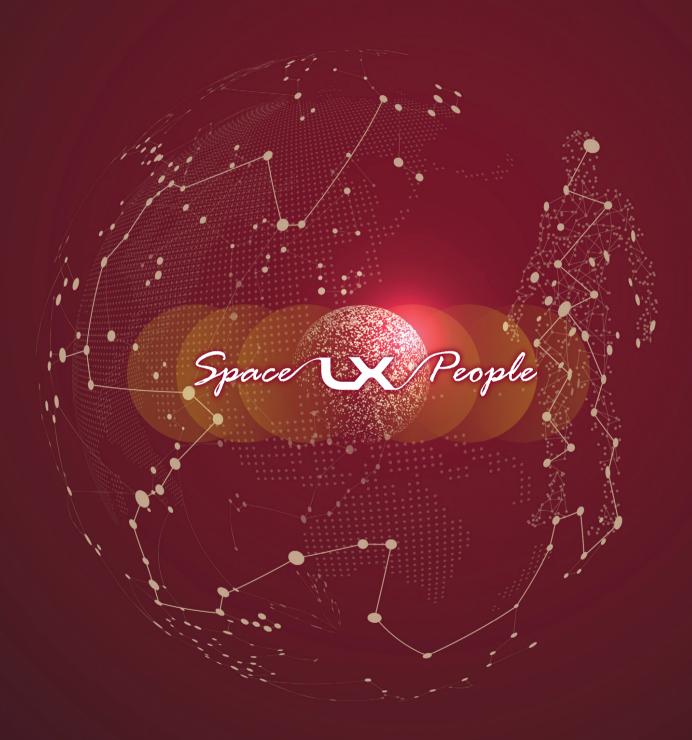
# 2016 Sustainability Report





# About This Report

### **Purpose of Publication**

Since its first publication of the Sustainability Report in 2010, LX Korea Land and Geospatial InformatiX Corporation has continued to open communication about its activities and performance to its stakeholders. Sustainability Report 2016 brings together the economic, social, and environmental performances of LX, and presents the future goals of sustainability management to enhance stakeholders' interest and participation. By publishing the Sustainability Report every year, LX hopes to focus on communicating more closely with its stakeholders.

### Features of the Report

To respond to the various demands and opinions of the stakeholders, this report divides major sustainability management topics based on the GRI G4 guideline, a standard index of sustainability management. The report also contains a more concrete and in-depth account on the background of selecting core issues of the stakeholders through the results of a materiality assessment, derived from the results of the materiality test and responses thereof, and enhanced user convenience by including aggregated quantitative data.

### **Reporting and Verification Standards**

This report faithfully reflected the requirements of the GRI Sustainability Reporting Guideline (G4 Core) and international sustainability management standards like the UNGC and ISO 26000. The financial and nonfinancial data was verified by the independent verification body Korea Foundation for Quality, statement of which is on p.60-61.

### Scope and Period of Reporting

This report covers LX's main Headquarter, LX Education Institute, Spatial Information Research Institute, the regional headquarters, and 176 district offices. The general status and activities of LX are based on the data from fiscal year 2013 to 2015, and for some issues, the activities and performance of the period leading to the first half of 2016 have been presented.



2015-2016 Highlight News

Vision and Strategies

Sustainability Management Initiative

Stakeholders' Materiality Assessment

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### **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 to build a cyber global village was symbolically captured in the cover design.

# LX, Connecting Space and People

2016 Sustainability Report

# A Leader in National Spatial Information

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### 2016 Sustainability Report

A Promise for a Better Future A Leader in National Spatial Information Growing with the Trust of the People Appendix

# **CEO** Message

### Dear Stakeholders of LX Korea Land and Geospatial InformatiX Corporation,

LX Korea Land and Geospatial InformatiX Corporation started out as the Joseon Cadastral Association in 1938 and went through the days of 'Korea Cadastral Survey Corporation', and started a new history in June 2015. In line with the new trends, it has worked incessantly in the past year to consummate the transition to Korea Land and Geospatial InformatiX Corporation.

"Land and geospatial information", part of the new name of LX, contains three important meanings. 'Land' is a concept that includes the territory, territorial waters and airspace. It means the space in which we live. 'Information' refers to the diverse data, numbers and knowledge filling that space. Lastly, 'land and geospatial information' can be said to be the diverse information filling the space in which we live. Accordingly, LX will take the lead in defining and understanding the space in which we live and that of our global neighbors who live side by side with us, and in creating sustainable future values by leading the changes in our lives.

In particular, despite difficult internal and external economic conditions, all our employees have made concerted efforts faithfully following our management philosophy based on the 'Three-Element Theory' consisting of time, space and people. As a result, we received the best grade (grade A) in the public institutions management performance evaluation conducted by the Ministry of Strategy and Finance in 2015.

Particularly, by creating the LX Land Information Base Map, we played a pivotal role in national spatial information, and the government entrusted LX with the management of the Korea National Spatial Data Infrastructure Portal, the Highway Management System, and natural disaster information. In this manner, we have been faithfully fulfilling our role and responsibilities as a public institution.

LX is confident that the coming year of 2017 will be the starting point of our next 100 years as a leader of spatial information in conjunction with maintaining the high standards and traditions of our original work in cadastral survey. Accordingly, build the framework that will last the next 100 years, and reinforce our competitiveness in spatial information, LX has set the following goal: 

# future.

The employees of LX will guard our fair and transparent corporate culture more staunchly based on morality and integrity. Moreover, we will invest in people to secure future competitiveness in cadastral survey and spatial information. We will further solidify advanced education and learning system, and reinforce the expertise of our human resources.

In particular, we will make available the LX Land Information Base Map for the public so that everyone will be able to utilize this useful information easily and conveniently in the 'land and geospatial information repository by the people, for the people and of the people'.

### Third, we will create a healthy industrial ecosystem for national development.

LX will create a healthy industrial ecosystem for the growth of everyone by providing the foundation for small and medium-sized enterprises to enjoy public-private partnership growth, and delivering the value of sharing with the local community. In this manner, we will fulfill our social responsibilities to gain trust of the local community and shared growth with our partners.

### Dear stakeholders,

LX considers the changes and flow of the present age as our mission, and is committed to helping people live more comfortably by collecting and converging the information of our land. On the stage of spatial information that has infinite possibilities, LX will do our level best to play the central role and help Korea take the lead in global spatial information. It is my sincerest desire that you continue to follow the progress of LX, and we appreciate your unwavering support and interest.

Thank you very much.



LX believes in the power of 'time', 'space' and 'people'. Discovering the infinite value of the national land, we will walk together with you.

First, we will foster human resources based on a transparent corporate culture. People are at the center of LX's

### Second, we will provide more necessary information to the people, and actively communicate with them.

December 2016 Geospatial InformatiX Corporation



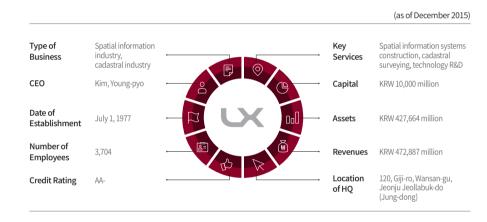
# Introduction to LX Korea Land and Geospatial InformatiX Corporation

### LX Overview

Having started out as the Cadastral Association of Joseon Dynasty in 1938, LX has been instrumental in national development by protecting the land ownership of people since 1977 under the name of Korea Cadastral Survey Corporation. The name was changed, with the advent of the information age, to Korea Land and Geospatial InformatiX Corporation in June 2015 to provide spatial information, for use in real life by people. Today LX is contributing to national development by creating added value in convergence of spatial information, and making a new history of space.

### **Current Status of LX**

LX is performing duties like supporting the implementation of spatial information systems, research on spatial information and cadastral systems, technology development and cadastral surveying, in accordance with Article 12 of <sup>[</sup>the Framework Act on National Spatial Data Infrastructure]. It is headquartered in the Jeollabuk-do Innocity (Jeonju), and has 12 regional headquarters and 176 district offices around the country.



### **Organization Chart**

Vice President and Planning Group	Cadastral Business Group	Spatial Information Business Group	Management Support Group	
Planning and Coordination Office	Cadastral Business Office	Spatial Information Business Office	Management Support Office	Audit Office
Performance Management Dept.	Cadastral Resurvey Dept.	Information & System Management Dept.	Personnel Dept.	
Public Relations Dept.	Customer Relations Dept.	Global Business Dept.	Finance Dept.	
			Labor Relations and Welfare Dept.	
and and Geospatial		Spatial Information Research Institute	Regior	nal Headquarters

**Main Duties** 

### **National Spatial Information Business**

LX uses national spatial information to create a world in which all of us can live safely and comfortably, and open a rich future for Korea.

 Korea Real Estate Administration Intelligence System basic data improvement project National point number verification project Digital documentation of cultural heritage archetypes project • National land survey project utilizing UAVs (drones)

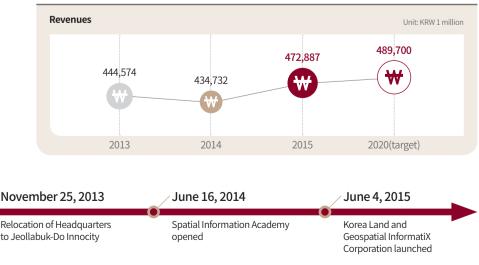
### Global Business

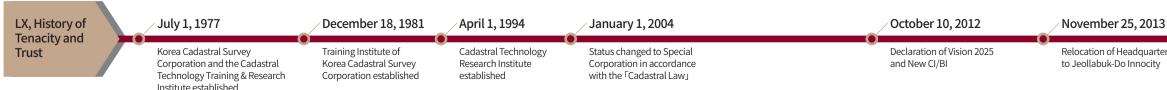
This business spreads the cadastral and spatial information technology of Korea to developing countries, and leads the digitalization of national land management around the world.

 Tunisia land management system digitalization support project • The National Cadaster of Uruguay advancement

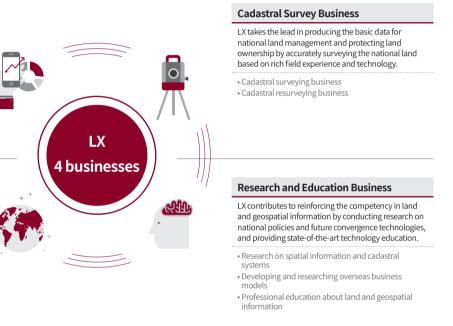
Training project for developing countries

**Revenues and Target** 





LX conducts 4 businesses, i.e., national spatial information, cadastral survey, global business, and research and education. The national spatial information business is the new growth engine of LX to create new high added-value by developing convergence technologies and business models in the continuously growing spatial information market. The cadastral survey business protects the property rights of people by correctly measuring national land. In addition, the global business and research and education business are contributing to the implementation of a healthy spatial information ecosystem in which the private and public sector, and for that matter, everyone in the world grows together through the technical and human infrastructure of LX.

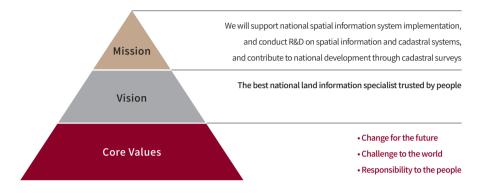


LX will fully open the cadastral confirmation survey market to the private sector in 2018 according to the government policy on utilization of national spatial information. Accordingly, LX set up a stretch goal for the national spatial information business as a new growth engine, and is expanding the business scope.

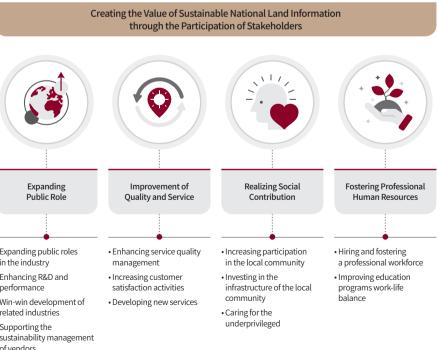
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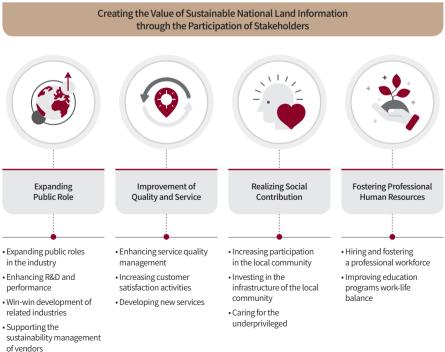
# **Vision and Strategies**

### LX Vision 2025









# 2015 - 2016 HIGHLIGHT **NEWS**

### **Key Sustainability Management News**

### LX changes its name in 38 years for a new start

On June 4, LX changed the company name from Korea Cadastral Survey Corporation to Korea Land and Geospatial InformatiX Corporation. After 38 years, the new name reflects the expansion of its public domains, its future vision and changed status due to the enforcement of 3 laws related to spatial information. LX regards past events as the priming water for a new start, and is embarking on a new challenge as a national land information expert, befitting the new name.





Non-discriminatory LX all employees

declare human rights management

The 'LX Human Rights Management Decla-

ration' ceremony was held in the auditorium

of the main headquarters with more than 200

LX employees and employees of vendors in

attendance. At LX's advanced human rights

leadership was manifested at this event held

with the aim of emphasizing the importance

of human dignity and value and creating an

organization culture without discrimination

with regard to gender and academic back-

### Key Outcomes of 2015

In the first year after it was renamed Korea Land and Geospatial InformatiX Corporation. was awarded accreditations and credits in various areas, including responsible management, business and PR, showing its outstanding performance. This is attributed to the fact that LX's faithful performance in its roles as a public institution was positively rated. LX promises to continue operations as a corporation trusted by the public.

### **Results of 2015 Public Institution** Management Evaluation





### Various kinds of national land information at a glance; LX National Land Information Base Map is open

LX provides the 'LX National Land Information Base Map' to people free of charge. The Map is based on aerial photos and satellite imageries of the national territory at different scales and levels. The images show information related to real estate, such as land, buildings and roads and are available in the national spatial information portal. Also, since the relative location of national land information containing space and location data as well as orthophotos was greatly improved, everyone can use it easily and conveniently.



### Using advanced spatial information technology to improve land related systems for developing countries

LX's expertise on cadastral survey and land administration system of Korea was introduced to a delegation of World Bank (WB) officials who visited the main headquarters. In particular, LX demonstrated advanced survey technologies, including the digital survey system and UAV (drone) that was developed in house. Such discussions have led to cooperation in the area of land-related systems development and enhancement for developing countries around the world.

### LX Sustainability **Management Plan**

Sustainability Management Visior

Strategic Goals

Strategio Tasks

LX established the mid-to long-term future growth strategy to confirm and develop sustainable value of national land through spatial information. 'LX Vision 2025' will overcome limitations that come from overdependence on the cadastral survey business by parallel expanding LX's business area in spatial information, an important growth engine, and carry out integrated investigations and management of national land information.

LX established the Sustainability Management Plan linked to its 'LX Vision 2025' with the involvement of the stakeholders, which entails 'creating the value of sustainable national land information through the participation of stakeholders.' We are presenting the direction of sustainable growth by deriving strategic tasks in 4 areas in consideration of the direction of future management activities and the influence of major stakeholders.

# Sustainability Management Initiative

### Sustainability Management Based on Compliance with the Sustainability Management Initiative

As a corporation complying with international standards, LX forged an international commitment to economic, environmental and social responsibilities, i.e., UNGC (United Nations Global Compact), in June 2007 to fulfill its social roles and responsibilities. Also, LX supports the 10 principles in human rights, labor standards, environment, and anti-corruption, made public through the LX Code of Conduct and the Environmental Management Principle on its homepage. The results are published annually in the form of Communication on Progress (COP) to faithfully comply with the principles.



### LX's Response to Sustainability Management

LX is taking the lead in protecting the human rights of internal and external stakeholders in all its management activities. LX already established the principles on management of human rights in Article 43 (Prohibition of Sexual Harassment) and Article 49 (Compliance with International Management Standards) of the Code of Conduct, and protects human rights through human rights education, improvement of the grievance handling system, prohibition of forced labor and child labor, prevention of discrimination against regular workers and improvement of labor conditions. Also, LX is taking the lead in protecting labor rights based on Article 48 (Harmony between Labor and Management) of the Code of Conduct.

### LX's Response to Sustainability Management

LX established the Code of Ethics for Environmental Preservation, and is taking the lead in creating and protecting environmental values. To justify the cause of enterprise-wide environmental management, LX applied the principle of environmental protection to Article 47 of the Code of Conduct, and is exerting to manage responses to climate change by saving energy and reducing energy consumption in everyday life.

### Anti-corruption

Governance

Businesses should work against corruption in all its forms, including extortion and bribery.

### LX's Response to Sustainability Management

All employees of LX are making efforts to be ethical and transparent, and help a clean corporate culture to take root.

Accordingly, LX is actively complying with Articles 5, 8, 15, 16, 21, 23 and 24 of the Code of Conduct, and made it mandatory for new employees and existing employees to pledge the compliance of the Code of Ethics and receive related education.

### Sustainability Management and the UN Sustainable **Development Goals (SDGs)**

Sustainable Development Goals (SDGs)

ture.









6

CENT WORK





mation'

SDGs or the 'Sustainable Development Goals' are the following goals of the UN Millennium Development Goals (MDGs), and are the principal common goals pursued by the UN and the international society from 2016 through 2030. SDGs include 17 goals and 179 tasks for the sustainable development of all countries in the world, e.g., elimination of poverty and inequality, responding to climate change, economic growth, and quality jobs.

LX is capitalizing on its competencies gained by performing public roles and practicing socially responsible management to achieve the SDGs. Also, it will discover new growth opportunities by identifying and carrying out projects linked to the SDGs, and contribute to the sustainable growth of society at large.

### LX's Response to Sustainable Development Goals

To achieve the UN sustainable development goals, LX is developing business models linked to SDGs. LX will continuously develop such models so that they are consistent with the SDGs to fulfill its social responsibilities.

### Goal 9

### Sustainable Innovation of the Industrial Infrastructure

As an institution leading land and geospatial information in the spatial information market, regarded as a growth area of the future, LX is using UAVs (drones) to survey the national land. The results of the national land survey are expected to play an innovative role in building the sustainable industrial infrastruc-



\* For more information, read p.25 'National land survey utilizing UAVs (drones)'.

### Goal 11

### Sustainable Urban Development and **Creation of Residential Space**

LX is taking advantage of its outstanding technologies to continuously provide Korea's land administration service to developing countries. In particular, LX is planning to continuously enhance the value of space in global business sites by exporting the Korean-style land and geospatial information management system.

% For more information, read p.31 'Reduction of the global digital divide in land and geospatial info-



# Stakeholders' Materiality Assessment

### Materiality Assessment Process

LX is faithfully applying the 4 reporting principles set forth in the GRI G4 Guideline, i.e., Stakeholder Inclusiveness, Sustainability Context, Materiality, and Completeness, based on the participation of stakeholders in surveys and interviews. There were ten core issues identified based on the result of the materiality assessment test, and these were shared at board meetings and meetings between important agencies. These discussions led to the establishment of response strategies and activity programs by working-level departments.

Through interviews with stakeholders, LX introduced the current status of its sustainability management, and listened to their opinions on future improvement activities and strategies. LX will continuously communicate with stakeholders after publication of the report, and make efforts to raise the level of mutual understanding.

Step 1	Step 2	
Investigation of Sustainability Management Issues	Confirmation from the Stakeholders through Interviews	What is LX's competitiveness, and what kind of expectations does the
Internal and external materials were reviewed	It is important how the sustainability management of LX is view from the outside; in order to grasp	Ministry of Land, Infrastructure and Transport have about LX?
to identify sustainability management issues through activities in 2013-2015. Media Research	such views, interviews were conducted to obtain opinions on future management activities.	<b>Contributing to the improvement of the quality of life of people_</b> As the representative agency in spatial information and cadastral systems, LX is engaged in technical cooperation with the private sector, industries and academics, and supporting marketing channels, and producing results with the aim of protecting the property rights of people and realizing a creative economy. In particular, as an entity exclusively
	and clients?	responsible for managing the quality of national spatial information based on state-of-the-art technology and with an outstanding
Press and media articles from January 2015 to June 2016 about the sustainability management activities of LX in terms of the economy, society and environment were compiled.	Improving convergence information and service_ As the experts in national land information trusted by the people, I understand that LX is working hard in various areas to keep customers satisfied. In particular, LX is providing quick and accurate data at the right time where they are needed with regards to cadastral survey and spatial information, which are areas most closely related to the people. In the coming age of the 4th Industrial Revolution, should LX continue to provide high quality information as well as continue its efforts to improve public service, this will	professional workforce, LX has a great sense of responsibility. LX must continuously consider how it can converge and utilize 'spatial information' to enrich the lives of the people.
	certainly elevate the level of trust from the clients.	
Investigation of Issues Pertinent to Public Institutions and Related Agencies	The People Song, Seog-jun Member of the National Assembly	The Government Lee, Seong-hai Director General, Spatial Information Policy Bureau, Ministry of Land,
Sustainability management issues of relat- ed agencies under the Ministry of Land, Infrastructure and Transport and other major public institutions were investigated with particular emphasis on LX's role and responsibility as a public entity working for		Infrastructure and Transport
the public interest.	Kim, Jin-sang Principal of Manseong Elementary School	Kim, Seok-gu CEO of Geomatics Total Service
Analysis of International Standards	The Local Community	The Private Partnership
Core issues and requirements were revie- wed by analyzing global sustainability ma- nagement standard indexes, such as GRI G4		
guideline, ISO 26000 and UNGC.		What must LX in order to create a sustainable spatial information industry ecosystem, and enhance the competitiveness of SMEs?
Reviewing Internal Data	What efforts must LX undertake to understand the needs of the local community and meet them? Alleviating the difficulties of the local community_ LX is checking the diverse needs of the local community based on communication, and doing its best to satisfy them as partners in raising the	<b>Building spatial information industry leadership</b> LX is introducing standards for do business in the spatial information and cadastral survey industry, and being the flag bearer for the SMEs by taking the
Sustainability management issues were reviewed and identified from business reports, management performance eva-	quality of life for the people. In particular, the corporation's participation in the 'Yellow Carpet' project, which was initiated in Jeollabuk-do Innocity, greatly increased the safety of children on their way to and from school. As an important stakeholder in the local community, LX is giving a helping	leading role in a wide range of new and overseas business. Today, Korean SMEs are having difficulties due to various legal and institutional regulations. Accordingly, I hope that LX will play the role in easing such

\* Yellow Carpet: Making safety space at the entrance to the crosswalk to help elementary school children commute to school more safely

hand to local residents, particularly, the underprivileged suffering in the blind spot of welfare.

luation, key agendas of the board meetings and the CEO's New Year's address.

### does the LX?

### What global issues or academic trends should LX focus in, and what roles should it play for the state and people?

Leading the spatial information industry\_ The spatial information produced by LX is generated in the industrial sites and is recognized as very accurate data with broad implications. Accordingly, LX must continue to pay attention to discovering and fostering a professional research workforce that can create new values by analyzing and converging spatial information, for use in multiple industries. The strengthening of human resource will continue to play a pivotal role in sustaining the high levels of work done by LX.



### ormation MEs?

troducing cadastral taking the ss. Today, stitutional regulations and presenting solutions in the legal framework so that private-public partnership will be mutually beneficial and together

lead growth in the industry.

### What system or program does LX have to create work-life balance and a good working environment, and what are your expectations about LX?

**Creating a workplace where employees are happy**\_For an enterprise to establish itself as sustainable, I believe that it is most important to make a workplace where employees are happy. In this respect, LX's flexible work arrangements and the 'Landy Workplace Child-Care Center' are good programs for a working mom like me in that they enable me to manage my time for work, child rearing and self-development. I hope that there will be more family-friendly programs so that we can find a balance between work and life, and work more productively.

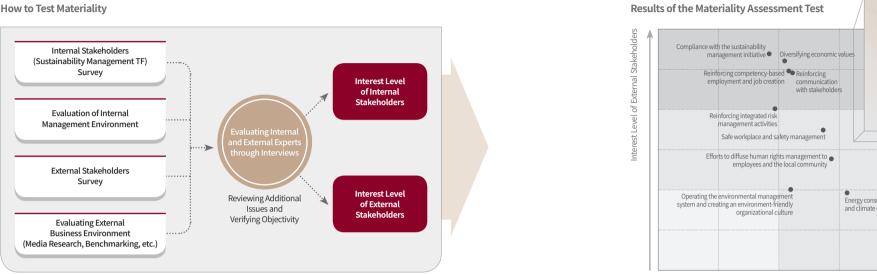
Step 3

### Materiality Assessment Test



The materiality assessment test was conducted centered on the list of sustainability management issues to comprehensively review the interests of internal and external stakeholders.

### How to Test Materiality

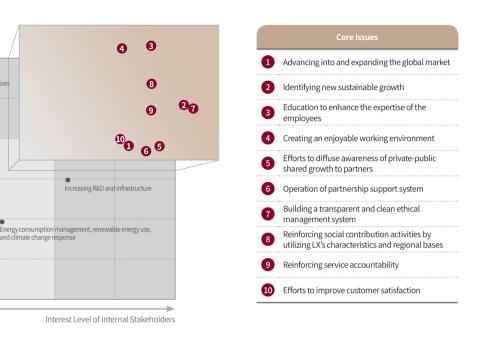


### Step 4

Checking Core Sustainability Management Issues

Ten core issues were derived from the materiality assessment test, from the viewpoint of core GRI G4 indexes, and finalized 6 reporting topics. The interests of the stakeholders as well as impacts by topic were reflected in order to solidify the direction of the responses and future strategies. These were elaborated in the report.

No	Core Issues			Stakeholders G			GRI Aspe	ect	Reporting Topic	Reporting Conte	nts	Page
		Government	Relevant Institutions	Partners Cust	omers Local Communities	Employees						
1	Advancing into and expanding the global market	٠	٠				Indirect Economic Effects		New Growth Engine of the Future and Introduction to	Importance of Sustainable Global Growth     Cadastral Survey     Establishing the Direction for New Growth     Global Business		p.20~33
2	Identifying new sustainable growth	٠	٠			•		• Indirect Economic Enects LX Business	National Spatial Information	Research and Education	p.20 33	
3	Education to enhance the expertise of the employees					•	Training and Education		Human Resources	<ul> <li>Selection of Talent</li> <li>Developing Human Resources</li> </ul>		
4	Creating an enjoyable working environment					•	Employment     Labor/Management Relations     Occupational Health and     Safety	<ul> <li>Diversity and Equal Opportunity</li> <li>Equal Remuneration for Women and Men</li> </ul>	Management	<ul> <li>Evaluation and Compensation</li> <li>Work-Life Balance</li> <li>Organizational Culture for Harmony between</li> </ul>	Labor and Management	p.48~51
5	Efforts to diffuse awareness of private- public shared growth to partners			•			Procurement Practices		Public-Private	Public-Private       • Public-Private Partnership Growth Promotion System         Partnership Growth       • Public-Private Partnership Growth Activities         • Establishing the Fair Trade Order		p.39~41
6	Operation of partnership support system			•			- Froduction in fuddees		Partnership Growth			
7	Building a transparent and clean ethical management system	•		•	•	•	• Anti-corruption		Ethical Management	<ul> <li>Establishing a Clean and</li> <li>Ethical Culture</li> <li>Ethical Management Activities</li> </ul>	Reinforcing Internal Control     Proactive Human Rights     Management	p.36~38
8	Reinforcing social contribution activities by utilizing LX's characteristics and regional bases	,			•		Communities     Grievance Mechanism for Impac	cts on Society	Local Community	Reinforcing Social Responsibilities     Increasing Social Contributions     Creating Value in the Private Sector		p.46~47
9	Reinforcing service accountability				•		Customer Health and Safety     Product and service labeling	Customer Privacy     Regulations	Customer	Customer-Oriented Management		p.42~43
10	Efforts to improve customer satisfaction				•		• Marketing		Satisfaction • Expanding Customer Satisfaction Service			pr. 2. 10



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### Governance

### **Establishing Balanced** Governance

The LX Board of Directors operates based on the principles of autonomy and responsible management. The Board holds monthly steering committee and regular BOD meetings to make decisions on key issues related to management activities. In addition, the Board also incorporates a separate group of non-standing directors with expertise in the pertinent areas and is committed to guarantee management independence.



Holding the first BOD Meeting in 2016

### **Composition and Operation** of the Board of Directors

### **Composition of the Board of Directors**

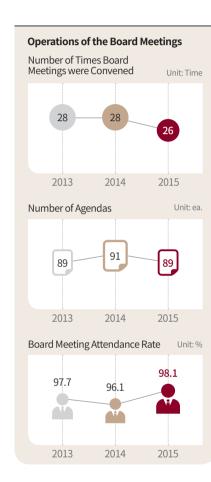
The Board of Directors, the highest decision-making body that deliberates and makes decisions on key management issues, consists of 4 executive directors (standing members), and 6 outside directors (non-standing members) with expertise in management, expertise in management, accounting, legal affairs and spatial information. According to Paragraph 4 of Article 18 of the <sup>r</sup>Act on the Management of Public Institutions, the President and CEO also serve as the Chairman of the Board of Directors. The Act also stipulates that the proportion of non-standing directors will be more than half of the Board to ensure management transparency.

Classification	Name	Title
Executive director	Kim, Young-pyo	• CEO • Chairman
	Ahn, Jong-ho	Vice-president and Head of the Planning Group
	Choi, Jong-man	Head of the Cadastral Business Group
	Kwon, Ki-joong	Head of the Management Support Group
Non-executive director	Kim, Yeong-mi	<ul> <li>Senior non-executive director</li> <li>Professor, Department of Public Administration, Sangmyung University</li> </ul>
	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	<ul> <li>Managing director in charge of civil engineering, Mooyoung Construction Management</li> </ul>
	Song, Yeong-nam	Professor, Department of Economics, Chonbuk National University
	Lim, Jae-ik	Professor, Department of e-Business, Ajou University

### **Operation of the Board of Directors**

The Board of Directors is divided into the steering committee and the regular board. Board meetings are convened to make resolutions according to related laws. In 2015, there were 11 regular board meetings held. After the main headquarters was relocated to Jeollabuk-do, Innocity, 98% of board members attended the meetings. The main items on the agendas of the Board of Directors meetings have included management performance, reports on research projects findings, and mid-term management plans. A total of 34 resolutions were passed.

### **Expertise of the Board of Directors**



Board of Directors Mobile Homepage

**Compensation of the Board** 

https://direct.lx.or.kr

**Evaluation and** 

of Directors

**Increased Participation of Non-standing Directors** Because the LX organization is spread out nationwide, it has become necessary for the nonstanding directors to have an increased understanding of the businesses processes. With this in mind, each non-standing director is assigned to a certain region, where he/she serves as head of the district office for 1 day, and also as head of the regional headquarters for 1 day. Also, preliminary consulting and special lectures are held to increase the field communication activities of the nonstanding directors. Moreover, management information is provided in real time using the LX mobile application where the Board of Directors can check on a regular basis issues and activities. In this manner, the directors can actively participate in management activities by monitoring the activities as well as providing suggestions.



To reinforce the checks-and-balance of internal management, outside or non-standing directors with expertise in pertinent areas are part of the LX Board of Directors. To share the experience of management, outside directors were given the opportunity to serve as heads of district offices for one day and discuss mid-to long-term LX management strategies at the local levels. The experience has been useful in understanding the business areas and everyday chores of decision making so that this can be reflected when passing decisions or resolutions at the Board meetings.

### Invigoration of the Expert Committee

To help outside directors utilize their expertise and add their expertise to management policies, the LX Board of Directors has established an expert committee system where the non-standing members are assigned to either the Management Committee or the Technical Committee depending on their area of expertise. The two committees conduct in-depth review of agendas in related areas so that their accountability in decision-making related to management can be reinforced.

Committees	Roles	Area of Expertise	Composition	
Management Committee	Deliberating on	Organization, HR, information management	Non-executive director	Kim, Yeong-mi
	issues related to management, financial management, legal systems and regulations	North Korean information, unification, social welfare	Non-executive director	Doh, Hee-yoon
		Finance, labor and HR development	Non-executive director	Song, Yeong-nam
		Assets, HR, finance, welfare	Executive director	Kwon, Ki-joong
Technical Committee	Deliberating on issues	GIS, spatial information analysis, statistics, industrial location	Non-executive director	Lee, Hee-yeon
	Deliberating on issues - related to spatial information, cadastral system, survey technology, business development -	Civil engineering, construction, surveying, geospatial information	Non-executive director	Park, Hee-sang
		Management, informatization (ERP, spatial information), globalization	Non-executive director	Lim, Jae-ik
		All business of LX, survey technology	Executive director	Choi, Jong-man

### **Composition of Committees**

The Board of Directors takes responsibility for management activities, and is evaluated and remunerated following a fair procedure. The CEO signs a management contract with the Minister of Land, Infrastructure, and Transport with regard the management goals and key tasks. An annual report is delivered every year in this regard. In 2015, LX received the top A grade in the evaluation of the management performance of the heads of government agencies. Executive directors set up management goals for affiliated organizations individually by signing job performance contracts with the CEO, and receive compensation according to the executive salary regulation. Meanwhile, non-standing directors receive compensation according to the Ministry of Finance and Strategy's 「Guideline on remuneration of executives of public institutions」.

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# **New Growth Engine** of the Future

### Importance of Sustainable **Global Growth**

As the expert entity of national land information which provides service for the people, LX is gaining competitiveness by concentrating on future growth business that calls for public interests as well as business profitability.

### Background of Selecting Core Issues Core Issues Core Issues Core Issues

For the sustainable growth of enterprises and the national economy, a preemptive strategy to identify future growth engines in the global market is very important. The spatial information industry is a high value-added segment of conversion technologies, and is a rapidly growing new business area in the global market.

### LX's Response Plan

Korea Land and Geospatial InformatiX Corporation will capitalize on spatial information gained together with people to be recognized as the world's leading national land information expert and an undisputed global industry leader.

### **Establishing the Direction for New Growth**

### The 'Spatial Information Hub' LX Makes Together with People

LX is making spatial information together with the people for everyone's use. In particular, LX has made available the National Land Information Base Map free of charge, actively supporting the development of the spatial information industry to materialize ideas from the people. LX has established itself as a national land information hub allowing everyone to use precise spatial information anytime and anywhere.

### Supporting Total Quality Management for Development of the National Land Information Area

In July 2016, LX was selected as an 'agency specializing in space-based high-quality convergence information quality management'. Accordingly, LX is managing the quality of domestic spatial information jointly with the Ministry of Land, Infrastructure and Transport. LX will provide reliable quality spatial information by thoroughly managing and verifying the quality of national land information.

### Reinforcing Support for Development of the Industry

LX has solidified the industrial infrastructure to quickly respond to the rapidly changing technological environment. In particular, LX is creating the most adequate environment for a healthy industrial ecosystem by providing financial and technical support, and opportunities for professional training for SMEs in the area related to cadastral survey and national land information. LX is using its experience and advanced technology to actively pursue new markets in developing countries jointly with private enterprises in Korea.

		Business Environment			
Internal Competency		Opportunities (O)	Threats (T)		
		<ul> <li>The government plan to foster spatial information industry</li> <li>Rapid development of new technologies related to precision spatial information, such as IoT, UAV (drone), autonomous vehicles</li> </ul>	<ul> <li>Revenues from surveying expected to decrease in the mid-to-long term due to market changes</li> <li>Expanded demand for private-public partnership growth</li> </ul>		
	Create	Create new values	Minimize threats and create internal values		
Strengths	<ul> <li>Developing human resources in tune with the new company name and roles</li> <li>Core technologies and DB to invigorate spatial information convergence</li> </ul>	<ul> <li>Innovation through new curricula and education system in the LX Education Institute by diversification of faculty</li> <li>Enhancement of performance by the Spatial Information Research Institute for strategic tasks of the future</li> </ul>	<ul> <li>Development of spatial information convergence technologies to counter reduced revenues from surveying and implementation of DB</li> <li>Public role of spatial information to create win-win infrastructure with private enterprises</li> </ul>		
(S)	Raise	Reinforcing opportunities and interval values	Minimizing threats and reinforcing internal values		
	<ul> <li>Ability to systematically manage work entrusted by the government</li> <li>Ability to use its national network to investigate land and geospatial information and provide service</li> </ul>	<ul> <li>Expanding the designation as the exclusive agency entrusted with land management and national spatial information business</li> <li>Expanding public spatial information convergence service</li> </ul>	<ul> <li>Strengthening of the role as an integrated national control points management agency</li> <li>Using the national organizational network to implement the national land information DB together with people</li> </ul>		
	Reduce	Reinforcing opportunities and reducing weaknesses	Minimizing threats and reducing weaknesses		
Weaknesses	<ul> <li>Sales, organization and workforce structure focused on cadastral surveying</li> <li>Rigid field-centered team structure and small distributed district offices</li> </ul>	<ul> <li>Continuously developing spatial information business areas based on new technologies</li> <li>Flexible land and geospatial information organization</li> </ul>	<ul> <li>Developing overseas spatial information markets together with private enterprises</li> <li>Building systems to utilize national spatial information and create a consulting organization</li> </ul>		
(W)	Eliminate	Reinforcing opportunities and eliminating weaknesses	Minimizing threats and eliminating weaknesses		
	<ul> <li>Employees' linear thinking focused on cadastral survey</li> <li>Monopoly of the cadastral survey market</li> </ul>	<ul> <li>Continued education on spatial information and new technologies for employees</li> <li>Expansion of public function and role in spatial information</li> </ul>	<ul> <li>Expanding collaboration, e.g., education for private operators and technical support</li> <li>Eliminating ineffective management factors and introducing the peak salary system</li> </ul>		

LX was able to predict changes in the business environment, and analyze internal competency. As a result, it derived three directions for securing future growth engines. LX is establishing itself as a spatial information service hub connecting the government, public agencies and people, and expanding its public role as the entity to manage the quality of national land information. In addition, LX will promote the development of the national economy by reinforcing its competencies in multiple ways, e.g., fostering experts and advancing into overseas markets.



# **National Spatial** Information

### What is Spatial Information?

Spatial information refers to the map and all information that can be expressed on the map about location and distribution. Geographical information, information on properties, such as the boundaries of arable land and the status of agricultural products, and information on resources like the location of water and plants and trees are important elements of the economic value of spatial information. Like this, information on 'space' is the most basic information that people should know Conceptual Map of Spatial Information in everyday life along with 'time'.

### **Conceptual Map of Spatial Information**



### Introduction to LX's key **National Spatial Information Business**



A Photograph of Installation of National Point Numbers



Seosan Haemieupseong Precision Surveying Site LX is conducting a national land surveying business, e.g., creating the inundation trace map, surveying state and public land and seashores, and implementing the DB regarding land and

buildings, such as institutions, schools and riverbeds. LX is contributing to the development of the national spatial information industry through government-supported businesses like the Korea Real Estate Administration Intelligence System basic data improvement business, the national point number verification business, and the road name address base map update and information map supply business.

### National Point Number Verification Business

The national point number is a unique number assigned to a certain point as a location mark (gridtype coordinate) so that the locations of areas where there are no buildings, e.g., mountains, fields and seas, are easily marked and people can use them. It unifies the method of marking the locations of the entire country, and provides location information service for people. It serves as the national disaster safety network so that people can quickly respond to emergencies, such as disasters and accidents. LX is planning to link it to the national address information system and the road name address information support system to improve the utility of national point numbers.

### Korea Real Estate Administration Intelligence System Basic Data Improvement Business

Since the real estate administration information improvement business now covers the entire country, LX has provided a professional and technical workforce so that the basic data of the Korea Real Estate Administration Intelligence System can be updated at once, and enhanced the real estate administration information system reflecting the demands of the local governments across the country. As a result, LX corrected errors in 10.04 million real estate records, and supported the implementation of the 'Korea Real Estate Administration Intelligence System' service, which integrated 18 different existing real estate certificates in a single comprehensive real estate certificate. LX will provide improved service customized for the needs of people to rationally manage the properties of people and improve administrative efficiency.

LX is using various surveying devices, such as UAV(drone), terrestrial LIDARs and total stations, to record the 3D archetypes of cultural properties, and make digital image contents. When the spatial information of cultural heritages is built to hand down our outstanding cultural heritages to our descendants and provide them with an opportunity to indirectly experience our cultural heritages. The records of the archetypes will be utilized for academic research of cultural properties and their restoration, and the 3D digital contents will contribute to the teaching and promotion of accurate historical events. Furthermore, the data obtained from 3D surveying of cultural properties is very instrumental in developing tour packages, and restoring and managing cultural properties in providing security against their destruction and damage.





Since address information is used in an increasing number of areas after the enforcement of the road name address system in 2014, LX has been updating the base map and supplying guide maps. The base map updating business registers roads, buildings in the road name address base map quickly and correctly, and makes it possible to provide location-based service for address spatial information (road name addresses, detailed addresses, national point numbers, etc.). As a result, the uses of the road name address base map is expanding to include location-based information search, real estate transactions, new business creation and various research businesses. Meanwhile, the Korean and English road name address guide map is made and distributed, and the electronic map based on the guide map standard is provided on the Internet so that everyone can easily use the road name address guide map.



### **Digital Documentation of Cultural Heritage Archetypes Business**

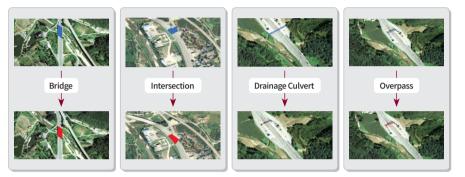
### **3D Images of Cultural Properties**

### The Road Name Address Base Map Updating and Guide Map Supply Business

### Highway Management System (HMS) Operation and Management Business

LX is trying to switch the focus of data management from drawings, and build integrated road information based on spatial information. LX is operating the optimal Highway Management System (HMS) using the LX National Land Information Base Map, e.g., checking the road register data and current status, digitalizing, standardizing and inspecting the location-based road register, and implementing comprehensive road information. As a result, LX is efficiently managing the roads around the country, and helping modernize infrastructure to create spatial information services that smoothly coordinate with and complement other public data.

Reflecting the Road Register Drawing in Spatial Information



### Introduction to LX's key **National Spatial Information Service**

### LX National Land Information Base Map Service

LX has been providing the 'LX National Land Information Base Map' to people through the national spatial information portal. The LX National Land Information Base Map is based on photographs of the national land taken from airplanes or satellites. It shows critical information related to real estate, such as land, buildings and facilities so small businesses and start-ups can more easily select locations and analyze business districts, and people can conveniently get information on real estate, popular tourist attractions, etc.

Ð National Spatial Information Portal Site www.nsdi.go.kr





Samdeok-dong, Suseong-gu, Daegu Serial Cadastral Map



Samdeok-dong, Suseong-gu, Daegu LX National Land Information Base Man

### LX Land Info-e App Service

To make land and geospatial information, closely related to the everyday life of people more readily available, LX developed the LX Land Info-e app. By providing accurate and quality land information free of charge, LX is fulfilling its social responsibilities, and contributing to improving the convenience and safety of people in preventing real estate fraud and damages from disasters. The LX Land Info-e app has been continuously updated, and in 2015 the number of users increased by 28% over the preceding year to 173,000, and just two years after its launch, it won the grand prize at 'Apps of the Year Awards 2015', co-hosted by the Ministry of Science, ICT & Future Planning and Maeil Business News.

# Using the UAV (drone) to Survey the National Land

### UN SDGs 9. Sustainable Industrial Infrastructure Innovation

The 9th task of the sustainable development goal aims at the building of a flexible infrastructure, comprehensive and sustainable industrialization and innovation of the infrastructure. Korea Land and Geospatial InformatiX Corporation will use the new spatial information technology, i.e., UAV (drone), to lay the foundation for the spatial information industry, and contribute to the development of the newly emerging sustainable industry.

### Using the UAV (drone) to Implement the Integrated **National Land Survey Platform**

LX is using UAV (drone) to collect and provide data on areas that are inaccessible by people or require precise spatial information. Also, LX uses the collected information for implementation of diverse spatial information infrastructures for the national land, preservation of cultural properties, management of the environment of islands, surveying of state-owned and public land, surveying and inspection of facilities, and cadastral resurvey.

The 'national land information monitoring system using UAV (drone)' that built by LX for the first time in Korea is used by private enterprises as well as LX. LX expedites business processes by providing services, e.g., applying for UAV (drone) flight permission and managing flight history. Also, LX provides map service so that it is possible to check the UAV (drone) images in real time.



Using UAV (drone) in Global Business

### Q What is UAV?

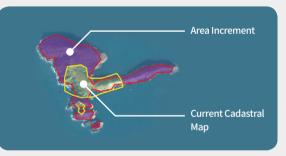
UAV is short for Unmanned Aerial Vehicle or as it's commonly called "drone". This aircraft performs duties without a pilot on board. Early applications were for military exercises, reconnaissance and surveillance, but recently businesses are finding new ways to use the UAV, and new industrial infrastructure is built based on technologies related to UAV (drone).

### SPECIAL PAGE



### Find Hidden Land: The Business for Finding The Correct **Positions of Islands**

LX used UAV (drone) to register islands, which are registered in incorrect positions due to the limitations of surveying technology, in their correct positions. LX used the state-ofthe-art GPS surveying technology to install control points in Somaemul Island, Deungdae Island and Soji Island, and shot orthoimages with UAV (drone). As a result, the area of Somaemul Island, Deungdae Island and Soji Island increased by 78,135<sup>m</sup>, and the islands' correct positions and shapes are represented on the cadastral map. LX is using new spatial information technology to find hidden land and support efficient management of national land, and taking the lead in ensuring the living and safety of people.



The Business for Finding the Correct Position of Soji Island

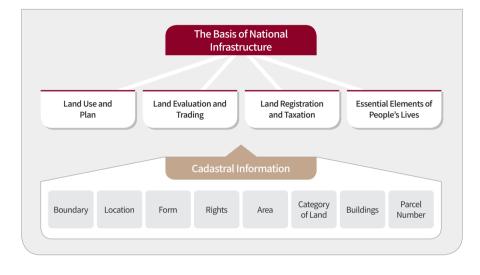
### **Reinforcing the UAV (drone) Infrastructure**

In 2015, LX launched the UAV forum to invigorate the spatial information industry using the UAV (drone), and formed networks with related agencies and enterprises to share information. Also, LX is carrying out the Ministry of the Interior's public land monitoring system implementation business using the UAV (drone), and the Ministry of Land, Infrastructure and Transport's UAV safety verification pilot business is laying the foundation for future growth engines of the country. As usage of the UAV (drone) continues to expand, LX will solidify the sustainable spatial information industry infrastructure to ensure quality services are combined with meaningful land and geospatial information.

# **Cadastral Survey**

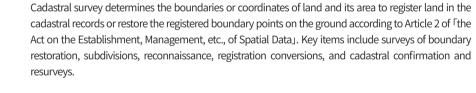
### What is Cadaster?

Cadaster is the 'registration of land' that records all information on national land, i.e. the basic concept of national land use and management. Cadastral information consists of boundary, location, form, rights, area, category of land, buildings and parcel number, and presents the criteria for the value of land, and is used as the basic data for planning the future of national land.



Through the cadastral survey business, LX is providing reliable public service so people can conveniently exercise their property rights. LX is capitalizing on its extensive surveying experience and advanced technology to quickly and accurately survey national land and provide information that is helpful in managing people's everyday lives.

### What is Cadastral Survey?





Cadastral Survey Site

### P **Consumer Satisfaction Center Site** https://c4c.lx.or.kr

### **Key Cadastral Survey Items**

Boundary Restoration Survey	This survey verifies that the boundary of the land matches the cadastral records.
Subdivision Survey	This survey divides 1 lot registered in the cadastral records into two or more lots. It is mostly conducted for transfer of ownership, sale and change of land category.
Reconnaissance Survey	This survey compares the location and occupied area of a building with the boundaries registered in the cadastral map and the woodland map, and marks them on the drawing.
Registration Conversion Survey	This survey primarily registers changes in the shape and quality of land registered in the forest land register and land register.
Cadastral Confirmation Survey	This survey establishes new land descriptions due to urban development businesses, etc.
Cadastral Resurvey	This survey establishes new land descriptions in the cadastral resurvey business according to the 「Special Act on Cadastral Resurvey」.

### What is Cadastral Resurvey?

Ð Bareun Ttang Cadastral Resurvey Site http://www.newjijuk.go.kr

Protecting

the property rights of

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Expected Benefits of

Cadastral

Resurvey

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cadastral records

LX is carrying out the cadastral resurvey business with the aim of not only accurately surveying land boundaries, but also completing the Korean-style smart cadastral map. As the business progresses, LX expects that the cadastral administration service will become more efficient through interworking with various land-related systems. Also, LX expects that the increased utility of land and geospatial information will invigorate the local economy, and create synergies, e.g., laying the foundation for the convergence of spatial information.



The cadastral resurvey business correctly surveys the land whose boundaries on the cadastral map do not match the actual boundaries of the land, and converts it to a digital cadaster that meets international standards. The current cadastral map was made during the land survey of the 1910's, and this cadastral map was digitalized. 5.54 million lots (about 15%) out of more than 37 million lots are the targets of this business. Accordingly, LX clarified the land boundaries through the cadastral resurvey business, and minimized people's inconvenience.



### **Cadastral Resurvey Procedure**

The cadastral resurvey business will be carried out until 2030, and national budgets cover everything from survey costs to registration costs without any burden on land owners. LX provides information on the implementation plan, and obtains the consent of land owners before surveying the business area, and if the land boundaries are confirmed later, LX makes new land registers and digital information.

**Cadastral Resurvey Procedure** 



### Expected Benefits of Cadastral Resurvey

# **Global Business**

### **Global Expansion of National** Land Information

LX is taking advantage of its outstanding national land development and management knowhow it has accumulated over the years to share its experience on the Korean-style cadastral system and national spatial information business with developing countries. LX is capitalizing on its differentiated expertise to develop land infrastructure of developing countries and be the hub for global land information capacity building by solidifying its cooperative networks.



Overseas Promotion of LX Business

### Introduction to LX's key **Global Business**





Korea's Land Information System presented at the World Bank (WB) Conference on 'Land and Poverty'.

Under the vision of 'Reinforcing the global competitiveness of the spatial information industry', LX is expanding its strategic marketing activities to advance into the global market and support the spatial information industry's effort to enter overseas markets. It is promoting shared growth with private enterprises, and increasing exchange and cooperation with global institutions. Also, LX is strengthening capacity building of global human resources by continuously building networks in developing countries.

### **Reinforcing the Public Functions of Overseas Businesses**

As a public institution representing Korea in the areas of cadaster and spatial information, LX is carrying out overseas businesses in developing countries by sharing its knowledge on the modernization of land administration. By combining different types of businesses from Official Development Assistance (ODA) businesses, Multilateral Development Bank (MDB) and governmentto-government (G2G) businesses, LX is pursuing sustainability of projects in the form of grant and loan combination.

### World Bank (WB) Capacity Building Program

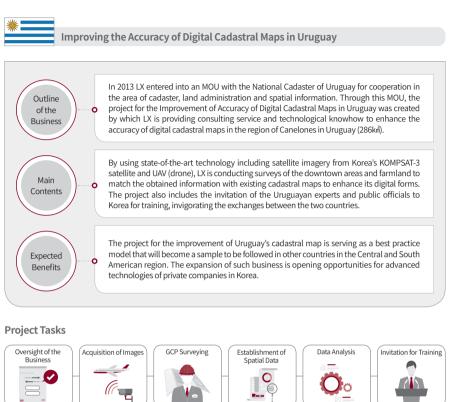
LX was awarded by the World Bank a capacity building program for the modernization of land administration system in five selected countries including Tunisia, Kyrgyzstan, Colombia, and others. By carrying out a diagnosis of the land administration system, the LX capacity building model designs mid-to long-term curricula to strengthen the capacity of major stakeholders in the land sector to eventually carry out projects for the modernization of land administration in their respective countries. The program consists of LX providing customized education and training for these countries through visits to Korea and as well as visits to the countries in collaboration with private enterprises in Korea.

### The Annual World Bank Conference On [Land and Poverty] and presentation of Korea's advanced Land Information System

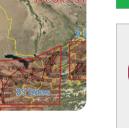
Every year, the World Bank host in its headquarter in Washington DC the Annual Land and Poverty Conference where in 2016 LX presented Korea's advanced land information system as an easy solution for the problems of developing countries. The presentation led to further conversations with higher officials from Kenya, Honduras, Malawi and the Philippines.



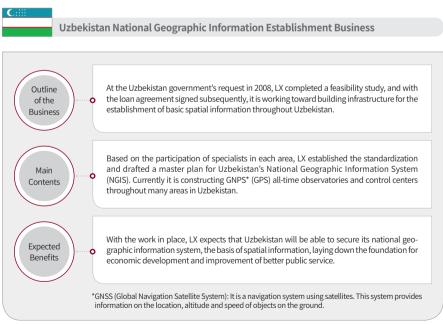
MOU with the National Cadaster of Uruguay







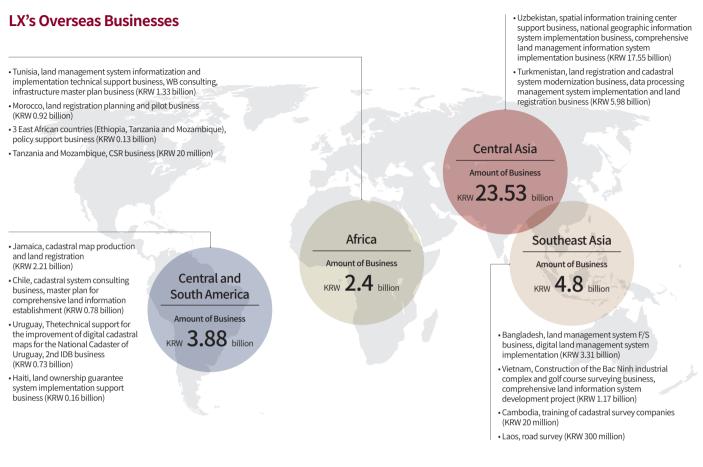








### **Project Tasks**



### Increasing the Number of Bridgeheads to support Private Enterprises Advance into **Overseas Markets**

In 2011 LX established the Overseas Business Support Center, and has been providing integrated information service and overseas expert counseling service to support domestic private enterprises advance into overseas markets. In 2012, the Center's homepage became operational to provide information on spatial information implementation in different countries, international bids and consulting, to help private companies enter the global market. The Center holds annually a spatial information road show to develop overseas markets and provide the opportunity for the sector's SME's to introduce their respective outstanding knowhow and expertise.

### J Spatial Information Industry Overseas Market Entry Support Center Site http://gisc.lx.or.kr



2015 Geospatial Information Roadsho

### 2015 Geospatial Information Roadshow

LX in cooperation with the Ministry of Land, Infrastructure and Transport held in November 2015 its third 'Spatial Information Road Show' in Jakarta, Indonesia to help domestic spatial information companies enter the market in the country. The delegation consisting of civilians and government officials introduced the excellence of Korean spatial information to Indonesian government officials, and supported presentations and exhibition booths to help SMEs promote their knowhow for business in Indonesia.

LX Spatial Information Road Shows

Classification	2013	2014	2015
Country	Vietnam Korea NSDI & U-City Vision	Sri Lanka Korea-Sri Lanka Smart NSDI Roadshow	Indonesia Geospatial Information Roadshow
Number of Participating Enterprises	21 public institutions and private enterprises	9 public institutions and private enterprises	10 public institutions and private enterprises

# **Reducing the Global National Land Digital Divide**

### UN SDGs 11. Make Cities and Human Settlements Inclusive, Safe, Resilient and sustainable

The 11th SDG is to develop inclusive, safe and resilient cities, and create sustainable human settlements. To address issues and challenges pertinent to this UN goal especially centering on the land sector in the developing countries, Korea Land and Geospatial InformatiX Corporation is promoting its core skills and knowhow to propose the Korean-style national land information system (KLIS) to the international community.

### Helping Tunisia Establish National Agenda

The Tunisian government's pressing needs in the land sector focused on the necessity of effective management of national land, lack of shared land information among government agencies, innovation of public land service, and protection of the property rights of people. To respond to the Tunisian government's will and effort to utilize national land information, the World Bank turned toward LX's Korean-style national land information system as a successful model fit for the situation in Tunisia for which active technical support was provided. Accordingly, with the support of the government in the form of Knowledge Sharing Program (KSP)\* by the Ministry of Finance and Strategy and Korea Export and Import Bank, a roadmap for the Tunisia government to solve its land issues was provided.

> Country Name: Tunisia Location of: North Africa, Tunisia-Tunis

> Business Period: 2015 ~ 2018 Business Cost: USD\$28.000.000 (about KRW 30.5 billion)



# Q

What is Korean-Style National Land Information System or KLIS?

The Korean-style national land information system refers to an advanced and comprehensive land administration system based on the Korea Land Information System (KLIS), which is an information system that digitalized all pertinent data on land into a data base that is updated in real time and shared with all sectors of society from government to private. Because everyone uses the same data, there is transparency and efficient land administration and management as well as better public service. LX, which played an important role in the development of the KLIS capitalizes on its abundant land administration knowhow to promote this efficient and modern system globally.

\* Knowledge Sharing Program (KSP): A knowledge-based development cooperation program for sharing the development experience of Korea with recipient countries. This program shares Korea's knowledge and experience with recipient countries, and supports reinforcement of their competencies. \*\*\* EDCF (Economic Development Cooperation Fund): A policy fund, established in 1987, to support the industrialization and economic development of developing countries and enhance economic exchanges between Korea and developing countries

### SPECIAL PAGE







### Implementing the KLIS system in Tunisia

Tunisia is 1.6 times larger (163,610km) than South Korea, but more than 80% of the national land is managed in drawings and paper registers. The urgency to digitalize this data became apparent as data were inaccurate and systems duplicated wasting budget and creating unnecessary cost not to mention inefficiency and poor public service. Following the KSP which provided a roadmap for the challenges, the project was followed up in 2016 with a Master Plan financed by the Korean Ministry of Land, Infrastructure, and Transport to design a sustainable project to digitalize 1.5 million land registry documents and drawings in addition to a feasibility study for the sustainability of the work. Such projects are at the same time focusing on strengthening the capacity of the local workforce and developing a management system.



# **Research and** Education

### **Reinforcing Future Growth** Competency

**Spatial Information R&D** 

R&D Performance in 2015	Unit: ea.
Research Projects	45
Papers Published and Presented at Domestic and Overseas Academic Conferences	58

Spatial Information Research Institute Site

Korea Land and Geospatial InformatiX Corporation is invigorating the research and education business. As Korea's only land and geospatial information research and education institute, LX is fully prepared to respond to the demands of the times while taking a leadership role in the spatial information area. LX is continuously updating personnel proficiency for development as a global hub of spatial information research and education and to lead and promote the spatial information industry.

The Spatial Information Research Institute is Korea's only spatial information research institute in the age of spatial information convergence. LX is pursuing the promotion of the spatial information industry and the co-prosperity of the public and private sector by conducting national policy support research and developing future-oriented convergence technologies.

### Main Research Areas

Area	Main Research Topics	Applications and Effects
Developing land and geospatial information policies	<ul> <li>Research on spatial information and cadastral policy support</li> <li>Developing a model of utilizing the national land information of North Korea in preparation for reunification</li> </ul>	<ul> <li>Supporting national spatial information policy- making</li> <li>Supporting the future Korean Peninsula spatial information and minimizing the cost of reunification</li> </ul>
Expanding the application of spatial information standards	<ul> <li>Applying international spatial information standards to Korea and international standardization of domestic technologies</li> <li>Spatial information standard consulting and post- evaluation of spatial information businesses</li> </ul>	<ul> <li>Increasing the number of Korean enterprises advancing into overseas markets by securing competitiveness in the global market</li> <li>Implementing spatial information infrastructure/ reducing maintenance costs and improving user convenience</li> </ul>
Securing core technologies	<ul> <li>Using GNSS (Global Navigation Satellite System) and UAVs (drones) to develop image acquisition and analysis technology</li> <li>Development of big data analysis/utilization model, spatial information S/W</li> <li>Implementing a precise digital map and developing a recognition technology evaluation method</li> </ul>	<ul> <li>Identifying location-based businesses and producing and acquiring spatial information Improving technologies</li> <li>Implementing the spatial information platform and supporting decision-making</li> <li>Invigorating the autonomous vehicle recognition technology and utilizing spatial information- based IoT service</li> </ul>

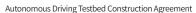
### **Reinforcing R&D Networks and Cooperation**

LX is reinforcing the R&D network by conducting joint research with academia, industry and research institutions in addition to collaborating agencies, e.g., development of spatial information technology and enhancement of the platform utilization technology. The number of joint research businesses conducted in 2015 increased by 23% over the preceding year, and the cumulative number of intellectual property rights reached 384.

### Diffusing the R&D Performance

LX is working closely with collaborative agencies to ensure fair distribution of performance results and sharing of technology advances. Both industry experts and the public benefit from LX-organized Smart Geospatial Expo and cadastral seminars where there is a lively exchange of national land information, industrial trends and the latest technologies. To further its outreach efforts, LX publishes the spatial information magazine and journal "Cadastre & Land Informatix".







**Developing Future Spatial** Information Workforce





### Introduction to LX's key **Education Business**

LX Education Institute Site http://www.lxcti.or.kr

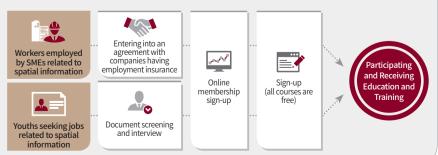
### **Education and Training in 2015**

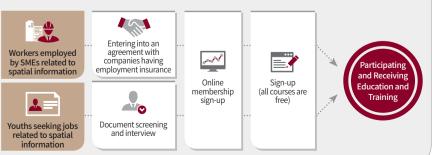
	Unit: Number, Times, Person			
Classification	Number of Courses		Number of Participants	
Training and education	35	75	2,194	
Entrusted education	16	48	1,315	





Spatial Information Academy Site http://lxsiedu.or.kr







P

http://lxsiri.re.kr

LX Education Institute is Korea's only national land information education institution and is developing a creative workforce through state-of-the-art technology education and convergenceoriented national land information education. LX is recognized as a mecca of national land information human resource development through its focus on learner-oriented customized education.





Spatial Information Academy Courses for Job Seekers

Spatial Information Academy Courses for Incumbents

LX is laying the foundation for becoming a hub of national spatial information by developing civilian specialists in new business areas as well as providing education for reinforcing the competency of employees to efficiently conduct national land information business. In line with Vision 2025, the education system at LX underwent a major reformation from the limited cadastral technology courses to a broader curriculum that emphasized spatial information and customized courses for different levels of competency to develop more professional human resources.

### **Expanding the Public Role of National Land Information Education**

LX undertook a major departure from the existing process centered on education for employees and related public officials to an expanded program that includes hands-on training courses for ordinary people. Through October 2016, 59 private people completed the education courses and as the industry's reach continues to expand, LX will develop and share educational programs to foster more national land information specialists.

### **Operation of the Spatial Information Academy**

LX has been operating the Spatial Information Academy since 2014 to develop land and geospatial information industry human resources through collaboration with the Ministry of Land, Infrastructure and Transport and the Ministry of Employment and Labor. LX provides customized spatial information education for employees and prospective employees of domestic companies that utilize spatial information to train them as spatial information specialists. In 2016, 439 persons completed 13 educational courses, and LX is developing new courses to further advance the spatial information industry, which will be the basis of the convergence creative economy in the future, and reinforce the global competitiveness of spatial information.

Sign-up for Spatial Information Academy Courses

\* For more information on the public-private partnership growth activities of the Spatial Information Academy, see p.40.

Growing with the Trust of the People

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**V** 

May

Apr

Fair and transparent management activities are essential conditions for the survival of an enterprise. The social standards for business ethics are very stringent, and go far beyond passive activities like simply eradicating unethical behavior. An active clean culture movement involving stakeholders is required as a core value of an enterprise.

Core Issues 7

Korea Land and Geospatial InformatiX Corporation is overcoming public distrust of corrupt public institutions by providing corporate-wide integrity education, operating a systematic internal control system and declaring Human Rights Management. LX has become committed to and is recognized by the public as operating with integrity, having the highest moral standards, and respecting human rights.

### Improving The Ethical Management System

Materiality

To contribute to the diffusion of anti-corruption and clean culture in the public sector, LX reestablished the ethical management system to ensure the effectiveness of our strategic goals. Specifically, we have an integrity team within the Audit Office for more systematic auditing, and an Ethics Committee, Integrity Task Force Team and Integrity Civil Auditor to ensure we operate at the highest ethical standards and maintain the public's trust.

**Ethical Management System** 



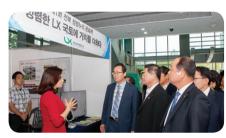
The First Clean Nuri Cultural Festival in 2016

Ethical

Management

**Establishing a Clean** 

and Ethical Culture



Introducing the Integrity Culture of LX

### **Clean LX Never Crossing the Line** Realizing Sustainability Management by Fulfilling Corporate Social Responsibilities 1 Getting Grade 1 Getting grade 1 in Evaluation Integrity up and in Overall Integrity of the Anti-Corruption Policy Corruption Zero • Improving the clean culture of • Building the anti-corruption • Eliminating and improving the public sector infrastructure factors causing corruption Enhancing the transparency Invigoration of corruption and reliability of policies prevention and reporting

### **Ethical Management** Activities

### **Showing Initiative and Clean Leadership**

The entire management team of LX, including the CEO, is committed to maintaining the highest standards of clean ethical management. Because the organization's operations span the entire country, management visits these businesses in person to emphasize clean activities through strong in the field communication, and ethical management workshops. There is a corporatewide consensus about integrity in place thanks to an enhanced employee awareness of their responsibility to maintain the public's trust.

### Result of Anti-Corruption & Civil **Rights Commission Anti-Corruption Policy Evaluation** Unit: Point



### **Reinforcing Internal Control**

### **Auditing System**

### **Key Outcomes of Auditing Activities**

• The Board of Audit and Inspection's Review and Evaluation of Self-Auditing Activities Selected LX as an 'Excellent Institution

• Received the Proud Auditor of the Year Award from the Institution of Internal Auditors in 2015



Received the Proud Auditor of the Year Award in 2015

LX explicitly stipulated the auditing independence in terms of organization, personnel, budget and authorities, and the ethics standards related to the responsibilities and gualifications of auditors in application of the regulations. External experts performed the screening for internal auditor selection in 2015 for the first time to solidify the independence of the auditing process.





### Efforts to Internalize the Awareness of Integrity

Customized educational programs with a comprehensive curriculum of integrity education contents run by LX ensure attendees acquire a keen awareness of their responsibility in maintaining the highest standards of integrity in business. To reinforce the anti-corruption awareness across the organization, we set up cyber integrity education and correspondence courses to systematize our curricula. A customized performance highlighting integrity was held 13 times in 2015 to help employees naturally embrace a clean culture and refine their knowledge of integrity through twoway communication, e.g., on-site emotional clean activities.

### Invigoration of the Clean Network

LX organized the Integrity Task Force Team to monitor anti-corruption and integrity activities and the results, and formed an internal and external integrity network. Also, we are sharing best practices with the Jeollabuk-do Public Institutions Integrity Cluster and have hosted the Clean Nuri Cultural Festival in September 2016 together with those public institutions which moved to Jeollabuk-do Innocity. We combined the rather dry topic of 'integrity' with easy-toappreciate cultural performances and integrity activities to form a consensus on integrity in the local community.

### **Operating the Internal Control System**

LX chose 'Clean LX Trusted by People' at its auditing vision, and established 3 strategic directions and 6 strategic tasks to 'realize the value of clean LX that emphasizes principles and basics.' In complying with the mid-to long-term auditing strategy, corporate-wide auditing activities are being conducted to ensure transparent and sound management.

### Securing Independence and Ethics

### Improving the Expertise of Internal Auditors

By implementing a program of professional education for auditors, an auditing advisory committee that includes external experts, and an Integrity Civil Auditor, LX now has in place an enhanced organizational system that promotes the professionalism of auditors.

### 2016 Sustainability Report

### **Human Rights Management Declaration**

As corporations gain greater influence in society, the demands for social responsibilities are also increasing. LX established the implementation plan and guideline for respecting and protecting the human rights of all employees during management activities in 2015, and pledged to actively practice Human Rights Management through the Human Rights Management Declaration.

### **Human Rights Education :**

Number of Employees Receiving Education on 4 Types of Violence and Rate who Completed the Training Unit: Person. %



\* 4 Types of Violence: Sexual Harassment, Prostitution, Sexual Violence and Domestic Violence



Human Rights Management Declaration Ceremony

### LX Human Rights Management Declaration

We actively practice Human Rights Management, emphasizing the dignity and value of each person in all management activities. To this end, we define our obligation to respect the human rights of our employees, customers, stakeholders and members of the local community, and declare the implementation of Human Rights Management to respect and protect human rights as follows.

• We will respect and uphold the international standards and norms of the UN regarding human rights.

- We will prevent human rights violations, and make utmost efforts to protect human rights.
- We will guarantee the freedom of association and collective bargaining.
- We will not allow any form of forced labor or child labor.
- We will not discriminate because of religion, sex, race, academic background, regional origin or disability.
- We will create safe and healthy working conditions to promote industrial safety and health.
- We will protect the human rights of customers and not infringe on their safety and privacy.
- We will make sure that the human rights of local residents in areas where we conduct management activities are not violated.
- We will comply with domestic and foreign environmental laws, and make efforts to protect the environment and prevent pollution.
- We will treat stakeholders fairly, and support them in practicing Human Rights Management.

We pledge to do our best to practice and diffuse human rights management so that the dignity and value of all stakeholders can be guaranteed.

> December 23, 2015 Employees of Korea Land and Geospatial InformatiX Corporation

### Diffusion of the Culture Respecting Human Rights

LX provided human rights education for all its employees to embed a corporate culture that protects the human rights of all employees, stakeholders and local residents. In 2016, we used the contents of the National Human Rights Commission to make our cyber Human Rights Management education mandatory for employees in class 3 or above to enhance their awareness of human rights. LX now requires the human rights protection pledge in all contracts to broaden our cultural base of respecting human rights to all stakeholders.

### LX's Plan

LX is committed to expanding the culture of integrity across the organization to obtain grade 1 in overall integrity. Through clean and ethical management activities, we will fulfill all social responsibilities required of LX, and proactively engage in Human Rights Management activities to continue earning the public's trust.



Materiality

### **Public-Private Partnership Growth Promotion System**

purchasing.





### **Public-Private Partnership Growth Activities**

Fair Distribution of Benefits The benefit sharing system has established a fair transaction culture that promotes public-private partnership growth through advance contracts with suppliers. Accordingly, we are identifying and developing LX-style benefit sharing models. In 2015, we actively took advantage of LX's publicprivate partnership growth execution organization and benefit sharing deliberation committee to develop a new multi-party benefit sharing model. As a result, LX is now able to share benefits with SMEs and practice win-win cooperation for growth. New models will be continually developed.





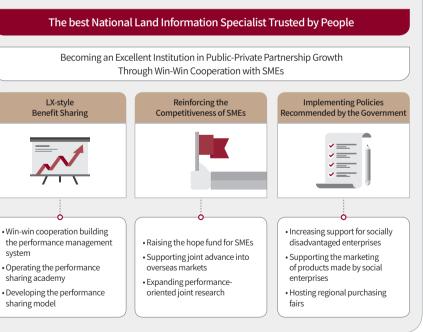
With industrial technologies becoming more complicated and convergence appearing throughout industries, the importance of cooperative relationships in the business environment is increasing. Improving competitiveness from the viewpoint of the industrial ecosystem, not simply helping SMEs, is now an important focus of LX.

Korea Land and Geospatial InformatiX Corporation is laying the foundation for growth in the competitive national land information industry by identifying various benefit sharing projects, and supporting SMEs' advance into overseas markets through strengthened competency training. We are creating sustainable values for both LX and all stakeholders through the continued commitment to public-private partnership growth activities.

### **Establishing Public-Private Partnership Growth Strategies**

Spreading the LX-style corporate culture of public-private partnership growth ensures that the goal of 'becoming an excellent institution public-private partnership growth through win-win cooperation with SMEs', is realized. The plan to internalize the culture of win-win cooperation involves implementation of 3 strategies and 9 tasks that include operating the benefit sharing system, reinforcing support for the customized win-win cooperation program, and expanding preferential

Public-Private Partnership Growth System



### **Reinforcing the Competitiveness of SMEs**

Spatial Information Academy

**Education Performance Data** 

219

2014

Consortium

103

2014

Number of People who Received Education

297

2015

130

2015

Companies Participating in the Education

Unit: Person

439

2016

Unit: Company

149

2016

The customized SME support program by LX takes advantage of our core competencies to meet the needs of SMEs. We are developing overseas markets and conducting joint technical research by providing economic research powered by the hope fund and LX's infrastructure. To better address the needs of the private sector, we are reinforcing their competencies by providing focused education and technology assistance. These efforts in win-win cooperation have earned LX the grand prize at SME Innovation Awards 2015, sponsored by the Ministry of Trade, Industry and Energy in the public-private partnership growth category for the second consecutive year.

### Invigoration of the Spatial Information Academy

The Spatial Information Academy provides industry-oriented education services for employees of SMEs with insufficient education infrastructure, and continuously develops step-by-step courses that reflect the demands of people who need education. Furthermore, we appointed workinglevel staff of SMEs as instructors for the education courses, and are spreading the culture of publicprivate partnership growth to the spatial information industry through the Academy. Accordingly, in 2015, LX received grade A in the Consortium Joint Training Center supervised by the Ministry of Employment and Labor, and was rated as excellent since 80% of those job seekers who completed the Academy courses have found jobs since the Academy was opened in 2014.

### Win-Win Cooperation Program Activities and Performance

 Interest rate was reduced for 11 SMEs by up to 3.4% We reduced the loan interest rate for SMEs. Win-Wir • We secured funds liquidity for SMEs by contributing to the hope fund Cooperatio raising the hope funds to the tune of • We increased the joint spatial information KRW 2 billion over a period of 2 years business amount • We conducted 21 joint research projects • We increased joint research with SMEs with SMEs that have core spatial that have core spatial information technol information technologies in 2015 (up 23% over the preceding year) • World Bank and Asia Development Bank We increased joint cadastral confirmation Marketin business advancing into overseas markets surveys Suppor jointly with the private sector • We increased the amount for joint advances · We secured stability of business by into overseas markets managing the risks of overseas business We invigorated overseas entry support • We invigorated overseas entry support center service center services (216 times in 2015) • 439 people completed the courses of the We supported Spatial Information Academy Reinforcing Spatial Information Academy in 2016 education Competenc • 155 companies participated in the • We supported the operation of cadastral private sector competency reinforcement survey and calculation education program education program • We provided the surveying software of • We provided KRW 0.63 billion for the LX (copyright) free of charge surveying and calculation software

### Key Outcomes of Public-Private Partnership Growth

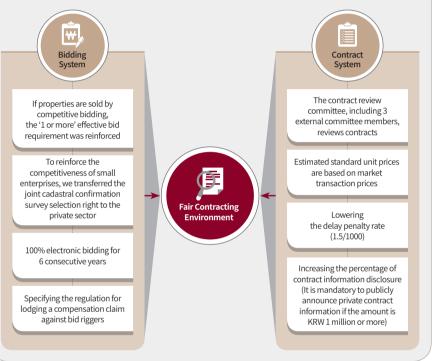
• We received the grand prize at the SME Innovation Awards, sponsored by the Ministry of Trade, Industry and Energy, in the public-private partnership growth category for 2 consecutive years • The Spatial Information Academy received grade A in the Consortium Joint Training Center performance evaluation in 2015

• We disclosed 494 pieces of contract information (up 49% over the preceding year)

 Social enterprise product purchase data KRW 1.15 billion (up KRW 710 million over the preceding year)

LX's Plan

LX is planning to continuously communicate and pursue public-private partnership growth based on trust through win-win cooperation with SMEs with the strategic goal of becoming an excellent institution in publicprivate partnership growth. In particular, to help improve the competitiveness of SMEs, we will actively operate the Spatial Information Academy and reinforce customized spatial information education services. Also, we will continue to be a leading public-private partnership growth partner in the spatial information industry by conducting win-win cooperation activities in joint R&D and development of overseas markets while continuing to support socially disadvantaged enterprises.





Order

# **Establishing the Fair Trade**

### LX's Efforts to Create an Environment for Fair Contracts

# **Supporting Socially Disadvantaged Enterprises**

### **Reinforcing Fairness in the Contract System**

To ensure the fairness of selecting contractors and increase the participation of local enterprises and socially disadvantaged enterprises, we revised contract-related regulations. Also, we paid 100% of the requested prepayment in 2015, increasing the prepayment ratio by 12% over the preceding year to improve SMEs' fund liquidity. Meanwhile, LX made it possible to use the homepage and mobile app to check purchase contract information anytime and anywhere, thereby increasing the transparency of transactions.



### Increasing Preferential Purchasing

We are supporting SMEs by increasing purchases from underprivileged and socially disadvantaged enterprises according to the government-recommended policy. We hosted a purchasing fair for 300 participants from 67 companies in Jeollabuk-do to help socially disadvantaged enterprises find markets for their products and contributed to their growth by gradually increasing our purchases from them. As a result, in 2015, we exceeded the government-recommended product purchase rate (5%) from enterprises run by females, and the amount of purchases from social enterprises increased by KRW 710 million over the preceding year to KRW 1.15 billion. We fulfilled our social responsibilities, and contributed to the management activities of SMEs.

### **Reinforcing Customer Satisfaction Education**

Providing Customized Videos 'The Land Internet Broadcasting System (LIBS)', LX's own broadcasting channel which produces diverse information on policies and education related to spatial information, produces and provides customized videos to deliver stories about land and surveying, lawsuits related to cadastral survey, recruiting information and information necessary for everyday life. These offer participants a path to improving their quality of life and greater convenience.







How to



Land Internet Broadcasting System Site http://libs.lx.or.kr

**Expanding Customer** 

**Customer Satisfaction with** 

97.1

2014

\* Since the Public Institution Customer Satisfaction Survey was Upgraded to PCSI 2.0 Model in 2015, it is Difficult to Compare Numbers with those of Preceding Years in

90.1

2015

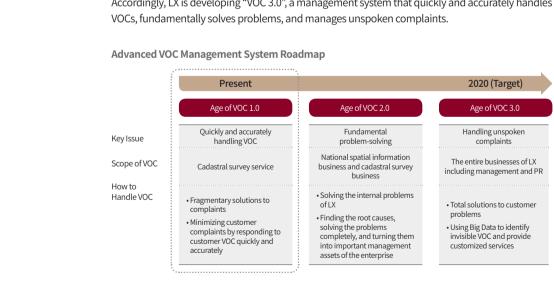
**Public Institutions** 

91.9

2013

Absolute Terms

Satisfaction Service



Materiality

**Customer-Oriented** Management

Customer

Satisfaction

Customer-Oriented Management System

**Customer Delight TOP PLUS** ntaining the Highest Level of Customer Satisfaction (Grade S), and Attaining Grade S in LX-SQI Professionalism Initiative Reliability Empathy Building the National Land Implementing LX 3.0 Diffusing Customized Service nformation CS Infrastructure the CS Culture Consumer-oriented National land information Expanding the CS motivation reinforcing customized service VOC building the infrastructure infrastructure Improving the customer-centric MOT quality CS competency Implementing an efficient CS system

\* LX-SQI: It is short for LX-Service Quality Index

### Sharing the Enterprise-Wide Customer Satisfaction Vision

We are emphasizing the importance of customer satisfaction management by diffusing the new customer satisfaction vision, the customer service charter and the service standard manual across the organization. We made a communication channel on our intranet (WELAND) to help employees better understand customer satisfaction and are conducting panel group reviews of online and offline customers so they may provide us with valuable feedback about LX services.

Core Issues 9 Core Issues 10

The growing importance in the quality and breadth of the spatial information industry market is reflected in the demand for location and attribute information, such as digital maps, navigation and smartphone location services by individual and corporate consumers.

After changing the company name, Korea Land and Geospatial InformatiX Corporation implemented a customer-oriented CS management innovation system to reinforce customized service activities in key businesses. We are committed to maintaining the highest level of customer satisfaction, and conducting activities to improve the public nature and convenience of services.

### **Building the Customer Satisfaction Management Innovation System**

To realize customer values, LX implemented a customer-oriented customer satisfaction (CS) management innovation system linked to corporate strategies. Also, we are making sure that customer satisfaction improvement activities are continuously carried out by presenting the customer service charter implementation standards, and operating internal and external meetings, such as Customer Satisfaction Innovation Committee and VOC council (VOC: Voice Of Customer) on a regular basis.

LX's Plan

LX is concentrating on improving the quality of customer service and enhancing the level of customer satisfaction by reinforcing customer-oriented service competency. As a result, we are committed to the implementation of a corporate-wide consumer-oriented management culture and an integrated VOC management system that provides top-quality services. LX is committed to maintaining the highest levels of customer satisfaction and will continue serving as a public institution that is trusted by the all who come in contact with and use our services.



To improve basic knowledge of customer responses and professionalism in handling complaints, we are operating systematic education and training in customer satisfaction. These courses range from regular training and education to customized education and cyber education, which reinforce the customer satisfaction competency of all employees. In addition, we are operating the internal CS Academy and expanding participation in CS expert education courses offered by external agencies to improve the competency of departments and employees who come in contact with customers.

Stories about Land and Survey

Lawsuits Related to Cadastral Survey

### Implementing an Advanced VOC Management System

With the expansion of LX business areas into spatial information, it has become necessary to implement an integrated management system for collecting and managing various VOCs in the National spatial information business, the cadastral survey business, and global business. Accordingly, LX is developing "VOC 3.0", a management system that quickly and accurately handles

Information Security

Materiality

# LX Strategic Plan for

# Informatization



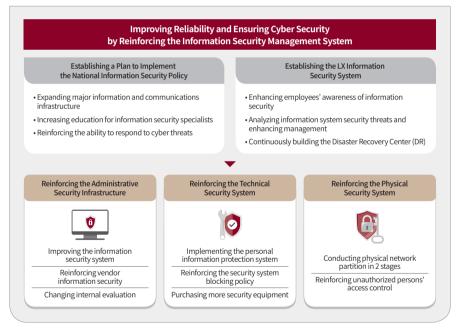
Information Center Control System

Korea Land and Geospatial InformatiX Corporation is implementing a corporate-wide information security management system to prevent the possibility of personal information and core security information leakage in preparation for today's rapidly increasing cyber security threats. We are reducing the disaster recovery time by conducting Disaster Recovery Center simulation exercises, and reinforcing our ability to proactively respond to cyber attacks and emergencies by implementing the national information security policy. These efforts are paying significant dividends in the everimproving security of vital information.

### Establishing a Corporate-Wide Information Security Management System

With the growing need for stronger information security, the government policy regarding cyber hacking threats from the outside is being reinforced. Accordingly, LX has established a midto long-term strategy for informatization and reinforced the administrative, technical and physical security system to implement a stable and safe information security management system.





### A Dedicated Information Security Organization

We are operating a dedicated information security organization in charge of detailed information security tasks headed by the Chief Privacy Officer who also serves as the head of the spatial information business division. This person is responsible for leading the inspection of the management status of the headquarters and individual regional headquarters, strengthening vulnerabilities, and establishing effective countermeasures to improve the safety and stability of information security across the organization.

### **Expanding Personal Information Protection**

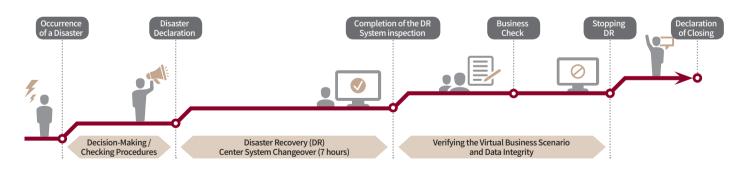
To safely protect the personal information of customers and employees, LX created manuals that prescribe specific responsibilities and actions and improved the personal information file system at the corporate level. On this basis, we implemented a round-the-clock monitoring system to protect personal information and achieved zero personal information leakage in 2015.

### LX Reinforces Cyber Security Information Protection and Management

To build an effective defense system against intelligent cyber attacks, we partitioned our physical network by separating the internal and external network lines in 2014, and completed physical network partition for the Cadastral Training Center, the Spatial Information Research Center and regional headquarters in 2015.

### National Information **Security Policy** Implementation

### Training Scenario to Respond to Emergency Failures



### LX's Plan

LX attained zero security incidents by enhancing the information security system and will continue to protect information linked to the property rights of people by improving the security system in preparation for advanced persistent threats (APT), and transferring important systems to the Disaster Recovery (DR) Center, thereby firmly establishing our status as an excellent institution in information security.

### **Reinforcing Security Infrastructure**

To improve the organization's security competency, we revised the guidelines and manuals related to information security and provided preliminary security education for outside vendors while demanding that these people comply with security regulations and pledges to prevent any breaches. We are continuously providing security training and education for all employees to ensure that they can quickly respond to any security-related incident.

### **Reinforcing Technical Security System**

We introduced state-of-the-art security systems and equipment to improve the level of technical security for our information assets and applied a network access control system throughout the organization's information system to block unauthorized access. Additional steps include the use of secure USBs and the installation of a patch management system to reinforce technical procedures.

### **Reinforcing Physical Security System**

### System for Ensuring LX Business Network Stability



### **Ensuring Stability by Implementing Disaster Recovery Center**

We attained the goal of recovering from failures within the shortest time (7 hours) by enhancing the Disaster Recovery (DR) Center, and reviewed the network paths to be utilized during natural disasters and emergencies. The recovery time of 17 hours is shorter than the target DR time of secondary banking institutions, i.e., 24 hours, which is attributed to our continuous improvements in simulation training scenarios and expansion of the core server of the Disaster Recovery Center.



Materiality

Social responsibilities for the underprivileged and local communities are being reemphasized due to the global economic recession. As social interest in the creation of shared values increases due to the spread of sustainability management, demands for LX-style social contribution activities are rising.

Core Issues 8

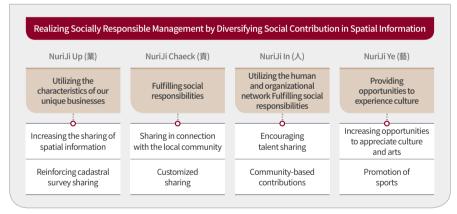
Korea Land and Geospatial InformatiX Corporation is capitalizing on its inherent business to reinforce the sharing system that has been customized to offer the best service to each region's people. As the competency of LX's spatial information technology advances, the culture of social responsibility is being spread across the organization and beyond to include an ever-growing array of beneficial activities.

### **Reinforcing Social** Responsibilities

### **Reinforcing LX-Style Social Contribution System**

In 2013, we made a social contribution brand by combining a purely Korean word 'Nuri', meaning 'national land', and a Chinese word meaning knowledge 'Ji (知), i.e'. 'NuriJi (知)', reinforcing the execution base of our social contribution activities. We are jointly conducting creative social contribution activities with people in multiple areas through our 4 strategies of NuriJi Up (業), NuriJi Chaeck (責), NuriJi In (人), NuriJi Ye (藝).

Social Contribution System



### **Increasing Social** Contributions

### Key Performance Indexes of **Social Contributions** Number of Participants Unit: Person 39.673 29,814 21,770 1 2013 2014 2015

### NuriJi Up (業, Business)

Based on the business characteristics of LX, we are providing public service for the safety and convenience of people in ways that invigorate the financial condition of ordinary people and foster the development of successful start-ups. Our small business bankruptcy prediction model based on big data analysis and the customized sharing program that eliminates or reduces the cadastral survey fees for those people in the low-income bracket are just two examples of this system's contributions to society.

### NuriJi Chaeck (責, Responsibility)

To become a public institution trusted by local residents after relocation to Jeollabuk-do Innocity, we have expanded our social responsibilities by building a network with related agencies in the region. We are conducting social contribution activities that improve the living conditions for the underprivileged in the local community and reinvigorate traditional markets. Our staff offers a helping hand to people in need, and engages in customized win-win activities utilizing the resources of LX, e.g., donating equipment and survey education textbooks.

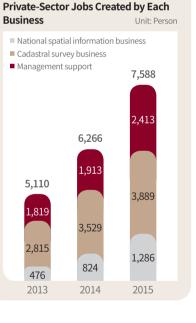
Community Ballet School

NuriJi In (人, Human)

To provide the underprivileged in the local community with opportunities to enjoy diverse experiences, we are supporting cultural, artistic and sports activities. Since 2011, we have been providing people with opportunities to appreciate free ballet performances, and operating the community ballet school together with the Korean National Ballet. LX is developing local sports and fostering less popular sports events like the LX Cycling Team founded in 2006, to help these athletes improve their skill levels and reap the rewards of success in competition. By donating equipment and organizing events, people enjoy greater access to sports, which raises their quality of life by broadening their experiences.

### **Creating Value in the Private Sector**

quality jobs.



LX's Plan

As the socially responsible management of public institutions is reinforced, LX is conducting social contribution activities that help people and the local community. We are trusted by the public and recognized as a leader in social contributions through the active participation in programs that make full use of the characteristics of LX. We understand and accept our responsibility as a people-oriented public institution to create sustainable quality jobs in the private sector despite today's rapidly changing economic conditions.

We combined the nationwide human and organizational network of LX with social contributions to provide talent to the local community. For example, we encourage our employees to take advantage of their job skills to conduct skilled sharing activities like supporting survey education and providing free legal services. We also encourage them to actively participate in diverse voluntary services like environmental cleanup and providing assistance at welfare facilities.

### NuriJi Ye (藝, Culture)

### Creating More Private Sector LX-Style Jobs

LX implemented the private-sector job creation system in each of its businesses in alignment with its founding principles. By aligning the execution strategy with the national spatial information business, the cadastral survey business, and core businesses like management support, we are creating sustainable LX-type private-sector jobs. With the aim of creating twice as many jobs as LX employees by 2017, we will expand our key businesses and reinforce our core competencies to create meaningful numbers of



**Private-Sector Job Creation System** 

# Human Resources Management

Materiality

### recruitment, development of competency and fair personnel management are attracting attention as the core topics of HR management. In addition, the demand for balance between work and life is increasing throughout all industries along with the desire to have a safe workplace.

Core Issues 3 Core Issues 4

Korea Land and Geospatial InformatiX Corporation is leading open recruitment using a system based on job competency, and fostering highly productive human resources by reinforcing the professional competency of each employee. There is a company-wide commitment to abide by the premises of our work culture to reject discrimination of any kind and build good labor-management relations firmly rooted in win-win cooperation.

Recently the lifecycle management of employees until retirement as well as open

### Selection of Talent

### **Recruitment Based on Job Competency**

LX is well aware of the necessity of selecting people from various areas to lead the spatial information industry, so it is incumbent upon us to use a recruitment method based on job competency and not on monotonous competition. We are screening our new employees in ways that evaluate their personality, talent, aptitude, job competency and growth potential as well as their knowledge beyond their scores on written tests.

### First Public Institution to Introduce NCS\* Evaluation Model

In 2013, we became the first public institution to introduce the National Competency Standards (NCS)-based core job competency evaluation model that analyzes the required competence for each job and applies a consistent screening method to each applicant. In 2015, we recruited new employees using this system that were best suited for LX; and in a testament to its strengths, it was selected as a best practice at the public institution NCS business agreement ceremony and LX earned the Ministry of Finance and Strategy's award at the public institution competency-based recruiting contest. We are contributing to the implementation of a competency-based society and the diffusion of an open recruiting culture.

\* NCS (National Competency Standards): Standards systematized by the state with regard to the knowledge, skills and attitudes required to perform duties at industrial sites

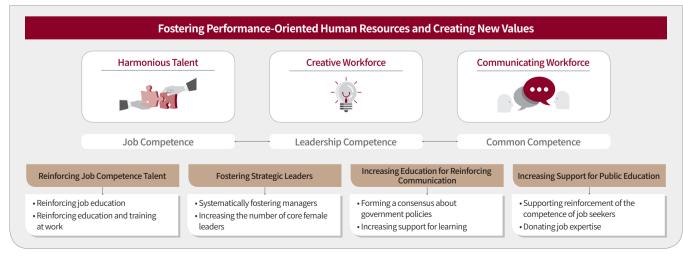
### Developing Core Human Resources

We are making sure that employees are confident about their future by providing them with intensive education in the newly named Central Training Institute (formerly the Cadastral Training Center). The education programs have been revised with a focus on courses related to national land and geospatial information to develop core human resources ideally suited for the future environment of LX.

### Human Resources Development System

Developing

Human Resources



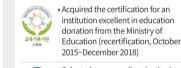




Number of People who Completed Education



### **Key Outcomes of Human Resource** Development



 Selected as an excellent institution in human resources management by the Ministry of Education and the Ministry of the Interior (Best-HRD) for two consecutive years (recertification, November 2014~November 2017)

# - ㅇㅇㅇ ㅠㅎ시상 | 일家양득 간담회





Workshop for Female Managers

### **Changing Education Programs with Focus on the Future**

We abolished existing education courses that were focused exclusively on cadastral survey, and replaced them with education programs related to national land and geospatial information. We have 20 curricula that have been determined to be vital to the continued growth of LX, e.g., spatial information, statistics and big data, and combined training programs to add 24 new education courses to foster international experts in national land and geospatial information planning, analysis, and feasibility studies.

### Supporting the Acquisition of New Technologies in Spatial Information

Demands for experts who can handle technologies related to advances in spatial information are increasing, so LX actively supports the acquisition of personnel with qualifications in areas of greatest demand, e.g., data analysis quasi-experts and UAV (drone) pilots. As a result of these efforts in 2015, we fostered and are currently employing 132 data analysis experts and 7 specialists.

### **Fostering National Land and Geospatial Information Analysts**

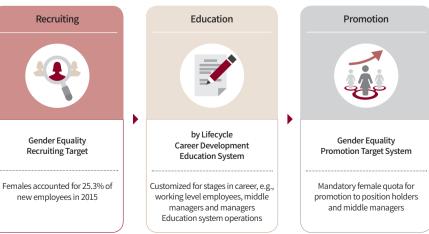
We selected 316 employees with basic knowledge of spatial information to participate in a 3-stage evaluation followed by a 6-month regimen of professional education courses. Stage 1 (basic education courses) investigates national land conducts and data processing exercises. In stage 2 (working-level education courses), 96 of those who completed the preceding education course were selected to receive in-depth education related to statistical analysis of national land information and national land information policies. Then, the 20 students who performed best in the working-level education courses received professional education related to national land information feasibility analysis and planning and were assigned to core departments, giving full play to the technical competence necessary for identifying national spatial information policy businesses and new growth engine businesses.

### Diffusing the Corporate Culture of Gender Equality

By simultaneously operating the gender equality quota system and promotion target system, we are giving fair opportunities for growth from recruiting to career development and promotion. In 2015, as a result of these efforts, we received a commendation from the Ministry of Employment and Labor as an excellent institution in gender equality.

### **Fostering Female Employees**

We adopted the gender equality employment target system in 2006, and in 2015, females accounted for 25% of all new employees and in keeping with the gender equality promotion target system, 3 out of 13 such employees were females. We are contributing to gender equality in employment by operating the education system for career development based on lifecycle so female employees receive education fit for their positions. To prevent employees from having their career interrupted, we capitalized on the Ministry of Employment and Labor's substitute workforce bank to provide recruitment information.



### Female Workforce Development Process

**Organizational Culture for** 

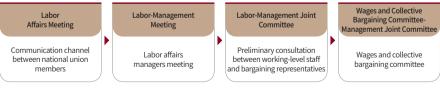
Labor-Management

Harmony

After analyzing the internal and external business environment and diagnosing the level of our labor-management relations, 3 labor-management strategies and 9 strategic tasks linked to our management goals have been formulated to improve labor-management relations and to create a rational vision of labor-management relations, i.e., 'Creating a labor-management culture opening the future together based on creative labor-management relations'. LX is creating an advanced culture of mutual trust and co-prosperity according to the mid-to long-term roadmap that reflects the current labor environment and offers guidance for managing future government policies.



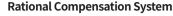
Configuration of the Communication Channel between Labor and Management



# LX's Plan

LX One-Mind Athletic Meeting

For enterprises to gain long-term competitiveness, they must make efforts to build an organization culture based on mutual trust among all members and improve sustainable productivity. LX is providing open opportunities for all employees and ensuring a pleasant working environment by creating a sound organizational culture. Improvements in working conditions are being made and investments in ways to enhance efforts to boost productivity will reinforce the positive partnership between labor and management. LX is an industry leader in creating and adhering to a responsive and productive corporate culture.



We prepared a mid-to long-term compensation system roadmap, and a rational compensation system for the labor of employees that includes fair and rational evaluation procedures for the performance of all employees, and improved transparency of performance measurement and employee satisfaction by obtaining their feedback on system improvement.

### **Retirement Preparation Program**

To help retirees explore their career potentials after retirement and make a new start, we provide them with a prospective retiree support program. For example, in 2015, we ran our life design program for life after retirement seven times, supported the self-diagnosis of 250 prospective retirees, and analyzed the environment after retirement to give them practical help.

### Work-Life Balance

**Evaluation and** 

Compensation

LX improved working style and culture, took the lead in implementing innovations in organizational culture that are favorable to work-life balance, and created a safe workplace. These policies earned LX the family-friendly certification in 2012 from the Ministry of Gender Equality and Family. We are continuously improving working conditions so that employees can enhance productivity through a mutually satisfactory work-life balance.





Improving Working Culture Expanding the number of days Recommending the use of vacation fo the benefit of family members ting a campaign for company

LX Camp with Families

### 50

ncouraging male employees to tak

### **Developing a Strategy for Improving Labor-Management Relations**

Labor-Management Strategy Execution System

### Forming a Consensus through Communication between Labor and Management

We are implementing field-oriented labor-management communication channels to form a consensus between labor and management, and prevent labor-management conflicts. These exchanges between labor and management are effective in notifying the labor union in advance of changes in labor conditions according to legal standards. An online grievance handling system was introduced in 2015 that offers improved accessibility and response.

### Programs for Labor-Management Harmony

We are concentrating on invigorating activities and programs to realize cooperation between labor and management and build a sound labor-management culture. Our experiential healing program allows employees to relieve stress and improve their productivity using self-guided, individualized methods that are most effective. Also, we solidified the foundation for cooperation between labor and management by improving provisions in the collective agreement concerning infringing on management rights and authority over personnel affairs, and are guaranteeing lawful union activities by operating a time-off system in compliance with government standards.



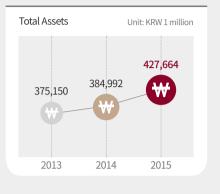
Sustainability Management	54
Performance Data	
GRI Index	58
Third-Party	60
Verification Statement	

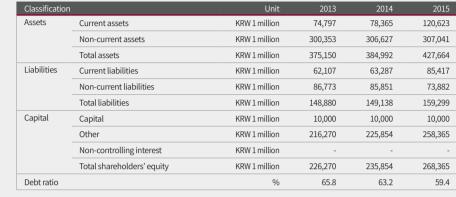
# Sustainability Management Performance Data

### Economy

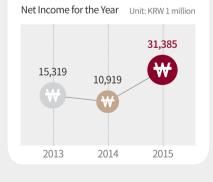
Summary Statement of Financial Position (K-IFRS)

Summary Statement of Comprehensive Income (K-IFRS)









343

2014

Unit: ea.

384

2015

**Registration of Intellectual** 

Property Rights

297

2013

Revenues (sales)	KRW 1 million	444,574	434,732	472,887
Net sales	KRW 1 million	444,574	434,732	472,887
Cost of goods sold	KRW 1 million	352,819	353,806	363,663
Selling and administrative expenses	KRW 1 million	59,550	56,081	62,626
Operating profit	KRW 1 million	32,205	24,845	46,599
Other revenues	KRW 1 million	2,934	3,592	3,909
Other expenses	KRW 1 million	16,116	17,376	13,751
Other profit	KRW 1 million	-700	1,370	1,843
Finance profit	KRW 1 million	2,050	2,013	2,133
Finance costs	KRW 1 million	24	-	-
Profits related to companies accounted in equity method, etc.	KRW 1 million	-	-	-
Net income before income tax	KRW 1 million	20,349	14,444	40,733
Income tax expenses	KRW 1 million	5,030	3,525	9,348
Net income for the year	KRW 1 million	15,319	10,919	31,385
Other comprehensive income	KRW 1 million	18,699	-1,335	1,126
Total comprehensive income	KRW 1 million	34,018	9,584	32,511
Ratio of net income to net sales	%	3.5	2.5	6.6
Net Worth Turnover Ratio	%	196.5	184.3	176.2

### R&D Investments

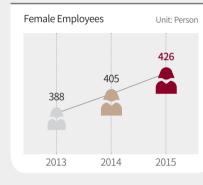
Classification	Unit	2013	2014	2015
R&D expenses	KRW 1 million	9,316	9,152	6,945
Ratio of R&D expenses to sales	%	2.1	2.1	1.5

### Registration of Intellectual Property Rights

Classification	Unit	2013	2014	2015
Patents (utility models)	ea.	8	8	12
Trademark rights	ea.	34	36	45
Copyright (program registration)	ea.	255	299	327
Total	ea.	297	343	384

\* Intellectual property data is cumulative.







Number of Displaced Workers Unit: Person

25

2014

27

2013

2014 2015





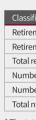
### Employees Classif

Emplo

type

Regio

Gende Minorit



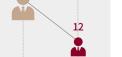
# Wages of New Employees Compared to the Minimum Wages

Classif Statute Wages Wages Ratio ( Ratio (

# Number of New Hires and Displaced Workers (retirees)

Classif Total n Numbe new hi





Ratio o 2015



### A Promise for a Better Future A Leader in National Spatial Information Growing with the Trust of the People Appendix

# Society

ification		Unit	2013	2014	2015
oyment	Executives	person	5	5	5
	Regular workers	person	3,663	3,663	3,669
	Unlimited contract workers	person	82	98	120
	Non-regular workers	person	115	187	209
	Total	person	203	210	224
onal	Headquarters	person	28	25	31
-	Central Training Center	person	61	70	61
	Researchers	person	426	430	439
	Regional Headquarters	person	3,147	3,218	3,248
	District Office	person	388	405	426
	Total	person	34	43	48
er	Female employees	person	388	405	426
	Female managers	person	34	43	48
rities	People with disabilities	person	123	128	125
	Veterans	person	121	128	133

### Retirement Pension System

ification	Unit	2013	2014	2015
ement pension amount (DB)	KRW 1 million	105,105	122,145	135,651
ement pension amount (DC)	KRW 1 million	4,349	10,237	15,408
retirement pension amount	KRW 1 million	109,454	132,382	151,059
ber of subscribers (DB)	person	3,577	3,653	3,971
ber of subscribers (DC)	person	67	134	186
number of subscribers	person	3,644	3,787	4,157

\* The total number of subscribers may be different from the number of employees due to retirement of some employees and changes in the system.

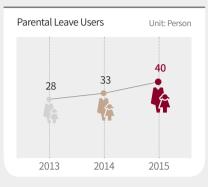
ification	Unit	Details	Remarks
tory minimum wages	KRW	6,030	as of 2016
s of new employees (male)	KRW	12,350	
s of new employees (female)	KRW	12,350	
(male)	%	205	
(female)	%	205	

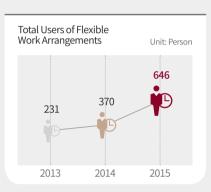
fication			Unit	2013	2014	2015
number of e	mployees		person	3,668	3,668	3,674
per of	Gender	Male	person	81	80	77
nires		Female	person	28	24	26
	Local employees	Non-metropolitan local employees	person	68	64	49
		Metropolitan local employees	person	41	40	54
	Total		person	109	104	103
of newly employed workers		%	3.0	2.8	2.8	
per of displaced workers (retirees)		person	27	25	12	
ofdisplaced	workers (retiree	s)	%	0.7	0.7	0.3

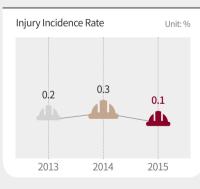
### Use of Parental Leave

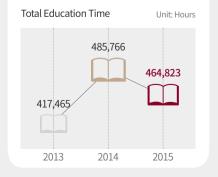
Female

Total









56

### Classificatio Unit Parental Male person 2 3 leave Female person 28 31 37 users Total 33 person 28 40 Percentage of person Classification Persons who used parental leave Persons who were still employed 6 months after the end of parental leave n to work afte Male 100 3 3

Current Status	of Flexible	Work Arrang	ements

42

45

Classification		Unit	2013	2014	2015
Part-time workers		person	12	7	10
Flexible work arrangements	Flex-time	person	206	355	529
	Flexible working hours	person	7	2	94
	Smart work	person	6	6	13

42

45

100

100

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

Classification	Unit	2013	2014	2015
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	2013	2014	2015
Injury incidence rate	%	0.2	0.3	0.1
Number of fatalities	person	-	-	-

### Proportion of Employees Subject to Performance Evaluation

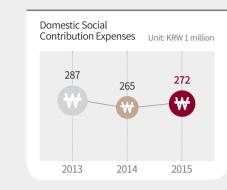
Classification	Unit	2013	2014	2015
Total number of employees	person	3,663	3,663	3,669
Number of evaluated employees	person	3,663	3,663	3,669
Proportion of performance evaluation	%	100	100	100

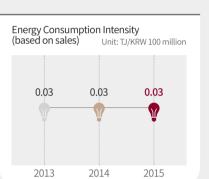
### Average Education Time per Employee

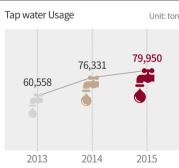
Classification	Unit	2013	2014	2015
Total number of employees	person	3,663	3,663	3,669
Total education time	Hours	417,465	485,766	464,823
Education time per person	Hours	114	133	127

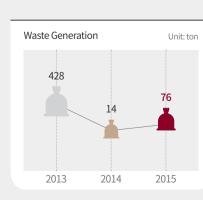
The Ratio of the Basic Salary and Remuneration Female Workers to Those of Male Workers (by type of worker)

Classification		Unit	2013	2014	2015
Executives	The ratio of the basic salary of females to that of males	%	100	100	100
	The ratio of the total remuneration of females to those of males	%	100	100	100
Employees	The ratio of the basic salary of females to that of males	%	91	91	91
	The ratio of the total remuneration of females to those of males	%	91	91	91

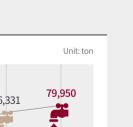














Classif

Direct Indired Total Direct (Scope Indirect (Scope 2

### Amount of Local Product Purchase

Classification	Unit	2013	2014	2015
Total purchase amount*	KRW 1 million	75,791	55,556	50,835
Reinforcing the competitiveness	KRW 1 million	68,482	50,242	40,450
Technology development	KRW 1 million	2,835	716	529
Enterprises of females	KRW 1 million	3,457	6,565	4,663
Social enterprises	KRW 1 million	274	436	1,152
People with Severe Disabilities	KRW 1 million	613	357	407
Self-support village for disabled veterans	KRW 1 million	21	15	41

\* Total purchase amount: Individual expenses are overlapped.

### Social Contribution Expenses

Classification		Unit	2013	2014	2015
Disbursement	Social contribution operating expenses, etc. (indirect cost)	kpenses, etc. KRW		-	-
method	Donations, etc. (direct cost)	KRW	407,355,300	265,143,440	271,932,880
Location of	Domestic social contribution expenses	KRW	287,355,300	265,143,440	271,932,880
disbursement	Overseas social contribution expenses	KRW	120,000,000	-	-
Disbursement	Cash	KRW	374,377,000	221,226,490	228,309,000
type	In-kind	KRW	32,978,300	43,916,950	43,623,880
Total		KRW	407,355,300	265,143,440	271,932,880

### Environment

### Energy Consumption and Energy Intensity

Classification	Unit	2013	2014	2015	Remarks
Diesel	TJ	34.15	34.75	46.32	
Gas (LNG)	TJ	6.82	6.11	17.39	
Gas (LPG)	TJ	0.10	0.26	0.14	
White kerosene	TJ	9.91	10.02	7.36	
Gasoline	TJ	2.27	2.07	2.05	
Power	TJ	69.91	67.35	80.96	
Other	TJ	4.37	2.46	1.95	
Total	TJ	127.53	123.02	156.17	
Energy consumption intensity	TJ/ KRW 100 million	0.03	0.03	0.03	Based on sales

### Water usage by Source

ification	Unit	2013	2014	2015	Remarks
vater	ton	60,558	76,331	79,950	

### Greenhouse Gas Emissions and Greenhouse Gas Intensity

ification	Unit	2013	2014	2015	Remarks
t greenhouse gas emissions (Scope 1)	tCO <sub>2</sub> e	3,578	3,575	4,788	
ect greenhouse gas emissions (Scope 2)	tCO <sub>2</sub> e	3,687	3,489	4,194	
	tCO <sub>2</sub> e	7,265	7,064	8,982	
t greenhouse gas emissions intensity pe 1)	tCO <sub>2</sub> e/ KRW 100 million	0.80	0.82	1.01	Based on sales
ect greenhouse gas emissions intensity pe 2)	tCO <sub>2</sub> e/ KRW 100 million	0.83	0.80	0.89	Based on sales

### Waste Generation by Type

ification	Unit	2013	2014	2015	Remarks
ral waste	ton	350	14	76	
fied waste	ton	78	-	-	
	ton	428	14	76	

# **GRI Index**

### **General Standard Disclosures**

Indicators	Description of the Indicators	ISO 26000	UN SDGs	Page / Remarks
Strategy and	l Analysis			
G4-1	CEO Message			4-5
G4-2	Description of key impacts, risks, and opportunities	4.7, 6.2, 7.4.2		4-5, 20-21
Company Pr	rofile			
G4-3	Name of the organization			6
G4-4	Primary brands, products, and/or services			6
G4-5	Location of organization's headquarters			6
	The number of countries where the organization operates, and names of countries where either the organization has			
G4-6	significant op erations or that are specifically relevant to the sustainability topics covered in the report			28-31
G4-7	Nature of ownership and legal form			6
G4-8	Markets served (region-specific, business area, customer/beneficiary type)			7
G4-9	Scale of the reporting organization	6.3.10,		55
G4-10	Total workforce by employment type, employment contract, and region	6.4.1-6.4.5,	SDG.08	55
G4-11	Percentage of employees covered by collective bargaining agreements	6.8.5, 7.8		55
G4-12	Major features of the supply chain related to major activities, products and services of the organization reported			39-41
G4-13	Significant changes during the reporting period regarding size, structure, or ownership			6
G4-14	Whether and how the precautionary approach or principle is addressed by the organization			36-38
G4-15	Externally developed economic, environmental, and social charters, principles, or other initiatives to which the organization subscribes or endorses			10-11, 58-59
G4-16	Memberships in associations (such as industry associations) and/or national/international advocacy organizations in which the organization			10-11
Aspects of M	lateriality and Boundaries Identified			
G4-17	Operational structure of the organization covering major departments, companies in operation, subsidiaries, and joint ventures			6
G4-18	Process for defining report content			2
G4-19	The aspect of materiality identified in the process of defining the content reported			14-15
G4-20	Boundary of the internal report (e.g. nation, business department, subsidiary, leased facility, joint venture, supplier)			14-15
G4-21	Boundary of the external report (e.g. nation, business department, subsidiary, leased facility, joint venture, supplier)	5.2,		14-15
G4-22	Explanation of the effect of any re-statements of information provided in earlier reports, and the reasons for such re-statement	7.3.2-7.3.4		No significant change
G4-23	Significant changes in the scope, boundary, or measurement methods applied in the report			from the previous report No significant change
C				from the previous report
	Engagement			10.10
G4-24 G4-25	List of stakeholder groups engaged by the organization			12-13
G4-25 G4-26	Basis for identification and selection of stakeholders with whom to engage	5.2		12-13
G4-26	Approaches to stakeholder engagement, including frequency of engagement by type and by stakeholder group	5.3		12-13
G4-27	Key topics and concerns that have been raised through stakeholder engagement, and how the organization has responded to those key topics and concerns			14-15
Report Profi	le			
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G4-29	Date of most recent previous report	750		2
G4-30	Reporting cycle	7.5.3, 7.6.2		2
G4-31	Contacts for questions regarding the report or its contents	1.0.2		2
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G4-34	Governance structure of the organization	6.2, 7.4.3		18-19
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# Specific Standard Disclosures

### Economics

Indicators	Description of the Indicators	ISO 26000	UN SDGs	Page / Remarks	
Indirect Econ	Indirect Economic Effects DMA (Disclosures on Management Approach)				
G4-EC7	Development and impact of infrastructure investments and services provided primarily for public benefit	6.3.9, 6.8.1-6.8.2, 6.8.7, 6.8.9	SDG.02, SDG.03	20-33	
G4-EC8	Indirect economic impacts	6.3.9, 6.6.6-6.6.7, 6.7.8, 6.8.1-6.8.2, 6.8.5, 6.8.7, 6.8.9	SDG.10	20-33, 39-41, 46-47	
Procurement Practices DMA (Disclosures on Management Approach)					
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### Environments

Indicators	Description of the Indicators	ISO 26000	UN SDGs	Page / Remarks			
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G4-EN3	Direct energy consumption within the organization	6.5.4		57			
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### Labor

Indicators	Description of the Indicators	ISO 26000	UN SDGs	Page / Remarks
Employme	mployment DMA (Disclosures on Management Approach)			
G4-LA1	Total number and rates of new employee hires and employee turnover by age group, gender, and region	6.4.3	SDG.08	55
G4-LA2	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by significant locations of operation	6.4.4, 6.8.7		48-50
G4-LA3	Return to work and retention rates after parental leave, by gender	6.4.4		56
Labor/Mana	agement Relations DMA (Disclosures on Management Approach)			48
G4-LA4	Minimum notice periods regarding operational changes, including whether these are specified in collective agreements	6.4.3, 6.4.5		51
Occupation	al Health and Safety DMA (Disclosures on Management Approach)			48
G4-LA5	Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programs	6.4.6		56
G4-LA6	Type of injury and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities, by region and by gender	6.4.6, 6.8.8		56
G4-LA8	Health and safety topics covered in formal agreements with trade unions	6.4.6		56
Training an	d Education DMA (Disclosures on Management Approach)			48
G4-LA9	Average hours of training per year per employee, by gender, and by employee category	6.4.7		56
G4-LA10	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings	6.4.7, 6.8.5		50
G4-LA11	Percentage of employees receiving regular performance and career development reviews, by gender and by employee category	6.4.7		56
Diversity an	d Equal Opportunity DMA (Disclosures on Management Approach)			48
G4-LA12	Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity	6.2.3, 6.3.7, 6.3.10, 6.4.3	SDG.05	55
Equal Remu	Equal Remuneration for Women and Men DMA (Disclosures on Management Approach)			48
G4-LA13	Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation	6.3.7, 6.3.10, 6.4.3, 6.4.4		55

### Society

Indicators	Description of the Indicators	ISO 26000	UN SDGs	Page / Remarks
Communitie	Communities DMA (Disclosures on Management Approach)			
G4-S01	Percentage of operations with implemented local community engagement, impact assessments, and development programs	6.3.9, 6.5.1-6.5.3, 6.8	SDG.04, SDG.16, SDG.17	100%
G4-SO2	Operations with significant actual and potential negative impacts on local communities	6.3.9, 6.5.3, 6.8	SDG.04, SDG.16, SDG.17	Not related
Anti-corrupt	Anti-corruption DMA (Disclosures on Management Approach)			36
G4-SO3	Total number and percentage of operations assessed for risks related to corruption and the significant risks identified	6.6.1-6.6.3		37
G4-SO4	Communication and training on anti-corruption policies and procedures	6.6.1-6.6.3, 6.6.6		37

### Product Responsibility

Indicators	Description of the Indicators	ISO 26000	UN SDGs	Page / Remarks
Customer He	Customer Health and Safety DMA (Disclosures on Management Approach)			42
G4-PR1	Percentage of significant products and services categories for which health and safety impacts are assessed for improvement	6.7.1-6.7.2, 6.7.4-6.7.5, 6.8.8		20-21
G4-PR2	Total number of incidents of non-compliance with regulations and voluntary codes concerning the health and safety impacts of products and services during their life cycle, by type of outcomes	4.6, 6.7.1-6.7.2, 6.7.4-6.7.5, 6.8.8		No violations of the relevant regulations
Product and	Service Labeling DMA (Disclosures on Management Approach)			42
G4-PR5	Results of surveys measuring customer satisfaction	3.7.1-6.7.2, 6.7.6		43
Marketing D	MA (Disclosures on Management Approach)			42
G4-PR6	Sale of banned or disputes products	-	SDG.12	Not related
G4-PR7	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship, by type of outcomes	4.6, 6.7.1-6.7.3		No violations of the relevant regulations
Customer Pr	Customer Privacy DMA (Disclosures on Management Approach)			
G4-PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data	6.7.1-6.7.2, 6.7.7		44
Regulations	Regulations DMA (Disclosures on Management Approach)			
G4-PR9	onetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services	4.6, 6.7.1-6.7.2, 6.7.6		No violations of the relevant regulations

# **Third-Party Verification Statement**

Verification Statement of Korea Land and Geospatial InformatiX Corporation 2016 Sustainability Report

### Preface

KFO have been engaged by Korea Land and Geospatial InformatiX Corporation (Hereinafter 'LX') to perform an independent assurance in regard to the following aspects of this Sustainability Report (Hereinafter 'the Report'). LX has responsibility to establish compilation criteria including content of this Report and KFQ's responsibility is to provide a verification conclusion of LX.

### Independence

KFQ was not involved in the preparation of any part of the Report, other than providing a verification opinion, and there has been no conflict of interest between LX and KFO. Further to this KFO has no biased opinion on stakeholders of LX.

### **Verification Standards**

Assurance/verification standards

- AA 1000 Assurance Standard 2008
- AA 1000 Accountability Principles Standard 2008
- GRI G4.0 Sustainability Reporting Guidelines
- ISO 26000, UNGC: Social Responsibility Standard

### Verification Scope

The followings are included in the scope of this verification.

• Report sustainability performances and activities in relation to headquarter, spatial information research institute, land and geospatial informatics education institute, 12 regional headquarter and 176 district office of LX.

- Application of GRI 4.0 Core option for the Report preparation.
- GRI G4.0 Compliance assessment regarding contents of the Report and assurance principles of reporting quality.
- Application of Type 1 verification approach according to AA 1000 and AA1000 AS 2008 to assess compliance with inclusiveness, materiality and responsiveness principles and reliability of sustainability performance information.

• The term 'Moderate Assurance' used in AA1000AS is designed to be consistent with 'Limited assurance' as articulated in ISAE 3000. Our assurance is a Type I assurance engagement as defined in the Guidance for AA1000AS.

• Core subjects in ISO 26000, UNGC

### Verification Procedure

KFQ considered the procedures to achieve reasonable assurance of any apparent misstatements or material inconsistencies with the sustainability information, as well as internal process and system of data collection to have reliability of sustainability performance information provided in the Report.

### Desk Review

KFQ has performed GAP analysis of key issues and sustainability performance information provided in the Report against GRI guidelines and information acquired through media survey. With regard to the financial data included in the Report, our procedures were limited to verifying that they were correctly derived from the LX's audited 2016 statement of accounts for the first half year.

### Site Visit

KFQ visited LX headquarters to understand and assess the systems and processes in place for managing and reporting the sustainability data. KFQ Reviewed internal documents selected under sampling technique considering materiality and interviewed with interested person to confirm contents of the Report. Also, KFQ closely reviewed LX internal data controlling system and the Report compilation process.

### Resolution of Findings

KFQ Reviewed the final report to check the errors and issues identified during above process to provide correct and reliable sustainability performance information, and conducted an independent assessment of the Report in relation to GRI Guidelines.

Consideration and Limitation

# Verification Opinion

Based in the verification activity stated herein, KFQ confirmed that this Report meets the GRI G4.0 'Core' option. According to the three principles of AA 1000 AS, namely, inclusiveness, materiality and responsiveness, sustainability performance information was assessed and KFQ could secure reasonable evidences to provide Type 1 level of assurance through followings.

- activities

### **Recommendation for Improvement**

KFQ expect that LX will carry forward detail goal development to reach the visible economy performance in section "the elicitation of sustainable future growth engines and the expansion global market, a material sustainability issue of stakeholders."

### **Competence of Verification Team**

KFQ has been performing various verifications tasks, and has qualifications to perform independent verification activity. KFQ's verification team for LX 2016 Sustainability Report is comprised of competent experts, who have in-depth experiences in sustainable management and its verification.



Completeness and responsiveness of sustainability performance information reported in the Report are subject to inherent limitation due to their nature and the methodology used determining, calculating and estimating such data.

1. LX has defined stakeholders related to the major issues of sustainable management. To hear any concerns and opinions from them, LX has a customized communication channel of diverse stakeholder and reflected it LX's business strategy and intensify sustainable management

2. According to the materiality test process, LX identified most relevant and significant sustainability issues then pool it in groups. Those issues were finally grouped as 10 major issues based on stakeholder survey, media analysis and opinion of external specialist.

3. LX has included in the Report its response to the material sustainability issues that were identified through material analysis process. LX responded properly with coherent actions and concerned active response to their sustainability management work.

> November 2016 Seoul, South Korea.

Daehyun Nam

CEO Nam, Dae-hyun Korean Foundation for Quality (KFQ)

# LX, Connecting Space and People

LX Korea Land and Geospatial InformatiX Corporation 2016 Sustainability Report

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