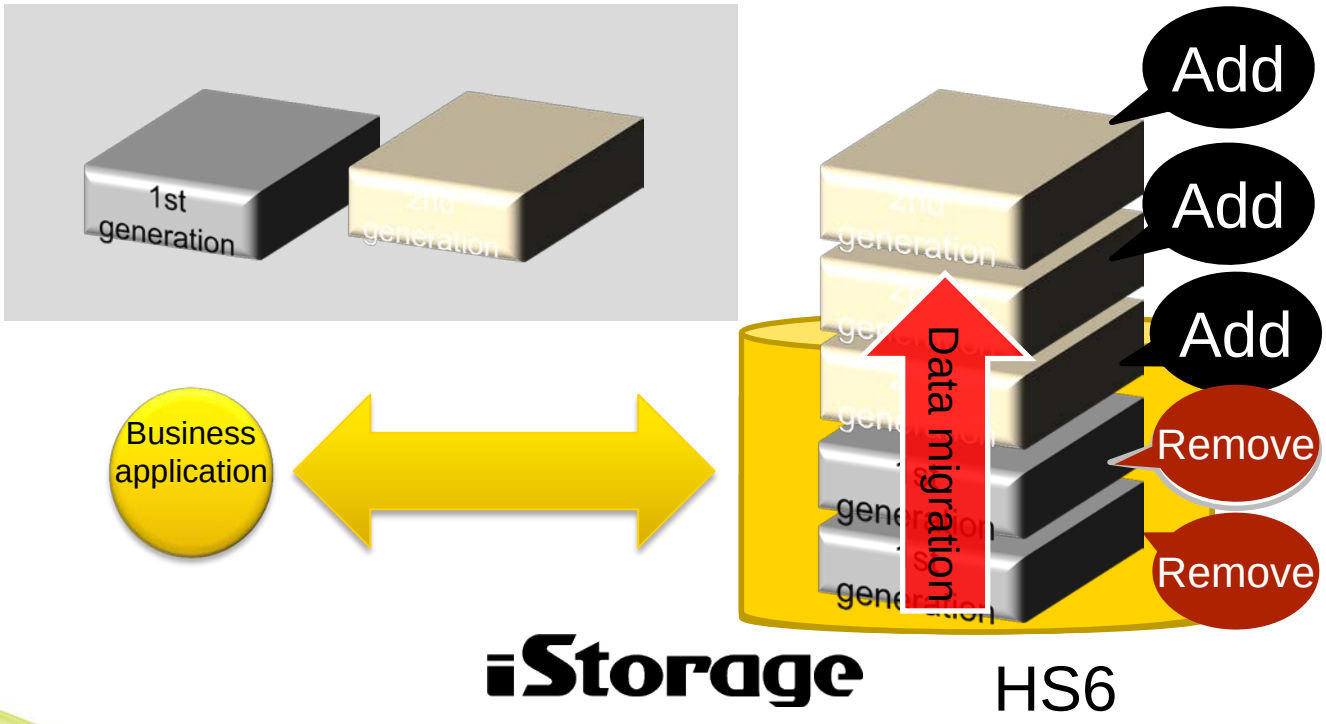


# SDS Architecture for Technology Refresh

Abstraction

Automation

Scalability

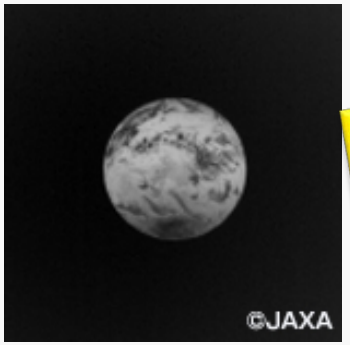


# High-definition Image Compression Solution

## The Venus probe Akatsuki employed StarPixel.

- Low communication speed (2 to 32 kbps) in ultralong distance between Venus and Earth (longer than 0.1 billion km)
- Probe satellites have strict limitation in battery power and weight
- JPEG2000 imposes a heavy load on processing an image **in 60 seconds**
  **>> StarPixel compresses an image in about 1 second.**

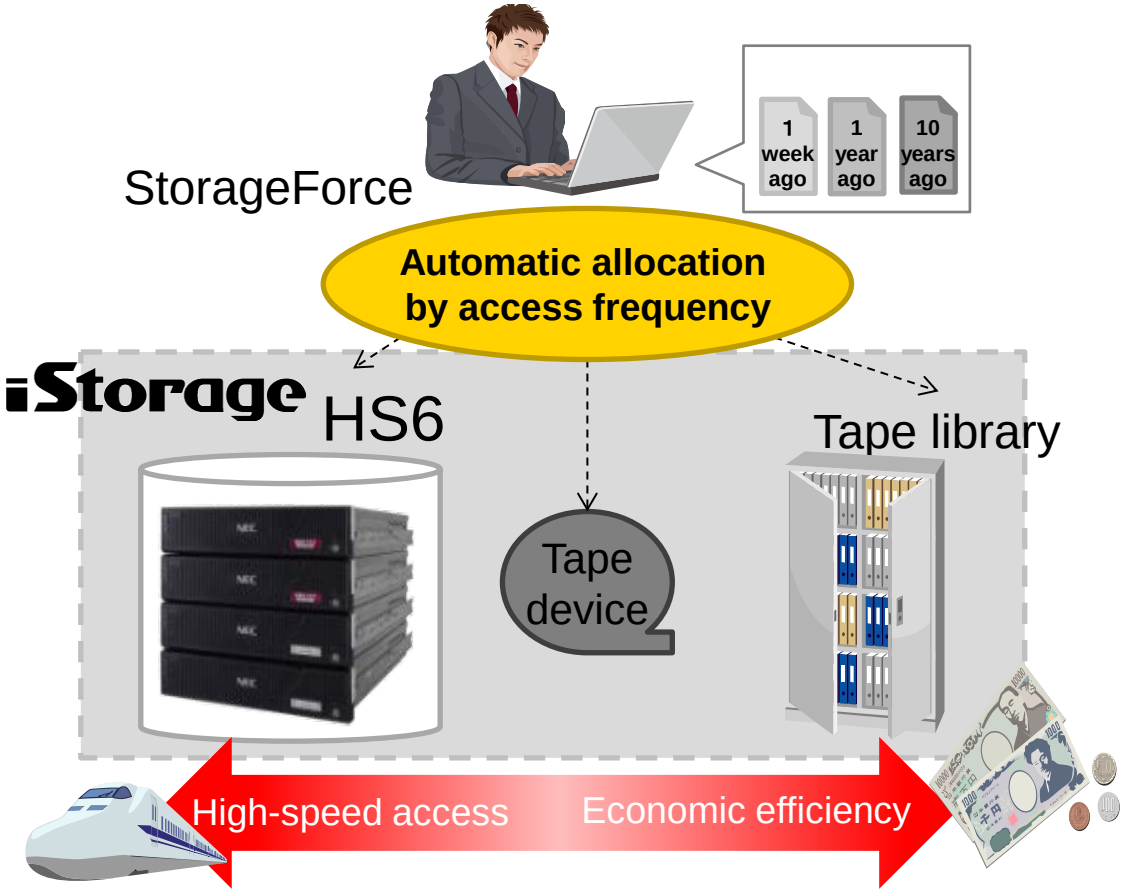
Device mounted on Akatsuki

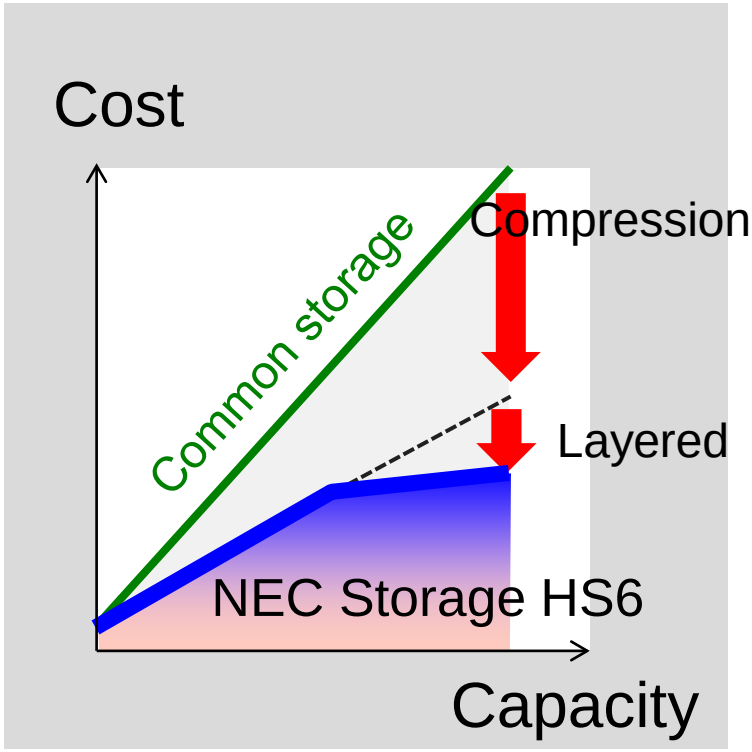



The Earth shot from Akatsuki

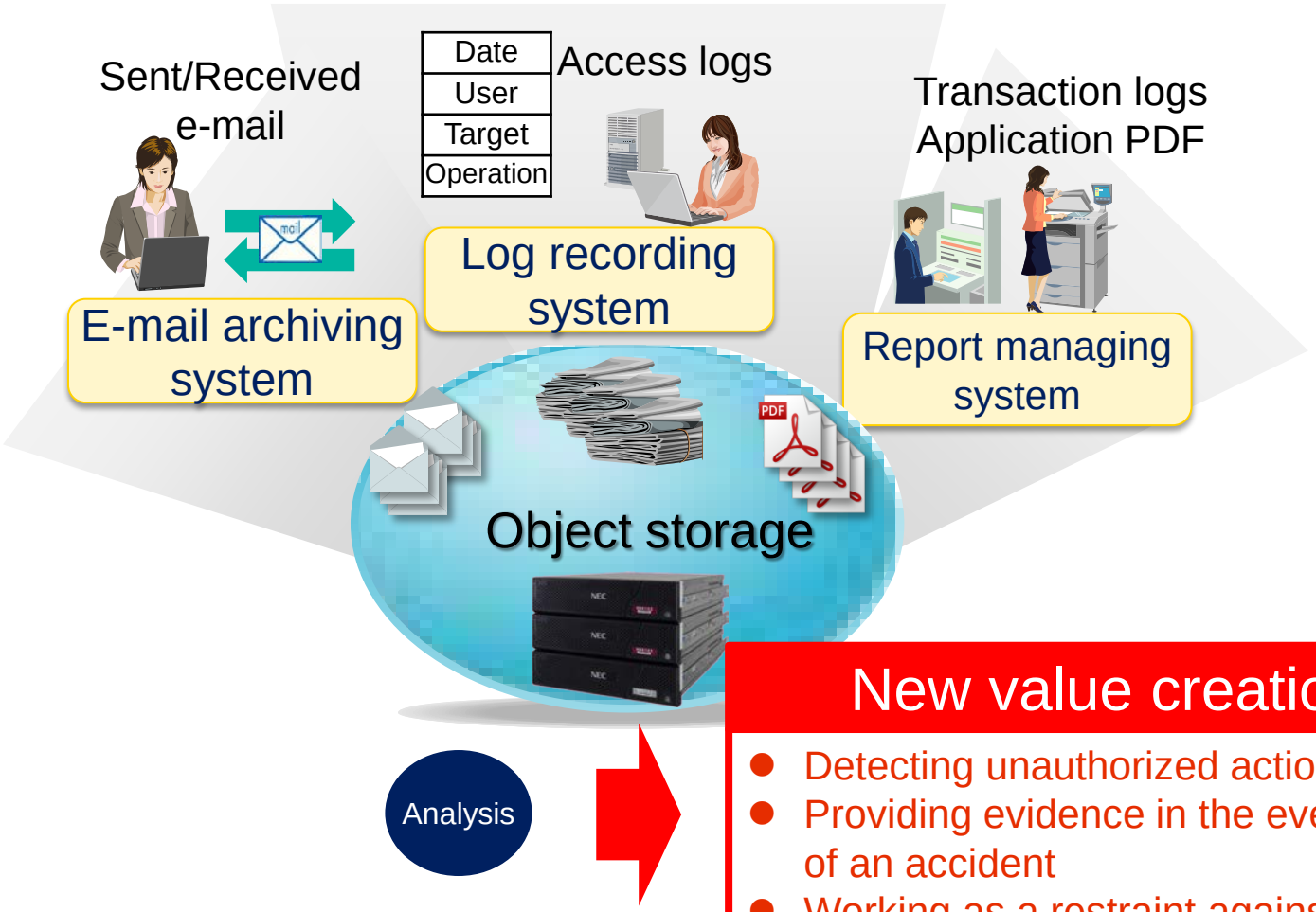
Asteroid Probe Hayabusa-2 employed StarPixel, too!

# Managing Big Data in Layers of Storage and Tape



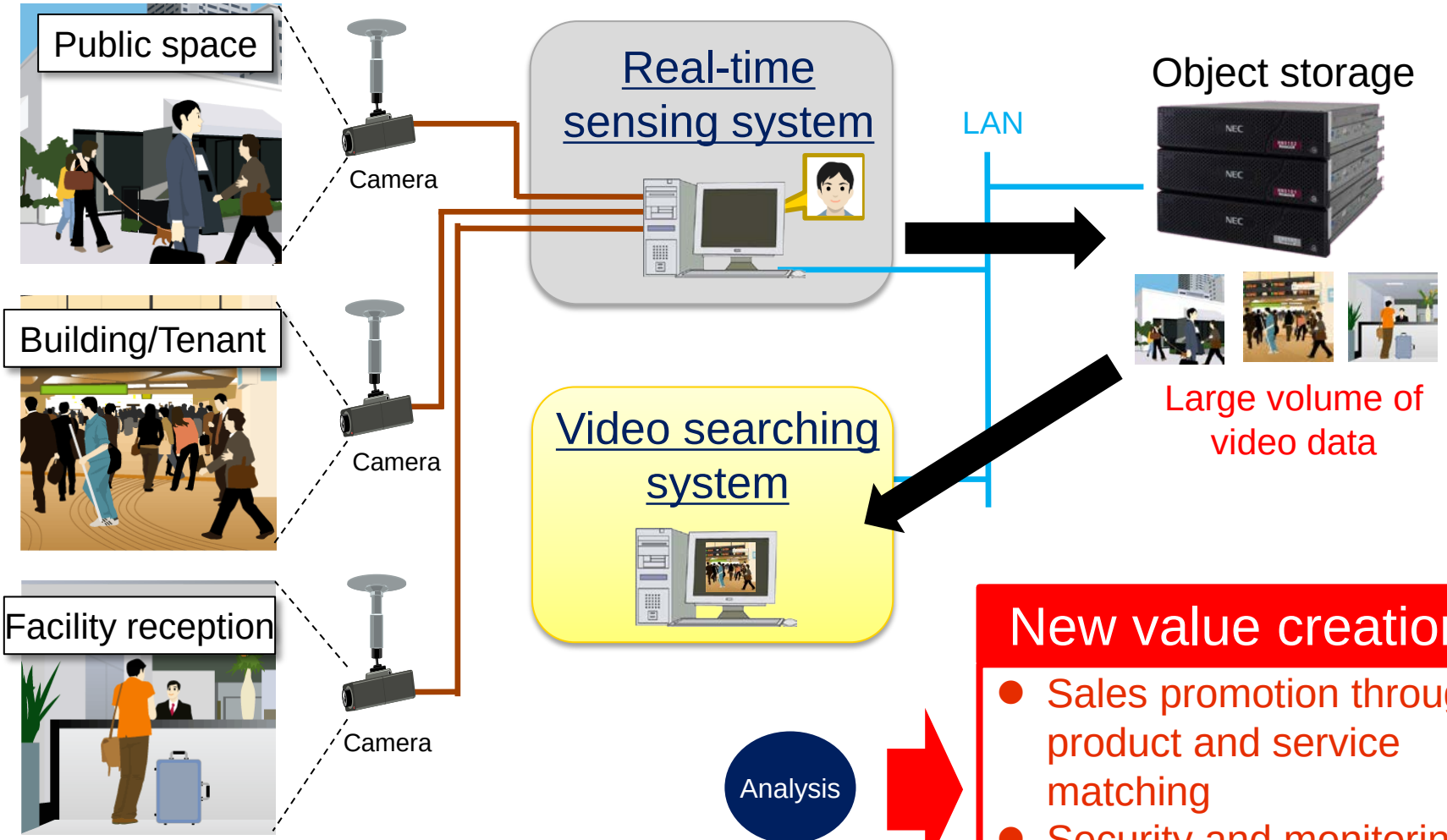
# Example1: Measures against information leakage




## New value creation

- Detecting unauthorized actions
- Providing evidence in the event of an accident
- Working as a restraint against data leakage

# Example2: Video Analysis



# NEC approach to Social Infrastruture

# NEC's Concept "Innovative Social Infrastructure"

For all people,
an Abundant Society

## Solutions for Society

- Public (Disaster prevention, security, electronic administration, finance)
- Telecom Carrier (Information networks)
- Enterprise (Logistics, distribution, transport)
- Smart Energy

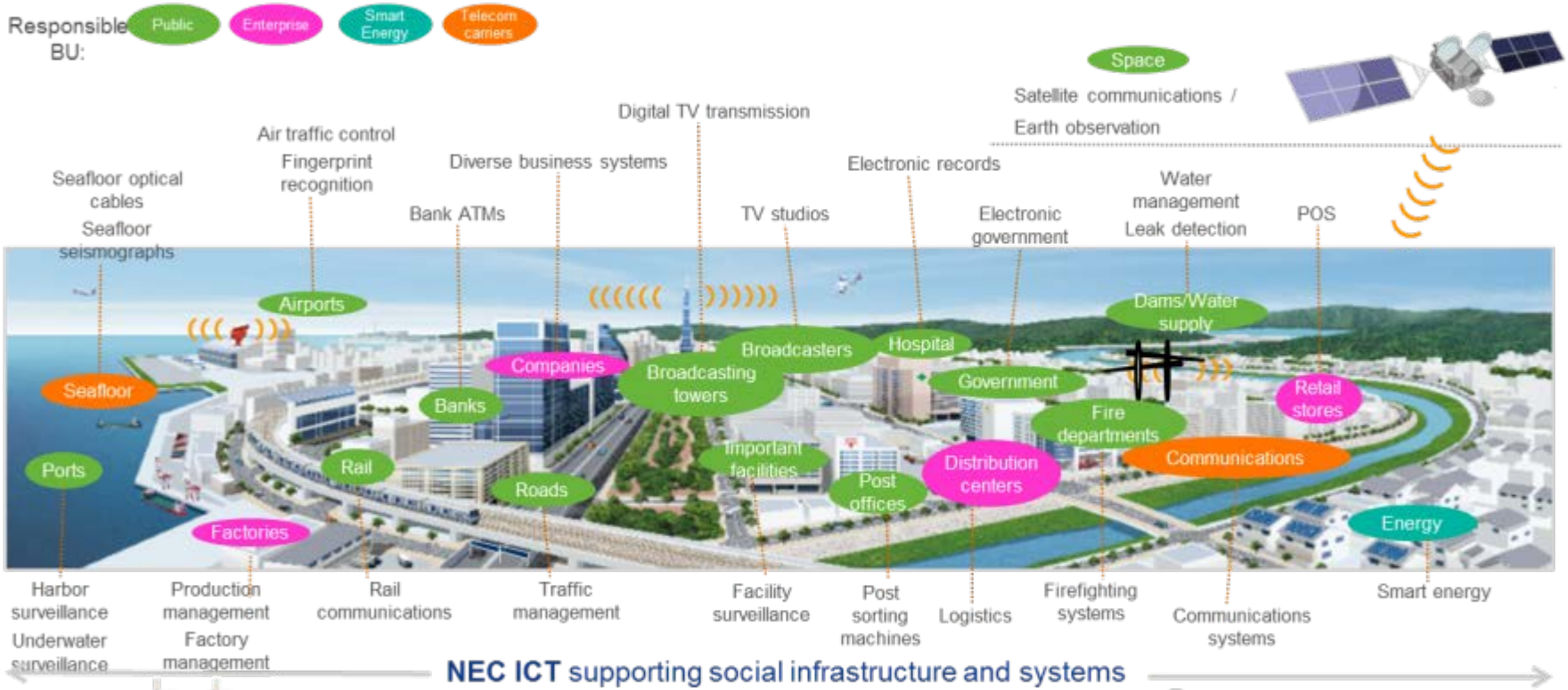
## Innovation of social infrastructure via ICT

- Safety
- Security
- Efficiency
- Equality

# Innovation of Social Infrastructure via ICT

## Leveraging our proven results and strong position for global expansion

- From the seafloor to outer space, concentrating management resources in areas in which social infrastructure will be innovated by ICT




**NEC ICT** supporting social infrastructure and systems

Next-generation network technologies

High-performance, high-reliability core IT technologies

Diverse sensor and human interface technologies




Empowered by Innovation NEC

Empowered by Innovation