COMPANY PROFILE

Renewable Energy Management I Agriculture ICT I IoT System I Web/Mobile Application I SI Solution

ELSYS Elsys Co.,Ltd.

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(#211, Knowledge Industry Center, Jeonnam Technopark)
Research Center: 13, Yulchon Industrial Park 4-ro, Haeryong-myeon, Suncheon-si, Jeollanam-do
(#205, Knowledge Industry Center, Jeonnam Technopark)
Tel: 061)743-5333 **Fax**: 063)729-2925 **URL**: www.elsys.kr
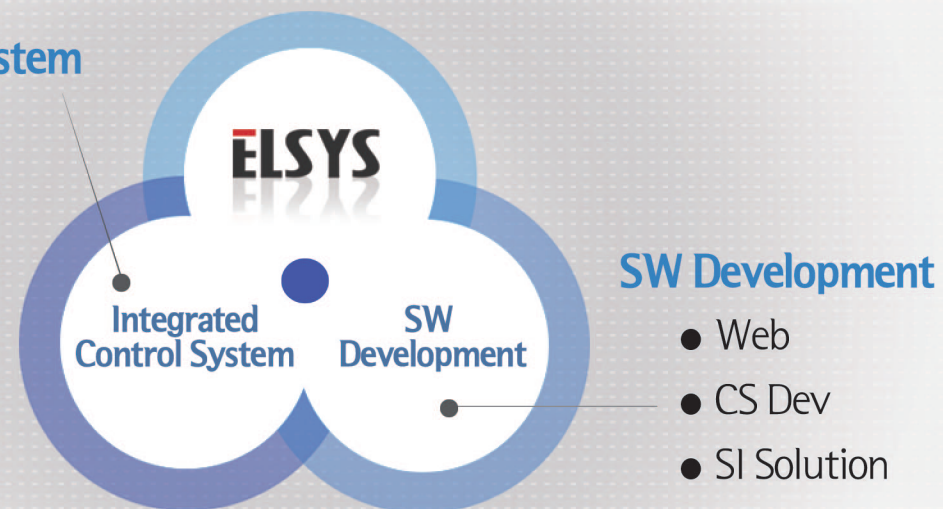
ELSYS Elsys Co.,Ltd.

■ Company Overview

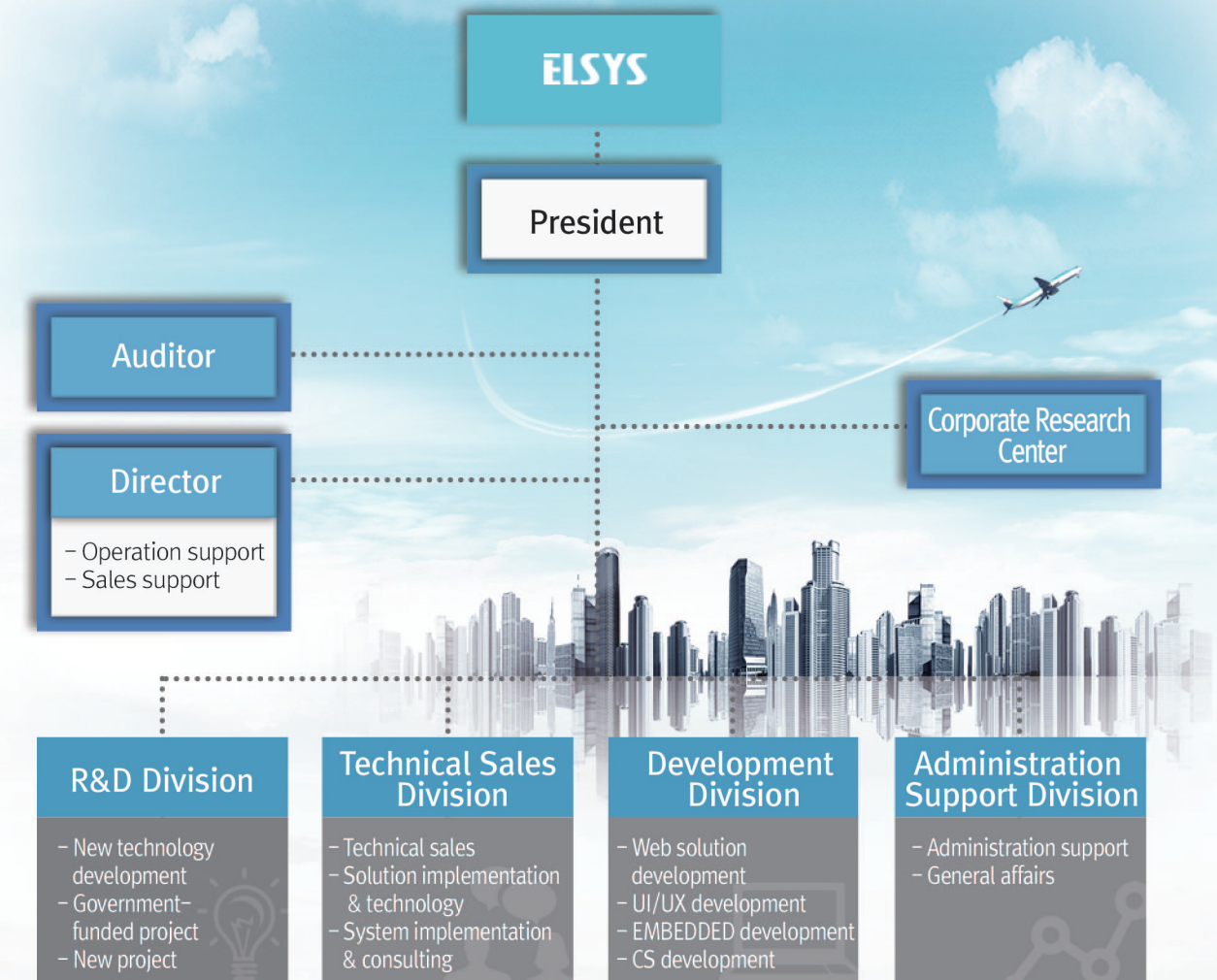| Company Name	Elsys Co., Ltd.
Location	13, Yulchonsandan 4-ro, Haeryong-myeon, Suncheon-si, Jeollanam-do(#211, Knowledge Industry Center, Jeonnam Technopark)
President	Yang Su-Yeong
Date of Establishment	September 13, 2005

ELSYS Elsys Co., Ltd.

■ Business Area

Integrated Control System

- Agriculture ICT
- Renewable Energy Management
- IoT System

ELSYS

Integrated Control System

SW Development

SW Development

- Web
- CS Dev
- SI Solution

■ Organization Chart

ELSYS

President

Auditor

Director
- Operation support
- Sales support

Corporate Research Center

R&D Division	Technical Sales Division	Development Division	Administration Support Division
- New technology development - Government-funded project - New project	- Technical sales - Solution implementation & technology - System implementation & consulting	- Web solution development - UI/UX development - EMBEDDED development - CS development	- Administration support - General affairs

■ Conporate Patents and Certifications

SW Operator, Information & Communication Operator	Venture Business Certificate	Corporate Research Center	INNO BIZ Certificate	Patent Registration (11 patent registrations, 26 patent applications)	3 GS Certifications	About 80 Program Registrations

■ History

2014
- Selected to carry out the project to build national DB for 2 consecutive year(NIA-Gangjin Goryeo Celadon DB)
  Patent registration : Method for detecting the error data in sensor network environment
- Patent registration : Water Harp device
- Patent registration : Power control system of electric cars
- GS certification : Renewable energy monitoring system

2013
- Selected for 2 projects to build the u-IT based systems(eradication of harmful animals, seaweed farming convergence model)
- Patent registration : Data collection system integrated with multi-sensors
- Patent registration : Wind turbine control system and method
- Patent registration : MODBUS communication encoding method and system
- GS certification : Kiosk type electronic guestbook

2012
- Registered the factory for direct production
- Obtained the direct production certification for premises broadcasting system
- Technology transfer for GS certification program (farming counseling record)
- Selected to supervise the project to build promotional hall for the International Garden Exposition Suncheon Bay Korea 2013

2011
- Obtained the direct production certification for CCTV
- Registered as subcontractor of ASIANA IDT
- Selected as the Start Corporation of Jeonnam Technopark
- Selected to carry out the project to build u-EXPO integrated information system for International Exposition Yeosu Korea and establish the IT infrastructure
- Patent registration : USN data integration management system using the poly-context

2010
- Awarded the prize from the President of Jeonnam Technopark
- Awarded the prize from SMBA in Gwangju, Jeonnam Registered as subcontractor of SK C&C
- GS certification: Cube Map View

2009
- Selected to carry out the pilot project for metropolitan economic zone(wind turbine control and monitoring system)
- Registered as ICT subcontractor of POSCO
- Selected as promising small and medium-sized enterprise of Jeollanam-do
- Registered the license for information & communication construction business
- Increased the capital(KRW 150 million)
- Patent registration : Surveillance system and control method

2008
- Awarded the commendation from the governor of Jeollanam-do
- Selected for technology innovation task by SMBA for 3 consecutive years(development of Cube3D World, etc)
  Participated in the u-IT pilot project of NIA (LSB-based
- u-Guiding Angel System, etc)
  Obtained INNO BIZ certification(Small and Medium Business
- Administration in Gwangju, Jeonnam)
  Obtained the direct production certification from Korea
- Software Cooperative
  Relocated the head office (Jeonnam Technopark)
- Established the corporate research center(3D Space Technol-
- ogy Research Institute)
  Obtained the venture business certification(Kibo)
- Registered the software business

2005
- Established Elsys Co., Ltd(September 2005)

■ Track Records

2014
- Developed the energy mix hybrid small complex smart farm
- Developed the system stand-alone SmartMicroGrid Operation Platform for IoT-based green energy self-reliant island
- Developed the augmented reality for realistic 3D visualization of outdoor structures
- Established the barcode system for raw materials in Gokseong factory/refinery factory, and developed the LCC

2013
- Developed the energy-saving plant factor system for cultivating special ginseng, which can reduce the growth cycle by more than 20%
- Developed the USN-based greenhouse integrated control system applying the greenhouse control system standards
- Developed aquatic eel farm integrated control system technology based on NFC(Near Field Communication)
- Produced user interaction-based 3 D imaging visualization interlocking system for remote monitoring of wind turbines
- Established harmful wild animal eradication system applying u-IT technology
- Established growth management system for Pungcheon eel applying u-IT technology
- Built the U-IT based convergence model for high quality seaweed farming
- Established the portal and DB for Goryeo celadon in Celadon Museum in Gangin-gun

2012
- Developed the multi-sensory realistic media experiential system for functional entertainment service
- Developed the open-end high functional standard IoT device and intelligent SW
- Developed low wind condition-based wind turbine system for the improvement of utilization rate
- Built the u-EXPO integrated information system and established IT infrastructure
- Built the new address data for emergency rescue standard system
- Produced the 3D contents related to root industry for stimulating robot ecosystem and promoting the convergence mindset
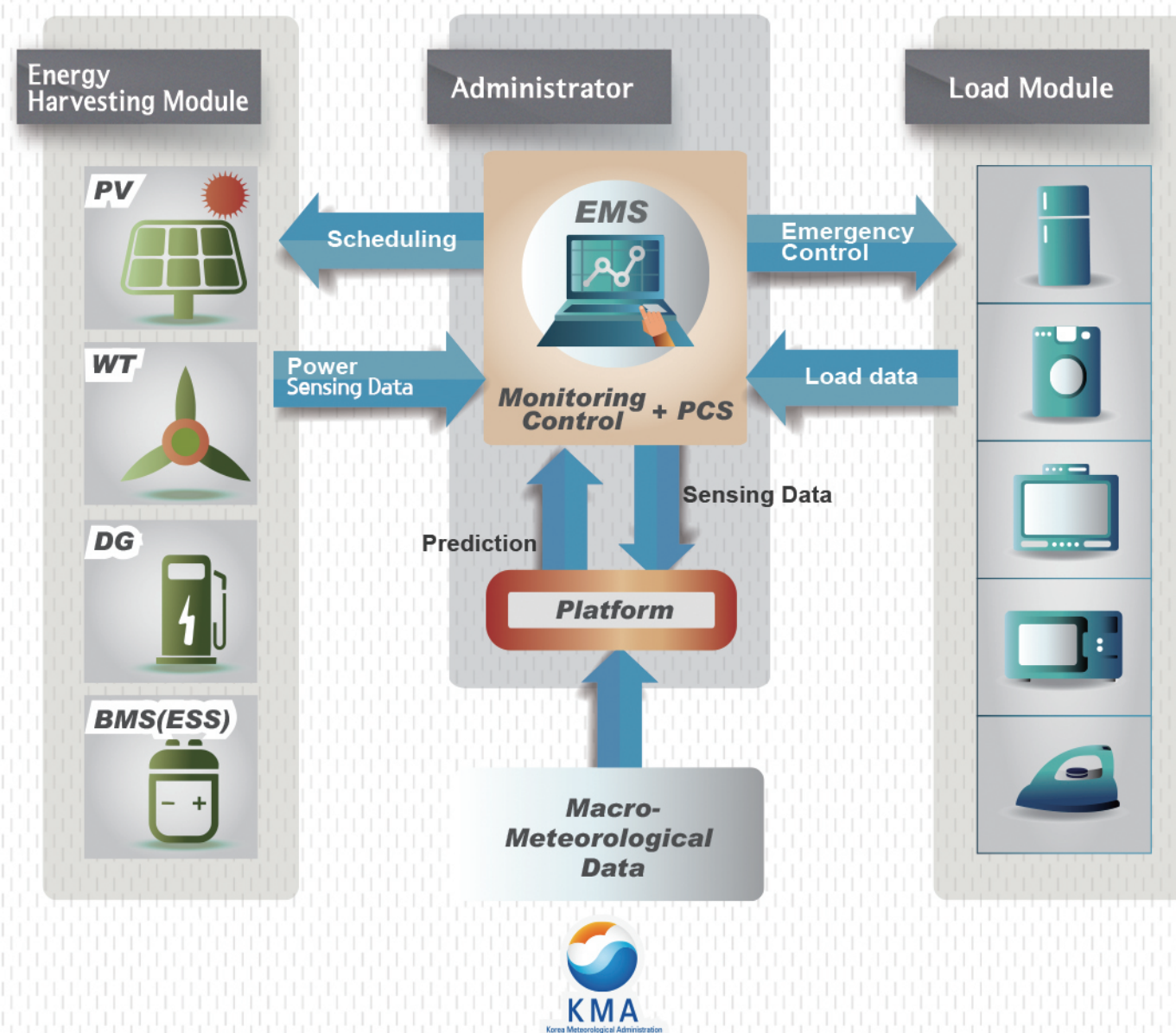- Developed the u-Farming integrated management & control system software

2011
- Designed the SCADA system for wind turbines and finalized test-bed development
- Developed the distribution type integrated environment S/W platform for supporting the establishment of urban type plant factory
- Established the promotional hall for the International Garden Exposition Suncheon Bay Korea 2013
- Constructed the website for greater web access of the disabled and conformity to web standards
- Built the QR management system

2010
- Developed rapid charging system applicable to both automobiles and commercial electric cars
- Developed the 3D GIS-based simulation system analyzing the optimal site for solar photovoltaic power generation
- Developed the system guiding the exhibited objects using the ZigBee
- Established the island management system for Jeollanam-do
- Built the mobile website of Gwangyang City on smartphone platform

2009
- Developed the technology for mutual cooperation distance measurement of moving objects & the location-based u-Tour system for group tourists
- Developed the MW-class wind turbine output control and operation system
- Carried out the project to build the metropolitan bus information system(BIS) based on Suncheon-Gwangyang axis
- Built the 3D integrated monitoring system for u-City

2008
- Selected to carry out the technical innovation task by SMBA for 3 consecutive years
  – Development of Cube3D World
  – Development of underground facility management system using the Cube3D World
  – Development of Cube3D World-based urban planning support system
- Participated in the u-IT pilot project led by NIA
  – LBS-based u-guiding angle system
  – Eco-friendly agricultural product history management system using the RFID

2005

Stand-Alone SmartMicroGrid Operating Platform
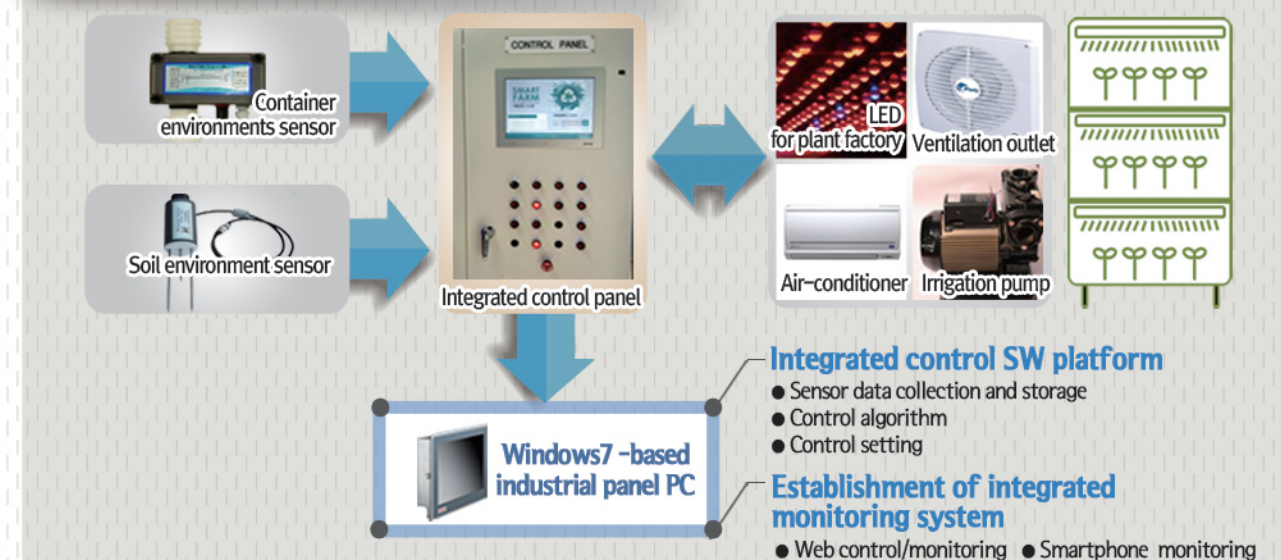## for Green Energy Self-Sufficient Island

The modular system that can accommodate the various market environments
The scalable system that can interlock with various renewable energy device
Smart energy management system by big data analysis using IoT technology
Software-centered operating platform considering load amount.

Energy Harvesting Module
- PV
- WT
- DG
- BMS(ESS)

Administrator
- EMS
- Scheduling
- Power Sensing Data
- Monitoring Control + PCS
- Prediction
- Platform
- Macro-Meteorological Data

Load Module
- Emergency Control
- Load data
- Sensing Data

KMA
Korea Meteorological Administration

IoT Tech Based
Ginseng Bud SmartFarm Factory

Ginseng Bud Smart farm factory is system providing optimal growth environment created by IoT-based application technologies, such as growth environment monitoring for Ginseng bud, a high value-added crop, automatic facility control, remote operation and management, etc. Even ordinary people can easily cultivate ginseng and produce clean functional agricultural well-being food even without expertise.
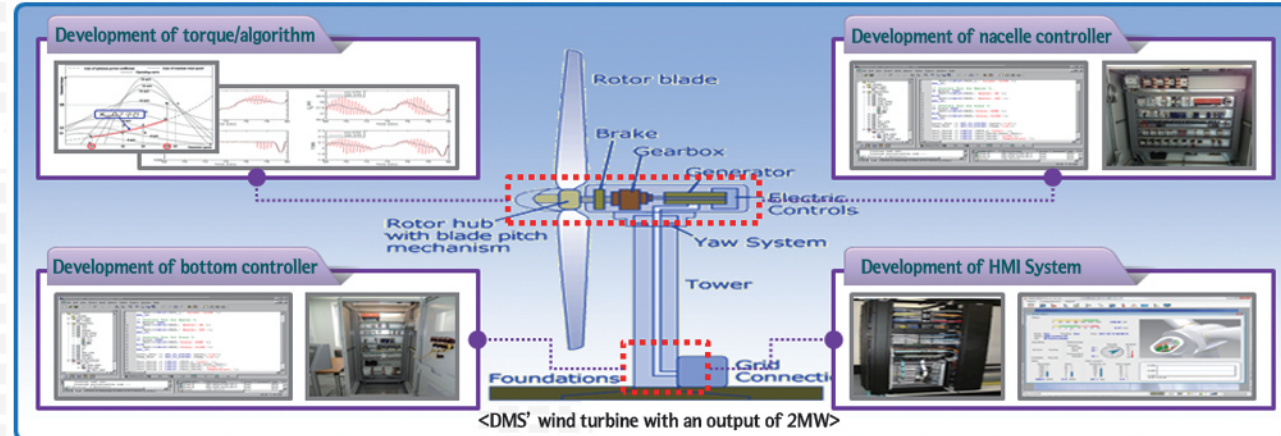
Smart farm factory system configuration diagram

- Container environments sensor
- Soil environment sensor
- CONTROL PANEL
- Integrated control panel
- LED for plant factory
- Ventilation outlet
- Air-conditioner
- Irrigation pump
- Windows7 -based industrial panel PC

Integrated control SW platform
- Sensor data collection and storage
- Control algorithm
- Control setting

Establishment of integrated monitoring system
- Web control/monitoring
- Smartphone monitoring

Mobile container

IoT technology-based automatic control

Optimal growth environment

Integrated Control System

Renewable Energy Management

Renewable energy management system for reducing the greenhouse gas emissions and environmental contamination through green technology and clean energy
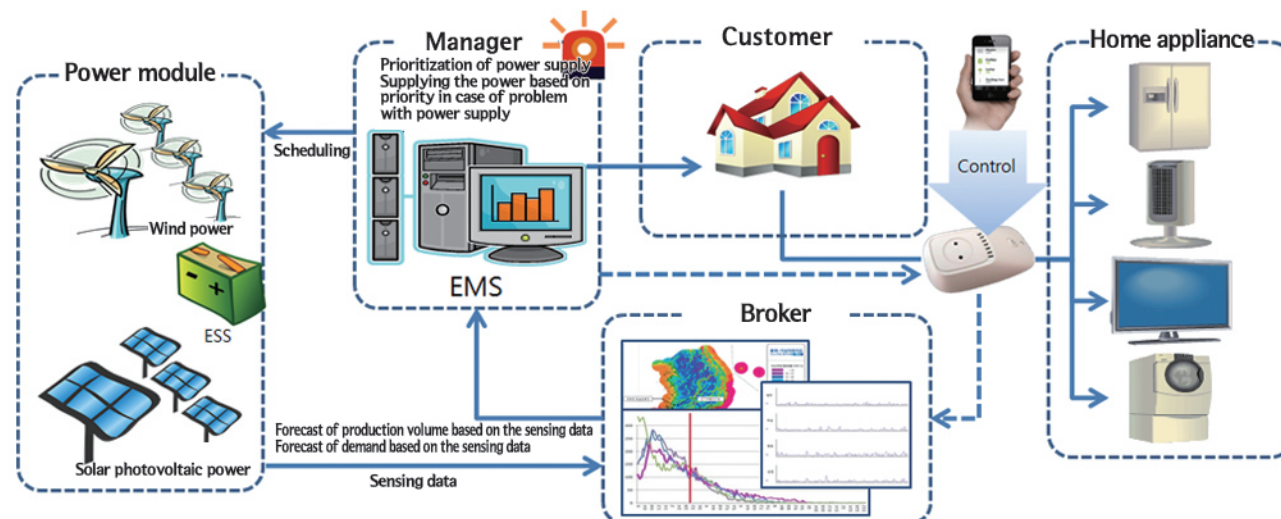

Development of torque/algorithm
Development of nacelle controller
Development of bottom controller
Development of HMI System

Rotor blade
Brake Gearbox
Generator
Electric Controls
Rotor hub with blade pitch mechanism
Yaw System
Tower
Foundations
Grid Connection

<DMS' wind turbine with an output of 2MW>

Agricultural ICT(container type plant factory)

Agricultural ICT system stimulating the smart agriculture based on the 6th industrialization of agriculture, high-tech production, efficient distribution, and technological innovation
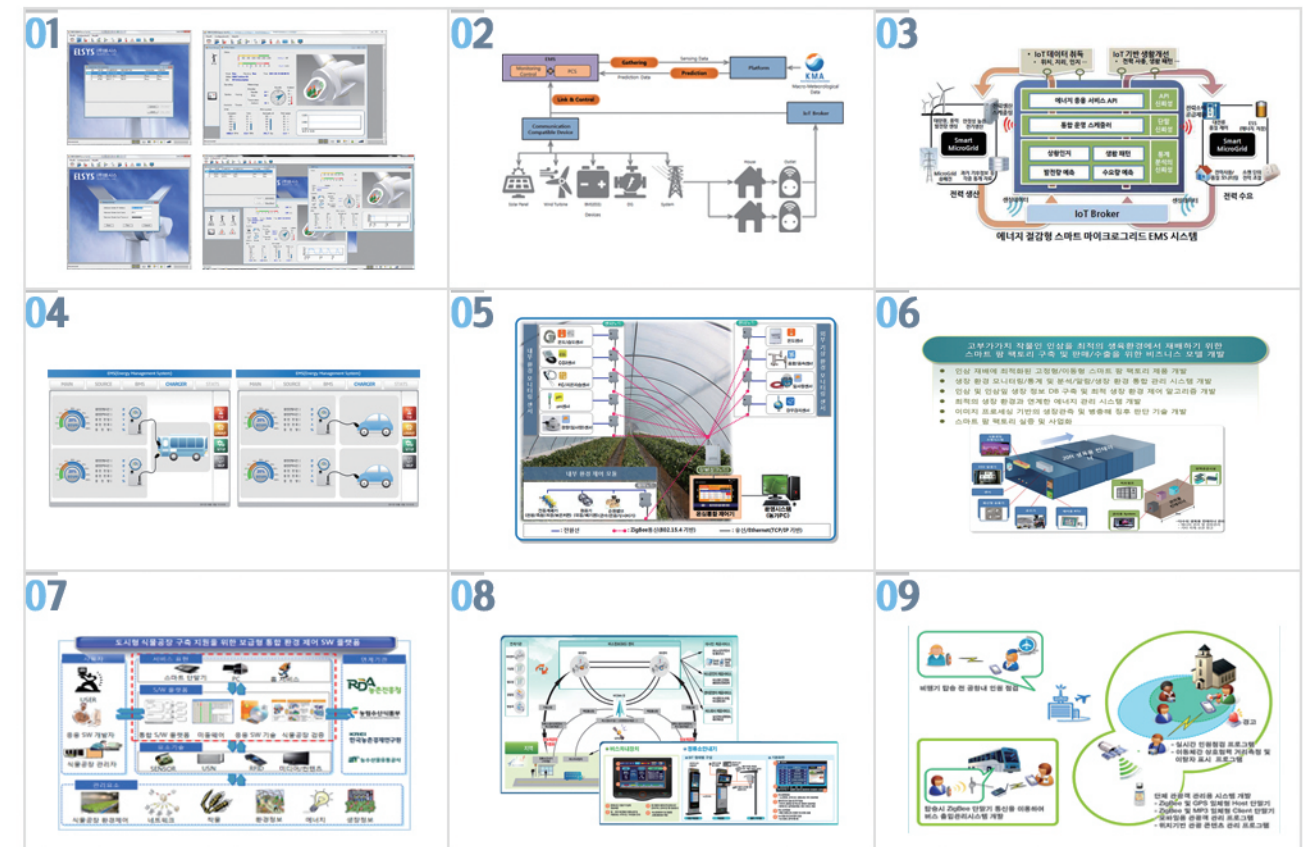

IoT System(Energy-saving SmartMicroGrid EMS)

Internet of Things(IoT/M2M) system opening up the world connected via internet through cloud, big data, smart device, and sensor network

Power module
Wind power
ESS
Solar photovoltaic power
Scheduling
Manager
Prioritization of power supply Supplying the power based on priority in case of problem with power supply
EMS
Broker
Forecast of production volume based on the sensing data
Forecast of demand based on the sensing data
Sensing data
Customer
Control
Home appliance

Integrated Control System Area

01 Wind Turbine Output Control & Monitoring S/W
SCADA(Supervisory Control and Data Acquisition) system and CMS(Condition Monitoring System), the most essential core operation technology for wind farms that take efficient and stable operation as top priority

02 IoT-based SmartMicroGrid Operation Platform
Integrated control platform form intelligent power control based on thorough analysis by applying the IoT technology to ensure efficient power generation and proper load control for regions not connected to the system

03 Energy-saving Smart Micro Grid EMS
Developing and building various solutions, like building integrated monitoring and management system that applies sensor and ZigBee communication

04 Rapid Charging System for Both Automobiles and Commercial Electric Cars
180kW rapid charging system based on dynamic parallel method applying the differentiated micro grid technology and high integration technology based on automobile and renewable energy industries

05 USN-based Greenhouse Integrated Control System
USN-based greenhouse integrated control system applying the greenhouse control system standards, ensuring high quality products, production volume expansion, cost-saving, easy installation and scalability, and high reliability support in 'high value-added' facility cultivation industry

06 Container Type Plat Factory
A system to build the smart farm for cultivating the crops in optimal growth environment, and to collect the crop growth information and ensure efficient control, management, and operation of major components of farm factory

07 Distribution Type Integrated Environment Control SW Platform for Supporting the Establishment of Urban type Plant Factory
Component-based environment control SW Platform for the control, management, and operation of various sensors and efficient energy control in plant factory and processing the information related to the growth of crops

08 Bus Information System/GIS-based Control System
State-of-art system enabling the user to figure out the operations of bus in real-time via internet, mobile devices, GPS and wireless communication network (WCDMA) installed on bus

09 Location-based u-Tour System
The system enabling effective management of group tourists based on mutual cooperation distance measurement technology applying the ubiquitous technology and GPS

■ SW Development

◯ Web/CS Development

Web Program, C/S Program Development and GIS Program Development

- Integrated information system(web portal, mobile, work management system)
- Web application program development (control program, QRMS, VR–BOOK, etc)
- C/S program(USN integrated control, RFID history management)
- GIS application program(electronic drawing viewing system, sewage management system, etc)

◯ Implementation of Solutions

Personal Information Blocking, Web Mail System, Mail/Document/ Mobile Security DB Encoding

- Personal information blocking solution(website, PC, server)
- CMS(Contents Management System)
- Spam mail blocking, mail distribution management, document security, mobile security solution
- DB access control, DB encoding solution

◯ System Integration and Consulting

Server System, Network System, Security Equipment Establishment & Consulting

- Server(IBM, HP) and network(CISCO) system integration & maintenance
- Network firewall, web firewall, network control(NAC) system establishment & consulting

◯ System Development Area

01 Website Construction
- Construction of integrated webpage and mobile website, reactive website, web access mark acquisition

02 History Management System Using the RFID
- Processing, managing, and controlling the information collected from temperature, humidity, soil, luminance sensors / managing the agricultural products by using the RFID

03 USN Solution
- Development and establishment of various solutions, such as integrated monitoring and management system establishment using the sensor and ZigBee communication

04 Integrated Lecture Management System
- Managing the lecture and organization information comprehensively, such as organization information management, instructor management, lecture management, lecture course offering management, etc., & providing the statistics

05 QRMS(QR Code Management System)
- Customized to the concerned areas that users want to apply by providing various categories for more useful and universal QR code and management,

06 Personal Information Blocking(Website, Server, PC)
- Detecting and blocking the personal information existing on website bulletins, files in server, and personal information stored on DB and PC

07 Mail/Document/Mobile Security
- Spam mail blocking, outgoing mail security, mail archiving solution & security web-hard, mobile conference, enterprise automatic backup solution
- Integrated mobile device security solution, such as management and application security for mobile devices and application distribution, etc

08 DB Encoding/DB Access Control
- User access control and network-based DB access control for the encoding field by security manager

09 System Integration & Consulting
- Establishment and maintenance of server(IBM, HP) and network(CISCO) system integration
- Establishment and consulting the network firewall, web firewall and network control system