

mobigen

Make The Best For Smart Business

Company Introduction

2016

*Inspiring Technology
for Smart & Intelligent Business*

www.mobigen.com

TEL. (82) 2-538-9360 FAX. (82) 2-538-9369

Content

1. Company Introduction

- Company Status
- Employees and Financial Performance
- Business Area
- References & Experiences

2. Business Status

- Big Data Business
 - Success Stories
 - IRIS DB - Features
 - OSS(Operation Support System) - Success Stories
 - 3G/4G Customer Service Management based on packet probe
 - Map-based Monitoring
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Company Status

Under the three management philosophy of “infinite challenge”, “infinite innovation” and “infinite impression”, Mobigen is putting all efforts to be the best ICT solution specialist so that we help customers have more efficient and smarter ability to work. Mobigen has been performing various types of projects for mobile network quality management and security management, and is the specialist that released the first big data platform in domestic.



Make The Best For Smart Business

Company Name	Mobigen Co., Ltd.
Date of Establishment	March 21, 2000
Address (Headquarters)	3 rd , 5 th Fl. 552, Yeoksam-ro, Gangnam-gu, Seoul, South Korea, 06187
Address (Bundang Office)	4 th Fl. 12, Sunae-ro, 46 Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, South Korea, 13595
Contacts	+82 2 538 9360 Fax (+82 2 538 9369)

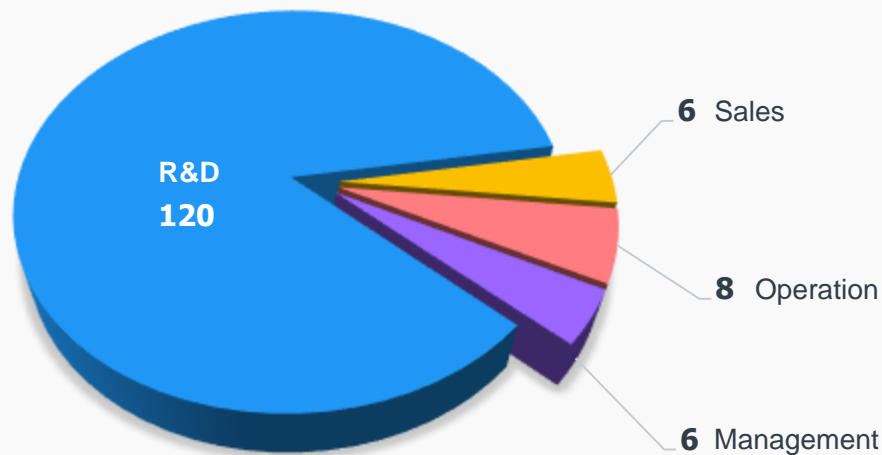
- 2015** Selected as a managing company for Global Creative Software project (GCS) supported by the Ministry of Science, ICT and Future Planning (MSIP)
Integrated Spark, an open source framework, into Mobigen's IRIS Big Data DB
- 2014** Received SK telecom Partner Award
Renewed Quality Management ISO-9001
- 2012** IRIS Enterprise V1.0 received the Grand Prize in New Software Product from Ministry of Knowledge and Economy
[Certification] Acquired CrediMail V6 GS certificate (Good Software)
- 2010** Selected as exemplary taxpayer by Seoul Metropolitan Government
- 2009** Certified as 'A+ Members' enterprise by Korea Technology Finance Corporation

- 2008** Awarded as Honor Partner by SK Telecom
- 2007** Won Good Proposal Award at SK Telecom's Open Idea Festival
- 2006** Selected as HP eKorea Partner
- 2005** Selected as enterprise responsible for IT advance and innovation by SME (Small & Business Administration)
Acquired ISO9001 Selected as honor IT firm (Korea Technology Finance Corporation)
- 2004** Selected as good product by Public Procurement Service
Certified as IT solution partner of Samsung Electronics
- 2003** Won "Best Partner Award" by SK Telecom
- 2002** Acquired IT mark awarded to SMEs with competitive IT capabilities from the former Ministry of Information & Communications
- 2001** Designated as excellent new technology creator in IT sector
- 2000** Established Mobigen / Opened R&D Center

Employees and Financial Performance

Mobigen has experienced in the field of big data and accumulated technological competence over 10 years. Based on such experience and proven technology, Mobigen is able to take full responsibility to meet any customers demand. Mobigen is the technology-driven SW development specialized company consisting of more than 80% R&D staffs out of total employees.

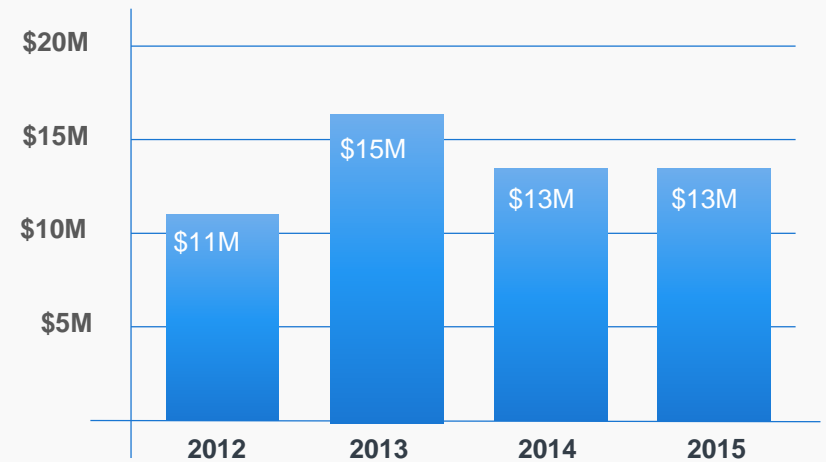
Employees by Sector



Total 140 Employees

■ R&D ■ Sales ■ Operation ■ Management

Financial Performance



Business Area

Mobigen's business area are of Smart Big Data sector that processes and manages the structured/non-structured big data in real-time, the Smart solution (OSS and Smart Grid) sector that efficiently manages telecommunication network and service environment, the Smart Messaging sector for smart work environment. Mobigen has been recognized for its technological competence by providing portfolio that consists of more convenient and efficient solutions and products.



References & Experiences



System / Project Offered	Remark
Packet-based LTE/WCDMA Quality Management	Packet Probe + Big Data Solution
Cyber Attack Analysis System	Big Data Solution
Big Log Data Analysis System	Packet Probe + Big Data Solution
Smart Grid Network Management System	Smart Grid
Cloud-based Security Log Analysis System	Big Data Platform(Open Source)
Packet-based LTE Traffic Analysis System	Packet Probe + Big Data Solution
LTE Femtocell Manager	Smart Device
LTE Network Management System	OSS
Packet-based LTE Traffic Analysis System	Packet Probe Solution
Mobile-based Switch Monitoring System (Smart NIMP)	OSS
Map-based Monitoring on Smartphone (Mobile i-Map)	OSS
Map-based Broadband Network Monitoring System	OSS
High-speed Railroad Network Management	OSS
Transmission Network Fault Monitoring System	OSS
WCDMA Access Audit Automation System	OSS
Factory Energy Management System (FEMS)	Smart Grid
Electricity Big Data Analytics	OSS
Packet-based LTE/WCDMA Quality Management	Big Data Solution

Big Data Business

Diverse Business Approaches based on IRIS Big Data Platform



In-house Developed Platform

IRIS DB

- Distributed big data DB supporting SQL

IRIS Log Analyzer

- Distributed analysis solution of log data

IRIS Hadoop Enterprise

- Packaged Hadoop Echo System



SI Projects based on IRIS

Telco

- SK Telecom, LGU+, etc.

Finance

- Samsung Fire & Marine Insurance

Public

- Government agencies



Constant Development of Big Data Applications

Customer Pattern Analysis

- Trend analysis of customer behavior

Log Analysis

- Analysis of equipment log data

Anomaly Detection

- Anomaly detection of equipment fault/traffic/security

Big Data – Success Stories

Mobigen has lots of experience in processing and analyzing various big data (more than 30 big data projects). Mobigen owns not only open-source big data platform (Hadoop) based solution but also proprietary solution of distributed DB (IRIS DB) for big data processing.

Customer	Project	Description
SK Telecom	Real-time packet collection/analysis platform	Open source platform that collects and analyzes LTE/WCDMA packet probing data in real-time A big data consultant and 7 developers committed
	DW capacity expansion for billing data(CDR) processing	Real-time indexing and archiving about 70B records per a day (Total 1.5 PB) Adds IRIS in order to take over some tasks(e.g. storing raw data and making summary statistics) what the existing data warehouse system has been carrying on
Samsung Electronics	Big data analysis/management platform (Media Solution Center)	Integrated management/analysis of global mobile phone logs Deploys analysis platform/management system based on Hadoop A big data consultant and 9 developers committed
Samsung Fire	Integrated log analysis system	Company-wide traffic analysis based on packet data Security management and system level usage analysis Processes 50B records/year, about 1PB/year
NIA (National Information Society Agency)	Big data analysis and utilization center	Deploys a platform for public data analysis and big data education Deploys the platform based on open source(Hadoop, Flume, R, Mahout, etc.)
KISA (Korea Internet Security Agency)	Information sharing and synthetic analysis system on cyber threat and incident information	Detects cyber threat and share information based on log analysis of public offices Deploys converged platform that combines open source(Hadoop, R, Mahout, Flume, etc.) and in-house solution (IRIS DB) Big data consultant and 14 developers committed
	Deploys big data-based intrusion detection system for 4G mobile network – government project	
	Deploys big data based intrusion log profiling and correlation analysis system –government project	
Ministry of Trade, Industry and Energy	Deploys device independent cloud platform – government project	
ETRI (Electronics and Telecom Research Institute)	[Smart Internet] Deploys big data processing platform under cloud environment – government project	

Big Data – Success Stories

LTE Quality Management

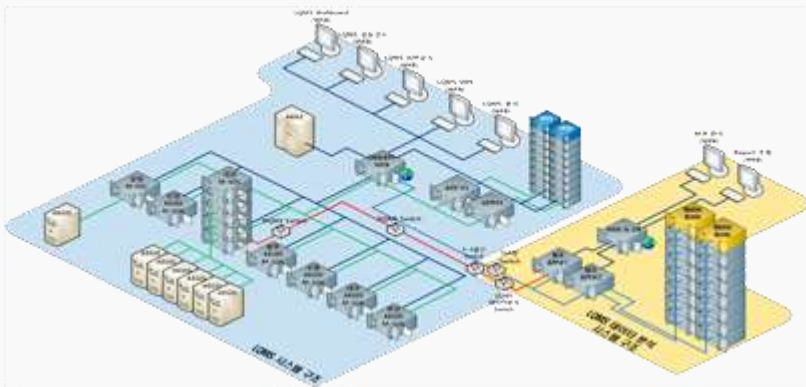


LTE (4G) Service Quality Management

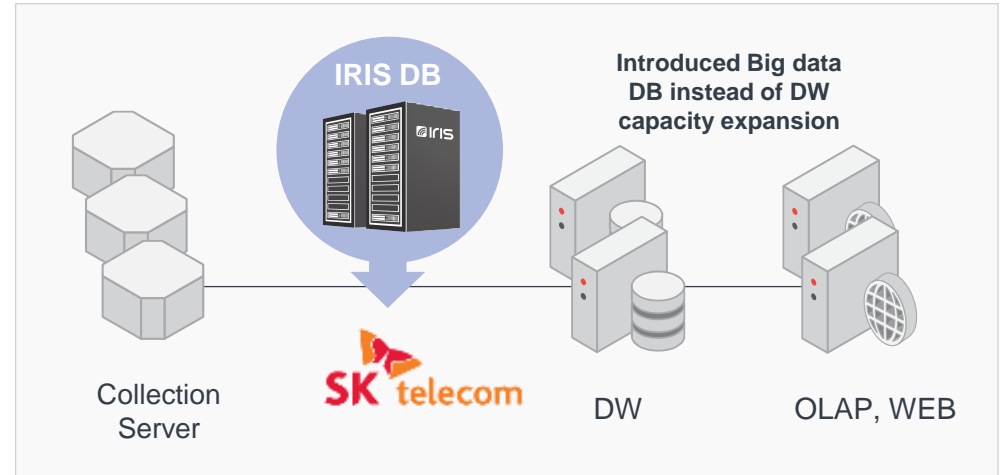
Big Data Platform

- LTE service quality monitoring/analysis,
- Provides information for engineering & marketing
- LTE packet collection, billions of records/day

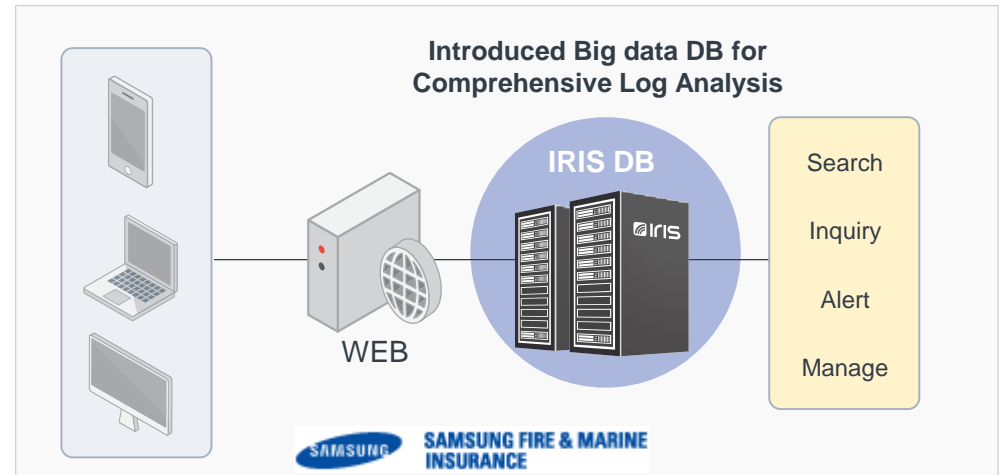
- High Availability Architecture
- Real-time monitoring system
- Detailed service monitoring
- VoLTE monitoring



DW Preprocessing



Big Data Analysis(Enterprise Data Governance)



IRIS DB – Features

 **IRIS Big Data DB Cluster** Low-cost and high-performance DB cluster for real-time processing of petabyte-scale big data



Smart storage that supports SQL

IRIS DB is a big data DB that supports the standard SQL. You can easily approach the large-scale distributed DB with SQL. We have added the smartness of SQL into a big data storage.



Optimizes for real-time time-stamped log data processing

IRIS DB is optimized to aggregate the large-scale time-stamped log data in real-time.



Guarantees the high-performance with hybrid architecture

To process big data in real-time, IRIS DB is designed with In-Memory and On-Disk Hybrid architecture. The architecture can achieve the best performance and the best capacity at the same time.



Optimizes the cost of big data ownership

Owning big data can generate various types of business related costs. IRIS DB helps you to lower the ownership cost by storing and processing big data, and considering the long-term usage of big data.



Compression and Encryption

IRIS DB can significantly decrease the ownership cost by increasing the data storage capacity over three times with the high performance compression. Also, the data can be physically protected through encryption.



Integration of Know-how accumulated for years in Telecom Sector

IRIS DB has faithfully carried out the advanced requirements of big data in Telecom field. IRIS is a technological integration that has accumulated the telecom management experience for years.



HW+SW All-in-one Appliance

The best analysis of big data is proceeded with the best integration of H/W and S/W. The package integrating H/W and S/W can satisfy the performance and the maintenance cost at the same time.



Intelligent Analysis and Visualization based on Synthetic Charts

Data analysis and management can be effectively done by auto clustering, classifying and analyzing the archived data through intelligent machine learning, and by visualizing synthetic chart based on scenario.

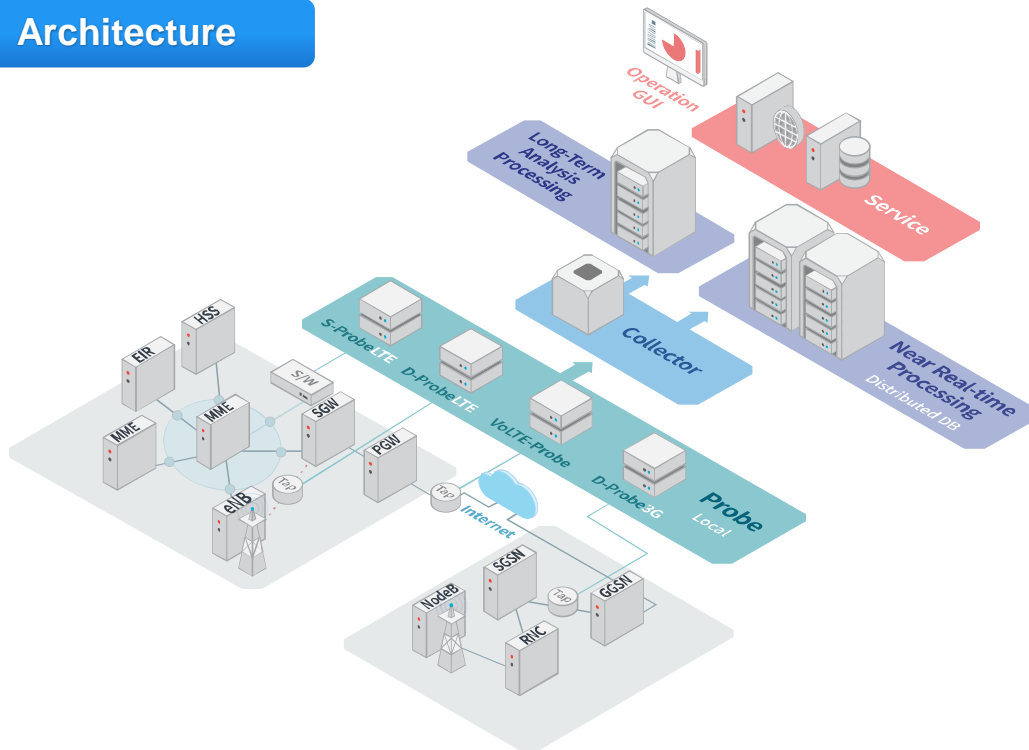
OSS(Operation Support System) – Success Stories

Using billing information (CDR) of mobile operators, Mobigen applied specialized technology that manages overall service quality of mobile network and subscriber-level service quality. Mobigen has developed and deployed Packet Probe system recently to effectively respond to operation and analysis of data service on all IP network (LTE), and continues to develop and deploy systems by converging and combining diverse technologies that are based on in-house big data platform.

Project	Description	Effect and Remarks
Subscriber/Location-based traffic monitoring and service analysis system	<ul style="list-style-type: none"> • Signaling and user data packet probing on 3G/LTE network • Subscriber/location-based traffic monitoring and service application monitoring • Root cause analysis by real-time correlation of Signal and user data • Processes large volume Traffic(User Traffic 10Gbps, 400PPS) 	<ul style="list-style-type: none"> • Real-time (1min.-period) monitoring and analysis • Pinpoints root cause of the problem quickly • Monitor quality of experience on subscriber-level • Utilizes traffic data per subscriber/per location/per service application in different purposes (e.g. engineering, customer care, marketing, etc.)
HD Voice(VoLTE) Quality management system	<ul style="list-style-type: none"> • Collects/analyzes SIP/RTP packet in LTE EPC~IMS sector • Generates HD Voice-specified KPIs (Success/Fail, Drop call, Loss, Jitter, Silent, etc.) • Equipment-level monitoring/analysis, subscriber-level monitoring/analysis, packet viewer, etc. 	<ul style="list-style-type: none"> • Great improvement by analyzing service quality per device manufacturer
Administrative District Map-based integrated management system	<ul style="list-style-type: none"> • Monitors/analyzes fault/performance/VOC of 2G/1X/WCDMA/LTE network per administrative district (city, province, county, etc.) • Maximizes visualization of intuitive monitoring by expressing with different color on the map 	<ul style="list-style-type: none"> • Integrated management with a single screen allowed effective operation
Integrated WCDMA/LTE NMS	<ul style="list-style-type: none"> • Fault and performance monitoring/analysis of 2G/1X/WCDMA/LTE network on a single screen 	<ul style="list-style-type: none"> • Greatly reduced and improved operation efficiency by Integrating network management environment
Smartphone malware monitoring and control system	<ul style="list-style-type: none"> • Registers detection patterns of malware • Protects subscriber's information and minimizes impact by detecting and preventing anomaly on mobile network 	<ul style="list-style-type: none"> • Enhances competitive edge of security service through network-based malware detection and device control using xDR data
Wi-Fi AP management system	<ul style="list-style-type: none"> • Remote configuration for over 130,000 Wi-Fi APs • Service quality monitoring of network devices by collecting event and performance 	<ul style="list-style-type: none"> • maximizes operation efficiency through remote/auto provisioning and policy-based firmware downloading and management of multiple devices
Integrated hadoop cluster management system	<ul style="list-style-type: none"> • Integrated management for Hadoop and Hadoop ecosystem(Hadoop, YARN, Flume, Storm, etc.) • Real-time collection of Metric of Ganglia/Ambari based infra(server, network) and service(Hadoop based) • Monitoring/analysis of anomaly of performance/state by collecting 640 Metric from 600ea big data nodes in real-time 	<ul style="list-style-type: none"> • Overall control on big data cluster • Integrated control on server infrastructure and network service

OSS - 3G/4G Customer Service Management based on packet probe

Architecture



Features

- Provides the near real-time(1min.) monitoring and analysis of customer experience of service quality
- Creates xDRs to provide end-to-end visibility of each call and pinpoint root cause of the problem
- Correlates signaling and user data to provide root cause analysis based on 3GPP call procedures
- In-depth monitoring from different perspectives
 - Network Topology monitoring from network operation perspective
 - Application and VoLTE monitoring from customer perspective
- Stores network data in a big data DB for big data analytics
- Seamlessly scalable architecture



● Real-time Monitoring



● Traffic Pattern Analysis



● VoLTE Quality Monitoring

OSS - Map Based Monitoring

Map-based Network Monitoring(Web)

- **Fault and performance monitoring of nationwide network**
 - ☞ Monitors from service area and customer perspective

Map-based Network Monitoring(Mobile)

- **Monitoring/analysis operation from outside of office**
 - ☞ Offers a mobile office environment

- Comprehensive monitoring/analysis for the administrative district, subway and a crowded area
 - Monitors traffic performance for the administrative area at one-minute interval
- Drilling down to lower-level maps for detailed investigation
- Intensive monitoring for the concerning area
 - Provides monitoring and analysis functions for the concerning areas (e.g. highway, railroad, etc.)
- SMS Trouble Ticketing with Call Back URL



● Regional View (Web)



● Highway View (Web)



● Highway View (Mobile)

Thank you.

Contact Information

Address 3rd, 5th Fl. 552, Yeoksam-ro, Gangnam-gu, Seoul, Korea, 06187
Telephone +82-2-538-9360 **Fax** +82-2-538-9369
Email global@mobigen.com

www.mobigen.com

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