Universe: Enabling telcos' digital transformation

Big data is now the core driver behind the digital transformation among telcos. When it comes to building big data analytics platforms, operators are frequently asking the following three questions: How can big data analytics platforms be built? How can big data analytics platforms be used to tackle business problems? How can we build digital collaborative ecosystems to realize the monetization of data assets?

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The era of business-driven big data has arrived

Big data, which was first used by Internet companies, is now seeing widespread application in all kinds of industries. There are three key factors behind the growth of big data:

**Business:** Big data can be used to mine business value, and an increasing number of telcos are now focusing on its commercial applications. With the customer as a core focus, they are looking to leverage big data for customer value innovation, business optimization, and business model innovation. 2015 marked the start of a new era of business-driven big data.

**Data science:** The traditional analytical tool has become intelligent, with new theories and techniques in data science (such as machine learning, cognitive computing, deep learning and knowledge discovery) being applied and becoming the driving force behind the development of data analysis.

**Technology:** Open-source technologies such as Hadoop have played a significant role in driving the development of big data. Hadoop has even become the de facto industry standard. However, the diversity and complexity of these technologies present quite significant challenges to operators’ IT departments. The issue now facing the industry is how to further consolidate and standardize big data technologies.

Operators face numerous new challenges in big data application

The use of big data in the telecom sector can be divided into four classes based on technology maturity:

**Class 1:** Technology Enhancement, using big data technologies to enhance computing elasticity and lower data processing costs.

**Class 2:** Vertical Solutions, like precision marketing, customer retention, and service quality management. But these are also silo systems and cause data silos.

**Class 3:** Data-driven Operations, building enterprise big data analytics centers to support digital transformation. All data, including third party data, is ingested, stored, and processed. Applications and data are decoupled completely. Therefore a large number of long-tail analytics applications emerges.

**Class 4:** Operating Data as a Biz, monetizing data by providing data services for various industries, thus creating new business models and value streams.

However, unlike Internet companies, carriers lack sufficient big data technology and data scientists, and thus face a large number of challenges in leveraging big data such as:

- **Data asset integration:** Most telcos use many kinds of service systems and analytics systems across their networks, such as BI, NI, customer services and marketing. This "silo-ization" of data has become a critical obstacle to big data analysis. The primary issue carriers face with big data is how to efficiently integrate all the data from BSS, OSS, network equipment and financial systems – as well as a growing amount of Internet data – and ensure the quality of this data.

- **Severe shortage of data scientists:** In 2014, there was a shortage of almost 200,000 big data scientists in the US alone. Big data scientists are in even stronger demand in other regions. Operators are struggling to find enough big data scientists in their regions to support refined operations analysis.

- **Serious lack of successful big data business**
cases: Carriers are attempting various ways to leverage big data to solve their business problems. The average operator drafts dozens of big data business cases per year, but less than 20% succeed.

Difficulty in finding innovative business models for data asset monetization: In addition to helping operators refine their internal operations, big data can also be opened to businesses, thereby helping operators build digital ecosystems. While many operators have made attempts in this respect, the incomes generated have been small. There are two main reasons for this: firstly, the lack of external data sources; and secondly, the inability to find suitable business models.

An overview of Huawei’s Universe big data solution

Big data is now the core driver behind telcos’ digital transformation; its importance is evident. The three questions telcos ask the most when building big data analytics platforms are: 1) How can big data analytics platforms be built? 2) How can big data analytics platforms be leveraged to solve business problems? 3) How can big data be used to build digital collaborative ecosystems for the monetization of data assets?

These three questions are the consistent focus of Universe, Huawei’s big data solution. Universe takes advantage of Huawei’s significant strengths in industry experience, technology and services to provide the best big data analytics platform in the industry. At the same time, Huawei’s Universe solution combines two types of collaborative ecosystems (the big data application development ecosystem and the big data operations ecosystem), and leverages the standard BDRA service delivery process and Analytics App Market to create a business-driven and artificial-centric big data solution. The solution helps telcos build the core capabilities to carry out digital transformation (including refining their internal operations and expanding their industry value chain).

Huawei’s Universe big data solution includes the Universe big data analytics platform (Data Factory, Wisdom Center and Data Operation Platform) and end-to-end value-driven big data services (consulting, business operations, data analytics, data governance, and integration services).

A closer look at the Universe big data platform

Data Factory

It has been estimated that during the implementation of big data projects, nearly 70% of the time is spent on data ingestion and integration. In the future, the amount and complexity of data will only increase. Today, data conversion must be carried out in near real time. It will become impossible to manually complete the labor-intensive work of data conversion with the scale of data that we will see in the future.

The core features of the Data Factory are unified data ingestion and integration, unified data asset management, converged data models, and unified data access services. The unified
data ingestion and integration function is pre-configured to support 190 BSS, OSS and MSS data sources – as well as providing adapters for the collection of new media data sources such as the Internet and social networks. This gives operators the ability to carry out digital analysis. The Data Factory offers automated data cleaning and conversion, dramatically improving the efficiency of data integration.

The unified data asset management component supports telecom converged data models and data quality standards, helping operators to rapidly implement information architecture governance. The unified data access service creates a unified interface for the data storage layers (EDW, MPP DB and Hadoop), and provides a unified access point for upper-layer applications. More importantly, it enables data access control, ensuring data security.

Using the Data Factory, one operator in China has been able to achieve integration and governance of real-time event data from over 190 data sources (BSS, OSS and MSS) in only two months, a significant time saving compared to conventional methods.

**Wisdom Center**

Big data business analytics has in the past been heavily dependent on highly skilled data scientists. Now, the Wisdom Center provides intelligent and real-time data analysis capabilities using its two core analytics engines: the knowledge discovery engine and the real-time analytics engine. Huawei’s knowledge discovery engine is targeted at business problems and is based on Huawei’s in-depth research on data science techniques, including automated modeling, incremental learning, feature engine and high-dimensional feature extraction. The engine includes the Persona engine and the Product Portrait engine. It is capable of automated knowledge discovery and reduces the time needed for business analysis from several weeks to a few hours. The real-time analytics engine is based on automated pattern-matching technology and can process
millions of events and decisions per second, helping operators to quickly seize business opportunities.

The Wisdom Center is also preset with more than 300 out-of-the-box business templates. These cover nine areas under three main headings – "innovation and growth", "customer and market", and "operations and support". The solution is already being put to use by operators as an on-demand virtual data scientist team.

Using the Wisdom Center, one carrier in China has been able to boost its 4G user marketing success rate from 5% to 12%, and its rate of attracting subscribers defected from rival networks from 5% to 10%, greatly increasing its 4G business revenue and subscriber growth.

**Data Operation Platform**

The Data Operation Platform offers four key solutions: partner management, data product development, data exchange and trading, and a digital product store. In addition, it has over 500 kinds of data products built in. It provides a one-stop solution to help operators build data operations capabilities to achieve rapid data monetization and business model innovation.

The Data Operation Platform is based on Huawei’s inTouch Partnership Program platform. The solution helps operators build a digitized data operations ecosystem, create differentiated and innovative business models, and monetize data assets.

In one successful case, Huawei helped a Chinese operator join forces with partners to launch data monetization products targeting the finance, tourism, credit checking, government, retail, and advertising sectors. The products included customer preference analysis, crowd flow analysis, advertising effectiveness assessment, industry indexing, and credit checking. Not only did this help the carrier generate a substantial new revenue stream within two months, but it also helped it establish a leading position in the market.

**Universe’s end-to-end big data services**

Huawei’s Universe big data solution provides the following end-to-end big data services:

- **Consultancy**: Huawei has partnered with globally leading consultancies to provide operators with business and technical consultancy, covering precision marketing, customer experience management and data operations, as well as technical planning consultancy for big data analytics platforms.

- **Business Operations**: brings together partners from sectors, such as advertising, banking, credit checking, government and enterprise, and retail, to provide operators with a one-stop data operation service, helping them to create new revenue sources.

- **Data Analysis**: Data mining, machine learning and knowledge discovery technologies provide analysis targeting business problems, including innovation and growth, customer and marketing, operations and support analysis.

- **Data Governance**: leverages Huawei’s deep understanding of telecom data to provide end-to-end data governance services, including maturity assessment, roadmap planning, rule design, and implementation.

- **Integration and Delivery**: provides end-to-end big data integration based on Huawei’s service platform that provides a comprehensive solution to complexities caused by fragmented technologies to streamline delivery and shorten delivery periods.