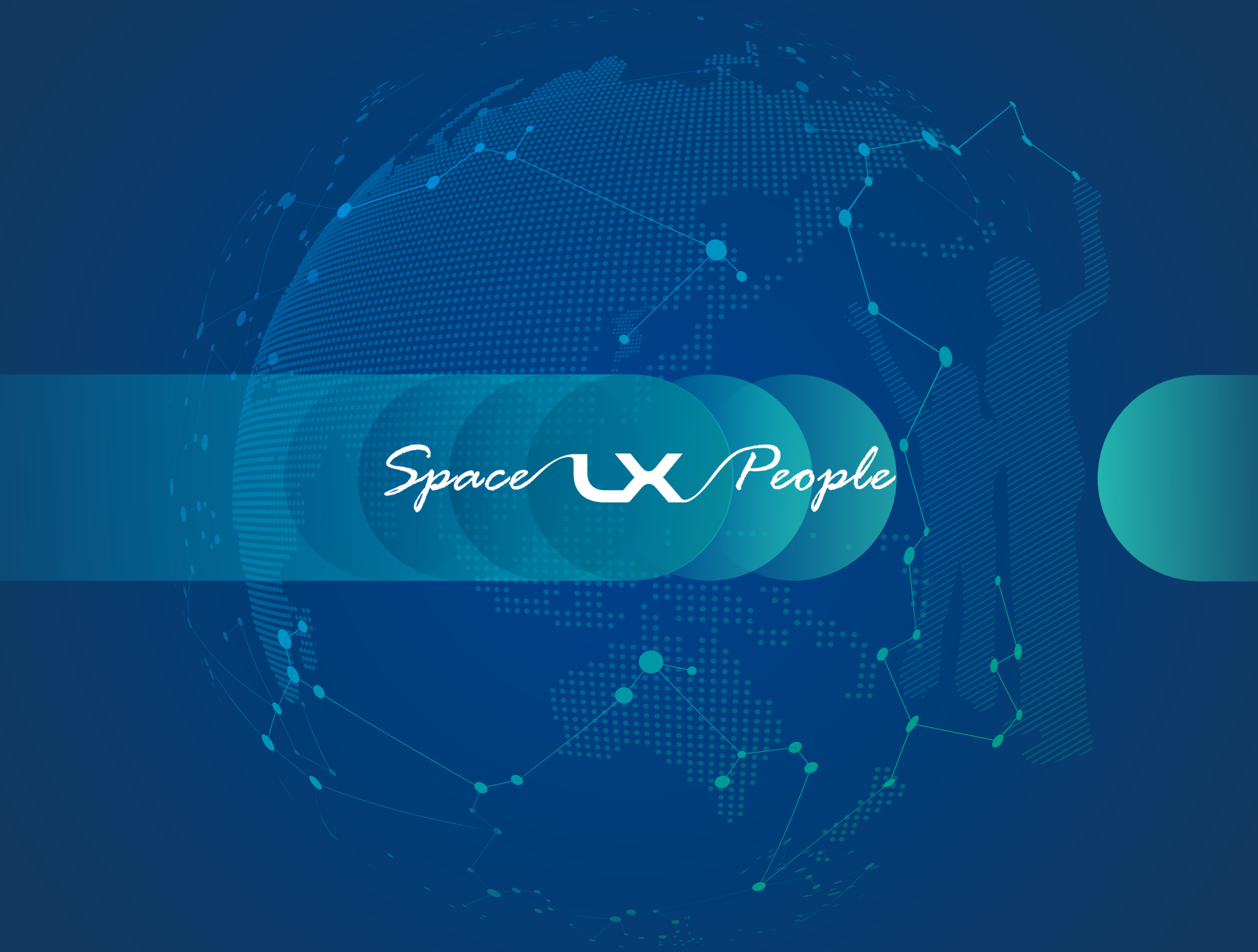
2017 Sustainability Report



Korea Land and
Geospatial InformatiX Corporation

About this Report

Purpose of Publication

Since the publication of its first sustainability report in 2008, LX Korea Land and Geospatial InformatiX Corporation has continued to disclose its sustainability management strategies and performance. The annual publication of this sustainability report helps LX to promote the interests of its stakeholders, and their proactive participation and the resulting trust and support underpin our growth and development into an organization that creates new values.

Features of the Report

In a preemptive response to the mandatory requirements of the Global Reporting Initiative's (GRI) standards after 2018, this report is prepared in accordance with the modified report standards. By advancing the existing materiality assessment system, it features secured objectiveness as it quantitatively analyzes the interests of key stakeholders by different topics and then reflects them in the selection of core issues.

Reporting and Verification Standards

This report satisfies international sustainable management standards including the Core option of the Global Reporting Initiative's (GRI) Standards, a global standard for sustainability reporting, UNGC, and ISO26000, among others. In addition, the company has obtained the verification for its financial and non-financial data from a specialized verification body, the Korean Foundation for Quality. The 3rd party statement can be found in pp. 62 - 63.

Reporting Scope and Period

The report covers the headquarters, LX Education Institute, Spatial Information Research Institute, 12 regional headquarters, and 172 district offices. It records LX's sustainability performances from January 1 to December 31, 2016 with additional activities and performances from the first half of 2017 for some issues. In particular, quantitative performances have been released for the past three years from 2014 to 2016 to enable year-by-year trend analysis.

Cover Story

LX Korea Land and Geospatial InformatiX Corporation draws the future blueprint of national spatial information. LX capitalizes on the power of time, space and people to go beyond the national territory of Korea, but towards the world. This strong will of LX was symbolically captured in the cover design.

LX, Connecting Spaces and People

2017 Sustainability Report

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CEO Message

LX Korea Land and Geospatial InformatiX Corporation (LX) is a quasi-governmental agency under the umbrella of the Ministry of Land, Infrastructure and Transport of the Republic of Korea and was established to protect the people's land property rights and ensure the effective management of land. With the pride of an organization that has been developed with Korea's modern and contemporary cadastral history, LX has been pursuing growth based on "fundamentals" under a sense of mission to provide people with open land information services as a public institution.

LX changed its name two years ago and widened its scope of business from the cadastral to the spatial information business so as to improve the quality of life for individuals. The company does this by "offering a land and geospatial information repository by the people, for the people, and of the people." Our objective is to suggest ways to utilize our nation's land in a more valuable manner and to pioneer the era of smart land where diverse technologies and industries converge together.

LX attained greater esteem after the news that Koreans selected the organization as the "Best Company to Work For in Korea (in the public sector category)." It is also the first quasi-governmental agency to receive the "Consumer Centered Management (CCM)" certification and become the winner of the Korea Small and Medium Enterprise Innovation Award in the category of the public-private partnership growth.

In this context, the new future for LX that "adheres to consolidating its foundation" is based on "sustainable growth." Thus, LX has reflected upon the path of our development and published a detailed record in the form of the "2017 Sustainability Report."

With the advent of the 4th Industrial revolution, LX promises you that we will not settle for our present success: we will strive to leap forward to create greater value for our land and a more prosperous future by making a commitment to the following.

First, we will be reborn as a hub for spatial information that is built together with the people.

LX is broadening its territory by providing the public with free spatial information, enabling them to create added value in an easy and convenient way. LX has established and provides the "LX National Land Information Base Map" that enables individuals to see various national land information at a glance for free. The company is also in the process of evolving into a hub that is responsible for spatial information with a given commission to manage the National Spatial Information Portal, Highway Management System (HMS), and natural disaster information control from the government.

LX is building a dense national disaster safety network by establishing and verifying the National point numbers that identifies exact location data from remote areas and by operating the flood hazard management system caused by torrential rain, typhoons, and tsunamis.

Because LX is an exclusive institution of the unified Survey of the Land Information, which conducts the national land monitoring project using drones (UAV), and has been designated as a specialized organization for the national land spatial information quality management, we commit our utmost efforts to enhancing the public benefit.

Second, we will lay a foundation for sustainable management by cultivating human resources based on a transparent and ethical corporate culture.

Integrity ethics management is a necessary and sufficient condition for the sustainable growth of LX. The company has reformed its "corruption reporting center" to allow anonymous reporting and held anti-corruption ethical management workshops in the headquarters and district offices throughout the country. As a result of integrity culture promotion, we achieved grade 1 in Anti-corruption Initiative Assessment for 2 consecutive years.

LX, the 1st public institution to introduce NCS(National Competency Standards) evaluation model, is being reborn as an exemplary institution leading the ability-based recruitment by introducing "Blind Recruiting," and was voted by the people as the Best Company to Work For in Korea (in the public sector category), a ranking overseen by the GPTW Institute.

Third, we will take the initiative to start a virtuous circle that grows the cadastral, spatial information industry by advancing to the global market.

Venturing beyond national boundaries, LX has extended its field from the cadastral business to the spatial information business and accelerated overseas market expansion since 2006. Developed by the Korean government, the "Korea Land Information System (KLIS)," which is a Korean version of a land management system, "National Spatial Data Infrastructure (NSDI) service," and our national land information management system, are drawing global attention. As a participant that has helped establish this national system, LX has handed advanced land surveying technologies over to developing countries that are in dire need of building an effective land information system. LX was also selected as one of the institutions implementing the "capacity building program for the modernization of the land administration system" by the World Bank (WB) from the past year.

LX is fully committed to assisting developing countries to develop their cadastral/spatial information industry as reflected in its successful and recent completion of the "The improvement of Geolocational accuracy of Cadastral map in Uruguay," "Establishment of National Geographic Information System in Uzbekistan," etc.

Lastly, we would like to contribute to the pursuit of win-win management in line with the UN's Sustainable Development Goals (SDGs).

LX has joined the "UN Global Compact," a policy initiative for businesses to declare their commitment in the areas of human rights, labor, the environment, and anti-corruption, and is exploring business models to attain the Sustainable Development Goals (SDGs), a blueprint and roadmap for the mutual prosperity of our international society. The SDGs encompass all areas of the economy, society, and environment and orient toward a human-initiated, comprehensive partnership to be implemented by both developed and developing counties while taking care of the environment. Accordingly, LX has introduced green growth and land utilization methods to respond to climate change to developing countries and continues to build a cooperative, win-win model with the operation of the "LX Spatial Information Foundation Support Center" in an effort to foster a business incubator ecosystem using spatial information.

We have developed our expertise through our passion and dedication to our national land. Our vision to become a global leader that ushers in the renaissance of the cadastral and spatial information businesses will only be realized through ceaseless innovations to create a better future. LX will evolve into a fully trusted, leading institution that specializes in national land information with its sustainable development strategies. We would be more than grateful for your support as we strive to achieve a better tomorrow.

November 2017
CEO, LX Korea Land and Geospatial InformatiX Corporation
Park, Myoung-sik

박명식

A Promise for a Better Future

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2016 2017 Highlights News

Key Outcomes

The endeavors which LX Korea Land and Geospatial InformatiX Corporation made to realize the common good and to pursue sustainable growth with stakeholders as a public institution have been rewarded in various fields. LX will continue to strive to become the best specialized institution trusted by the people.

Results of the Public Institution Management Evaluation

LX has obtained the top grade, A, in the public institution management evaluation in 2016.

2013	2014	2015	2016
B	B	A	A

Major Awards and Certifications

Ranked as the Best Company to Work For in Korea in the public sector category
(GPTW Institute, global trust management rating agency)

Won the 2016 Korea SME Innovation Award in the category of the public-private partnership growth for the third consecutive year
(National Commission for Corporate Partnership)

Certified as an excellent institute for Consumer Centered Management (CCM)
(Korea Fair Trade Commission)

Key Sustainability Management News

Our 40th Anniversary Marks Another Major Leap Forward to Success

In July 1977, LX was founded as the Korea Cadastral Survey Corporation and had been growing alongside the value of the national land. With the enforcement of three laws on spatial information including the "The Framework Act on National Spatial Data Infrastructure," we have changed our corporate name to the LX Korea Land and Geospatial InformatiX Corporation. We continue to pursue national development and improve quality of life of people though the use of national land information.

Introduction of Environmentally-friendly Land Administration/Spatial Information Technologies Abroad

LX was one of the official guests to take part in the "4th Korea Green Innovation Days" held in Tanzania in April 2017, and had an opportunity to introduce green growth in developing countries and land utilization methods against climate change. In the event, LX's presentations of two innovation cases and demonstration of UAV (drones) helped to bring more publicity to Korea's excellent national land information technologies.

Building-up a Win-win Spatial Information Business Start-up Ecosystem

LX supports new start-up companies for the growth of the spatial information industry and job creation. We have sealed an agreement with the Korea Foundation for Cooperation of Large&Small Business, Rural Affairs and opened "LX Spatial Information Foundation Support Center" in June 2017 to discover promising founders and to offer substantial support—such as business funds and space, IT infra, to name a few—for establishing new businesses.

Introduction to LX Korea Land and Geospatial InformatiX Corporation

LX Overview

In 1977, LX was established as the Korea Cadastral Survey Corporation in a bid to protect the people's property rights and promote the advancement of cadastral survey technology and the cadastral system. Since then, it has changed its corporate name to the LX Korea Land and Geospatial InformatiX Corporation in June 2015 and we devote ourselves to developing and providing the state-of-art technology applicable to the people's daily lives. The newly launched LX aims at contributing to the national development by assiduously fulfilling its role as the best and most trusted specialized national land information provider.

General Status	
Institution Name	LX Korea Land and Geospatial InformatiX Corporation
Head of the Institution	Park, Myoung-sik
Date of Establishment	July 1, 1977 (Changed the corporate name to the LX Korea Land and Geospatial InformatiX Corporation on June 4th, 2015.)
Basis for foundation	Article 12 of The Framework Act on National Spatial Data Infrastructure
Number of Employees	4,115 persons
Credit Rating	AA0 (NICE Information Service, as of June 2017)
Key Services	Spatial information systems construction, cadastral surveying, technology R&D
Capital	KRW 10,000 million (As of Dec 31, 2016)
Assets	KRW 618,295 million (As of Dec 31, 2016)
Revenues	KRW 507,843 million (As of Dec 31, 2016)
Location of HQ	120, Giji-ro, Wansan-gu, Jeonju-si, Jeollabuk-do, (Jung-dong)
Major business sites	Headquarters, LX Education Institute, Spatial Information Research Institute, 12 regional headquarters, and 172 district offices

Main Business

LX undertakes five major businesses including national spatial information, cadastral survey, and cadastral resurvey, global business, and research and education. In the age of the 4th industrial revolution where people, things, and space are all connected to each other, we are making efforts to enter the overseas market of spatial information business through the public-private partnership with private companies based on the high precision cadastral data. Against this backdrop, we intend to concentrate our capability on the research and education businesses in an attempt to prepare for rapid technological advancement and changes in demand and to secure new growth engines. Capitalizing on our infrastructure, we are fully committed to expanding our spatial information business through win-win cooperation with private companies.

National Spatial Information Business	Promote the spatial information industry and provide spatial information service based on the effective building and management of the national spatial information system and the convergence of a variety of spatial information
Cadastral Survey Business	Register land information to the cadastral record managed by the government and provide quick and accurate cadastral service to protect the people's property rights
Cadastral Resurvey Business	Conduct the cadastral resurvey business and the world geodetic system conversion project to complete the Korean version of cadaster and construct a smart national land system by 2030
Global Business	This business spreads the cadastral and spatial information technology of Korea to developing countries, and leads the digitalization of national land management around the world.
Research and Education Business	Reinforcing the future growth capacity by strengthening future-oriented R&D while fulfilling our social responsibility through public education and utilizing our educational resources

LX VISION 2025

LX has set out to improve the efficiency of national land management and people's quality of life by executing government projects and supporting the establishment of policies. We consequently seek to be an institution loved by the public by strengthening our social responsibility implementation and accountable management. LX will consolidate its status as the national spatial information hub as well as a specialized institution that provides people with the national information service by cultivating experts and invigorating R&D for the management of integrated and convergent land information.

LX Management Strategy System

Mission

We will contribute to national development through cadastral survey implementation, support of the establishment of a national spatial information system, and R&D in a spatial information cadastral system

Vision

- The best national land information specialist
- Trusted by the people

Core Values

- Change for the future
- Taking on the world's challenges with new technology
- Responsibility for the people

Strategic Directions

- Creation of new growth engine for spatial information industry
- Leading sustainable cadastral industry
- Strengthening future growth capabilities
- Leading social value realization

Sustainability Management Initiative

Compliance with Global Sustainability Management Initiatives

As a global corporate citizen, LX strives to be an active participant who fully meets its social responsibilities to international society. We transparently disclose actual activities and performance in this report, in line with the implementation guidelines proposed by the global initiatives. LX actively demonstrates its intent to fulfill its social responsibility for internal and external stakeholders and underpins LX's contribution to sustainable value creation.

Countenancing the United Nations Global Compact (UNGC)

Since 2007, LX has joined the United Nations Global Compact (UNGC), an international convention on corporate social responsibilities, to uphold the 10 principles in the four areas of human rights, labor, the environment, and anti-corruption. To fully abide by the corporate social responsibilities promoted by the UNGC, LX discloses the LX code of conduct and sustainability management achievements on its homepage and this report.

Human rights/Labor

Main Contents	LX Response
Principle 1 Businesses should support and respect the protection of internationally proclaimed human rights; and **Principle 2** Make sure that they are not complicit in human rights abuses. **Principle 3** Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining; **Principle 4** The elimination of all forms of forced and compulsory labor; **Principle 5** The effective abolition of child labor; and **Principle 6** The elimination of discrimination in respect of employment and occupation.	Along with the Code of Ethics, LX publicizes the basic principles to realize ethical management with its LX Code of Conduct. We have established our own human rights management system based on Article 52 (Compliance with International Management Norms) of the LX Code of Conduct. We have also disclosed our human rights management declaration and formed a specialized team for human rights management as a part of the effort. In addition, we operate a Future Growth Forum, Labor-management win-win conference that was founded on the principles of Article 51 (Harmony Between Labor and Management) of the LX Code of Conduct to stimulate communication between labor and management and take a leading role in protecting labor rights.

Environment

Main Contents	LX Response
Principle 7 Businesses should support a precautionary approach to environmental challenges; **Principle 8** Undertake initiatives to promote greater environmental responsibility; and **Principle 9** Encourage the development and diffusion of environmentally friendly technologies.	Applying the principle of environmental protection specified in Article 50 of the LX Code of Conduct, LX runs an energy council and implements countermeasures against climate change through greenhouse gas reduction. We also analyze the factors influencing the environmental problems with the spatial /statistical analyses based on Big Data and propose appropriate measures to tackle fundamental environmental problems.

Anti-corruption

Main Contents	LX Response
Principle 10 Businesses should work against corruption in all its forms, including extortion and bribery.	To internalize ethical management among all its employees, LX discloses its basic principles of ethical management including Article 1. General Provision, Article 4. Fair Work Performance, Article 5. Prohibition of Accepting Undue Profits, and Article 6. Compliance with Clean Contract Proposal, while carrying various efforts to spread ethical management to all stakeholders with the promotion of a clean network.

Implementation of the Sustainable Development Goals (SDGs)

UN SDGs

The term SDGs is an abbreviation for "Sustainable Development Goals" (hereinafter SDGs). The SDGs and the follow-up goals of the United Nations' Millennium Development Goals (MDGs) are the greatest common goals that the United Nations and members of international society set out to attain from 2016 to 2030. The SDGs encompass 17 goals including the elimination of poverty and inequality, response to climate change, quality employment, etc. and 169 targets.

LX's Response to Sustainable Development Goals

As a member of the international community, LX is committed to taking part in the initiatives of the UN SDGs. In our effort to achieve the SDGs, we are expanding our public role as a public institution and creating social values through our business. LX is focusing on identifying business models related to the SDGs by taking advantage of its accumulated capacity through management activities. Through continued management on SDGs implementation models overlapping with our business domain, we will discover new growth opportunities and contribute to solutions for the imminent challenges that face mankind.

Goal 9.	**Establishment of the National Infrastructure (Railway) Spatial Information System** More detailed information is on page 25.	p.25
Goal 11.	**Comprehensive Land Information Management System Construction Business** More detailed information is on page 33.	p.33
Goal 16.	**Promotion of the Integrity Network** More detailed information is on page 39.	p.39
Goal 8.	**Expansion of the Spatial Information Academy** More detailed information is on page 43.	p.43
Goal 4.	**Provision of Customized Training** More detailed information is on page 51.	p.51

Sustainability Management System

LX Sustainability Management Strategy System

Building on the sustainability management vision of "sustainable national land information value creation with stakeholder participation," LX is implementing "LX Vision 2025" in conjunction with its sustainability management strategy system. We will advance our sustainability strategy system in consideration of its impact on key stakeholders and future management direction.

Vision of Sustainability Management

Creating the Value of Sustainable National Land Information through Stakeholders Engagement

Directions	Tasks
Expanding our Public Role	• Expanding public roles in the industry • Enhancing R&D and performance • Win-win development of related industries • Supporting the sustainability management of partners
Improvement of Quality and Service	• Enhancing service quality management • Increasing customer satisfaction activities • Developing new services
Realizing Social Contribution	• Increasing participation in the local community • Investing in the infrastructure of the local community • Caring for the underprivileged
Fostering Professional Human Resources	• Hiring and fostering a professional workforce • Improving educational programs • Work-life balance

Definition of Stakeholders

LX has clarified the range of stakeholders by defining their characteristics. Our revamping of communication channels for different stakeholders facilitates more active two-way communication such as reflecting stakeholders' demands in management plan. We will prioritize the trust of stakeholders in our management activities and become a public institution loved by the people.

Communication Channels for Different types of Stakeholders

★ Regular ★ Frequent

	Interests of stakeholders	Intensive communication channel
People — People, National Assembly	• Strengthened public functions • Various information made available	★ Spatial Information Academy, PR center ★ LX Land Info-e APP, gourmet restaurant guide, overseas expansion support center
Government — Government, Public Institutions	• Pivotal role in industrial development • Pursue national benefits for citizens	★ Future strategy content, spatial information newsletter ★ Policy forum, conferences, spatial information magazine
Customers — Survey customers, Local Community	• Accurate survey results • Enhanced service quality	★ Leaflets, brochures, periodicals ★ Quick call center, homepage, SNS
Related Agencies — Experts, Academia	• Expand the provision of expert capability • Collaborative PR activities	★ Symposium, PR consultation body ★ National land internet broadcasting center, press conference, LX supporters
Private Partnership — Partner institutions	• Win-win and public-private partnership growth • Youth unemployment, job creation	★ National land expo, on-the-go lectures, expert education, talk concerts ★ LX Spatial Information Foundation Support Center, workshops
Employees — Employees and the Trade Union	• Sustainability Management • Create a great place to work	★ Field visit, video conference, labor-management consultative body ★ Intranet, house journal, workshop

Stakeholders' Materiality Assessment

Materiality Assessment Process

LX founds its sustainability management activities based on its stakeholders' participation. We identify the relevant sustainability management issues through international standards, media, benchmarking, etc. as well as various stakeholders' opinions obtained from questionnaires and interviews. These activities have allowed LX to select a total of 12 sustainability management core issues in need of intensive management and reflect them in this report. Core issues will be shared by the main department where they are used to set up the directions for countermeasures and the establishment of objectives in the future.

Communication with Key Stakeholders

The interviews with key stakeholders from different groups provide LX a venue to introduce the current statuses of LX's sustainability management and to listen their opinions on what they are satisfied with and areas that require improvement. We will continue reflecting the opinions of stakeholders in our management activities and do our best to become an undisputedly trustworthy institution for the people.

Step 1 Composition of Sustainability Management Issues

Key issues were identified in terms of LX's sustainability management through media research, benchmarking, international standard analysis, and internal and external materials.

Media Research

Press and media articles from January 2016 to June 2017 about the sustainability management activities of LX in terms of the economy, society and environment were compiled.

Analysis of Issues Pertinent to Related Agencies

Common key issues in the public sector were delineated by reviewing sustainability management reports prepared by major public institutions and the related agencies under the umbrella of the Ministry of Land, Infrastructure and Transport.

Analysis of International Standards

Global standards and initiatives pertinent to sustainability management including the GRI Standards, ISO 26000, UNGC, and UN SDGs were examined.

Reviewing Internal Data

Sustainability management issues were identified from business reports, management performance evaluation, key agendas of the board meetings, and the CEO's New Year's address.

Step 2 Confirmation from the Stakeholders through Interviews

What is the issue to which LX needs to heed special attention if it is to draw higher satisfaction from its main stakeholders and customers, the people, while fulfilling its obligation?

[Providing Valuable Land Information] LX carries out the role of protecting individuals' property rights and helping to realize the effective use of land, the basis of a nation, as the primary institution in charge of land information management and cadastral survey. As far as I understand, LX has secured a high level of technological competencies through advanced technology management and industry-academia cooperation in the fields of spatial information and cadastral survey. Based on the competitiveness that we has attained throughout its work, LX is broadening its area of business into the global market, subsequently creating jobs in the private sector and supporting the overseas sales of SMEs. If LX commits more effort to R&D and fostering related industries so that they can overcome the challenges of an information-centered future, as well as provide people with more effective and valuable national land information, I am certain that the people's trust and satisfaction with them would grow even further.

If there is an area in which LX can help its employees to exert their best capabilities in their given positions by paying greater attention, then what would it be?

[Training Top-level Experts] In the age of artificial intelligence, we should discard the past traditional concept of space and reconstruct a new one. Today, space and spatial information transcend the tangible environment such as the land and the sky, expanding into an intangible environment like cyber space. Hence, it is necessary for LX to seek the effective management of national land space and sustainable development based on its particularity as a cadastral survey and spatial information company. LX is a group of experts armed with abundant knowledge and various experience in the field and optimized to explore new business areas. I think it is of great importance for LX to keep on hiring talented individuals and operate a talent cultivation program to develop them as top-level experts. Providing employees with the relevant training will serve as a basis on which LX can attain sustainable growth.

As a representative partner, what do you expect from LX in terms of the win-win public-private partnership?

[Public-Private Partnership System for Mutual Growth] As the forerunner of the specialized cadastral business and spatial information business, LX is devoted to building a spatial information ecosystem, using its accumulated knowhow and cutting-edge spatial information technologies. As LX runs a Spatial Information Academy to transfer its professional technological capacity to the private sector, it helps partner companies a great deal. I expect that LX could lay a foundation on which private partner companies can grow by developing various support activities such as business start-up support programs and Hope Funds and develop a spatial information industry ecosystem where genuine mutual growth is achieved through a systemic private-public cooperation scheme.

The People

Cho, Jeong-sik
Member of the National Assembly

The Academia

Jho, Wha-sun Director
Institute of State Governance Studies, Yonsei University

The Private Partnership

Kim, Sung-ho CEO
EGIS Co., Ltd.

The Government

Kim, Seung-gi Senior Expert Advisor
Land Infrastructure and Transport Committee, National Assembly

The Local Community

Lee, Jong-sung President
Community Chest of Korea, Jeollabuk-do

The Employee

Park, Hyun-jin Employee
Seogwuipo branch, Jeju Regional Headquarters

If there is an area to which LX should put more effort to attain sustainable growth with its stakeholders, what would it be?

[Leading Sustainable Development] So far, LX has exerted significant influence over Korea's sustainable development in terms of efficient land management and value creation as a leading institution in the field of national spatial information system support, R&D on cadastral systems, and cadastral surveys. Since its move to Jeonju, Jeollabuk-do in 2013, LX has been working on active communication with the local community, one of the key stakeholders, and persistently pursuing a public-private partnership growth with partners. In that regard, I would give LX a positive evaluation. As the institution that assigns value to the land, the backbone of any nation, I expect that LX will renew itself as a sustainable corporation that gives more attention to building trust through maintaining steady communication with the people while seeking to create positive impacts on the environment and society.

As there is an increasing need for the establishment of a sustainable social contribution system, what direction should LX guide itself? Is there anything you wish to see from LX in that regard?

[Social Contribution with Local Communities] After moving to Jeonbuk Innovation City, I've learned that LX carries on sustainable social contribution activities with LX's own stories. I trust that the true role of the LX within the local community is to gather opinions from the community, and that the institution considers them as it executes practical programs. By doing so, LX proposes a direction for the establishment of the social contribution system. The Jeollabuk-do Social Welfare Community Chest also conducts various projects annually for disadvantaged people, social welfare facilities, and groups within the community. In the future, I expect that cooperation with LX would empower those in need by providing proactive and sustained help in the local community.

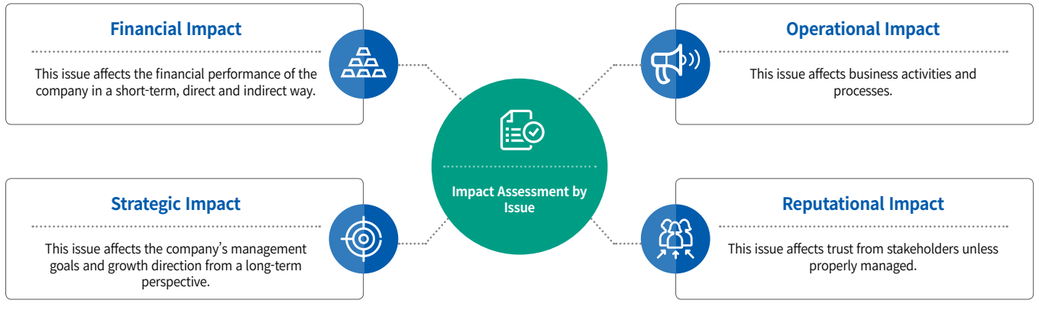
As a first employee from the Industry Professional Practice (IPP), what do you think of LX's recruitment policy and what do you expect from LX for the future?

[Fair Youth Job Creation] With growing social interest in job creation for the youth in public institutions, there are various systems in place including ability-based recruitment, blind recruitment, etc. In my case, I was one of the Industry Professional Practice (IPP) students. I learned about the practical business for 5 months and was given an opportunity to pursue my dream. As the members of the group constitute the source of competitiveness in a company, I expect that a passionate and talented young people will create a quality work environment and become a growing LX.

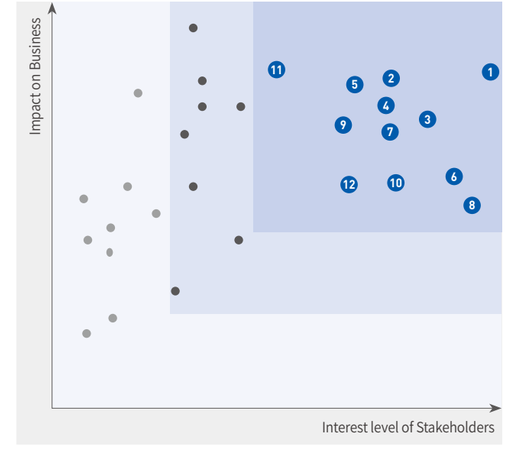
Stakeholders' Materiality Assessment

Step 3 Materiality Assessment Test

Based on the list of sustainability management issues, the materiality assessment test is conducted after reflecting internal/external stakeholders' degree of interest, expert assessments, an internal review, and other factors. In particular, we strengthened the structure of our stakeholder questionnaires so that we can assess the impact of each issue on LX in four aspects: finance, operations, strategy, and reputation. Through this, we will identify the impact characteristics of each issue and utilize it to establish a strategic sustainability management system.



Results of the Materiality Assessment Test



NO	Core Issues
1	Effort to improve customer satisfaction
2	Ability-based recruitment and job creation
3	Invest in social infrastructure and win-win with the local community
4	Identifying a new sustainable growth engine for the future
5	Create an enjoyable working environment
6	Fortify service accountability
7	Reinforce social contribution activities based on LX's characteristics and regional bases
8	Expand R&D and infra
9	Building a transparent management system that promotes ethics and integrity
10	Efforts to diffuse awareness of public-private partnership growth to partners
11	Advancing and expanding into the global market
12	Operate a system to support partners

Step 4 Identification and Reflection of Core Issues in Sustainability Management

Based on stakeholder interests and impact on business, LX has selected 12 core issues and determined 7 report themes in accordance with the GRI standards. This not only creates a detailed report on the materiality of issues by different topics and future actions to be taken by LX, but also reflects influence factors assessed by stakeholders in the report.

NO	Core Issues	Impact Assessment by Issue				GRI Topic	Reporting Topic	Reporting Contents		Page Reference
		Finance	Operation	Strategies	Reputation					
4	Identifying a new sustainable growth engine for the future			●		Economic Performance	New Growth Engine for the Future	• Identification of the Future New Growth Agenda • New Growth Agenda Pool and Task Set-up	• Future New Growth Directions	p.18-19
8	Expand R&D and infra			●						
11	Advancing and expanding into the global market			●						
9	Building a transparent management system that promotes ethics and integrity	●		●	●	Anti-corruption Anti-competitive Behavior	Ethical Management	• Promotion of Social Responsibility Management via Ethical Management • Building a Transparent LX Together	• Realization of Clean LX Values	p.38-40
10	Efforts to diffuse awareness of public-private partnership growth to partners		●	●	●	Supplier Social Assessment	Public-Private Partnership Growth	• Win-win Synergy to Open Up a New Paths to Growth	• Fair Trading Culture to Foster a Level Playing Field for SMEs	p.42-43
12	Operate a system to support partners		●	●	●					
2	Ability-based recruitment and job creation		●	●		Employment	Job Creation	• Expansion of Open Recruitment Based on Competencies	• A Leading Public Job Creator in the Private Sector	p.44-45
1	Effort to improve customer satisfaction		●		●	Customer Privacy	Customer Satisfaction	• Provide an Outstanding Customer-Centered LX Service • LX that Communicates with Customers	• One Step Ahead Customer Satisfaction Service	p.46-47
6	Fortify service accountability		●		●					
3	Invest in social infrastructure and win-win with the local community				●	Indirect Economic Impacts	Local Community	• Mature Pursuit as a Leading Social Contribution Institution • Heartwarming Sharing with People	• Value of Sincerity Augmented by LX's Sharing	p.50-51
7	Reinforce social contribution activities based on LX's characteristics and regional bases				●					
5	Create an enjoyable working environment	●	●			Training and Education	Human Resources Management	• LX's Talent to Create the Future Value of Our Land • Establishment of Fair and Transparent Personnel Management System	• LX, a Great Place to Work • Harmonious and Win-win Labor-Management Culture	p.52-54

Governance

Composition and Operation of the Board of Directors

Building on the principle of autonomous and responsible management, the Board of Directors makes decisions on key management issues in an independent manner. The Board of Directors has earnestly performed its obligations by transparently deliberating and determining important matters on management activities by holding regular board meetings, expert committees, non-executive director meetings, and Board of Director meetings as needed.

Composition of the Board of Directors

The Board of Directors consists of 4 executive directors including the president and 6 non-executive directors who possess the capabilities to run the organization and relevant expertise. In accordance with Paragraph 4 of Article 18 of the 「Act on the Management of Public Institutions」, the president, as the CEO, also serves the Chairman of the Board of Directors. Executive directors are appointed by the president, whereas non-executive directors are nominated by the Minister of Land, Infrastructure, and Transport for more than half of the Board. All directors have rights to make independent decisions, and they also have their own independent obligations to uphold.

There is no specific qualification restriction on directors in terms of education, gender, religion, and birthplace or ethnicity. Above all, directors must be qualified in terms of managerial knowledge, experience, expertise, and integrity.

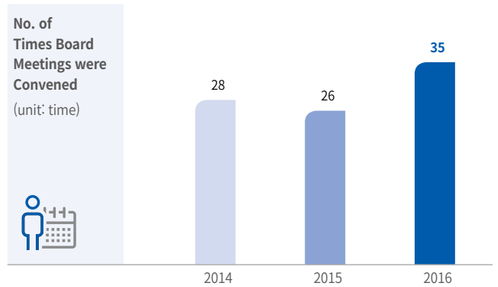
Auditors participate in the Board of Directors to offer their opinions in the decision-making process and monitor how managerial decisions are put into practice.

Classification	Name	Title
Executive director	Park, Myoung-sik	• CEO • Chairman
	Ahn, Jong-ho	• Vice-President and Head of the Planning Group
	Cho, Man-seung	• Head of the Cadastral Business Group
	Kwon, Ki-joong	• Head of the Management Support Group
Non-executive director	Kim, Yeong-mi	• Senior non-executive director • Professor, Department of Public Administration, Sangmyung University
	Lee, Hee-yeon	• Professor, Department of Environmental Planning, Graduate School of Environmental Studies, Seoul National University
	Doh, Hee-yoon	• President, Happy Unification Road
	Park, Hee-sang	• Managing Director in charge of civil engineering, Mooyong Construction Management
	Song, Yeong-nam	• Professor, Department of Economics, Jeonbuk National University
	Lim, Jae-ik	• Professor, Department of e-Business, Ajou University

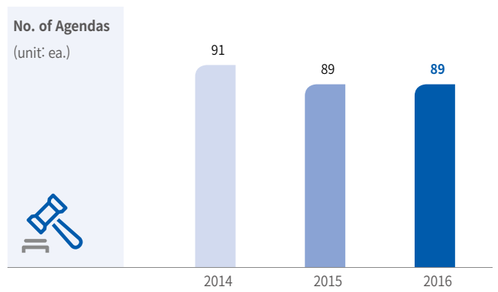
Operation of the Board of Directors

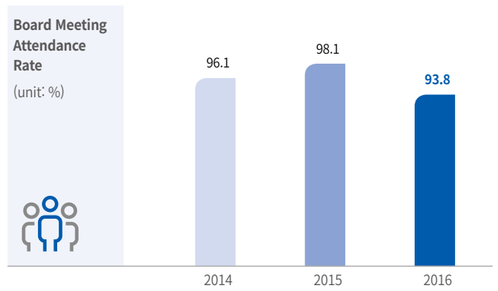
There were total of 13 regular board meetings held in 2016 with a participation rate of 93.8%. The Board of Directors has deliberated and passed a total of 89 agendas (30 resolutions and 59 reported items).

Operation of the BOD



* The number of board meetings held includes BOD meetings, expert committees, non-executive director meetings, etc.





Strengthen Expertise in the Board of Directors

LX is committed to recruiting non-executive directors who are well-versed in law, accounting, and the business expertise necessary for proper management of an enterprise so as to provide the organization with constructive criticism and check on the internal managerial activities. Particularly, LX offers managerial information to non-executive directors on a real-time basis to encourage them to contribute their ideas and fully employ their expertise.

9th On-site Board Meeting, 2017 (Vehicle-based multisensory surveying system)

Operation of the Expert Committee

LX operates the Expert Committee system to utilize the expertise of non-executive directors. The Expert Committee is composed of a management committee whose members are experts in the field of management, law, and others and a technical committee consisting of experts in the organization's business fields such as spatial information, cadastral systems, and so on. Individual committees are engaged in assisting the BOD's reasonable decision-making as they conduct in-depth review on items of their respective fields that are raised prior to the board meetings.

More Communication with Non-executive Directors

LX's major business fields include spatial information and cadastral surveying, and the company assigns individual non-executive directors to different regions to enhance their understanding of our business. A program run by LX enables them to experience what is like to be the president or the head of a district office for one day at 12 headquarters and 172 district offices throughout the nation. This program also helps us to secure a direct communication channel with employees. Our efforts to achieve revitalized communication between non-executive directors and those in the fields extend to the process of requesting advice and special lectures. In addition, our BOD's mobile homepage creates a synergistic effect for management activities as it serves to be a platform in which management information sharing among directors is promoted and their individual performances are monitored.

Composition of the Committees

Management Committee

Roles: Deliberating on issues related to management, financial management, legal system and regulations, etc.

Areas of Expertise	Composition	
Organization, HR, Information management	Non-executive director	Kim, Yeong-mi
North Korean information, Unification, Social welfare	Non-executive director	Doh, Hee-yoon
Finance, Labor, Transportation, HR development	Non-executive director	Song, Yeong-nam
Assets, HR, Finance, Social welfare	Executive director	Kwon, Ki-joong

Technical Committee

Roles: Deliberating on issues related to spatial information, cadastral systems, survey technology, business development, etc.

Areas of Expertise	Composition	
GIS, Spatial information analysis, Statistics, Industrial location	Non-executive director	Lee, Hee-yeon
Civil engineering, Constructing, Surveying, Geospatial information	Non-executive director	Park, Hee-sang
Management, Informatization (ERP, spatial information), Globalization	Non-executive director	Lim, Jae-ik
Overall LX businesses, Survey technology	Executive director	Cho, Man-seung

Evaluation and Compensation of the Board of Directors

To ensure fair, transparent evaluations and compensation for the Board of Directors, LX conducts their performance evaluations in accordance with the relevant laws and guidelines. The CEO enters into a management contract on the management goals and major tasks with the Minister of Land, Infrastructure and Transport and is subject to regular evaluations of management performance of the CEO by the heads of government agencies. Executive directors sign job performance contracts with the CEO and are remunerated according to the executive salary regulations. Non-executive directors are rewarded in accordance with the 「Guideline on Remuneration of Executives of Public Institution」 set up by the Ministry of Strategy and Finance.

New Growth Engine for the Future

• Background of Selecting Core Issues

Now the world is facing in an ever-accelerating transition into a new industrial era called the 4th Industrial Revolution. It is of critical importance for companies to secure the effectiveness of new services and content such as IoT, augmented reality, Big Data, and more. Technology development and service innovation leads not just to an individual enterprise's economic benefits but also to social value creation. This compels us to establish preemptive strategies to discover new growth engines.

• LX's Response Plan

Korea Land and Geospatial InformatiX Corporation has been seeking to become the world's finest national land information provider based on spatial information developed with the people. We will carry out our role as a new social value creator based on constant innovation and an enterprising spirit.

• 2016 Key Achievements

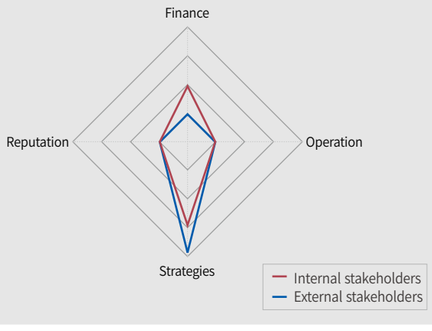
Establishment of the National Spatial Information
Received a Presidential Citation

Selected as a Model Organization
for the overseas expansion of e-government
(Ministry of the Interior)

Won the National Standardization Award
(Ministry of Trade, Industry and Energy)

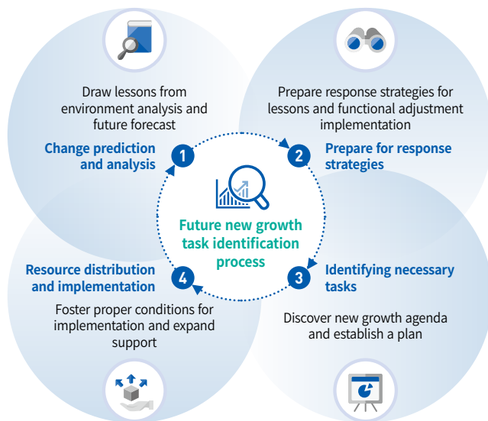
• Stakeholder Impact Assessment

The survey on stakeholder interests confirmed that, regarding the impact of the new growth engine for LX's future, internal stakeholders placed more stress on management strategies and short-term finance. External stakeholders, however, tended to put a high priority on the mid-to long-term management strategies.



Identification of the Future New Growth Agenda

As a people-centered, specialized institution in the field of comprehensive national land information, LX has identified and set up the future new growth agenda in consideration of not just of business profitability, but also overarching public interests. LX established five major tasks, in response to the forecast of changes in the managerial environment, internal competency analysis, etc., to ensure sustainable growth. These tasks are being implemented in line with the mid-to long-term strategic tasks.



SWOT Analysis and Performance Goals

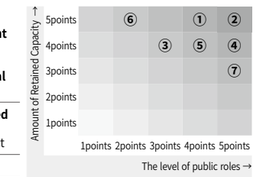
Internal Competency / Managerial Environment	Strength	Weakness
	• Investment and support capability for the development of cadastral & spatial information industry • Regular management and cadastral survey using institutions throughout the country	• Limited public service contents and communication channel • Initial state of building public service in the field of spatial information
Opportunity	**Strength Building (SO)**	**Opportunity Implementation (WO)**
• Spatial information cultivation policy to lead the 4th industrial revolution in the world • Convergence technology development and increased demand in the private sector for spatial information	• Strengthen government policy support for the development of cadastral & spatial information field • Reinforce R&D expansion and utilization based on our know-how	• Develop & diffuse service contents for the development of industry • Construct Institution's own spatial information infra early and prepare for utilization strategies
Threat	**Response to Threats (ST)**	**Overcoming Challenge (WT)**
• Drastic environmental changes including government policies and real-estate business, etc. • Increased demand for private participation in the public business areas	• Secure business infrastructure by preemptive investment for the development of industry • Discover government policy support contents that enables win-win cooperation between institution and private businesses	• Pursue joint business using LX's own infra • Beef up autonomous innovation in institution such as more efficient management and creation of new growth engine

Performance goals — **Create new growth engine/more effective management/improved public service**

New Growth Agenda Pool and Task Set-up

Agenda Pool
① **Unified survey of the national land information** ② **Comprehensive quality management** ③ Total management of the national location information ④ **Establishment of the national spatial information hub**
⑤ **Core convergence technologies based on R&D** ⑥ Spatial information DB building project
⑦ **Broadened overseas expansion**
⑧ Cadastral surveying own area and cadastral resurveying

Priority analysis



* ⑧ Cadastral surveying and resurveying are at the highest level of competence and public function, but led by government policies.

New growth Agenda	Mid-to long-term policy	Necessity of the Agenda
Unified survey of national land information	• Support national spatial information policy projects	• Unify and effectively manage various government-led land survey systems
Comprehensive quality management	• Reinforce public functions of cadastral & spatial information	• Lay a foundation for convergence industry including standardization of spatial information and quality control of confirmation surveying
National spatial information hub	• Support national spatial information policy projects	• Establish national land information management system • Enhance applicability of spatial information for the public
Core convergence technologies	• Fortify future-oriented R&D	• Secure competitiveness for the domestic industry by reinforcing technological capacities applicable for the 4th industry
Broadened overseas expansion	• Provide more services utilizing spatial information	• Creation of national interest and LX revenue • Pioneering an overseas market for domestic companies

Supporting the Infra to Implement the New Growth Agenda

To pursue the new growth agenda, LX strives to realize new growth engines by strengthening its executive ability with increased budgets for the tasks and the recruitment of specialists and establishing a strategic organizational reform roadmap. To ensure systemic management over business performance, the company carries out regular monitoring of its business performance while establishing a partnership system for responding promptly to internal and external environmental changes.

Partnership System to Manage the New Growth Agenda Performance

LX Management Innovation Team

Prepare future growth strategies	Lead management innovations
Mid-to long-term organization reform	Monitor any changes in the business environment

Planning and Coordination Office	Manage performance in line with the company-wide strategic tasks
Performance Management Dept.	Assess the executed performances and provide incentives
Business Group	Check the task implementation status by individual group

Future New Growth Directions

Establishment and Utilization of Infrastructure to Unified Survey of the National Land Information

By unifying national land information survey systems operated by the government, LX attempts to assume a new public role by increasing the efficiency of management. In this regard, the company would like to conduct specialized national land information business in the field of policy suggestions such as the fact-finding survey of vacant houses, national land information monitoring projects and the pilot project of integrated survey for municipalities.

Selected as the lead institute of policy study of the Ministry of Land, Infrastructure and Transport

Reinforce Reliability with National Spatial Information Quality Control

As the national spatial information quality control institution designated by the Ministry of Land, Infrastructure and Transport since July 2016, LX is committed to providing unified spatial information by incorporating administrative and spatial information in various fields. In so doing, the company intends to strengthen the national spatial information infra and the reliability of spatial information.

Designated as the National Spatial Information Quality Control Institution

Working as the National Spatial Information Hub for People

In response to interests in spatial information by the people and government, LX is striving to generate valuable spatial information with various stakeholders. With proactive communication with the people, LX will be a hub institution that offers the national spatial information necessary for people in an accurate and prompt manner.

In Pursuit of Advancing the National Spatial Information Portal

Development of Future-oriented Core Convergence Technologies

In response to unexpected environmental change and technological strides, the company is devoted to solidifying the foundation of the national spatial information industry by equipping itself with competitive core competencies. In the interest of sustainable growth, the company focuses its efforts on continued R&D investment and human resource capability development. In particular, the company will progress to become a specialized institution that contributes to industrial development by sharing its core infra including technology researches, specialized training, etc., over the entire industry ecosystem encompassing the government and private sector.

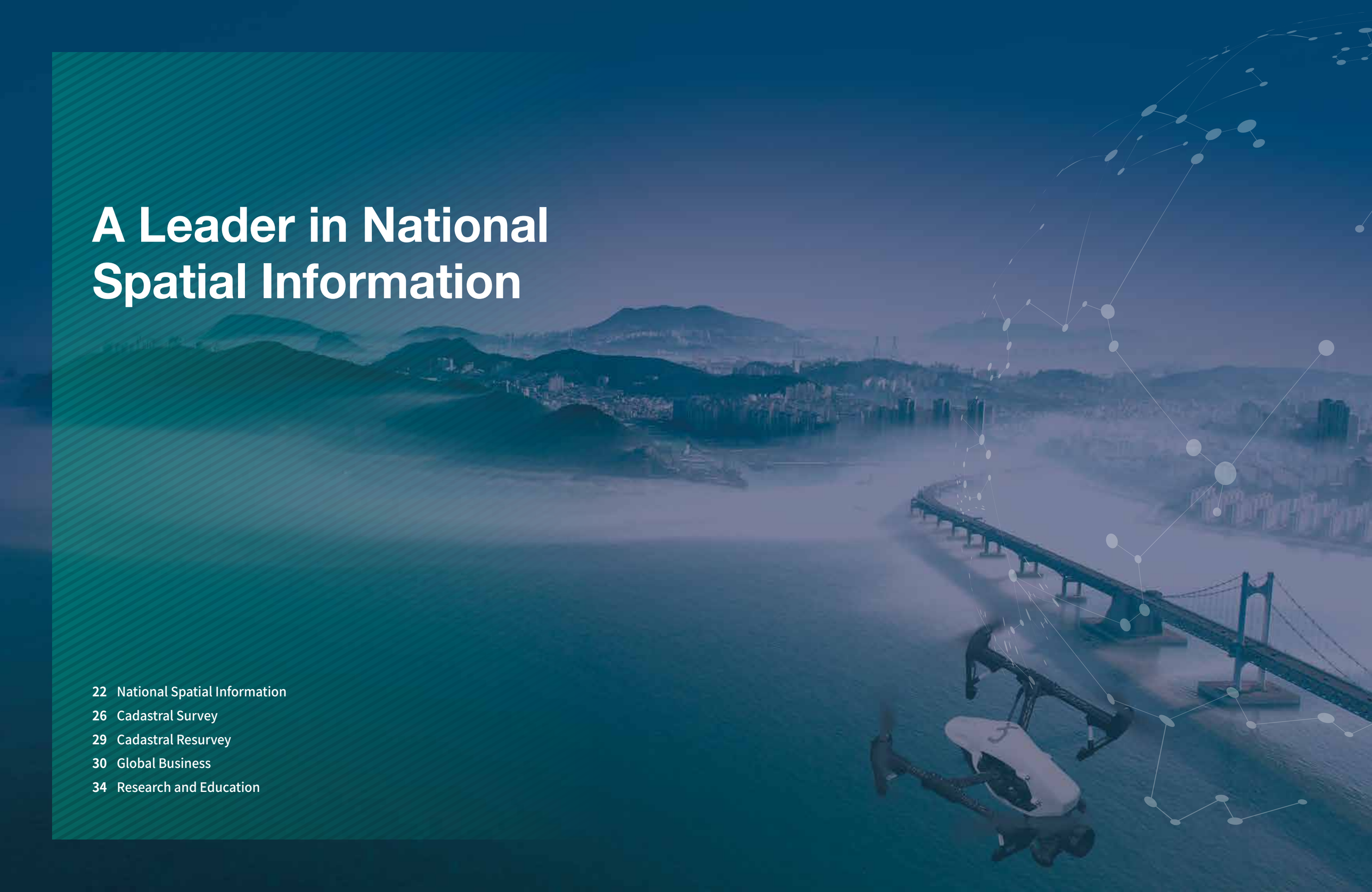
Selected as the Lead Institution for Spatial Information Data Retention Technology

Greater Overseas Expansion in Cooperation with the Private Sector

Building on the accumulated Korean-style land administration system and technological advantages in spatial information, LX tries to expand overseas business. Capitalizing on its global network, LX will advance the national spatial information field of developing countries with private companies and take the lead as a global spatial information specializer by contributing to the growth of the national economy.

Global Business in 24 countries

A Leader in National Spatial Information

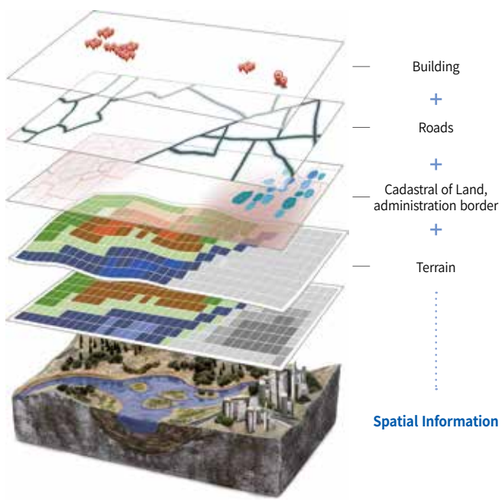


22 National Spatial Information
26 Cadastral Survey
29 Cadastral Resurvey
30 Global Business
34 Research and Education

National Spatial Information

All Information on the National Land, Spatial Information

Spatial information refers to maps and all information that can be expressed on a map to provide knowledge about certain locations, distributions, and more. Today, spatial information is indispensable information for our daily lives. It spans from information on properties such as the boundaries of arable lands and the status of agricultural products to information on natural resources to indicate the locations of water, greenery, or mountains. It is largely classified as national spatial information and urban spatial information and thus managed accordingly. Aside from the national spatial information such as topography, land utilization, and the natural environment, LX comprehensively collects and manages urban spatial information including roads, land, and facilities to provide a reprocessed version of this information so that it is suitable for daily use.



Understanding of Standard Spatial Information and the Role of LX

A standard is defined as the unification of type, quality, shape, size, etc., of a product to increase convenience and efficiency. Standards are regulated throughout entire industries, and the standards in the field of spatial information are made up of consistent technical specifications or rules that are necessary for effective production, management, distribution, and utilization. LX supports the government's standardization policies and conducts various standard supporting activities including special training and consulting on the topic of standards. The company broadens its competency to provide a favorable environment for enterprises based on the expansion of the basic standards.

Opening the Future with Spatial Information Technology

Ever since the term "4th Industrial Revolution" was introduced in the Davos Forum in 2016, many have expected that it would generate tremendous consequences in every area of society and economy. The LX national land information base map would accommodate VR technology, allowing us to get 3-dimensional information about the national land. This will create a virtual space where anyone could easily access information about real estate or hidden hot spots. It would usher in the era of autonomous driving automobiles that operate with artificial intelligence through a development of high precision e-maps for autonomous driving based on intellectual spatial information. The widened use of drones would assist in lifesaving operations and searches for missing people. Drones would also make it possible to collect various national land information unbounded by any hindrances, thus resulting in greater administrative convenience.

LX Service to Care for the People

The Representative Brand of Spatial Information Service, the National Spatial Information Portal

The National Spatial Information Portal is an integrated platform that integrates and provides around 1,300 types of national spatial information dispersed in 11 existing systems, including the Integrated National Spatial Information System, Vworld, Onnara real-estate portal, etc. It is expected that the portal site will raise the usage and applicability of spatial information through various fields by opening and sharing all synchronized data from data production institutions to service utilization organizations.

* Opened a convenient portal service providing information on national, public, and private spatial information (http://www.nsdi.go.kr)

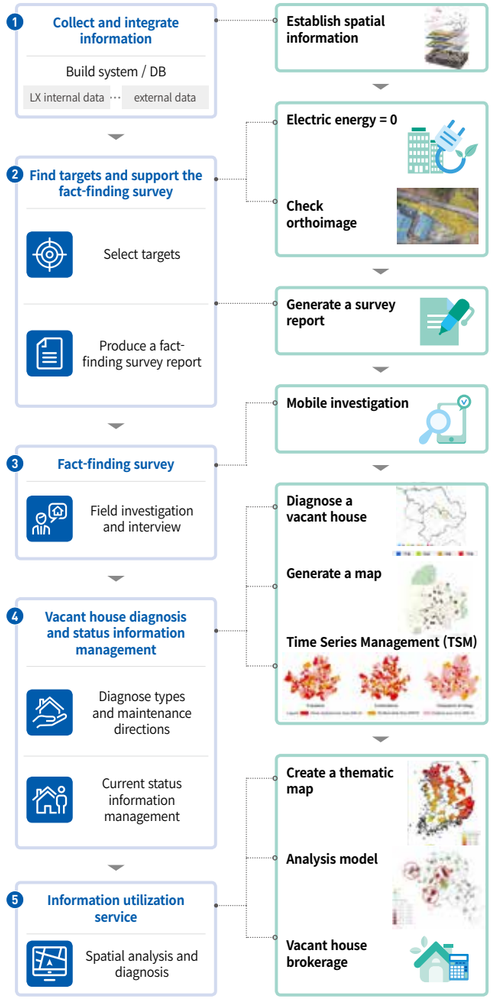
The Basic National Spatial Information, Serial Cadastral Map

LX is establishing the management and application plans on serial cadastral maps for the commissioned operation of the basic national spatial information. This will enable the company to create a serviceable and obtainable market through quality control and the use of serial cadastral maps. To realize this, LX is preparing for the necessary legal basis to carry out public obligations and the use for commissioned operation of serial cadastral maps. The company is also endeavoring to maintain the quality of the serial cadastral map with an expert system.

Fact Finding Survey of Vacant Houses and Data Management of their Current Status

The specialized fact-finding survey and systemic status management on vacant houses helps realize a more stable residential environment and higher residential satisfaction, thus ultimately contributing to a better quality of life in Korea. LX will combine field investigations with surveys to select candidates for vacant houses and to identify causes for vacant houses by using advanced spatial analysis techniques.

Fact-finding Survey of Vacant Houses and Information System Operation Procedures



Establishment of a National Land Information Monitoring System Based on Drone (UAV)

LX is pursuing the establishment of the national land information monitoring system based on UAV in the latter half of 2017. In 2015, LX was the first organization to create a UAV-based national land information monitoring system in Korea. It also and developed a UAV-based service model in partnership with the private sector. As of 2017, the company has obtained and manages extensive UAV images equivalent to around 78 times the size of Yeouido.

Support for the FIFA U-20 World Cup Korea 2017 with LX-UAV

LX has fully cooperated with requests regarding drone operations to prepare against external threats such as terrorist activities during the FIFA Under-20 World Cup held in Korea. To meet the expectations of successful hosting and ensure national security of this international event, the company has served its public obligations as the leading UAV organization in the public sector.

Drone Show Korea 2017

LX took part in Drone Show Korea 2017 organized by the Ministry of Trade, Industry and Energy and Busan Metropolitan city to invigorate the drone industry. LX introduced a range of UAV convergence technology including UAV platforms, 3D contents, VR experiences, UAV control simulation installations and UAV convergence new technology, etc., and proactively led the event. The company also promoted a convergence service model based on UAV convergence new technology and brought attention to the need for joint cooperation with the private sector in the LX UAV pilot workshop, which was held as an additional event.

Advancing LX Land Info-e

LX is improving the function of contents of the LX Land Info-e app to improve service quality and accessibility. As a specialized organization in land/spatial information, we take the lead in minimizing real-estate fraud or any damage caused by false investments by fulfilling our public responsibilities and making sure of stable land transactions.

Current LX Land Info-e app Users

(unit: person)

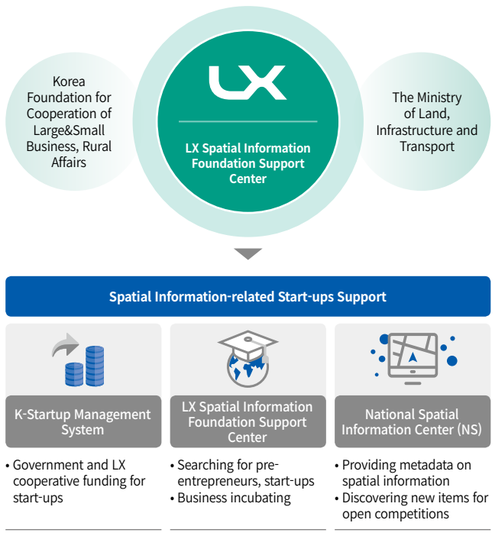
Service name	2014	2015	2016
Evacuation Information	38,037	16,554	10,592
Land Information service	58,092	98,307	137,565
PR center	21,580	12,422	18,087
Surveying fees	1,140	29,999	39,780
Story of Tastes	2,869	15,525	16,717
1 Night 2 Days	-	-	4,610
Tour in the Smart City of Jecheon	-	-	1,980
Transmission of the position in an emergency situation	-	-	2,447
Total	121,718	172,807	231,778

* Starting from 2016, we are offering 3 additional services which are '1 Night 2 Days,' 'Tour in the Smart City of Jecheon' and 'Transmission of the position in an emergency situation.'

National Spatial Information

LX Spatial Information Start-up Support

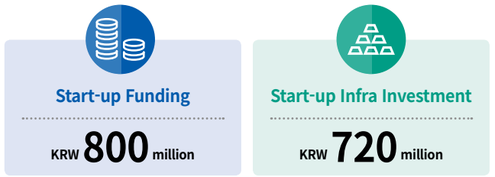
In conjunction with the government, LX raised funds to expand support for start-ups in the field of spatial information. LX provides a business site or the seed money to pre-entrepreneurs and small companies that have some feasible ideas on spatial information yet lack of business footholds. This helps them achieve stable business growth and also creates jobs. The initiative helps LX to be engaged in win-win cooperation with the private sector as a public organization and increases the use and value of the National Land Information Base Map.



LX Spatial Information Start-Up Support Details

Start-up infrastructure	• Free business site rental in the LX Spatial Information Foundation Support Center • Provide virtualization server, copy machine, fax, and internet access fees • Free supply of spatial information data owned by LX and the national spatial information center • Provide a web-based spatial analysis service (LX Big Data platform)
Capacity building	• Mentoring from spatial information and market specialists • Provide education and training related to the Spatial Information Academy and regular seminars
Management activities	• Provide KRW 20M to 50M for each ideas • Help creating a CI that highlights the start-ups' characteristics • PR outreach to the media and related organizations via LX's PR line • Support overseas exhibitions to help entering overseas markets

Funding and Infrastructure Investment for Start-up



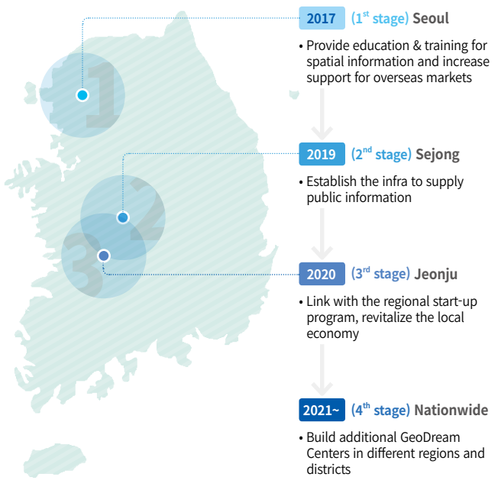
* Start-up funding and infrastructure investment are accumulated since 2016.

Application for Win-win Supporters for the Youth/Start-up Program

As part of the "Win-win Supporters for the Youth/Start-up Program," LX and the Korea Foundation for Cooperation of Large&Small Business, Rural Affairs annually invite start-ups (in the preparation stage) to promote the establishment of new businesses in the field of spatial information. LX aims to stimulate the spatial information industry with comprehensive support for new start-ups through the successful launch of their businesses and successful entrance into the global market.

Promote the Geo-Dream Center

LX provides a specialized start-up program for private or small and medium enterprises-related to spatial information with innovative ideas to enhance the nation's global competitive edge in the spatial information industry. The company is constructing a cloud-based data center to allow anyone to easily access high quality spatial information anytime, anywhere. It also supports shared offices that are open for people without restriction. In addition, the company supports the one-stop start-up program that encompasses marketing, PR, and legal assistance, thereby contributing to the revitalization of the spatial information industry's ecosystem.



Link to SDGs: **Establishment of the National Infrastructure (Railway) Spatial Information System**

Goal 9 Sustainable Industry Infrastructure Innovation

The 9th task of the Sustainable Development Goals (SDGs) is intended to build a resilient infrastructure, promoting inclusive and sustainable industrialization and fostering innovation. Using the spatial information infrastructure, LX Korea Land and Geospatial InformatiX Corporation provides a spatial information system for the core national infrastructure and proposes effective and intelligent methods for national land management.

9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all

Background

Today, there is an increasing demand for establishing accurate information systems for individual countries' national infrastructures (roads, railways, rivers, ports, etc.). It is necessary for these national infrastructures to not just have planning, design, and construction, but they must also attain life-cycle based operation through information systems, government-driven information integration, and more. Recently, there have been various issues and systemic research efforts related to accidents and disasters in the railway industry. This means there is a growing demand for a system to build, integrate, and supply railway-related spatial information to support decision-making for railway-related systems.

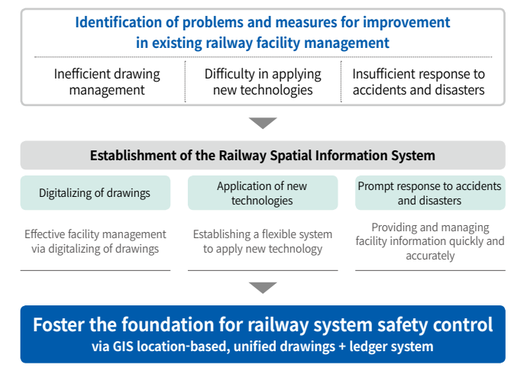
Scale and Scope of the Business

More often than not, the scale and budgets in the railway sector are so huge that a private company would not be able to take charge of spatial information projects in that industry. Therefore, LX participates in the Railway Information Strategy Planning (ISP) to induce the introduction of spatial information based on reliable data and seeks to implement a spatial information business in the railway field.

Activities and Performance

In addition, LX assists the private sector in taking part in the railway spatial information business including the construction and processing of spatial information, system development, etc. In regard to the national railway plan and design, the company supports the utilization of as-built drawings for land compensation and connection map projects. The company directly joins the ISP for the railway spatial information construction project and contributes to the creation of the spatial information market based on reliable data. This is an ongoing effort for LX as the company plans to support the creation of the spatial information market by backing up the adoption, application, and promotion of the spatial information for the national infrastructure including roads, railways, rivers and ports, etc.

Necessity of the Introduction of Railway Spatial Information



Expected Effects from the Introduction of the Railway Spatial Information

As is			To be	
Data Structure	· Unit information based on drawing/ledger	Transition to a dynamic information system	Data Structure	· Real-world, location-based information based on coordinates
Establishment Timing	· Used for construction, completion, and history management		Life-cycle	· Consider the overall cycle encompassing design, construction, repair, and management, etc.
Spatial range	· Local form by project & line		Spatial range	· Nation-wide, single point, integrated information
Advantages	· Include unique construction information specific to a drawing · History management by project	Preserve advantages	Advantages	· Secure unified information with an integrated information system · Enable quick renewals and application · Directly applicable to railway facility management and information systems
Limitations and Restrictions	· Difficult to apply to integrated information operation/management · Inherent limitation of all management/ maintenance work to be solely based on drawings/ledgers · Limitation of the gap reduction between real world and functional location · Interpretable only by the relevant staff of public organizations	Overcoming limitations	Expected Effects	· Real-world, absolute coordinates (locations) based information system construction/operation, facility management and maintenance · Real-time control for accidents/disasters, enable adoption of on-site information system for facilities and equipment

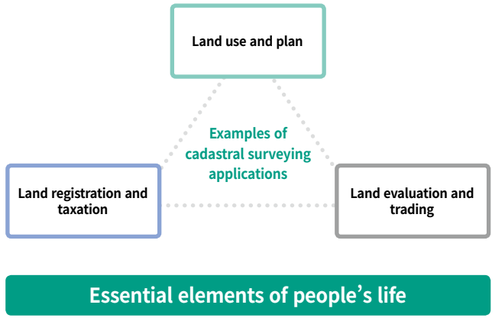
Cadastral Survey

Registration of Land, Cadaster

"Cadaster" refers to a permanent national system that registers and publicly discloses the physical status and legal rights for real estate (lands and buildings) and manages any modifications to this information. The basic concept of the use and management of national land, "cadaster," comprises boundary, location, form, rights, area, category of land, buildings and parcel number, etc. It forms the basis of information to present the value criteria for the relevant land.

Purpose of Cadastral Survey

A cadastral survey is indispensable in protecting the citizen's property rights by registering land information on the cadastral records, which serve to publicly verify cadastral information such as the location and area of land. Capitalizing on its abundant surveying experience accumulated over a long period of time and advanced technological superiority, LX surveys the land in a prompt and accurate manner and offers useful information for the daily lives of the Korean people.

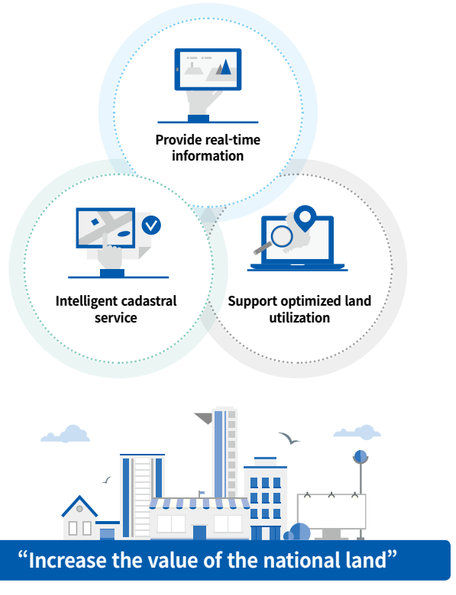


Future of Cadastral Information brought by New Technology

It is highly likely that the needs for the innovative management of land and real-estate would be brought to the fore so as to create new industries in the areas of health, agriculture, and society. In addition, the demand for big data using sensors is increasing, and it is expected that the real-time linkage technology combined with the fourth industrial revolution technology will be developed. On the other hand, demand for high-quality three-dimensional visualization of assets boundaries such as buildings and underground facilities is expected to increase. Demand for high-precision intellectual data for individuals is expected to increase significantly due to the development of high-precision location information technology.

Intelligent Cadaster for Happier Citizens

From graphical cadastral data to today's 4th industrial revolution, where IT related to artificial intelligence converges on the industrial sectors to create new values, land information and specialized knowledge on land use have remained inaccessible to most ordinary people. Thus, the future cadastral service will provide them with the most effective land use and suggestions to raise the values, backed by augmented reality and modeling made by artificial intelligence. This will lead to the development of an intelligent cadastral service that helps people make better-informed decisions.



LX's Future-oriented Cadastral Information Service

While LX meets the traditional demand for existing cadastral surveying, it assists future-oriented cadastral information, comprehensive land information consulting, and decision-making connected to the digital field among the 4th industrial revolution technologies. This will help realize the "Korean version of Cadastral 2034," which forms a part of the national cadastral system development strategy at the national level.

The National Land Information Consulting Service of the People "LX_GeoGo"

"LX_GeoGo" is LX's future cadastral information service that offers total consulting on national land use based on 3-dimentional cadastral information. LX_GeoGo will be programmed by learning methods, supervised by deep learning, so that it can provide a decision-making function tailored to realize land values and improved usage. It will then be developed into an artificial intelligence that will serve to provide users with accessible relevant information via an app.

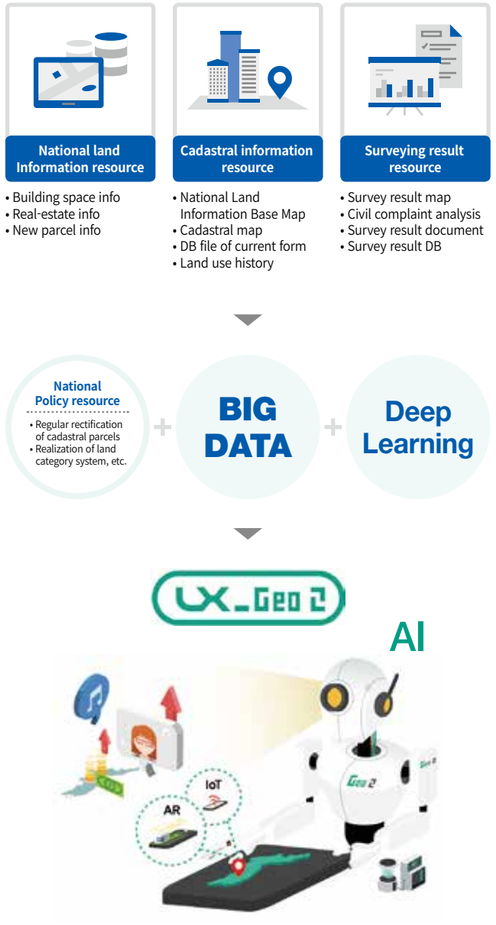
"LX_GeoGo" would provide land owners with comprehensive information about the land by combining the Internet of Things (IoT) with augmented reality and would aid their decision-making by suggesting the necessary information for the most effective land use methods and increasing the relevant land values. Its benefits are not limited to only land owners: surveyors may also take advantage of this information to make an optimum, informed decision. For example, just as artificial intelligence learns court cases to propose the most appropriate ruling for a lawsuit, "LX_GeoGo" will accumulate new data in addition to existing data and suggest accurate surveying data and performance determination measures with overlapping images and high-precision location information. With LX's "LX_GeoGo" service based on AI, LX provides the optimal surveyed results by presenting the land use plan to improve the land value to the people. Furthermore, we will open up the future of intelligent cadaster that contributes to the benefit of the public.

Increase in the Value of the National Land Brought by "LX_GeoGo"

LX National Land Information Platform

The LX National Land Information Platform is a multi-space for information about the national land. It loads the latest cadastral information to LX's cloud along with the existing cadastral survey information. By building Big Data on all relevant information including national land policies and cadastral survey results, LX will offer the optimized national land information based on new technologies such as Artificial Intelligence (AI) and Augmented Reality (AR) while setting out to establish a cloud-based LX national land information platform equipped with all survey files (survey files, survey performance, etc.) in a bid to examine the patterns of the existing decisions on surveying results.

Applicability of the LX National Land Information Platform



Cadastral Survey

Applying for the Cadastral Survey Service

We present all the procedures and processes of cadastral surveys from the survey consultation and follow-up management from the perspective of ordinary customers. For more information, please contact our Quick Call Center at 1588-7704.

Survey Consultation/Application

Cadastral Survey Quick Call Center

- You can book consultations without visiting the Center.
- Telephone Consultation: You can have a consultation at the time that is most convenient for you.
- Drawing Consultation: You can book a detailed survey consultation by examining drawings.

Prior Survey Schedule Notification Service

- Two days prior to the survey, you will receive a text message with information about the survey schedule.
- The advance notification service allows customers whose survey site and residential address are far apart to adjust their schedule.

On the Day of Surveying

Free Boundary Monuments

- LX purchases and provides customers with boundary monuments necessary for the cadastral survey at no cost.
- When installing boundary monuments, it is advisable to invite the neighboring land owners and stakeholders to prevent any conflicts from occurring.

On-site Distribution of the Boundary Relocation Surveying Result Map

- If requested by customers, LX will issue the boundary relocation surveying result map at the field.
- In particular, this map is very useful for any urgent document submission such as building permit/approval.

Survey Completion

Online Access to Cadastral Survey Result Documents

- Since August 2014, LX has been offering an online access service to allow anyone to issue result maps anytime, anywhere.
- Cadastral Survey Quick Call Center site: https://c4c.lx.or.kr
- You can access or download the details of survey application, progress and tax invoice (cash receipt) for 1 year from the survey completion date.

Discount System for Boundary Relocation Surveying

- When you have lost the original boundary monuments due to site construction, obstacles, or other reasons at the time of surveying, LX offers discount rates for reconfirmation of boundary monuments within 12 months from the first survey.

Mobile Customer Satisfaction Service

- LX provides customers with various services to satisfy them anytime, anywhere.
- LX Land Info-e APP provides integrated services such as restaurant search and shelter guidance by utilizing mobile.

Zero Customer Inconvenience Service

- LX has newly added "Zero Customer Inconvenience Service" menu on the homepage to receive the inconveniences and complaints of customers in real time and actively correct them.

Post-Cadastral Survey

Cadastral Resurvey

Cadastral Resurvey to Raise the Land Utility Values

The Cadastral Survey is a national project that is pioneering the smart land era by connecting accurate cadastral information obtained from new surveys with the latest IT technology and completing the Korean version of the smart cadaster by including the provision of digital cadastral information, etc. LX currently aims to launch a cadastral resurvey project on 5,540,000 parcels that do not fit into the cadastral map (around 15%) of the 37 million parcels throughout the nation.

Necessity of the Cadastral Resurvey

Today, the location of Korea based on the Japanese origin (Tokyo Datum) deviates from the international standard by approximately 365m. This inaccurate survey information obtained from obsolete technology from about 100 years ago has become a frequent source of conflicts among neighbors. Thus, it is necessary to conduct a cadastral resurvey to protect individuals' property rights and to effectively manage the national land.

* Today, the location of Korea based on the Japanese origin (Tokyo Datum) deviates from the international standard by approximately 365m.

Cadastral Resurvey Procedure

The cadastral resurvey project is expected to be completed by 2030. It does not place any financial burdens on land owners for the national budgets and covers everything from surveying to registration costs. Under the consent of land owners, LX informs them of its resurvey plan and carries out the surveying on the target areas before establishing new digitalized land registers based on the confirmed land boundaries.

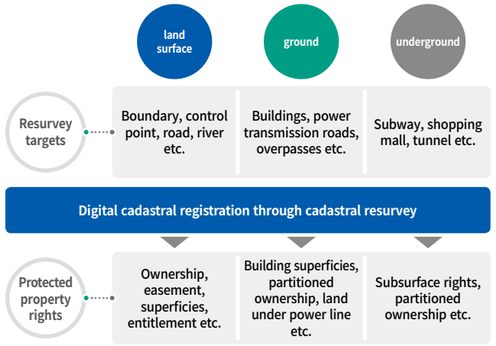
Cadastral Resurvey Procedure

1. Implementation plan and announcement
2. Briefing session for residents
3. Submission of land owner agreement
4. Notification of business district designation
5. Cadastral resurveying
6. Boundary decision (committee deliberation)
7. Adjustment amount
8. Cadastral records registration

Enriching the lives of people with Cadastral Resurvey

Protection of Property Rights through Digital Cadastral Information

As the boundaries of land become clear, social disputes are resolved and we expect to realize the protection of the property rights of citizens by registering the information of land surface, ground and underground in digital point of view.



Improvement of Quality of Cadastral Administration Service of the People

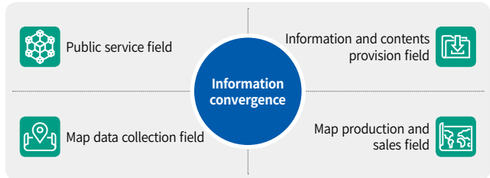
We provide accurate land information by correcting redundant information and inconsistent information, simplify the administrative procedures required for construction and development, and build up advanced digital information anytime and anywhere.

Regional Economic Development through Increasing Land Utilization

By arranging irregular land shapes in a straight line and adjusting the boundaries of the land, which is the land that does not have access roads to the ground, we secured the roads and built buildings to increase the utilization of land. Though this, we are raising the value of land use and contributing to the revitalization of the local economy.

Securing Advanced Cadastral Technology

Based on the digital information generated by our technology, it is possible to utilize the convergence and utilization with the spatial information of various fields, and the new synergy effect can be expected. In addition, we will hold global advanced cadastral technology and play a role as a future growth engine of the nation.



Global Business

Land, the Key to Solving Global Poverty

Global society has been working more closely together to tackle the problem of global poverty. The widely-held consensus is that land is directly related to the issue of poverty. Against this backdrop, LX is committed to realizing the effective use of land and the establishment of responsible land policies by sharing other countries' land management status and innovation cases.

Land Administration Innovation Case Announcement (CEO) in the 2017 annual meeting of the World Bank

Laying the Foundation for Global Spatial Information

LX is pursuing a grand vision for the establishment of the cyber global village through its global business by systematically arranging land information, accumulated for its global business over the last decade, as well as future land information throughout the world.

Cadastral Survey Business

Starting from Laos in 2006, the company has been engaged in various projects including improving the cadastral system, building cadastral maps, and land registration projects in Azerbaijan, Jamaica, and other nations. The Jamaica land registration project provided residents in underprivileged areas with land ownership, helping them to maintain stable lives. The company also provided basic data for stable land tax collections. The project has led to other cadastral projects in other countries in Central and South America including Uruguay, Chile, Colombia, etc.

Land and Spatial Information Consulting Business

Since the first implementation of the "Establishment of the land registration method and pilot project" in Morocco, Africa in 2007, LX has been offering land system consulting and land registration pilot projects in the global market. After 2014, we have expanded our spatial information business in earnest and have been consulting all over the Africa, including Tunisia, Ethiopia and Tanzania, which are developing countries. We also support the construction of land administration digitalizing and land information management systems in developing countries.

Capacity Building Business

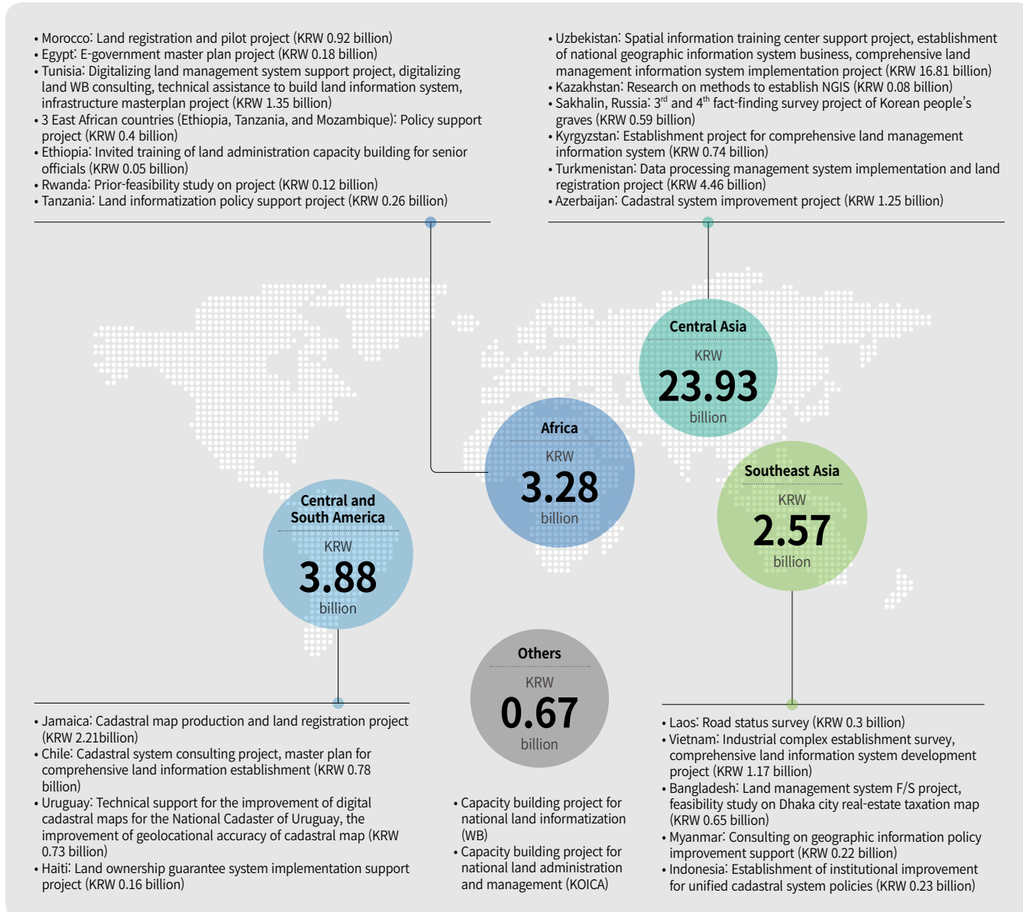
Starting by inviting Cambodia's cadastral public officers for a training program, LX has completed a capacity building business for about 200 trainees from 13 developing countries as of 2016. In addition, the company won orders from KOICA and the World Bank for capacity building businesses for land information, and has been continuing capacity building businesses by offering education that serves as the backbone of sustainable national development.

Spatial Information Package Business

As land registration, digitalizing of drawings, information system establishment, etc. are exported in a package, individual projects that fail to delineate the characteristics of spatial information are grouped in a total spatial information package. This will enable us to offer comprehensive spatial information infrastructure that serves not just to establish control points, land registration, digitalizing of drawings, material support, and information system build-up, but also the education and training necessary for their operation.

Types and Content of LX Spatial Information Consulting

LX with the World



Participation in the Annual Meetings of the World Bank

Since 2013, LX has taken part in annual meetings held in the headquarters of the World Bank. From 2014, the company dispatched its experts to the organization to identify technical services and international cooperation projects. In March 2017, the CEO joined the meeting to make a presentation of innovative cases in Korean land administration. LX also bore fruitful results from the event as the company acquired a foothold to present Korean industrial competencies to the world and linked it with tangible marketing performance by sharing excellent Korean spatial information technologies in the PR center during the event.

Smart Geospatial Expo

With the centralization of spatial information related to tasks to the Ministry of Land, Infrastructure and Transport, the Ministry hosts the Smart Geospatial Expo by integrating relevant events held by other agencies. Hosted by the Ministry, the main event is joined by LX; the Korea Land & Housing Corporation; Korean Association of Spatial Information, Surveying & Mapping; Korea Research Institute for Human Settlements; and SPACEN. LX continues to expand overseas demand by inviting foreign clients to international cooperation meetings, business meetings with private companies, industry visits, etc.

Global Business

LX, Helping Korean Private Companies Go Global

Overseas Order Support

To support private companies in securing overseas orders in a stable environment, LX undertakes preliminary feasibility studies, IT expert recruitment, Corporate Social Responsibility (CSR) consulting, and other activities. We help Korean companies to successfully enter the local market with local living tips, guidance, visa support, office space, or manpower assistance.

One-stop Marketing Support Strategy

LX annually selects one country from its strategic market pool of prospective customers to support its marketing efforts. The company engages in a series of marketing support activities including selecting the target country, local roadshows, invitations to Korea, etc., to actively support Korean companies in penetrating the overseas market and obtain orders.

Process of One-stop Marketing Support

Investigation of overseas market information
- Establish a market penetration strategy from a research service provider
- Conduct local market research and collect quality information

Target country selection
- Examine urgency, importance, and ease of implementation
- Identify the most feasible countries for penetration

Hold overseas roadshow	• Dispatch a joint public-private partnership export support team • Support company PR and business meetings
Invite foreign clients	• Conduct in conjunction with high-level talks of the Expo • Support a tailor-made project proposal and company PR
Project to support overseas business activities	• Support roadshows, invitation seminars, related business activities (business trips, MOUs)

Orders from Foreign Clients

Operation of the Overseas Business Support Center

The Overseas Business Support Center posts useful information such as international bidding and spatial information status by country on its homepage. It also holds shared growth workshops in cooperation with private companies, serves as the point of contact to announce any overseas spatial information roadshow events, and accepts applications.

Operation of the Overseas Information Portal Service

LX has established a network support system that turns various overseas spatial information and business information, obtained from government agencies or the private sector, into a database. It then shares this database with other organizations on a real-time basis through its homepage portal. With this portal service, companies can check international bidding or market information in real time and seek more successful overseas expansion through consultation with overseas business experts, using the corporate network, etc.

* Overseas Information Portal: http://gisc.lx.or.kr/

Spatial Information Road Show for Overseas Expansion

First Held in Hanoi, Vietnam in 2013, the Spatial Information Roadshow has been establishing itself as a window for the world into Korea's business competencies and technological prowess in the field of spatial information. Relevant public officials, the LX business group, and representatives from participating companies form a PR team to visit a target country, and we make careful arrangements to ensure it will be held in a different country each year based on business demands. LX also takes the opportunity to visit the government agencies of the host country to hold a cooperative government policy seminar or government conferences to reinforce human networks.

Hosting the 2016 Geospatial Information Road Show in Cambodia

CASE

LX has strengthened the cooperative ties between Korea and Cambodia in the field of spatial information and held a geospatial information road show in the public domain to build a network for overseas expansion in Phnom Penh, capital of Cambodia, in late 2016. The company provides Korean companies with real opportunities to expand into the overseas market and obtain orders by widening the path for overseas expansion with inter-governmental conferences, spatial information technology seminars, business meetings, and by directly promoting competitive technologies.

2016 Cambodia Geospatial Information Road Show

Link to SDGs:

Comprehensive Land Information Management System for the Kyrgyzstan

Goal 11 Developing Sustainable City and Forming a Residential Space

The 11th task of the Sustainable Development Goals revolves around the safe and resilient formation of city and residential spaces.
To relieve developing countries from the difficulties associated with land administration, the LX Korea Land and Geospatial InformatiX Corporation proposes a tailor-made model for each country based on the Korea Land Information System.

11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries

11.A Support positive economic, social and environmental links between urban, per-urban and rural areas by strengthening national and regional development planning

Background

The Kyrgyzstan is an inland country located in Central Asia and is named as the "Switzerland of East Asia" because of its capricious terrain formed by mountains and rivers.
Prior to the selection of the main project for the comprehensive land information management system for the Kyrgyzstan, LX had offered consulting and supporting activities including a feasibility study, expert dispatch, etc. It became a fully-fledged project later in 2015, when it was selected as the preliminary project by KOICA.

Implementation Process

Modeled after the Korea Land Information System (KLIS), LX utilized Korea GIS S/W technology to build a standardized comprehensive land information system suitable for the Kyrgyzstan. The company strives to enhance cooperation among relevant agencies including KOICA, Kyrgyz State Registration Services, Department of Cadastre and Registration of Rights to immovable property, etc. in a bid to maximize the effect of autonomous capacity building with the provision of Information Strategy Planning appropriate to the national development strategy of the Kyrgyzstan, local education and training, and invitation-based training.

Performance

By building the integrated national land information database for the Kyrgyzstan, LX has created momentum to lay a foundation for the establishment of scientific policies and sustainable economic growth by improving the administrative efficiency and governmental services to the citizens and linking information among inter-government agencies. The project also improved cooperation between the countries in the field of spatial information, thanks to the support for the Kyrgyzstan's effective national land management and development, as well as the expansion of LX's business area into nearby CIS regions.

Country Name: Kyrgyzstan
Location: Inland of Central Asia
Area: 199,951m²
Population: 5,790,000 (As of July 2017)
Gross Domestic Product (GDP): USD/ 6.9 billion (Based on 2017 IMF)

Kyrgyzstan Drone (UAV) Control Practice

Research and Education

Lay the Groundwork for the Growth of the Spatial Information Industry

Spatial information has established itself as a core technology and infrastructure for the 4th industrial revolution. Recognizing the importance of the spatial information industry and technology researches earlier, LX has focused on conducting useful spatial information research appropriate to the demand of these changing times.

The Only Spatial Information Research Institute in Korea

The Spatial Information Research Institute develops new spatial information technologies converged with Information Communication Technology (ICT) and carries out research for the policy projects necessary for the national development. In particular, as the only spatial information research institute in Korea, it contributes to the construction of the new spatial information ecosystem by taking the lead in cutting-edge research based on artificial intelligence and big data. In addition, as it is involved in studies of institutions or laws and legislations that would widen the applicability of spatial information and stimulate the industry development, it also strives to propose the direction for national policies and was selected as an excellent R&D public institution by the Ministry of Science, ICT and Future Planning.

Building a Network for Spatial information Research

The company is engaged in joint research by establishing a spatial information research network composed of domestic/international research institutes, industries and academia. In 2016, there were 21 collaborative research projects in progress from a total of 41 projects, indicating the drive to expand joint research projects with institutions of specialized technologies.

Value Sharing for National Spatial Information Research

The institute regularly releases the results of the national spatial information research conducted by the industry-academia cooperation in its academic journal, Cadaster & Land InformatiX, twice a year and produced 33 excellent papers in 2016. In addition, it holds the "Smart Geospatial Expo" a platform in which industry partner companies and institutions in the field of spatial information share the latest technologies and information and raise awareness of spatial information in the country.

Diffusion of spatial information issues and suggesting research direction

The Spatial Information Magazine is published and distributed for free in a bid to share spatial information news with the public and suggest research directions for specialists. From this year on, we launched a spatial information newsletter and email service to rapidly deliver the latest information on the spatial information industry and market.

Spatial Information Magazine and spatial information newsletter

2016 Key Research Performance

Status of Intellectual Property Registration (accumulated)	R&D Achievements (accumulated)
440 cases	412 cases

Key Research Area

National spatial information policy

Stimulation of spatial information industry
- Studies of legislation to develop the spatial information area
- Studies of land category revision to improve public confidence in cadastral records

Investigation of the current use of national spatial
- Propose national policies through present national land use
- Attempt to revitalize the private market in cooperation with the relevant institutions

Expanding the scope of the spatial information market
- Research on the application of the cadastral system to the oceans
- Development of the National Competency Standards

Sustained Growth of the Institution
- R&D on the global competitiveness index for key businesses
- Research on a permanent management system to ensure effective management of administrative assets

The 4th industrial revolution technologies

Development of convergent positioning technology
- Develop sensor fusion and hybrid engine
- Develop location-based community mapping system technology

Development of platform technologies
- Develop UAV upgrade and application technology
- Develop Smart Disaster Control system

GNSS-based core technology Research
- Research on GNSS positioning technology
- Construct and operate LX satellite positioning infrastructure

Development of intelligent system
- Develop spatial object recognition technologies
- Develop high-precision map-based unmanned vehicle control technologies

Cultivation of Creative Land Information Experts

Training talent required by the new era will be fundamental to developing new industries. LX contributes to the national and regional development by realizing technological progress in the convergent national land information education sector, which connects time, space, and people, and cultivating talented experts who can lead the national spatial information industry.

The Only Specialized National Land Information Training Institute

The LX Education Institute enhances executives' and employees' work capabilities and offers training to competent individuals who will be pivotal in the field of future national land information. It provides those engaged in the national land information field with opportunities to join its practice courses. The institute contributes to job creation for the youth by operating courses such as SME workers' work performance improvement courses and job seeker courses for the national land spatial information industry.

Tailor-made Training for Private Companies in the Spatial Information Area

The LX Spatial Information Academy offers free lecture courses by current employees of private SMEs to ensure practical, field-centered education via the National Human Resources Development Consortium project supported by inter-governmental collaboration. It also leads activities to create a win-win ecosystem, such as hosting the win-win growth conference to promote the private market.

LX Spatial Information Academy Training Overview

Employee Skill Improvement Course	Job Seeker Training
Workers currently hired by spatial information related SMEs	Young job seekers in the field of spatial information

Seal agreement with holders of employment insurance | Document and Interview Screening | Online sign-in | Course registration (all courses offered for free)

Participation and Training Implementation

* For more details about training courses and information about the LX Spatial Information Academy, please check the homepage below:
LX Spatial Information Academy Website: http://lxsiedu.or.kr/

Expanding National Information Education for the General Public

The LX Education Institute continues to develop training courses for laypeople to cultivate future national land information experts who are interested in national land information. As of October 2017, 188 trainees completed the courses, and the institute encourages them to move onto higher-level training courses, thereby enhancing the training courses' overall quality and performance.

Job Seeker Course at the Spatial Information Academy

Discovering Idea for the National Land Spatial Information

LX holds open competitions for LX spatial information business start-up ideas and spatial information open to the public. These competition events serve to offer relevant industrial opportunities and discover new business models. The winning teams and individuals will be given follow-up support according to stage, from start-up business idea clarification, incubating process for basic cultivation, to actual commercialization and market entry. LX also provides 10 types of future strategic content, which it has developed, to stimulate growth in SMEs, who will play a major role in pioneering the future spatial information industry. The company is committed to establishing a solid base for leading the national land spatial information industry by sealing agreements with several domestic universities to operate Industry Professional Practice (IPP).

2016 Education & Training Status

Training Education	Consigned Education	Academy
38 courses including the National Land Information Expert course	17 courses including the introductory cadaster course	14 courses including the open source GIS course
95 times	29 times	20 times
2,904 persons	866 persons	439 persons

Growing with the Trust of the People

Healthy Corporate Culture

38 Ethical Management

41 Human Rights Management

The Ecosystem of Mutual Growth

42 Public-Private Partnership Growth

44 Job Creation

High Quality Service

46 Customer Satisfaction

48 Risk Management

49 Information Security

Happiness Sharing

50 Local Community

Work-Life Balance

52 Human Resources Management

55 Health and Safety

Ethical Management

• Background of Selecting Core Issues

Compliance with laws and ethics is one of the fundamental principles for corporate management activities. Social standards on public institutions tend to be more stringent than those for private ones. We cannot stress enough the importance of fair and transparent management in business activities based on the integrity of each member of the institution.

• LX's Response Plan

The LX Korea Land and Geospatial InformatiX Corporation is devoted to eradicating various violations of laws and unfair practices and to creating a clean institutional culture through the internalization of a culture of integrity and an advanced audit system. We will grow into a trusted clean institution through not only systemic operation but also fundamental improvement and prevention activities.

• 2016 Key Achievements

Anti-corruption Initiative Assessment by the Anti-corruption & Civil Rights Commission
Grade 1 for 2 consecutive years

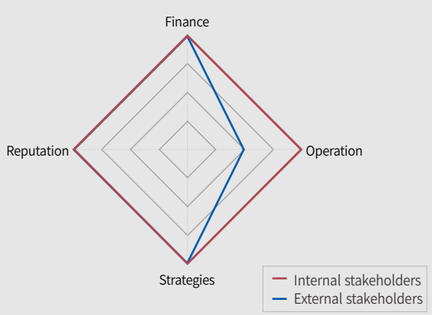
Integrity Happy Call*
1,402 cases

Internal audit sector by 2016 IIA (Institute of Internal Auditors) Korea
Won an award as an **Excellent Institution**

* Integrity Happy Call: An opinion gathering system for the person in charge of contractors and unsuccessful bidders to preclude any room for corruption for the contract business (over KRW 1 million) and to reflect any complaints and comments for improvement.

• Stakeholder Impact Assessment

The stakeholder interest survey on the impact of ethics management on LX confirmed for us that internal stakeholders evaluate all the aspects by giving them about the same weight. External stakeholders tend to assess all other aspects aside from operation to be identical.

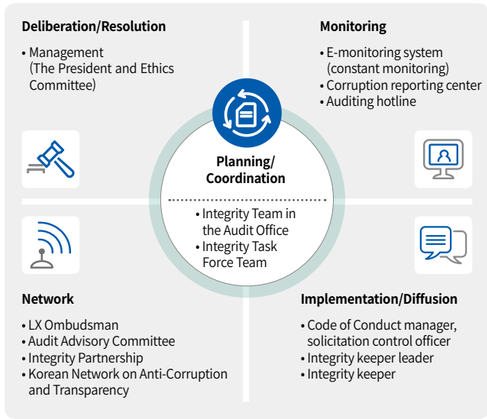


Promotion of Social Responsibility Management via Ethical Management

Creation of the LX Integrity Ecosystem

Along with strategic ethical management, LX is constructing an internal/external cooperative network to create a clean ecosystem based on ethical management. LX contributes to the growth of an ethical management ecosystem by running an Ethics Committee and Integrity Task Force Team. We assign dedicated teams to take charge of internal matters and join the Autonomous Council on Anti-corruption and Jeonbuk Integrity Council as part of the local community initiative.

Integrity Business System



Building a Transparent LX Together

Promotion of a Culture of Integrity

LX's efforts to proliferate its integrity ethics management culture are entrenched in the management's PR and endeavors to improve company ethics. LX opened an Integrity UCC and Photo competition while producing and distributing stickers about the Improper Solicitation and Graft Act.

We make sure to promote and reinforce the culture of integrity by introducing employee integrity pledges and encouraging clean reports through the corruption reporting center.

Integrity Ethics Management Promotion and Education

Integrity themed play with fun and impression
13 times **3,250** audience members

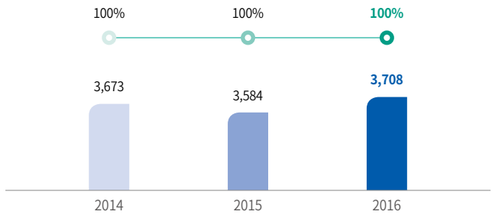
Cyber and Mailing Education
5,928 participants

Establish an Anti-corruption Infrastructure

LX is committed to improving management transparency and reliability through its proactive and integrity management activities. As a part of its Integrity Keeper activities, we provide survey customers with the work procedures and information on whistleblowing and quick survey results. LX also implements corruption prevention activities, including opinion gathering and integrity letters. Regarding institutional improvement, we have set up a new standard for placing limits on double payments of research allowances, incentives, and rewards.

No. of employees who attended Integrity education and completion rates

(unit: person)

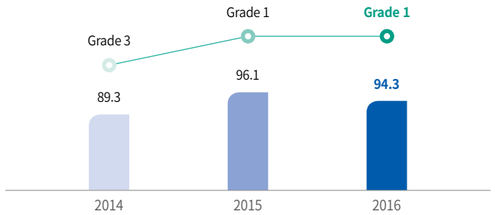


Education and PR of the Improper Solicitation and Graft Act

LX has assigned two-hour mandatory integrity education to its eight collective training courses to promote legal interpretation classes led by in-house lawyers. In addition, the company considers the dispersed organization structure throughout the country and has in place field-oriented training programs whereby senior auditors visit and give lectures on the sites. Also, the company sent integrity messages to the families of its employees and took part in a joint campaign to prevent improper solicitation via the Korean Network on Anti-Corruption and Transparency.

Result of Anti-corruption Initiative Assessment

(unit: out of 100 point)



Link to SDGs: **Promotion of the Integrity Network**

Goal 16 **Promote Peaceful Societies and Build Institutions**

The purpose of the 16th task of the SDGs is to promote peaceful and inclusive societies for sustainable development, provide access to justice for all, and build effective, accountable, and inclusive institutions at all levels. The LX Korea Land and Geospatial InformatiX Corporation reinforces ethical management activities in line with the related agencies.

16.3 Promote the rule of law at the national and international levels and ensure equal access to justice for all

16.5 Substantially reduce corruption and bribery in all their forms

16.6 Develop effective, accountable and transparent institutions at all levels

To achieve integrity management, LX has constructed the LX integrity network in which employees, the spatial information service, and survey customers and partner companies participate. LX also prepares for a range of stimulus measures. In its effort to establish and spread an integrity management culture throughout the industry, we monitor any unethical activities, improper requests, or illegal behaviors via various means including the Korean Network on Anti-Corruption and Transparency, and transparently share its follow-up actions and results to the public.

Integrity Network Operation

Korean Network on Anti-Corruption and Transparency	Develop anti-corruption policies in cooperation with domestic and overseas private groups and public institutions to build a transparent and clean society
Autonomous Council on Anti-corruption	Share and spread excellent examples of other institutions or groups in terms of integrity management
Jeonbuk Integrity Cluster	Build a wider consensus on integrity throughout the local community by undertaking various joint integrity campaigns with Jeonbuk government agencies, amending company rules in cooperation with other institutions, and holding the Cheong-ryeom nuri (integrity world) cultural festival.
Fair Play Pledge Ceremony by the Fair Player Club	Took part in the "Fair Play Pledge Ceremony" hosted by the Fair Player Club, a public-private cooperative forum seeking law-abiding, ethical management to increase anti-corruption efforts supported by the World Bank and Siemens of Germany

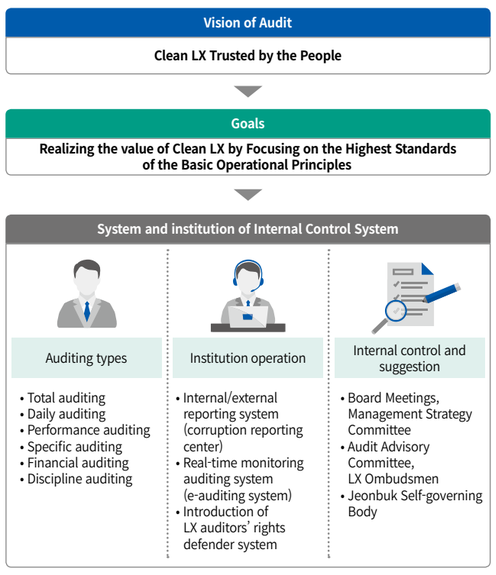
The Fair Player Club Fair Play Pledge

Ethical management

Realization of Clean LX Values

The operation of an internal control system that emphasizes moral principles and fundamentals helps LX to establish an ethical institutional culture. We are reinforcing our auditing capability and advancing its internal control system to become a Clean LX trusted by the people. LX strives to secure the independence and expertise of auditing, as demonstrated by its internal reporting system.

Ethical Management Strategy System



Cultivation of Internal Experts

With a view to enhance expertise in internal employees' auditing duties, LX provides custom-made professional education to meet the needs of trainees, who have different levels of understanding of the job. We also provide itinerant district training and education. LX encourages its auditing employees to acquire the auditing-related qualifications; this has led to 23 employees in 8 different fields earning auditing-related qualifications.

Acquirement of Certificated Internal Auditor (CIA)

Founded in 1974, Certificated Internal Auditor (CIA) is an international certification for internal auditors that qualifies them as internal auditing specialists for businesses. The CIA test, which is entirely in English, is divided into three subjects including the internal auditing process, internal auditing techniques and management control, and information technology and the auditing environment and places emphasis on precluding any illicit behaviors and inefficiencies from business management and advises and gives guidance for management innovation. LX makes sustained efforts to enhance its auditing process to the international level and, as the part of the effort, one internal auditor obtained the certificate in 2017.

Utilization of External Experts

LX secures the continuity of auditing by securing and expanding accountable, ethical, and fully-qualified members for its Audit Advisory Committee. Organized in 2015 with 6 members, the Audit Advisory Committee was expanded to 7 members in 2016. The participation of external auditors ensures that we conduct transparent management activities, such as through the stipulations for non-executive board members to join the board meetings and Management Strategy Committee, etc.

Strengthened Cooperation with Other Institutions

The company operates public auditing cluster council joined by seven institutions in Jeonbuk Region and carries out cross-auditing with five institutions including the Korea Electrical Safety Corporation, etc., so as to prevent any possible internal impropriety issues.

Follow-up Management of the Results of the Internal Control System Operation

Classification	Method	Main Contents
Sharing audit result	Online	• Post on the company intranet, share through the company with e-auditing system
	Case studies	• Publish auditing case studies, reckless management case studies, Q&A on the Improper Solicitation and Graft Act
	Auditor	• Survey on audit satisfaction, workshops, conferences and the audit deliberation, and Coordination Committee
	Follow-up check	• Check the implementation status according to audit result follow-up plan (32 institutions)
Monitoring	Cadastral survey	• Work support system, field support system
	Financial accounting	• Company-wide resource management system, LX electronic procurement system
	General administration	• e-audit system, electronic approval system, customer relationship management system
Performance analysis and feedback		• Analyze 2016 operational outcomes and reflect them in the 2017 auditing plan • Reinforce preventive auditing, budget saving, and system improvement

LX's Plan

The LX Korea Land and Geospatial InformatiX Corporation encourages its members to raise their awareness of integrity, taking a leading role in realizing a Clean LX that fulfills its corporate social responsibility. We will be the first to create our own unique culture of integrity to facilitate corruption preventive monitoring and secure expertise in the field of auditing.

Human Rights Management

• LX's Response Plan

It is fundamental for LX Korea Land and Geospatial InformatiX Corporation to protect its members' human rights as well as those of various stakeholders including its customers and local community residents. We properly respond not just to social interests on the implementation of human rights in the domain of business, but also promote human rights management in domestic public institutions. Through these efforts, LX hopes to grow as a leading institution of human rights management.

LX's Efforts to Respect Human Rights

LX respects human rights and other rights of various stakeholders including customers and employees, and is fully committed to follow the international standards related to human rights. Based on the Universal Declaration of Human Rights, LX has accepted the definition of human rights specified by the National Human Rights Commission to bring forward the LX Human Rights Management Declaration, which was attended by all employees, and laid the foundation to pursue substantial human rights management.

The Process of LX Human Right Management Implementation

- Nov. 2015 · · · · Declared Human Rights Management by Employees
- Dec. 2015 · · · · Declared Board of Director Resolution
- Jan. 2016 · · · · Established Guidance for Human Right Management Implementation
- Dec. 2016 · · · · Conducted Human Rights Impact Assessment
- 2016~2017 · · · Carried out Human Rights Trainings (Collective education: 3,491 persons/Cyber education: 4,610 persons)

LX Human Rights Capacity Building

Establishment of Internal Rules for Human Rights Management

LX established the implementation guidelines for human rights management to enhance the dignity and value of human rights management and preclude any possibility of human rights infringement. This guideline proposes the basic objectives and direction to implement human rights management and specifies that it should include an action plan and evaluation measures to execute human rights management.

Establishment of a Dedicated Team to Handle Human Rights Management

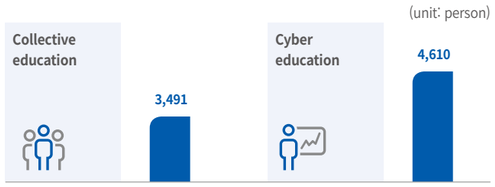
In recognition of the significance of human rights management, LX organizes and runs a Human Rights Committee in which top management and external stakeholders are involved. The Human Rights Committee, composed of 7 persons, discusses topics such as the establishment and implementation of LX's human rights improvement plan, as well as the work that is necessary for conducting the human rights impact assessment and its results. The committee provides concrete implementation measures with the management support team, the responsible working body, to put into practice.

Promotion of Human Rights Management through Communication

Strengthening of Human Rights Education

LX strives to internalize human rights management by means of human rights communication activities within the institution. We make and distribute thoughtfully designed materials about the substantial goals of human rights management and LX's future initiatives for human rights. LX also nurtures an atmosphere where human rights are respected and practiced throughout the assessment of our annual educational activities and prize giving for the employees with excellent result.

2016-2017 No. of Employees Completing Human Rights Education



* Since the December 2015 LX Human Rights Management Declaration, LX has offered human rights education.

Pursuit of Global Human Rights Management

LX shares its human rights to prevent human rights issues from occurring in relationships with partners, employees, and local community residents. This is because it is unavoidable for us and stakeholders to influence each other through various channels during our global business operation. In addition, LX appoints a staff, exclusively dedicated to human rights for each business site to supervise if there are any problems or requirements in terms of employees' human rights. If any problem is identified, the staff will report to the headquarters for a prompt action to be taken.

LX's Plan

The LX Korea Land and Geospatial InformatiX Corporation upholds respect for human rights as one of its core principles and strives to enhance the rights and benefits of its stakeholders. It plans to expand human rights protection and awareness with a mid-to long-term human rights management system. We will endeavor to invigorate human rights management through appropriate activities in stages to respond to external environmental changes such as global principles and government policies.

Public-Private Partnership Growth

• Background of Selecting Core Issues

The scope of responsibility expected from a corporation as a member of society is gradually growing. It is becoming widely recognized that forming a cooperative relationship with business partners and strengthening their competitiveness is essential for attaining sustainable public-private partnership growth.

• LX's Response Plan

A range of win-win cooperation programs, including the development of benefit sharing projects and overseas market penetration support, will enable the LX Korea Land and Geospatial InformatiX Corporation to reinforce the supporting system that is designed to assist competent partners in accomplishing excellent performance. The system will consolidate the foundation for the development of the national land information industry and ensure the sustainability of LX, our partners, and SMEs.

• 2016 Key Achievements

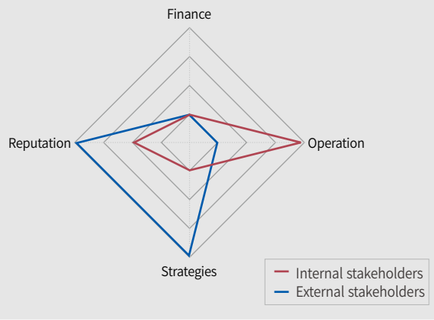
SME Innovation Awards in the category of public-private partnership growth
Won the Grand Prize for **3 years in a row**

The first to operate win-win supporters among quasi-government institutions
Support of KRW **1.28**billion

LX style benefit sharing projects
30cases selected

• Stakeholder Impact Assessment

The survey on stakeholder interests regarding the possible impact of public-private partnership growth on LX revealed that internal stakeholders placed more importance on the aspects of the operations. External stakeholders put more priority on the mid-to long-term management strategies and reputation.



Win-win Synergy to Open Up a New Paths to Growth

Effort to Discover Benefit Sharing System

LX has a system in place to discover benefit sharing projects and seal agreements in cooperation with SME partner companies. The system allows us to firmly establish fair trade orders and win-win growth. We bolster the existing multi-party benefit sharing system model and a service type benefit sharing model, while newly selecting the joint overseas expansion to Cambodia with our partner companies. This has resulted in selecting a total of 30 cases of benefit sharing projects in 2016, which are 20 cases more compared to the previous year. The operation of a benefit sharing academy and a Benefit Sharing Deliberation Committee allow us to continue our endeavors to grow in tandem with SME partner companies.

Operation of Communication Channels with SMEs

LX has in place a range of communication channels to listen to the opinions of SMEs and pursue public-private partnership growth based on their opinions. The company firmly established a smooth two-way communication system by collecting various complaints and demands with conferences and opinion surveys and improving any problem areas identified by them.

Council of Cooperative Partners Companies
- Composition of partner companies
- Promotion of regular quarterly meetings

Survey on Public-Private Partnership Growth
- For partner companies contracted after 2015
- Diagnosis of public-private partnership growth satisfaction

Overseas Expansion Support Center
- Support for overseas orders and inter-company network
- Host global roadshows

Operation of Win-win Cooperation Programs

To sharpen SMEs' competitive edges, LX carries out various public-private partnerships growth programs.
Its technology sharing and spatial information cooperation assists SMEs to build capabilities and business start-up programs and the Hope Funds help SMEs in terms of advanced infrastructure to develop spatial information business items. In addition, through the LX Spatial Information Academy, we provide training courses and tailored services to meet the needs of SMEs, contributing to the growth of the companies' growth.

Link to SDGs: **Expansion of the Spatial Information Academy**

Goal 8 Decent Work and Economic Growth

The task of the 8th Sustainable Development Goal (SDG) is to promote, inclusive and sustainable economic growth, full and productive employment, and decent work for all. With the Spatial Information Academy, the LX Korea Land and Geospatial InformatiX Corporation contributes toward job creation for young people and the cultivation of outstanding individuals for the spatial information industry.

8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services

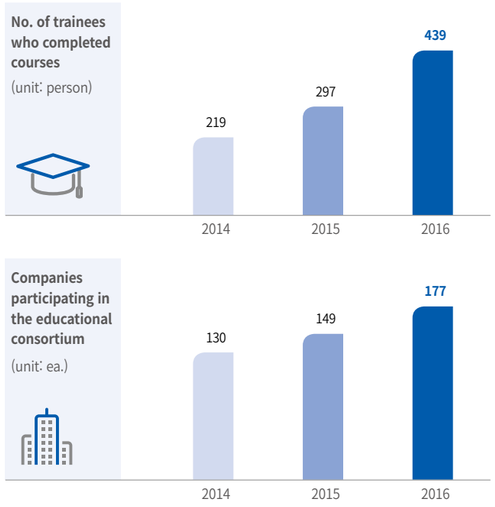
8.6 By 2020, substantially reduce the proportion of youth not in employment, education or training

The LX Spatial Information Academy is a specialized educational service targeting current employees of SMEs and job seekers who encounter difficulties that are inherent in the field of spatial information due to insufficient educational infrastructure and the barriers to entry. It is a part of the "National Human Resources Development Consortium Project" of the Ministry of Land, Infrastructure and Transport and the Ministry of Employment and Labor. It is provided free of charge to SMEs. In particular, we have developed a step-by-step process that identifies the needs and demands of trainees. In 2017, a total of 555 people completed the LX Spatial Information Academy, and the employment rate of spatial information companies has achieved an outstanding 80% or more every year since its opening in 2014.

2017 Job Seekers Class Trainees

Promotion Booth in Human Resources Recruitment Hall

Educational Achievements of the Spatial Information Academy



Fair Trading Culture to Foster a Level Playing Field for SMEs

Improving the Transparency of the Contract System

LX constituted fair and transparent contract arrangements with a view to expand SMEs and socially disadvantaged enterprises and to stimulate local economy revitalization. We provide small enterprises and small businesses of merchants with bidding data on a real-time basis with the improved procurement system and attempt to induce transparent and fair competition for bidding and contracts by fortifying the prior-specification disclosing system. Furthermore, we regularly disclose contract information on our homepage and use a management disclosure control system to ensure the transparency of agreements.

Diffusion of Good Purchase Culture

LX responds to the government's recommended policies by preferential procurement contracts with SMEs and socially disadvantaged enterprises. LX helps SMEs to enhance their liquidity with public purchase loan and prepayment system, etc. and we have also jointly sought to expand their markets by holding SME procurement consultation sessions and working-level workshops. Internally we promote win-win partnership with SMEs by improving the awareness on SME products and public procurement in the internal domain. Therefore, the prepayment in 2016 reached 19.3% and the purchase rate of SMEs products was 92.8%, marking not just an increase from the previous year but also the accomplishment of the target by over 100% so that these results highlight the contribution made by LX to achieve its social responsibility.

LX's Plan

The LX Korea Land and Geospatial InformatiX Corporation is committed to assume a leading role in promoting and spreading public-private partnership growth among companies by increasing support for young people and small businesses and by supporting SMEs to secure customized competitive edges. In addition, LX will also give a boost to activities for SMEs and socially disadvantaged enterprises by strengthening its role as the stronghold for overseas expansion, expanding joint R&Ds, the expansion of subcontract direct payment system, etc.

Job Creation

• Background of Selecting Core Issues

Risks associated with youth unemployment due to stagnant economic situation poses a daunting challenge to our society. Today, job creation is not merely the result of management activities but has been brought to the fore as a critical issue from the perspectives of business competitiveness and social responsibility. On the other hand, as the demand for providing fair opportunities rises, there is growing interest in talent recruitment of companies.

• LX's Response Plan

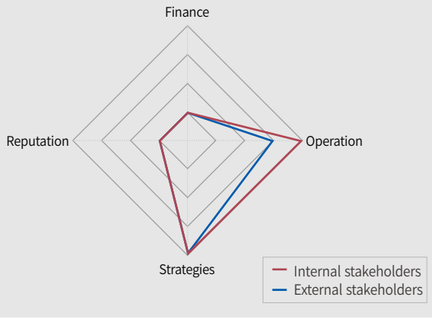
The LX Korea Land and Geospatial InformatiX Corporation carried out a thorough review on the management environment for job creation and the necessary workforce. We ensure the fairness and reliability of our recruitment process by first introducing a competency-based, blind recruitment system. In addition, we exert our various efforts in providing a quality job creation environment including a shift from temporary to permanent employees and the creation of jobs in the private sectors, thereby responding to the government's policies and contributing toward the development of industry.

• 2016 Key Achievements

No. of new employees	183 persons
No. of Industry Professional Practice (IPP) Trainees	172 persons
Job creation in the private sector	9,131 persons

• Stakeholder Impact Assessment

As a result of estimating the impact of LX on job creation through a survey of stakeholder interest, we have confirmed that internal stakeholders prioritize mid-to long-term management strategies and operational aspects; similarly external stakeholders place a priority on mid-to long-term management strategies.



Expansion of Open Recruitment Based on Competencies

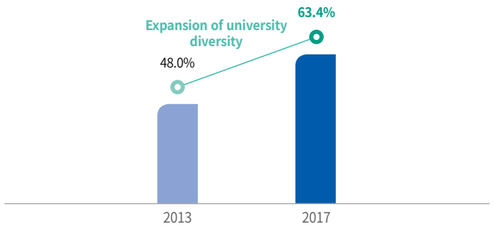
Customized Talent Selection

In accordance with the changing management environment and the expanded public role of the institution, LX has a recruitment procedure in place based on applicants' job competencies. We are the first institution that adopted a NCS-based recruitment system in the Korean public sector since 2013 for evaluating the competencies of applicants based on job relevance and ensures the objectivity of assessments with blind recruitment. In 2016, we hired 159 new employees and screened for the most suitable individuals for LX by running the entire process of recruitment from application to employment for permanent employees based on applicants' merit.

Reinforcing Blind Recruitment

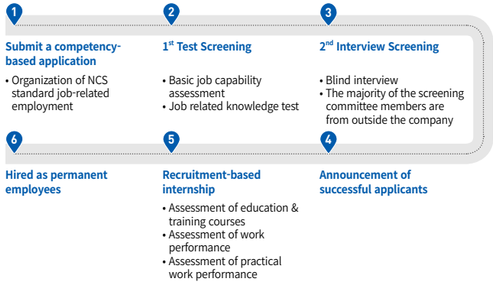
To hire talented individuals through equal opportunity and a fair process, LX introduced blind recruitment for the first time among public institutions in 2016. In an effort to relieve the problem of unnecessary competition, we removed the space that traditionally existed for applicants to include personal details such as a photo, place of origin, school name, etc., and instead focused more on interviews to review their experience relevant to the positions, their responses to specific situations, etc. LX conducts blind interviews that do not provide employer representatives at the interview with any data on the applicants. This allows us to build a recruitment system that is both fair and reliable.

Outcomes of blind recruitment



* The diversity of universities means the number of universities compared to recruits. We are hiring new employees of various backgrounds through blind recruitment.

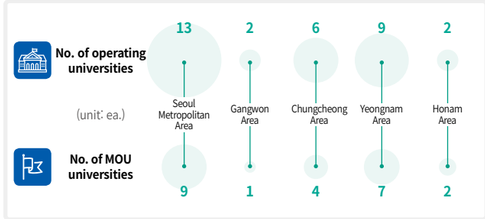
LX Recruitment Process



Operation of Industry Professional Practice (IPP)

To stimulate youth employment, LX has introduced a work-learning linkage system called Industry Professional Practice (IPP) promoted by the Ministry of Employment and Labor to foster talented individuals in the field. Selected in 2016, 172 university students are supported by LX to get the opportunity to combine their knowledge obtained from the university with hand-on experience in the field and receive systematic training. LX has signed MOUs with 23 universities in 2017 to broaden its IPP and is committed to cultivate talented young individuals through continued improvement of its educational courses and employment support system.

Industry Professional Practice (IPP) by Region and Current Status of MOUs with Universities



Realizing Employment Diversity

LX is operating an employment preference system to expand employment for the disadvantaged groups such as women, high-school graduates, talented individuals of regions, persons with disabilities, etc. In particular, LX pays attention to selecting local talent and strives to offer more employment opportunities through recruitment trips for local university students, customized career mentoring programs for regional university students, etc. As a result, we successfully recruited talented local individuals and those with disabilities, exceeding the obligatory percentage specified in the 2016 government's policy recommendation.

Improving Temporary Employment

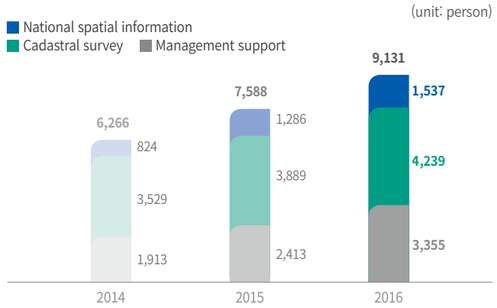
In line with the public institutions' personal management guideline, LX abides by temporary employment target management system that keeps the proportion of temporary employees to 5% of the total employees. We encourage the transition of temporary employment to permanent contracts through capacity building support and advantage points based on experience. On the other hand, we limit our indirect-employment to simple labor service at minimum and continue managing and supervising the workforce to ensure for proper working conditions.

A Leading Public Job Creator in the Private Sector

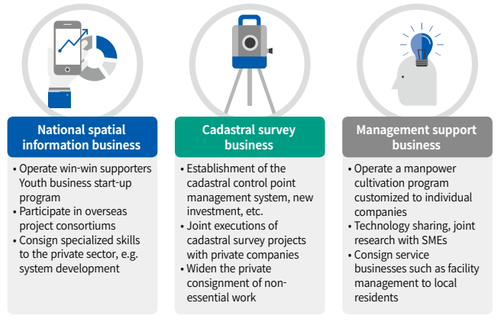
Establishment of an LX-style Strategic Scheme for Private Job Creation

The 4th Industrial Revolution is coming, and we cannot stress enough the importance of new growth engine businesses and new job creation. And as a public institution that serves its public obligations, LX prepared a strategic scheme to create new jobs in the private sector in conjunction with its strategies. In addition, we use our monitoring system to systematically manage our job creation results. To create new jobs with the goal of four times the current number of employees by 2022, LX is continuously building its core capabilities per business so as to provide quality and sustainable jobs.

Job Creation Achievements in the Private Sector By Different Businesses



Major Private Sector Job Creation Details by Business



LX's Plan

To generate quality jobs, the LX Korea Land and Geospatial InformatiX Corporation enhances fairness in the selection of individuals and offers customized employment opportunities for disadvantaged groups in terms of employment. We organize and run the "Quality Job TF" to figure out appropriate measures for the conversion of temporary employee to permanent position. LX is taking the lead in implementing the government's policies and contributing to the attainment of the virtuous cycle of employment.

Customer Satisfaction

• Background of Selecting Core Issues

In the era of global competition, customer satisfaction forms one of the crucial factors for enterprises to maintain their competitiveness. With the advent of new forms of service arising from socio-technological changes, the industrial paradigm is also evolving to bolster the rights and benefits of customers. Therefore, it is of fundamental importance to seek to provide preeminent service to customers in a bid to maximize customer values.

• LX's Response Plan

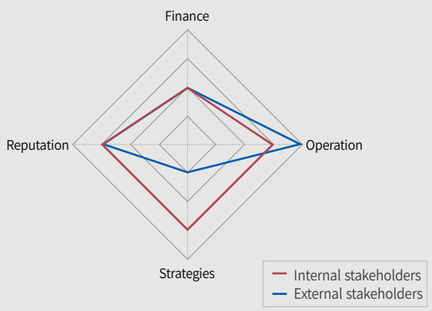
The LX Korea Land and Geospatial InformatiX Corporation collects and uses the Voice of Customers (VOC) obtained from the consistent communication with customers to drive its service improvement. Building on the public nature of our service and the understanding of convenience, we seek to address and solve problems from the perspective of customers and to be a company that meets moving customer satisfaction and can enhance customers' quality of life.

• 2016 Key Achievements

Acquired Consumer Centered Management (CCM) Certification	**First** as a quasi-government institution
Service Quality Index (SQI)	**92.8** points
Non-visit consultation (Completed 92,998 consultation cases in 2016)	**1,028** cases increase

• Stakeholder Impact Assessment

The survey on stakeholders' interests to see how they perceive the impact of the pursuit of customer satisfaction on LX, confirmed that the internal stakeholders placed more importance on the mid-to long-term management strategy, operation and reputation area, whereas the external stakeholders gave priority to the operational area.



Provide an Outstanding Customer-Centered LX Service

Improvement in Customer Satisfaction Management Innovation Strategies

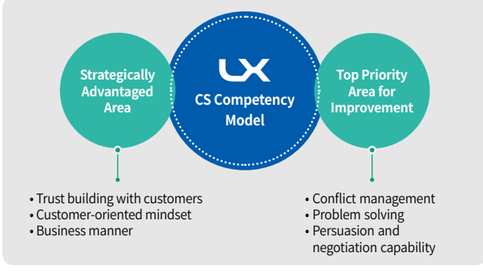
Following the changing role of the public corporation, LX tries to provide proactive services to meet the expectations of the people regarding public services by revamping our customer satisfaction management innovation strategies. Based on our preemptive customer satisfaction management efforts, we secure professional human resources and prompt responses to complaints. We will do our best to acquire distinguished, quality services in preparation for the future expansion of our business scope resulting from the further advancement of the spatial information industry.

LX Quick Call Center

Enhancing Professional Capability for Customer Satisfaction

LX is operating an educational and training program designed to improve expertise in MOT personnel to respond to customers. As we conduct customized education and training including CS Level Up, CS leadership, etc., for different levels of trainees, these efforts help to increase the level of customer satisfaction. Moreover, we provide in-house CS instructors with specialized external training courses to gain substantiality in CS education while making an effort to provide customer-oriented service by grasping the global customer satisfaction trends and incorporating innovative cases into our practices. On the other hand, we also pay attention to standardize complaint handling by updating the complaints processing manuals and sharing key case studies.

LX CS Core Competency Model

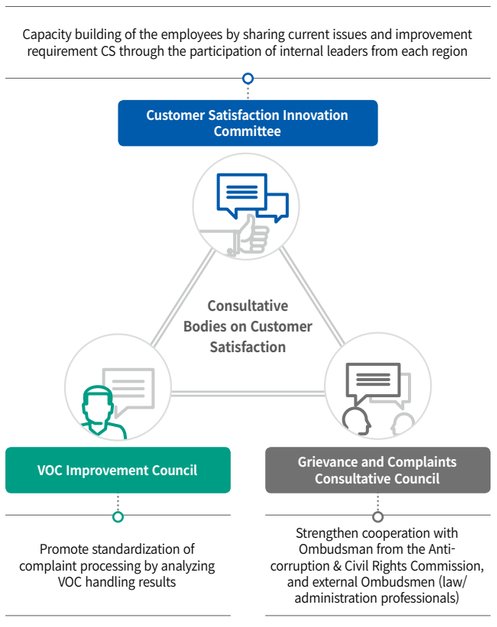


LX that Communicates with Customers

LX serves customers in prompt manner from VOC collecting to responding. In addition, we have simplified the stages of collection, acceptance and handling, etc. to a one-stop menu in order to enhance user's accessibility and shortened the complaint processing period. As our business domain expands further into the field of spatial information, various VOCs arise from the expansion. LX actively responds to such VOCs by establishing an integrated VOC management system.

Activation of Customer Satisfaction Consultative Bodies

To improve our ability to handle complaints, it is important to view from our customers' shoes and leverage our expertise. Hence, the operation of various consultative bodies helped in improving our capability to solve customer complaints of cadastral survey. We are busy strengthening our expertise on the basis of cooperative relationships with our external stakeholders such as relevant institutions and experts.



One Step Ahead Customer Satisfaction Service

To sharpen our competitiveness through spreading a customer-oriented management culture and advancing the rights and benefits of customers, LX acquired Consumer Centered Management (CCM) certification issued by the Korea Fair Trade Commission in December 2016. As a main CCM department, the customer support team is in charge of establishment and operation of the mid-to long-term customer satisfaction management plan for the purpose of internalizing the customer-oriented management principles.

Consumer Centered Management (CCM) Certification

LX Customer-Centered Management (CCM) System

Internal/external Cooperation System	• Regular intra-institutional performance checks and sharing of improvement measures via the CS Innovation Committee • Measure and evaluate complaint handlings • Establish a monitoring process after cadastral survey
Human Resource Management	• Form strategies to cultivate talented individuals • Establish an educational and training system • Prepare for the compensation scheme • Provide assistance in the education and training of MOT employees
Physical Resource Management	• Establish an integrated customer management system followed by regular check-ups & improvements • Maintain and improve an effective workplace environment
Education Management	• Operate compulsory courses for different level of positions based on the customer-centered management system, offering theory and case-study education • Operate an educational evaluation and reward system
CCM Manual Management	• Make and manage the manual on customer-centered management • Specify the main department for handling complaints, the process and resolution standard, etc.

LX's Plan

The LX Korea Land and Geospatial InformatiX Corporation sets out to accomplish greater customer service quality and higher customer satisfaction through its Customer-Centered Management (CCM). With a range of channels such as our homepage and mobile platform, we provide customers with useful information while addressing areas for improvement obtained from the VOC system through efforts such as the Quick Call Center to reflect them to our management strategies. We will continue to provide trustful solutions and services to satisfy our customers.

Risk Management

• LX's Response Plan

Against a backdrop of increasing uncertainty, the LX Korea Land and Geospatial InformatiX Corporation is committed in responding to risks proactively and preemptively. As an enterprise that pursues a new growth engine—the spatial information industry—as our core business, we preemptively review internal and external risk factors and reinforce an appropriate response system to maintain our competitive power.

Preemptive Risk Management for the Future

We have made a manual to offer guidance on how to systemically respond to four different types of risk by utilizing the risk management system benefiting from LX's characteristics. Furthermore, the "Risk Management Signal Light System" on the intranet enables regular monitoring and simulation drills based on virtual scenarios and further helps us to improve our risk management capability.

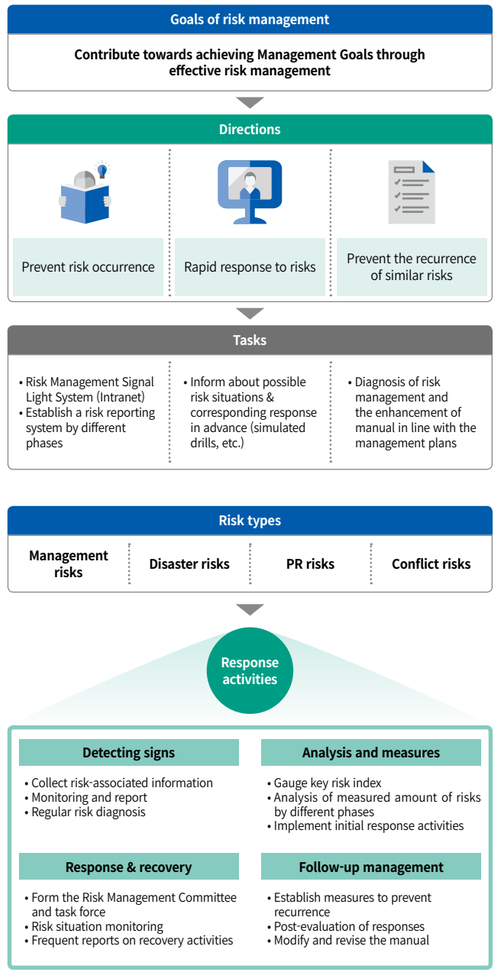
Financial Risk Management

The company revises its portfolio to fit into the current management environment and secures stable liquidity by effective fund operations to attain a stabilized internal environment while preparing and managing key risk management indicators in advance with internal and external risk factor analyses such as global oil prices and interest rate changes to brace itself against possible future financial risks. Consequently, LX has achieved a net profit this term by KRW 148.2 billion in 2016, four times higher than the previous year, and maintains a solid financial structure.

Non-financial Risk Management

Aside from financial risks, LX manages non-financial risks that may affect the reputation of the company in an integrated manner. The company builds a foundation for an integrated risk management system by identifying the mid-to long-term non-financial risks including climate change response by reducing GHG emissions of business sites, strengthened customer information security, etc., and classifying and managing them by different risk types.

Risk Management Response System



LX's Plan

The LX Korea Land and Geospatial InformatiX Corporation will keep on striving to achieve its management strategies and financial plans with an advanced risk management system that can promptly respond to internal and external environmental changes. In addition, we will reinforce our monitoring towards the risk-factor that can occur in non-financial areas and define and identify the mid-to long-term risks from the comprehensive perspective so as to establish an advanced risk management system.

Information Security

• LX's Response Plan

With the development in information communication technology, there is a growing risk associated with information leakage. In response to this risk, the LX Korea Land and Geospatial InformatiX Corporation places the highest priority on protecting its information assets and customers' personal information and it is continuously undertaking continued improvement activities. In addition, we are heightening our capability to promptly respond to cyber-attacks and emergency situations.

LX, Keeper of National Information Security

Advanced LX Information Security Management System

In response to the intensified level of potential security risk, LX has advanced its information security management system with a view to implement the national information security policies as well as to strengthen its executive ability in terms of information security. LX expanded its information security infrastructure and eliminates risk factors. Furthermore, we are committed to running a stable information security management system encompassing security training for all the employees, preventive measures for private data leakage, etc.

Personal Information Protection Management

LX puts priority on customers' personal information and strengthens the level of personal information protection management. As we have implemented preventive measures such as the destruction of all relevant private data upon completion of the work, and the operation of a personal information protection system as well as our own monitoring system, there was not a single personal information leakage incident or infringement accident. As the result, we selected as an excellent institution in the assessment on the level of personal information protection management of public institution.

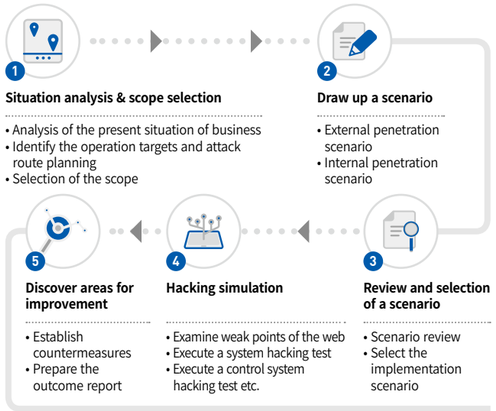
LX Control Center

Cyber Safety Zone Broadened by LX

Expansion of Information Protection Infrastructure

In conformity with the guidelines of the National Intelligence Service, LX expands its physical network to regional headquarters, implements measures to prevent any infringement accident via internet, and keeps monitoring its operational status. Moreover, we take active measures against rapidly increasing data leakage accidents by establishing a Network Access Control (NAC) system that completely blocks any unauthorized access of PCs, communication devices, etc., to our corporate network and a data storage prevention solution that obligates the preparation of important documents on the intranet while blocking any data storage on a PC connected to the internet, etc.

Check Process through Hacking Simulation



Stability through the Establishment of the Disaster Recovery Center

The advancement in Disaster Recovery (DR) center helps LX to secure the full protection and continuity of spatial information services. The total data reproduction rate between an information center and DR center has been raised by 100%, and the DR center storage was enlarged to more than 3 times to firmly build up a data security environment for the information center. In addition, we have done the integrated DB recovery test against possible emergency situations such as war and disaster and recorded the completion of a 100% data recovery by utilizing vaulting tape backup within 32.5 hours. This demonstrates our commitment to secure stability with increased resilience in information service recovery.

LX's Plan

The LX Korea Land and Geospatial InformatiX Corporation's preemptive response to information security risks resulted in zero cases of information security accidents in 2016. We will renew ourselves as the leading public institution that people can trust by responding thoroughly against information leakage and cyber terrorism as well as the continued provision of safe and stable spatial information services.

Local Community

• Background of Selecting Core Issues

Continued technological innovations and technology diffusion lead to a growing demand for enterprises to directly provide a solution to social problems and fulfill their social responsibility with regard to the creation of business. There is a heightened interest in the sustainable social contribution activities that use a company's own capability to exercise a positive influence over the society.

• LX's Response Plan

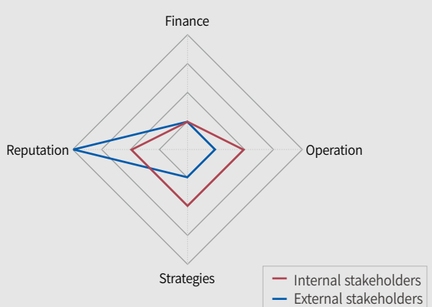
As a public institution, the LX Korea Land and Geospatial InformatiX Corporation considers the best interest of all and it is fully involved in solving social problems at a fundamental level. With the advancement of spatial information technology, we intend to launch differentiated social contribution activities by sharing and utilizing our own capabilities.

• 2016 Key Achievements

Amount of LX survey fee exemption (free)	KRW 22.2 billion
No. of audience for the Ballet Gala	3,415 persons
No. of trainees in the social contribution manager workshop	402 persons

• Stakeholder Impact Assessment

The impact of LX's social contribution activities on local communities was forecasted through the survey of stakeholder interest, the survey showed that the internal stakeholders put priority on the aspects of mid-to long-term management strategies, operation and reputation, while the external stakeholder considered the reputational aspect to be more important.



Mature Pursuit as a Leading Social Contribution Institution

LX Specialized Social Responsibility Management System

As a public institution, LX takes responsibility of the people and makes use of its capacity to conduct sharing activities. We have strengthened our foothold for social contribution by newly establishing social responsibility management strategies in line with its corporate strategies. In addition, we run a variety of programs such as volunteer groups and social contribution mileage to conduct systematic social contribution activities. We are committed to helping spread the culture of sharing.

Heartwarming Sharing with People

Creating a Safe and Secure Environment

LX offers a spatial information service for the people based on its spatial information competencies to foster a safe environment and increase daily conveniences for the people. Using a spatial information service in the event of disasters, we swiftly provide the people with information about damaged areas and emergency situations. Also, we offer useful daily life services including road name address information, cultural and tourism contents, and others.

Spatial Information Talent Donation

LX offered a talent donation lecture program for schools located in rural areas that are relatively deprived of the opportunity to experience the latest technologies. As the programs mainly cover 4th industrial revolution technology including UAV experience, autonomous vehicles, VR, etc., they stimulate children's curiosity and interest in science and help them to obtain new experience through the researchers' donation of their talent.

Spatial information talent donation activity

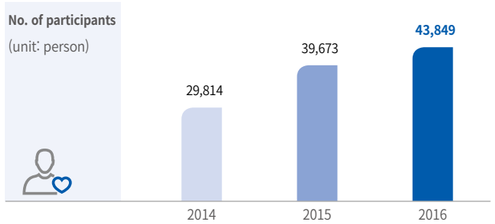
Contribution to the Revitalization of the Local Economy

LX was awarded a minister prize from the Minister of Land, Infrastructure, and Transport in recognition of its contribution to the local economy revitalization from the government in the "2016 Regional Industry Promotion Merit Awards." The prize was given to the institutions that made a significant contribution to the local economy development among those institutions that moved to the region, and LX's endeavors were recognized, including its cooperative activities with various local institutions, customized engagement with local residents, etc. In the future, LX will continue its social contribution activities for local communities and be the accountable public institution that actively responds to the demand of local communities.

Value of Sincerity Augmented by LX's Sharing

LX applies its business competencies to its social contribution activities by sharing with the local community. The value of sharing is instilled throughout the company as our members are engaged in various talent donation services including educational donation on survey for the underprivileged, and free legal advice, etc. In addition, the local headquarters share their successful social contribution programs including cyber education course, etc., so that all members of LX are encouraged to actively participate in various social service activities. As such, LX is continuously putting emphasis in giving back to the society as a public institution.

Social Contribution Participation by Employees



Link to SDGs: **Provision of Customized Training**

Goal 4 Quality Education

4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations

The task of the 4th Sustainable Development Goal (SDG) is to ensure inclusive and equitable quality education and promote life-long learning opportunities for all. As the LX Korea Land and Geospatial InformatiX Corporation offers customized educational programs to subject of education including local children, the underprivileged, young people, etc., it contributes to ensuring equal educational opportunities for future talents.

LX provides a wide range of programs starting from the ballet experience program for local children to the bicycle training program, and extending to the educational donation of land and geospatial information to juvenile reformatories, special educational courses on finding positions in governmental offices, and operating spatial information. LX also shares its core competency to local students, and it fosters future talented individuals fit for the local community. LX promises to endeavor in resolving the poor educational resource issue and discover new courses that are customized to students for the goal of providing equal educational opportunities to all.

Educational Program Achievements

Cycling class by LX cycle teams	6 facilities
Educational donation on cadastral survey	7 schools
Special lecture on public institution employment preparation	24 schools

Community Ballet School

LX's Plan

The LX Korea Land and Geospatial InformatiX Corporation is actively working to fulfilling its social responsibilities for a better life in the community. We plan to revitalize diverse social contribution that will create programs that will create value by effectively leveraging LX's capabilities. We promise to expand our positive influence by strengthening our public roles for the healthy and stable lives of people in the future.

Human Resources Management

• Background of Selecting Core Issues

There is a growing expectation from society and stakeholders that enterprises should be committed to the growth and competencies of their individual members. It is important to contribute to employees' development by promoting a sound organizational culture that accommodates employees' creative and diverse ideas as well as the creation of a positive workplace.

• LX's Response Plan

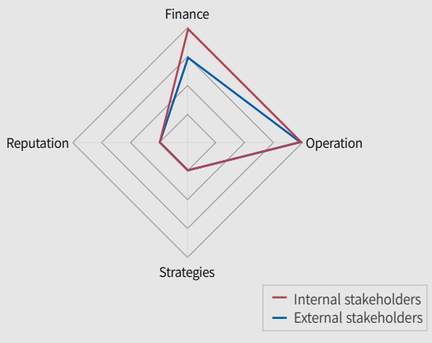
To become a workplace where excellent future talented individuals want to work, we are trying to promote innovation for sustainable human resources management. Also, in order for talented people with diverse backgrounds to fully demonstrate their abilities, we are building a culture of win-win growth.

• 2016 Key Achievements

Family-friendly corporation certification by the Ministry of Gender Equality and Family	3 times
No. of employees in a flexible work arrangement	1,142 persons
No. of trainees who completed cyber safety and health education	3,999 persons

• Stakeholder Impact Assessment

The impact of LX's human resources management was forecasted through the survey of stakeholder's interest, the survey showed that the internal stakeholders put priority on the aspects of short-term finance and operation, and the external stakeholder considered the operational aspect to be more important.



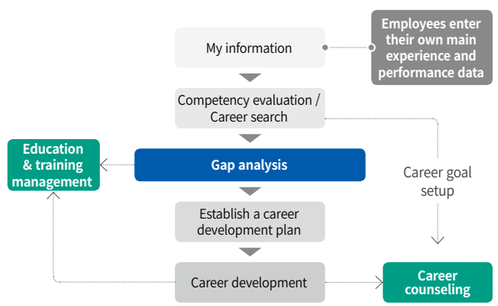
LX's Talent to Create the Future Value of Our Land

Intensified Customized Core Competencies

Based on the interest in the growth and development of LX members, LX provides employees' education and training in order to equip them with the capabilities necessary for the future spatial land information business and those to meet their individual needs. We've established customized educational and training courses to satisfy individual levels of competencies through the analysis on the mid-to long-term management strategies, new growth engine business, employees' needs, and capability diagnosis results. To assist our employees in bolstering their competitiveness, we also broaden educational and training courses specialized in the spatial land information and, at the same time, encourage field-oriented training in consideration of the characteristics of regional headquarters.

Career Development Based on Competencies

LX is establishing a strategic competency cultivation system with a career development program for all its employees. We provide our employees with the optimum opportunity to build their competencies by designing and offering online/offline educational and training programs. These focus on the insufficient competencies of employees, identifying the gap between the competency requirements for each job and employees' current capabilities based on diagnoses obtained by the assessments of individual employees' competencies with self-diagnosis, work performance plan, observation or interviewer records, etc.

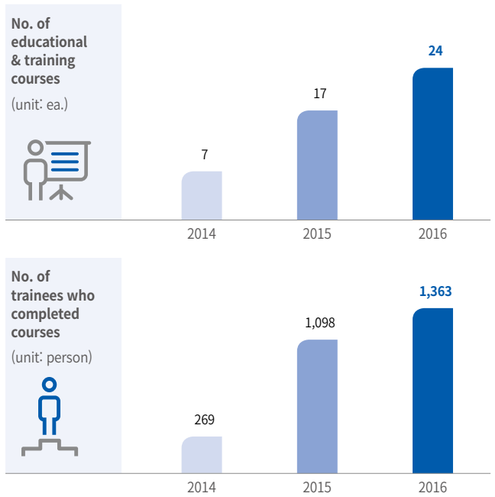


Seminar for activating drone use of the river field

Expand Specialized Education & Training on Geospatial Information

To meet the increasing demand of the spatial information industry inside and outside Korea, LX tries to preemptively respond to the growing industry by fostering specialists in its major business fields. A range of educational courses including terrestrial lidar, Big Data, and spatial information analysis, etc. helps LX employees to cultivate competencies for key issue areas of land information. Moreover, we organize an expert cultivation course and adopt a work-out type training where several teams are engaged in discovering new business opportunities in the field of national land information and given a chance to pursue their business projects if selected by a screening process. As a result, "The Fact-finding survey on Vacant houses and the Establishment of Information System" proposal has been selected as a national policy research project. As a showcase, LX is pursuing national policy support and expert cultivation at the same time through its specialized educational and training courses.

Educational Achievements of Geospatial Land Information



Establishment of a Fair and Transparent Personnel Management System

Supporting Lifelong Education

We also support workers that are soon to retire to successfully launch their 2nd chapter of their lives by providing a life design program. Their new start will be fully assisted with a self-diagnosis for the prospective retirees' career search and environment analysis after retirement. This education was held for 233 prospective retirees for a total of 6 times in 2016.

Management of Evaluation and Rewards

To achieve its corporate goals and strategies, LX has a performance management framework in place to concentrate the capabilities of the entire organization and the members to ensure that employees are appropriately rewarded by a fair and transparent assessment. Furthermore, we strive to establish a performance-based organization culture in which every member will be reasonably rewarded for their labor through an objective evaluation process. In addition, we enhance our transparency by making efforts to reflect the opinions of the members by running an opinion gathering channel regarding the evaluation and reward frameworks.

LX, a Great Place to Work

Efforts to Realize Gender Equality

In LX, rewards and promotions for both male and female employees are done equally. LX has established a growth path for the social participation of women and proactively engaged in nurturing female leaders. In line with this effort, we are set to gradually widen our pool of female workers and consequently hired more female workers, making up 21.9% of the total newcomers. Since 2014, we have also introduced the gender equality promotion target system, which dictates that 10% of total employees who achieve promotion to be female.

Fostering a Family-friendly Organizational Culture

LX sets its eyes on providing a happy workplace through innovative reform of culture that allows employees to have balance between work and family. We have obtained and been maintaining the family-friendly corporation certification by the Ministry of Gender Equality and Family since 2012 and run a variety of programs to promote a corporate culture that satisfies its members. LX improved its parental leave system by introducing the automatic parental leave system, and promoting paternity leaves among male employees, this is contributing to good family relationships and the substantial alleviation of child care burdens. LX will continue to seek work and life balance to raise the level of work engagement and to make sure to provide its employees with a happy workplace.

Selected as the No. 1 Company to Work for

LX has been placed 1st in the public sector category as the "Best Company to Work For in Korea" through the survey by the GPTW Institute, a global trust management rating agency. The survey was conducted for the first time in Korea to future members including students, current employees, job seekers, etc. under the global standards applicable to 50 countries in the world. LX has been recognized for the remarkable performances in various categories such as workers' treatment, talent cultivation, and work and life balance. We plan to exert more efforts to foster an organizational culture that seeks the right values and happiness for all individual members of the organization.

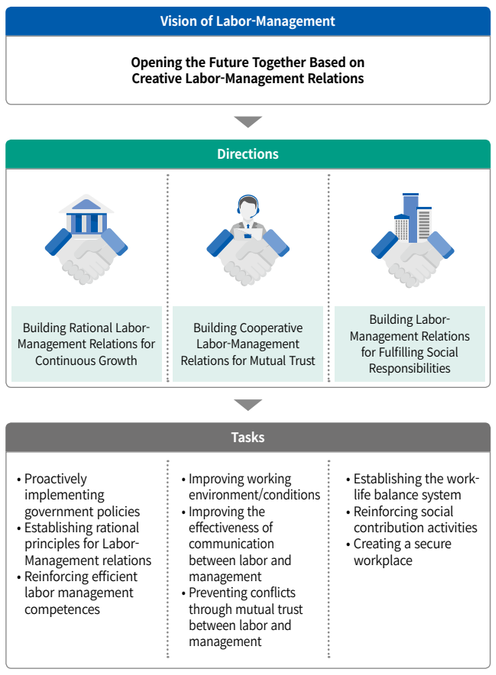
Human Resources Management

Harmonious and Win-win Labor-Management Culture

Establishment of Creative Labor-Management Strategies

Based on the Labor-Management vision of "opening the future together based on creative Labor-Management relations," LX has been forging a stronger consensus between labor and management against a fluctuating internal and external management environment. In consideration of its organizational features, we continue to seek a proper communication channel, addressing measures to attain reasonable Labor-Management relations, and improving them accordingly. In the future, LX will take account of the actual work environments of its members and proactively adopt government policies to build trust-based, advanced Labor-Management relations.

Labor-Management Relations Strategy System



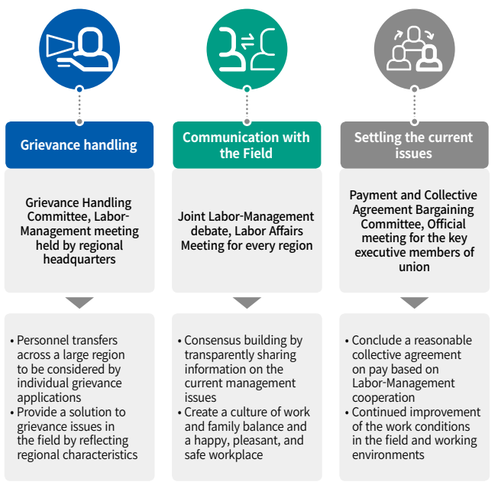
Efforts to Labor-Management Harmony

In an effort to establish a sound Labor-Management culture, LX concentrates on offering and invigorating joint programs for labor and management that may help protect members' rights while increasing productivity. These programs include the meditation experience program, process for the balance between work and family, the Labor-Management partnership educational program, and more. In addition, through the operation of legitimate and substantial Labor-Management meetings facilitates and ensures reasonable labor union activities and the establishment of rational Labor-Management relations.

Facilitating Communication between Labor and Management

Smooth communication is the precondition of cooperative Labor-Management relations. In this regard, LX builds up various communication channels to form a consensus between labor and management. We share the current status of management and gather field opinions through direct communication including future growth debate, win-win Labor-Management meetings, etc. In addition, if there are any changes in operations including work conditions, we are seeking a reasonable system of management through consultation with the labor union.

Labor-Management Communications Scheme



LX's Plan

The LX Korea Land and Geospatial InformatiX Corporation provides opportunities for all of our employees to develop their competencies and has established a fair performance evaluation and compensation system in a creative organizational culture. We will keep on monitoring the fruits of talent management based on continued communication with our members and creating a reasonable working environment that satisfies all members.

Health and Safety

• LX's Response Plan

Safety and Health Activities of a business is one of the essential management elements that do not just prevent casualties from occurring but affect the spirits and productivity level of its members. LX Korea Land and Geospatial InformatiX Corporation is constructing a systematic safety infra to ensure safe and health working conditions for its members. In addition, the company is proactively working on contributing to not just the healthy life of its members but also the people by promoting safety culture and advancing safety awareness.

Safe Social Environment Created by LX

Building the LX Safety Management System

Putting the foremost priority on safety is one of the principles of LX, and we overhauled our safety management strategy system according to its risk factor analysis. By creating an infrastructure for the safety of workers and people, LX strives to secure the ability to systematically manage and tackle problems as quick as possible. LX runs Risk Management Committee headed by the CEO to prepare against various disasters and to create a pleasant work environment by dispatching professional manpower throughout the network nationwide.

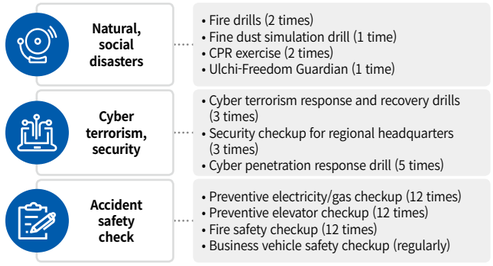
Disaster Response Drill

Emergency First Response (EFR) Certification

Bolstering the Ability to Respond to Disasters

The operation of the LX Risk Management System ensures the preemptively response to various disasters and catastrophic situations. We analyze the risk of a disaster in accordance with the risk response process to undertake appropriate measures or to follow-up with management activities. We also spread the update on the disaster situations through the risk management signal light system and emergency contact while running a consultative body with the relevant institutions.

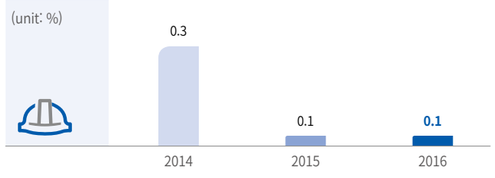
2016 Disaster Response Drills by Different Types



Creating a Prevention-Oriented, Safe Workplace

To ensure the safety of its own members and the employees of partner companies, LX has built a safety infrastructure. We support safety goods in preparation of possible safety accidents that might occur in survey fields in various locations in Korea and conduct regular checkups for vehicles and facilities. Also, we make it mandatory for every employee to take safety education and training while trying to raise safety awareness through the Safety Day campaign, distribution of safety manuals, PR on major seasonal safety issues, and others. Meanwhile, we conduct field inspections and safety trainings for the safety of employees from partner companies, doing our best to prevent any safety accidents from taking place.

Industrial Accident Rate



Improving Safety for the People

Capitalizing on its spatial information technology, LX supports appropriate responses to possible safety accidents and disasters that might take place in people's daily lives. The company provides not just traffic safety information but also safety information for heavy rains and floods, and contributes to promoting response to any emergency situation by building a safety information data for different disaster events and accidents.

LX's Plan

The LX Korea Land and Geospatial InformatiX Corporation will place the top priority on the health of our employees which will ensure a pleasant work environment and eliminate potential safety accidents. In addition, LX is proactively responding to issues related to the safety and health of the local communities by making use of its capabilities, and hence working toward creating a safe national land environment.

Appendix

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Sustainability Management Performance Data

Economy

Summary Statement of Financial Position (K-IFRS)

Classification		Unit	2014	2015	2016
Assets	Current assets	KRW 1 million	78,365	120,623	240,200
	Non-current assets	KRW 1 million	306,627	307,041	378,095
	Total assets	KRW 1 million	384,992	427,664	618,295
Liabilities	Current liabilities	KRW 1 million	63,287	85,417	126,444
	Non-current liabilities	KRW 1 million	85,851	73,882	95,763
	Total liabilities	KRW 1 million	149,138	159,299	222,207
Capital	Capital	KRW 1 million	10,000	10,000	10,000
	Other	KRW 1 million	225,854	258,365	386,087
	Non-controlling interests	KRW 1 million	-	-	-
	Total shareholders' equity	KRW 1 million	235,854	268,365	396,087
Debt ratio		%	63.23	59.36	56.1

Summary Statement of Comprehensive Income (K-IFRS)

Classification	Unit	2014	2015	2016
Revenues (sales)	KRW 1 million	434,732	472,887	507,843
Net sales	KRW 1 million	434,732	472,887	507,843
Cost of goods sold	KRW 1 million	353,806	363,663	384,411
Selling and administrative expenses	KRW 1 million	56,081	62,626	72,854
Operating profit	KRW 1 million	24,845	46,599	50,578
Other revenues	KRW 1 million	3,592	3,909	6,697
Other expenses	KRW 1 million	17,376	13,751	13,494
Other profit	KRW 1 million	1,370	1,843	148,543
Finance profit	KRW 1 million	2,013	2,133	3,024
Finance costs	KRW 1 million	-	-	1
Profits related to companies accounted in equity method, etc.	KRW 1 million	-	-	-
Net income before income tax	KRW 1 million	14,444	40,733	195,347
Income tax expenses	KRW 1 million	3,525	9,348	47,193
Net income for the year	KRW 1 million	10,919	31,385	148,154
Other comprehensive income	KRW 1 million	-1,335	1,126	-20,431
Total comprehensive income	KRW 1 million	9,584	32,511	127,723
Ratio of net income to net sales	%	2.51	6.64	29.17
Net Worth Turnover Ratio	%	184.32	176.21	128.21

Key Financial Indicators

Classification		Unit	2014	2015	2016
Stability	Current ratio	%	123.82	142.22	189.97
	Debt ratio	%	63.23	59.36	56.1
	Capital ratio	%	61.26	62.75	64.06
Profitability	Ratio of operating profit to net sales	%	5.71	9.85	9.96
	Ratio of net income to net sales	%	2.51	6.64	29.17
	Return on assets	%	2.87	7.72	28.33
	Operating Cash Flow to Total Assets	%	8.54	16.33	11.15
Growth potentials	Net sales growth rate	%	-2.21	8.78	7.39
	Operating profit growth rate	%	-22.85	87.56	8.54
	Net profit growth rate	%	-28.73	187.45	372.06
	Total assets growth rate	%	1.03	11.08	44.57
	Asset turnover ratio	%	1.14	1.16	0.97
Productivity	Gross value added to total assets or productivity of capital)	%	98.67	100.64	114.36
	Gross value-added to property, plant and equipment	%	150.16	161.45	213.81
	Unit labor cost growth rate	%	0.36	4.66	4.08
	Value-added productivity per employee	%	0.71	8.7	41.77

R&D Investments

Classification	Unit	2014	2015	2016
R&D expenses	KRW 1 million	9,152	6,945	17,535
Ratio of R&D expenses to sales	%	2.1	1.5	3.5

Registration of Intellectual Property Rights

Classification	Unit	2014	2015	2016
Patents (utility models)	ea.	8	12	13
Trademark rights	ea.	36	45	55
Copyrights (program registration)	ea.	299	327	372
Total	ea.	343	384	440

*The corresponding data on intellectual property rights are cumulative.

Environment

Energy Consumption and Energy Intensity

Classification	Unit	2014	2015	2016	Remarks
Diesel	TJ	34.75	46.32	46.95	
Gas (LNG)	TJ	6.11	17.39	6.79	
Gas (LPG)	TJ	0.26	0.14	0.13	
White kerosene	TJ	10.02	7.36	7.54	
Gasoline	TJ	2.07	2.05	1.98	
Power	TJ	67.35	80.96	92.11	
Other	TJ	2.46	1.95	2.51	
Total	TJ	123.02	156.17	158.01	Company-wide
Energy consumption intensity	TJ/KRW 100 million	0.03	0.03	0.03	Based on sales

Water usage by Source

Classification	Unit	2014	2015	2016	Remarks
Tap water	ton	76,331	79,950	74,814	Company-wide

Greenhouse Gas Emission and Greenhouse Gas Intensity

Classification	Unit	2014	2015	2016	Remarks
Direct greenhouse gas emissions (Scope1)	tCO_2e	3,575	4,788	4,466	
Indirect greenhouse gas emissions (Scope2)	tCO_2e	3,489	4,194	4,818	
Total	tCO_2e	7,064	8,982	9,284	Company-wide
Direct greenhouse gas emissions intensity (Scope1)	tCO_2e/KRW 100 million	0.82	1.01	0.88	Based on sales
Indirect greenhouse gas emissions intensity (Scope2)	tCO_2e/KRW 100 million	0.80	0.89	0.95	Based on sales

Waste Generation by Type

Classification	Unit	2014	2015	2016	Remarks
General waste	ton	14	76	77	
Specified waste	ton	-	-	-	
Total	ton	14	76	77	Headquarters and regional headquarters

Sustainability Management Performance Data

Society

Employees

Classification		Unit	2014	2015	2016	Remarks
Incumbent		person	3,953	3,908	4,115	
Employment type	Executives	person	5	5	5	
	Permanent employees	person	3,663	3,574	3,844	
	Unlimited contract workers	person	98	120	109	
	Temporary employees	person	187	209	157	
Regional	Headquarters	person	210	220	225	
	Education Institute	person	25	31	34	
	Research Institute	person	70	57	55	
	Regional Headquarters	person	430	428	462	
	District Office	person	3,218	3,172	3,339	
Gender	Female employees	person	405	403	438	Permanent employees
	Female managers	person	43	48	55	Level 4 or above of permanent employees
Minorities	People with disabilities	person	129	125	125	
	Veterans	person	128	133	135	

The Ratio of Average Annual Salary Compared to the Highest Annual Salary

Classification	Unit	2014	2015	2016
Total annual salary of the highest salaried recipient (A)	KRW 1 million	99.1	102.4	103.1
Average salary based on total employee(B)	KRW 1 million	64	66.4	67.5
Ratio (=A/B)	%	155	154	153

The Ratio of Average Annual Salary Increase Rate Compared to the Highest Annual Salary

Classification	Unit	2014	2015	2016
The salary increase rate of the highest salary recipient (A)	%	1.64	3.33	0.68
Average salary increase rate(B)	%	2.89	3.75	1.66
Ratio(=A/B)	%	0.57	0.89	0.41

Retirement Pension System

Classification	Unit	2014	2015	2016
Retirement pension amount (DB)	KRW 1 million	122,145	135,651	132,301
Retirement pension amount (DC)	KRW 1 million	10,237	15,408	46,499
Total retirement pension amount	KRW 1 million	132,382	151,059	178,800
Number of subscribers (DB)	person	3,653	3,971	3,899
Number of subscribers (DC)	person	134	186	502
Total number of subscribers	person	3,787	4,157	4,401

Wages of New Employees Compared to the Minimum Wages

Classification	Unit	Details	Remarks
Statutory minimum wages	KRW	6,470	As of 2017
Wages of new employees (male)	KRW	14,940	
Wages of new employees (female)	KRW	14,940	
Ratio (male)	%	231	
Ratio (female)	%	231	

Number of New Hires and Displaced Workers (retirees)

Classification			Unit	2014	2015	2016
Total number of employees (permanent)			person	3,663	3,574	3,844
Number of New hires (permanent)	Gender	Male	person	80	6	143
		Female	person	24	2	40
	Age	Under 30	person	76	-	124
		From 30 to 50	person	26	7	57
		Over 50	person	2	1	2
	Local employees	Non-metropolitan local employees	person	64	1	90
		Metropolitan local employees	person	40	7	93
	Total		person	104	8	183
Ratio of newly employed workers			%	2.8	0.2	4.8
Number of displaced workers (retirees)			person	6	2	8
Ratio of displaced workers (retirees)			%	0.2	0.1	0.2

Use of Parental Leave

Classification		Unit	2014	2015	2016
Parental leave users	Male	person	2	4	4
	Female	person	32	38	34
	Total	person	34	42	38

Classification	2015-2016 Persons who used parental leave (person)	2015-2016 Persons who were still employed 6months after the end of parental leave (person)	Percentage of persons who return to work after parental leave(%)
After Parental leave, Return status	52	50	96%

Current Status of Flexible Work Arrangements

Classification		Unit	2014	2015	2016
Part-time work		person	7	10	11
Flexible work arrangements	Flex-time	person	355	529	941
	Flexible working hours	person	2	94	184
Remote work arrangements	Smart work	person	6	13	6

Rate of Total Workforce Represented in Joint Labor-Management Safety and Health Committees

Classification	Unit	2014	2015	2016
Number of participants in the safety and health committee	person	14	14	14
Proportion of participants in the safety and health committee	%	100	100	100

Proportion of Work-related Disasters

Classification	Unit	2014	2015	2016
Injury incidence rate	%	0.3	0.1	0.1
Number of fatalities	person	0	0	0

Proportion of Employees Subject to Performance Evaluation

Classification	Unit	2014	2015	2016
Total number of employees	person	3,953	3,908	4,115
Number of evaluated employees	person	3,953	3,908	4,115
Proportion of performance evaluation	%	100	100	100

Security Guard Human Right Education

Classification	Unit	2014	2015	2016
Total number of security guard	person	3	3	3
Number of security guard educated in human right	person	3	3	3
Ratio of security guard educated in human right	%	100	100	100

Average Education Time per Employee

Classification	Unit	2014	2015	2016
Total number of employees (permanent)	person	3,663	3,574	3,844
Total education time	Hours	485,766	464,823	465,094
Education time per person	Hours	133	130	121

The Ratio of the Employee Diversity (by category)

Classification		Unit	2014	2015	2016
Female	Male	%	88.9	88.7	88.6
	Female	%	11.1	11.3	11.4
Age	Under 30	%	5.6	4.5	7.0
	From 30 to 50	%	68.4	67.7	62.8
	Over 50	%	26	27.8	30.2

The Ratio of the Basic Salary and Remuneration Female Workers to those of Male Workers (by type of worker)

Classification		Unit	2014	2015	2016
Executives	The ratio of the basic salary of females to that males	%	100	100	100
	The ratio of the total remuneration of females to that males	%	100	100	100
Employees	The ratio of the basic salary of females to that males	%	91	91	91
	The ratio of the total remuneration of females to that males	%	91	91	91

Amount of Local Product Purchase

Classification	Unit	2014	2015	2016
Total purchase amount*	KRW 1 million	55,556	50,835	50,493
SMEs	KRW 1 million	50,242	40,450	41,710
Technology development	KRW 1 million	716	529	851
Enterprises of females	KRW 1 million	6,565	4,663	4,936
Social enterprises	KRW 1 million	436	1,152	360
People with Severe Disabilities	KRW 1 million	357	407	445
Self-support village for disabled veterans	KRW 1 million	15	41	24

* Total purchase amount: Individual expenses are overlapped.

Social Contribution Expenses

Classification		Unit	2014	2015	2016
Disbursement method	Social contribution operating expenses, etc. (indirect cost)	KRW	-	-	-
	Donations, etc.(direct cost)	KRW	265,143,440	271,932,880	209,163,985
Location of disbursement	Domestic social contribution expenses	KRW	265,143,440	271,932,880	209,163,985
	Overseas social contribution expenses	KRW	-	-	-
Disbursement type	Cash	KRW	221,226,490	228,309,000	149,298,591
	In-kind	KRW	43,916,950	43,623,880	59,865,394
Total		KRW	265,143,440	271,932,880	209,163,985

GRI Index

Universal Standards(GRI 100)

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Economic Performance(GRI 200)

Classification	Disclosure	Indicators	Page	Note
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Economic Performance(GRI 200)

Classification	Disclosure	Indicators	Page	Note
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	205-2	Communication and training about anti-corruption policies and procedures	38-40	
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Classification	Disclosure	Indicators	Page	Note
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	305-6	Emissions of ozone-depleting substances (ODS)	No such cases	
	305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	No such cases	
Effluents and Waste	306-1	Water discharge by quality and destination	57	
	306-2	Waste by type and disposal method	57	
	306-3	Significant spills	No such cases	
	306-4	Transport of hazardous waste	No such cases	
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Social Performance(GRI 400)

Classification	Disclosure	Indicators	Page	Note
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	405-2	Ratio of basic salary and remuneration of women to men	58	
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Security Practices	410-1	Security personnel trained in human rights policies or procedures	59	
Rights of Indigenous Peoples	411-1	Incidents of violations involving rights of indigenous peoples	No violation cases	
Human Rights Assessment	412-2	Employee training on human rights policies or procedures	100%	
Local Communities	413-1	Operations with local community engagement, impact assessments, and development programs	50-51	
	413-2	Operations with significant actual and potential negative impacts on local communities	No such cases	
Supplier Social Assessment	103	Management Approach	42	
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	414-2	Negative social impacts in the supply chain and actions taken	No such cases	
Customer Health and Safety	416-1	Assessment of the health and safety impacts of product and service categories	55	
	416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	No violation cases	
Marketing and Labeling	417-2	Incidents of non-compliance concerning product and service information and labeling	No violation cases	
	417-3	Incidents of non-compliance concerning marketing communications	No violation cases	
Customer Privacy	103	Management Approach	46	
	418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	No violation cases	
Socioeconomic Compliance	419-1	Non-compliance with laws and regulations in the social and economic area	No violation cases	

Third-Party Verification Statement

Preface

KFQ was engaged by LX Korea Land and Geospatial InformatiX Corporation (further 'LX') to provide limited assurance on the 'LX Report 2017' (further 'the Report'). Our responsibility is to perform a limited assurance engagement and to express a conclusion based on the work performed. We conducted its assurance based on completeness of the data and information provided by LX. LX is responsible for all contents within the Report including the reporting principles and standards.

Independence

KFQ is not involved in the preparation of any part of the Report, other than providing an assurance opinion, and there has been no interest between LX and us. We have no biased opinion on stakeholders of LX.

Assurance Standards

KFQ has designed and implemented assurance according to the following standards.

- AA 1000 Assurance Standard 2008
- AA 1000 Accountability Principles Standard 2008
- GRI Standards
- ISO 26000 : Social Responsibility Standard
- UN SDGs (UN Sustainable Development Goals)

Assurance Scope

KFQ identified the followings as its scope:

- LX's sustainable management activities and performances of the headquarter and all business establishment (domestic and overseas) described in the Report.
- Compliance with the guidelines according to GRI Standards Core Option.
- GRI Standards compliance assessment regarding contents of the Report and assurance principles of reporting quality.
- Application of Type 1 assurance approach according to AA 1000 APS 2008 and AA 1000 AS 2008 to assess compliance with inclusiveness, materiality and responsiveness principles and reliability of sustainability performance information. The term 'Moderate Assurance' used in AA 1000 AS is designed to be consistent with 'Limited Assurance' as articulated in ISAE 3000.
- Core subjects in ISO 26000
- The link between the core subjects and the UN SDGs

Assurance Procedures

KFQ designed procedures to have reasonable assurance of the Report's critical errors or inappropriate information. We verified the reliability of the contents, processes and systems of data generation and report preparation.

- **Document Review**
  We reviewed the reliability of non-financial data in respect of the 'Sustainability' by cross-checking the Report with GRI Standards, quantitative data of LX, and internet & media research information. We also confirmed whether or not the financial information mentioned in the Report was correctly derived from the audited financial statements from business report on All Public Information In-One (http://www.alio.go.kr).

- **On-site Verification**
  We visited LX headquarter and conducted on-site verification to confirm reliability of the sustainability activities and performance data contained in the Report and to evaluate the effectiveness of the reporting process. We performed verification in the accuracy topic of the aggregated data from LX. These procedures included the following:
  - Materiality assessment process, stakeholders inclusiveness, key issues, internal response procedures, and etc.
  - Assessment of data analysis and descriptions and sustainable management performance in the Report.
  - Consistency between the financial data contained in the Report and the audited financial statements 2016.
  - Interviews with relevant staff responsible for providing information in the Report.

- **Resolution of Findings**
  We confirmed that some errors, inappropriate information, and ambiguous expressions found during on-site visit were properly reflected in the final Report.

- **Limitations**
  The Report has been prepared solely for LX in accordance with the terms of our engagement. We do not accept or assume responsibility to anyone other than LX for our conclusions we have reached in the statement. Completeness and responsiveness of sustainability performance information presented in the Report have inherent limitation due to their nature and the methodology used for determining, calculating and estimating such data.

Opinion

Based on the verification activity stated herein, KFQ confirmed that the Report meets the GRI Standards 'Core Option'. According to the principles of AA 1000 APS 2008 and AA 1000 AS 2008, inclusiveness, materiality and responsiveness, sustainability performance information were assessed and we could secure reasonable grounds to provide Type 1 level of assurance with the following confirmation:

1. (Stakeholders Inclusiveness) LX subdivided eleven stakeholders into six groups related to the major issues of sustainable management. To hear any concerns and opinions from them, LX had a customized communication strategy for each stakeholder group and reflected their responses and opinions to its sustainable management activities.

2. (Sustainability Context) In terms of sustainability, LX continues to actively respond to the economic, environmental and social effects that stakeholders requires based on the core issues. These sustainable management activities and performances in connection with the implementation of the UN SDGs were properly contained in the Report. This is a good example of LX's commitment to achieving and responding to global sustainable development goals.

3. (Materiality) LX established issue pools and reviewed by internal guidelines and external assessment criteria (GRI Standards guideline, DJSI, ISO 26000, UN SDGs, media coverage, benchmark, and issue analysis) incompliance with the materiality assessment process. As a result, LX appropriately reflected that twelve key topics derived from the process along with key performance in 2016.

4. (Completeness) LX applied reporting scope, boundary and temporal criteria. We confirm that the Report is suitable for stakeholders to assess sustainability performance.

Recommendation for Improvement

For further advanced sustainable management, LX needs to strengthen its reporting on ongoing management and response of key topics raised by stakeholders. LX is expected to be reflected in the sustainable management activities through setting up of key indicators of social responsibility linked with 'LX Vision 2025' and systematic monitoring. In addition, we recommend LX to report the company's response to the fourth industrial revolution and future strategies for securing new growth engines be systematically linked to mid- and long-term strategies for solving domestic and international social problems in future publications.

October 2017
Seoul, Korea

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Korean Foundation for Quality (KFQ)

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