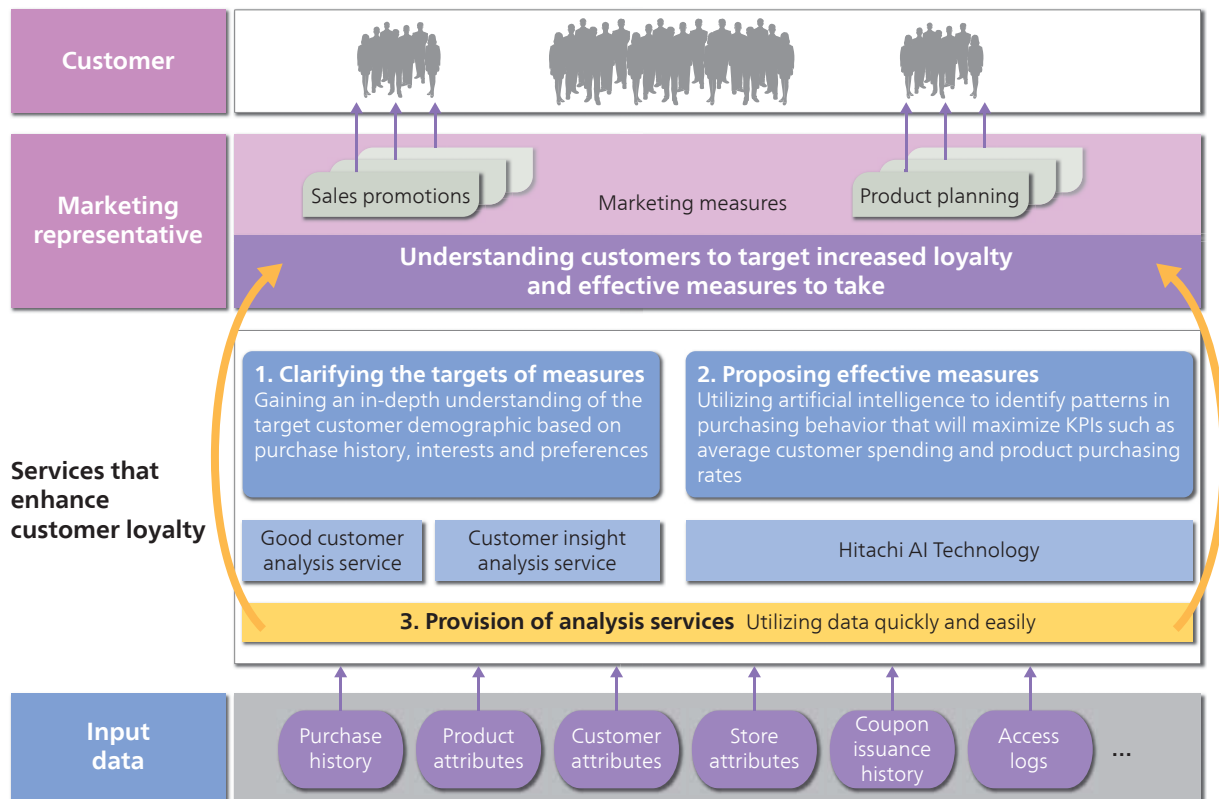# IT Platform

KPI: key performance indicator

1 Overview of services to enhance customer loyalty

1   Services to Improve Customer Loyalty Using Artificial Intelligence

In recent years, customer lifestyles, values and purchasing channels have diversified while product lifecycles have shortened. During this time, retailers, distributors and manufacturers of consumer goods have found it increasingly difficult to grasp the needs of their customers.

With services to improve customer loyalty using artificial intelligence (AI), the needs of target customers are subjected to detailed analysis from various angles such as interests, preferences and average purchase amounts, allowing users to derive potential measures for effective marketing. In doing so, businesses can improve customer loyalty and help expand sales and profits by boosting average purchase amounts and product purchase rates.

2   Network Inspection System

Cyber-attacks are evolving on a daily basis and external damage from threats such as malware infections and hacking are on the rise. To minimize the impact from these kinds of cyber-attacks, mechanisms to continually detect these constantly changing cyber-attacks at the early stages as well as systems for quickly ascertaining current conditions and taking action are needed.

The network inspection system is a product that detects suspicious communications by visualizing the network in real-time and continually monitoring network traffic.
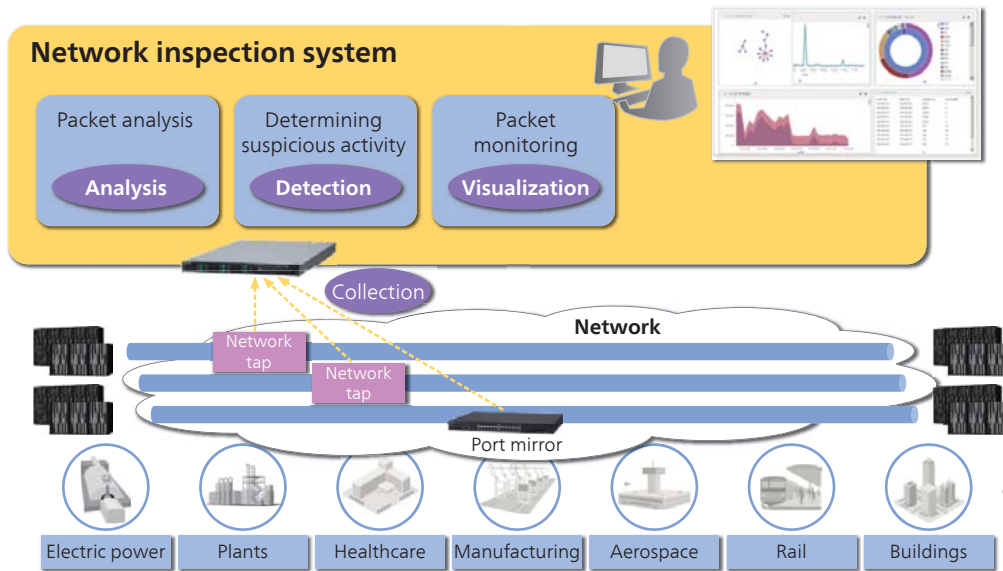The main features are as follows.
(1) Easy to ascertain the current status
  The characteristics of network traffic are identified in a multifaceted way and visualized in real-time.
(2) Early discovery of suspicious communications
  By modeling normal business operations and comparing it to communications traffic, suspicious

**2** Overview of the network inspection system

communications with the potentially to be zero-day attacks are detected in real-time.

(3) Ability to use as an add-on to current systems

The network inspection system can also be applied to existing products with a configuration that adds on to a system that is mirrored based on taps or switches without the need to install an agent.

3 Hitachi Unified Compute Platform for SAP HANA

There is a growing need to carry out real-time analysis of vast amounts of data produced by the rapid expansion of the Internet of Things (IoT) and other advances, and to utilize the findings to enhance the competitiveness of
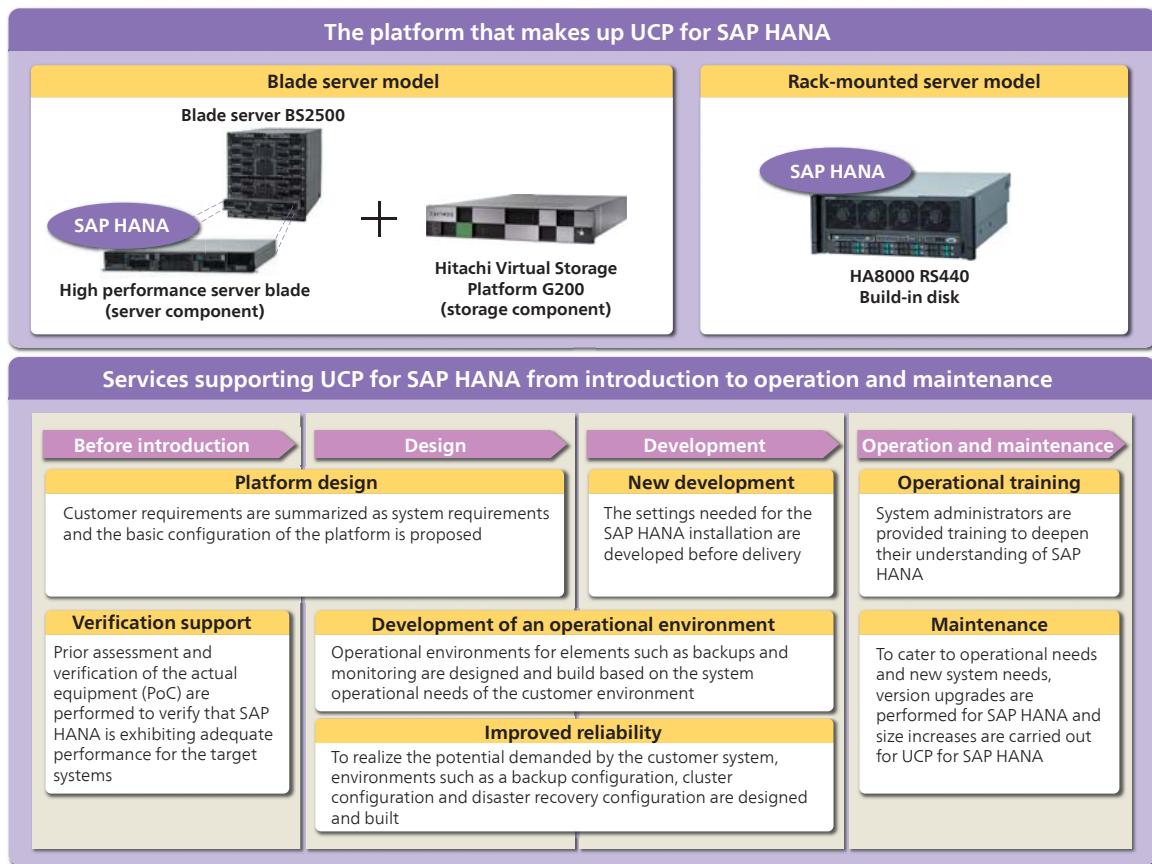
PoC: proof of concept

3 Overview of Hitachi unified compute platform for SAP HANA

businesses. To respond to this need, SAP SE offers SAP HANA*, a dedicated in-memory database that processes large volumes of data at ultra-high speed. For its part, Hitachi offers Hitachi Unified Compute Platform for SAP HANA, an integrated platform optimized for SAP HANA that combines high-performance servers and storage.

The platform combines reliable hardware with SAP HANA and is offered in a configuration that has gone through prior verification. This supports the launch of customer systems in a short time frame. In addition, Unified Compute Platform for SAP HANA is also configured for clusters and disaster recovery, allowing a business to curb losses due to downtime. Furthermore, the application of flash storage in the platform makes it possible to improve system speed and energy efficiency while reducing its installation footprint.

Moving forward, Hitachi will continue to enhance, expand and strengthen integrated platform solutions as the foundation for analyzing growing volumes of data and support businesses in the creation of new value and rapid management decisions.

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* High-speed in-memory platform of SAP SE.
* See "Trademarks" on page 162.

4 Integrated Operations Management JP1 Version 11 Enabling Quick Response to Changes to the Business Environment

In recent years, moves to utilize IT in new business value creation have accelerated, and businesses have been hard pressed to develop IT systems and operational management that can respond quickly and flexibly to rapidly changing business environments while controlling their investment costs. Moreover, with the diversification of system environments due to the use of cloud computing and virtualization, system infra-structure has become larger and more complex, and operational administrators need to develop sophisticated and wide-ranging sets of skills to respond to failures,

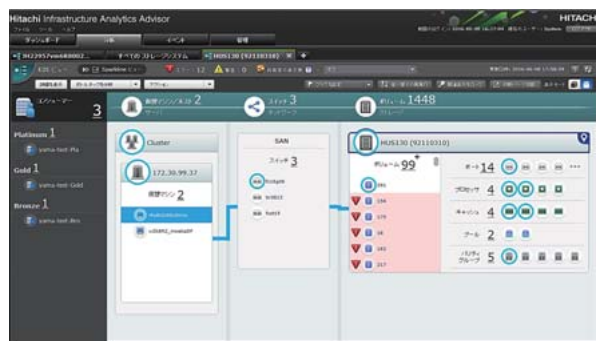from investigating the cause to taking countermeasures.

With integrated operations management JP1 version 11, Hitachi has started to provide JP1/Operations Analytics, which speeds up analysis to find the cause when a system failure occurs. This allows users to analyze the cause efficiently and quickly initiate recovery work without relying on the individual skills of an administrator, thus minimizing the impact on the business. Cloud compatibility and inter-system linking has also been enhanced for job management, such as support for auto-scaling and compatibility with the representational state transfer application program interface (REST API), enabling flexible job operation tailored to a wide range of business scenarios.

JP1 will continue to realize highly reliable and efficient IT operations with the ability to response swiftly to the changing business environment.

5 Hitachi Infrastructure Analytics Advisor Streamlining Cloud IT Resources and Supporting Stable Operation

In recent years, businesses based on private clouds have become commonplace in the market, with the number of private cloud adoptions continuing its upward trend year after year. While a private cloud is able to provide resources quickly in response to business conditions, private clouds also have to address the conflicting demands of efficiently utilizing physical resources in virtual environments that continue to grow in size and complexity while achieving stable operation during load fluctuations.

To solve this issue, Hitachi has newly released Hitachi Infrastructure Analytics Advisor, a solution that ascertains, analyzes and addresses the configuration and performance of IT resources. Since it determines the load status of the cloud environment and automatically detects load situations that differ from past trends, action can be taken before it impacts business. In addition, the configuration and performance of both physical resources and virtual resources can be

4 Screenshot of the JP1/Operations Analytics dashboard, which automatically collects information and monitors overall system status

5 Cloud environment topology display through Hitachi Infra-structure Analytics Advisor

intuitively monitored on a single screen, identifying noisy neighbors and system modification operations that can cause load fluctuations, and providing support for handling. By introducing Hitachi Infrastructure Analytics Advisor, users are able to achieve resource streamlining and stable operation simultaneously.

6 Hitachi Virtual Storage Platform G1500/F1500

Against the background of sensing technologies, artificial intelligence and other advancements, many companies are stepping up efforts to collect and analyze various data and utilize it to build relationships with customers and boost production efficiency. Amid this climate, companies looking to create new mechanisms while withdrawing from existing businesses and enacting business reforms have emerged. As a result, IT systems departments that support companies' data utilization need to address a range of business requests and reflect them in systems.

In light of this, in October 2016 Hitachi released VSP G1500, the high-end model in the Hitachi Virtual Storage Platform family of storage products supporting system infrastructure. In conjunction with the release, Hitachi commercialized the high-end all-flash array VSP F1500 to address growing flash storage utilization needs due to the recent advancement of digital society.

In addition to a wide range of conventional virtualization features including virtualization that ties multiple storage units together, virtualization of volume capacity and storage hierarchies and virtualization to present two storage units as a single unit, VSP G1500 features newly-added space reduction features that compress data and remove duplicates, offering a

high-end model that enables more efficient and low cost data storage. In another offering, the VSP F1500 all-flash array, which is designed and optimized for flash-based storage, retains the same high availability and reliability while processing more orders at high speed and reducing the time taken from data accumulation to analysis and utilization. By enabling high speed and stable access performance to the ever-growing amount of data, Hitachi is helping customer businesses create high added value.

7 Federated Cloud Services

In recent years, companies and other entities have accelerated efforts to migrate their business systems to cloud environments. However, migrating existing business systems to a cloud environment is no simple task from the perspective of migration costs and the transfer of operational skills.

Through its federated cloud service providing centralized operational management of business systems arranged across multiple clouds, Hitachi is in the process of developing features to support the move to cloud environments.
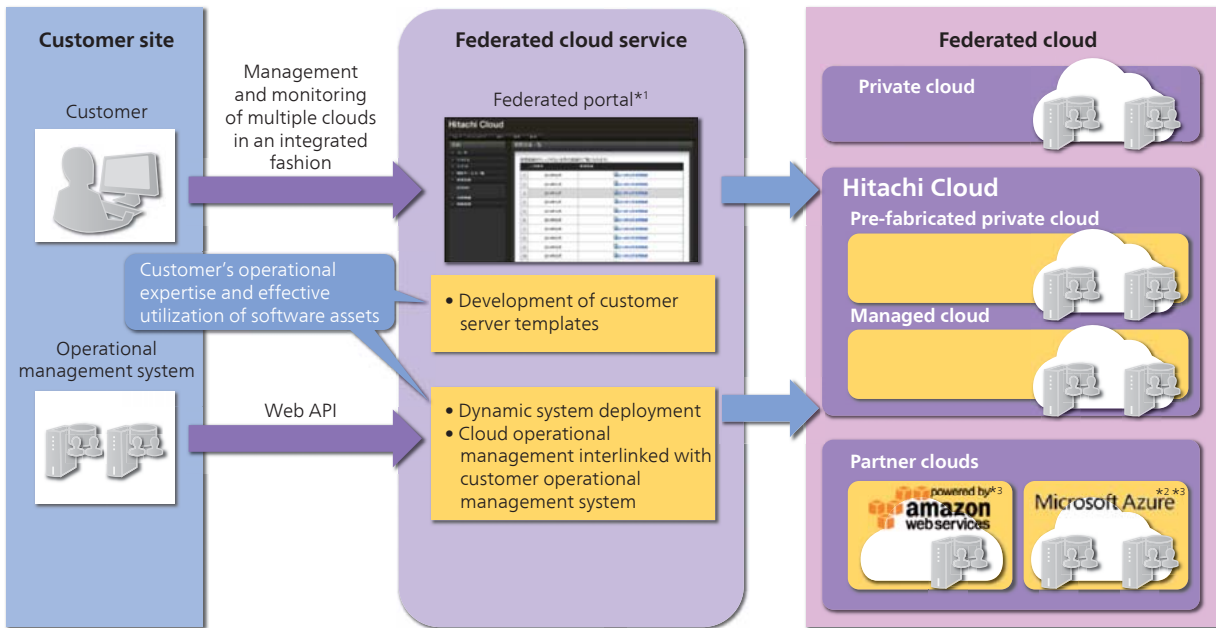
First, templates are developed based on the software assets and business systems the customer is familiar with, and these templates are stored on a federated portal that makes up the service. Next, according to a predefined order, the virtual servers generated based on templates the customer has prepared in advance are arranged in the cloud environment. A web-based API is provided for configuring various settings.

Through the development of these features, Hitachi will reduce the introduction costs incurred by customers

New high-end storage
Hitachi Virtual Storage Platform G1500, F1500

SVOS

VSP G200

VSP G400
VSP F400

VSP G600
VSP F600

VSP G800
VSP F800

VSP G1500
VSP F1500

SVOS: storage virtual operating system

6 Storage products lineup

*1 Private clouds, Hitachi Cloud and Amazon Web Services (AWS) are subject to federated portal management
2 Microsoft Azure* is only provided as a federated cloud monitoring service
*3 See "Trademarks" on page 162.

7 Overview of federated cloud services and federated portal functions

when migrating business systems currently in operation on a site to the cloud, and also help lower operational costs following cloud migration.
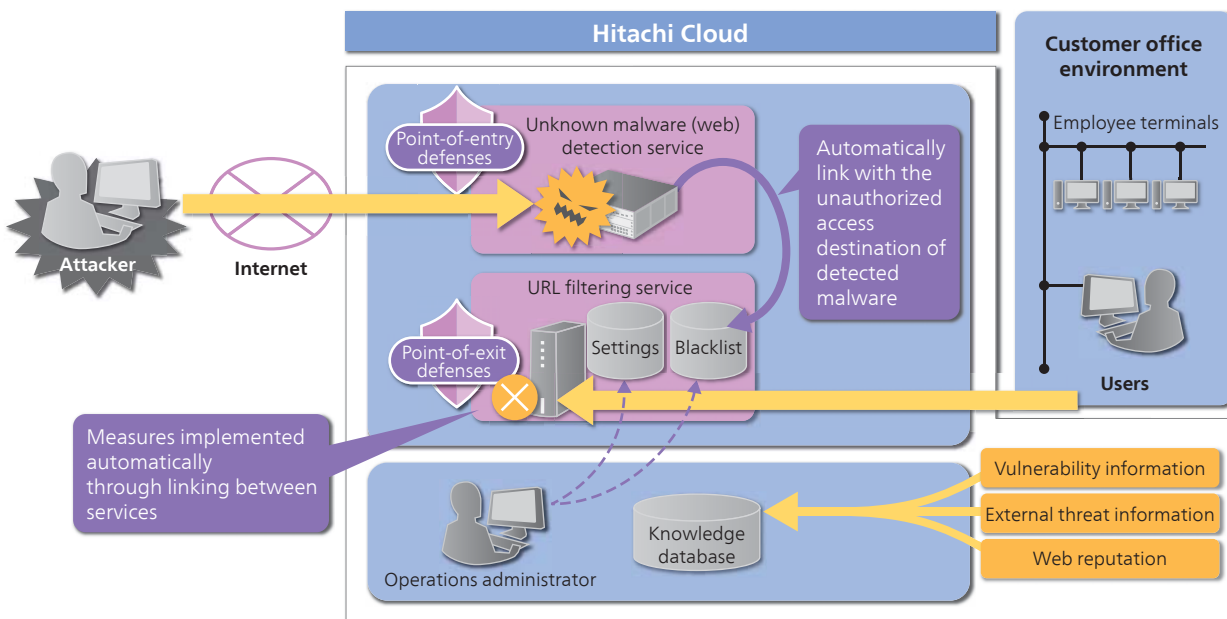
8 Cloud Security Services

Cyber-attacks threatening computer networks are increasing year after year. The number of targeted email-based attacks reported in fiscal 2015 rose to a record 3,828 cases*.

There are limits to the manual responses that can be taken against these kinds of cyber-attacks, highlighting the need for automated responses. Moreover, rather than passive measures to respond after being attacked, active measures to pre-emptively thwart attacks are also important.

Hitachi's cloud security services provide automated

8 Example of automated defenses through cloud security services

defenses by coordinating between multiple services. For example, a list of the connection destination IP addresses in malware detected with the unknown malware (web) detection service component of web access security is automatically supplied to the URL filtering service. By updating the pertinent information, the illegal sites accessed by external malware intrusions and command-and-control (C&C) services can be registered to a blacklist. In the future, Hitachi will develop a knowledge database that utilizes features such as web reputation and the automated collection of vulnerability and external threat information, giving Hitachi cloud service operators the tools to deploy active defenses.

* According to State of Threats in Cyberspace in Fiscal 2015 released by the National Police Agency.
http://www.npa.go.jp/kanbou/cybersecurity/H27_jousei.pdf

9 Analytics Template Supporting Predictive Maintenance

As an approach to improving the quality of industrial equipment and facilities, reducing lifecycle costs and enhancing operational utilization, there are increasing expectations regarding predictive maintenance utilizing IoT in Japan and abroad. Hitachi offers a Predictive Maintenance Service which utilizes IoT and machine-to-machine (M2M) technologies, diagnostic algorithms that is based on machine learning, and maintenance expertise acquired in actual operations.

While the service enables system introduction in a short timeframe through the standardization of diagnostic models to support even faster introduction,

Hitachi plans to rebuild and offer the elements and features needed for data analysis and utilization as an analytics template.

The main features are as follows.
[Rapid development of visualization]
(1) Group of components (Widgets) offering the graphical user interface (GUI) customized to the purpose of use.
(2) Group of APIs providing analysis results to existing systems.
[Adaptable data input]
(3) Data extract, transform, load and accumulation features to achieve flexible application for data that differs by device.
[Scalable data processing]
(4) Distributed processing feature for high-speed analysis of large volumes of data from multiple devices.

As a result, systems designed to analyze and utilize data can be built easily, and users can quickly make use of the service in business.

10 Energy-oriented Incubation

Japan's electric power industry underwent deregulation from spring 2016 with the liberalization of low-voltage electric power retailing, and there are plans to create a negawatt trading market in 2017. In this way, various legislative changes are being made ahead of the separation of electric power generation from distribution and transmission in the year 2020. At the same time, digitization is advancing in every industry, and the field
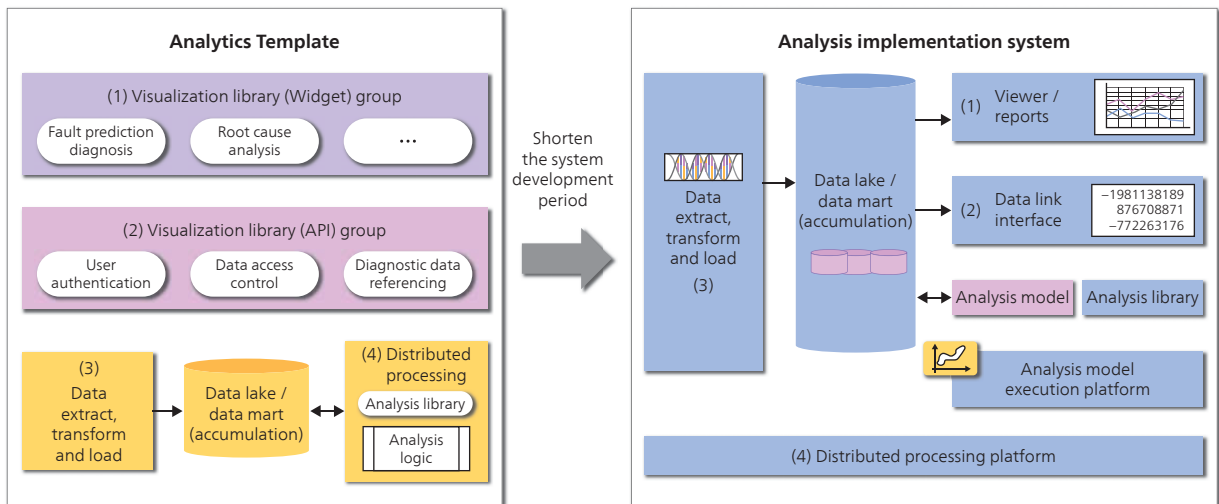

9 Analytics Template features

of electric power is no exception. For instance, it is possible to predict when a breakdown will occur by collecting information from sensors installed in generating equipment and analyzing the data, or encourage the efficient use of electric power by remotely monitoring and analyzing the usage of storage batteries installed on the consumer side.

These kinds of changes in the electric power industry are already underway overseas, where progress in deregulation is further advanced Hitachi is making use of its knowledge of operational technologies (OT)

gained through advanced energy-oriented demonstration projects such as demand response (DR) and virtual power plants (VPP) while leveraging IT advancements such as big data analysis, AI and blockchain to promote energy-oriented incubation that will bring about customer innovation.

Looking ahead, Hitachi will seek to develop business verification through collaborative creation with customers and architectures combining IT and OT, directing the results into practical business endeavors.
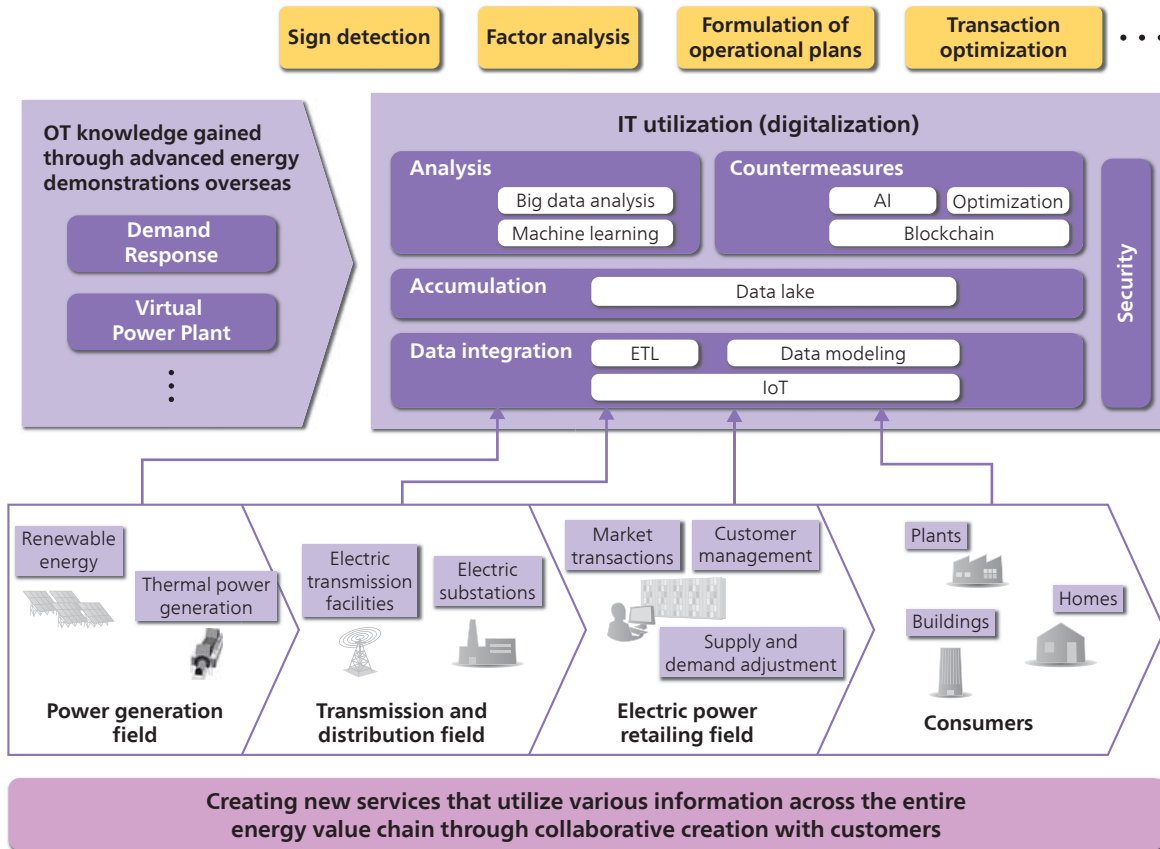
ETL: extract, transform, load

10 Energy-oriented incubation initiatives