iC 9

Intellectual Capital for Communities
In the Knowledge Economy

Mobility: The Next Frontier for Work

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- B.E. in Industrial Engineering, Seoul National University
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-
- Published research papers in Industrial Management and Data Systems, Computers in Industry, Journal of Intelligent Information Systems, European Journal of Applied Mathematics, Asia Pacific Management Review, International Journal of Information Technology and Decision Making, International Journal of Global Business and Technology, International Journal of Management Digest, Management Insight, Journal of Contemporary Management, Journal of IT Applications and Management, etc.
- Provided consulting and advices to Korean government, KISDI, KT, SK, POSCO, Sun Microsystems Korea, Microsoft Korea, LG, and Samsung.
- Research interest: Technology planning, Digital Convergence, Mobility at work, Strategic alignment of IT and Knowledge, IT industry policy.

Books Published

- The Use of Smart Mobile Equipment for the Innovation In Organizational Coordination, Springer, 2012
- Electronic Supply Network Coordination in Intelligent And Dynamic Environment, Business Science Reference, IGI Global, 2010 (with Dr. Mahdavi & Mohebbi)
- Technology Planning and Roadmapping (in Korean) (to be published in 2013 by Sigma Press)
- Reformation of Economic Structure in the Age of Digital Convergence (in Korean), Korea Information Society Development Institute, 2011
- Management Information Systems: Realizing Strategic Vision (in Korean), SciTech Media, 2010

1. Introduction

2. Mobility in Private Sector

3. Mobility in Public Sector

4. Conclusion

Increase in uncertainty & Speed of Market Change

Improved technological Smartness & Mobility

Corporate use of Mobile office systems

Growth of Korean Mobile Office Market

Mobile Office Systems (MOS)

- **MOS consist of devices, networks, platforms, and applications.**

- **MOS allows employees to use their portable devices such as smart phones to access corporate information systems outside of their offices.**

Functions of Mobile office system

Basic Functions

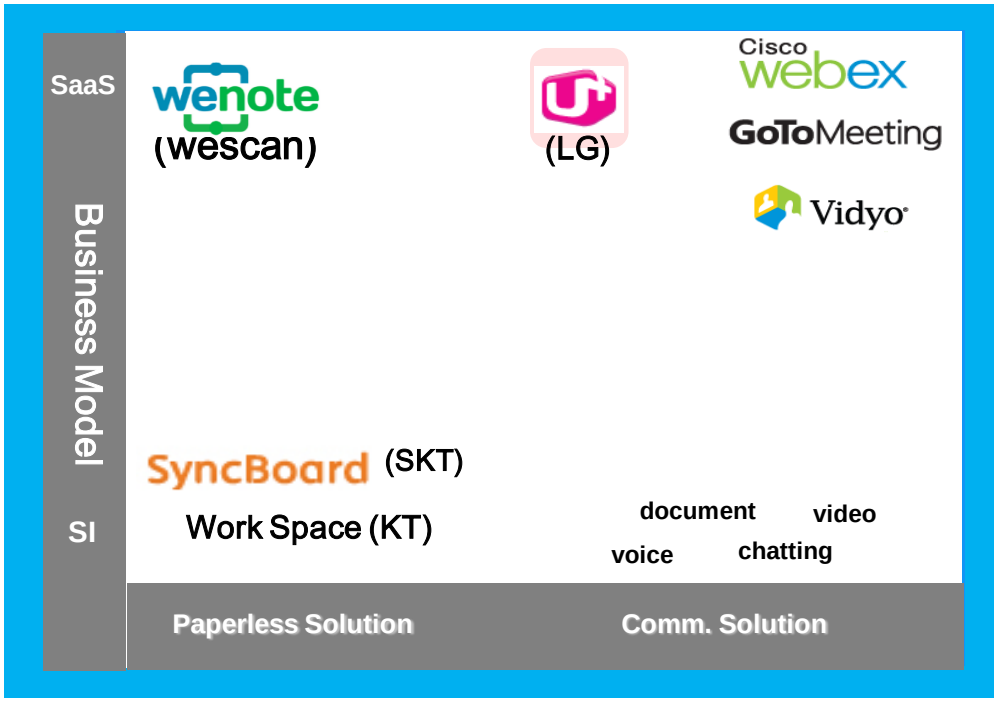
- E-mail
- Elctronic approval
- Task scheduler
- Employee search
- Messenger
- Internet Data Retrieval
- Social Network site
  (tweeter, face-book, U-tube)
- Corporate Bulletin Board

Specialized Functions

- Mobile Customer Relationship Management(CRM)
- Mobile Knowledge Management system(KM)

- Mobile Supply Chain Management system(SCM)
- Mobile Sales Force Automation (SFA)
- Mobile Enterprise resource Planning(ERP)
- Mobile Field Force Automation (FFA)
- Facility and Safety management

Emerging Mobile-based Meeting Services and Solutions (2013)



Example of use
① E-Brochure sharing
② emergency meeting
③ meeting document sharing
④ designer meeting
⑤ setting meeting agenda
⑥ team coordination

2012 Video Conference Market in Korea:
150Billion KRW~200Billion KRW

Major Functions of Mobile-based Meeting Support Technology

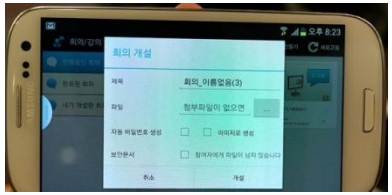
- Paperless meeting and meeting administration
- Real-time document sharing and communication using Smart devices
- Storage of documents at secured cloud
- Encryption and customized document security
- Support 3G, WiFi, and LTE
- Easy-to-use user interface (like messengers)

Voice communication + Document/text sharing + Memorandum

Mobile-based paperless meeting procedure

① Opening meeting session

② Meeting room setting (authorization)



③ Document sharing

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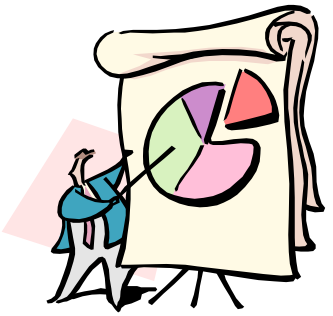
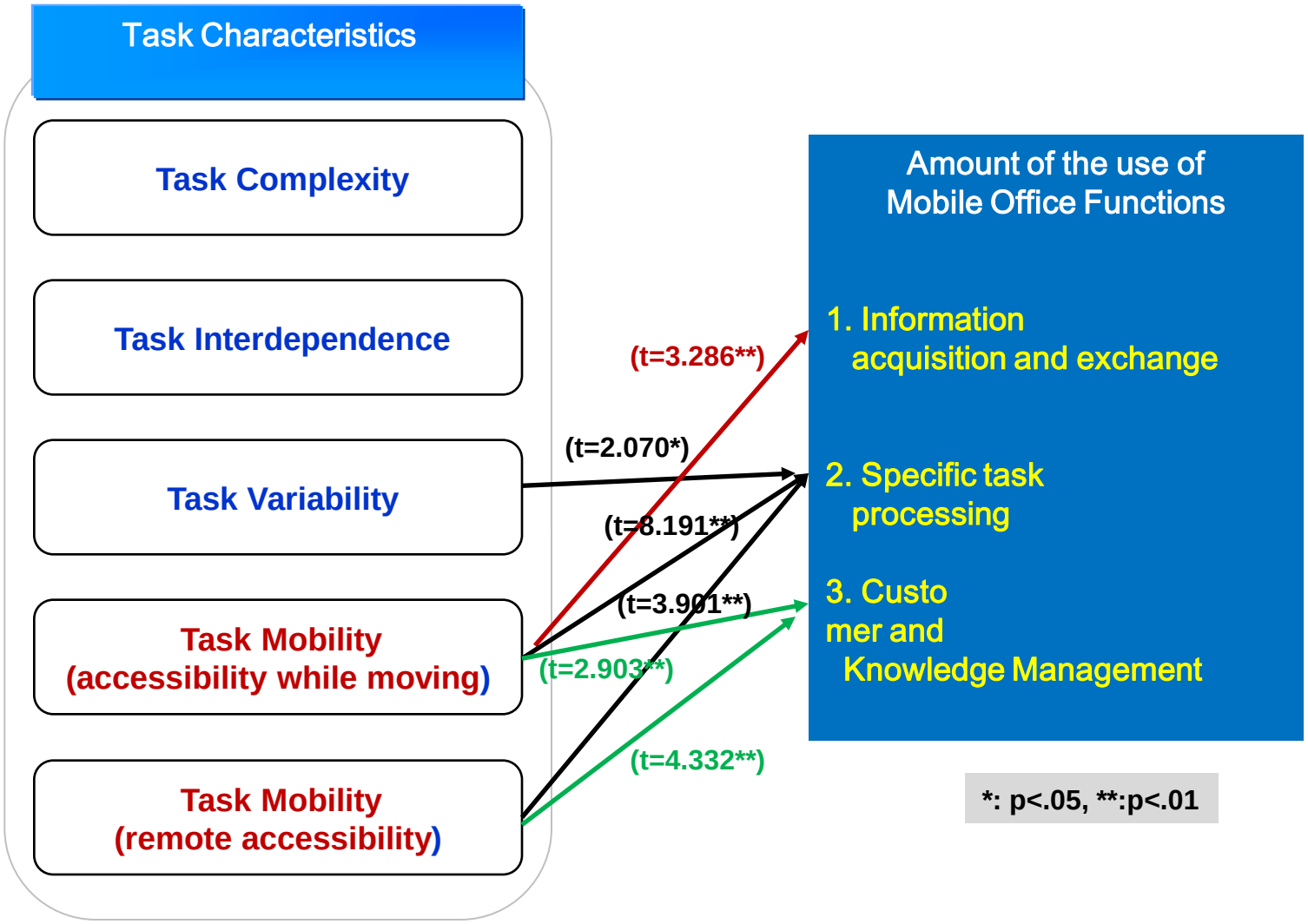
Survey 1: Task characteristics and MOS

- **Nature of task is related to the use of information technology.**
- **Task-Technology Fit is an important concept which is known to influence employee performance.**

124 responses from companies that adopted MOS such as KT, Samsung, POSCO, SK were used in the research.



Survey 1: Task characteristics and MOS



Conclusion from Survey 1

1. Understanding the nature of tasks should precede the design and adoption of mobile office systems.
   - Customized adoption will help optimize the effects of investments into MOS.

2. Task mobility is the most important consideration in the use of MOS.
   - Mobility is positively related to the use of both general and specialized functions.
   - High priority should be given to users of tasks with high level of mobility.

3. Companies with tasks of high variability, uncertainty and interdependence should focus more on the use of specialized functions of MOS.

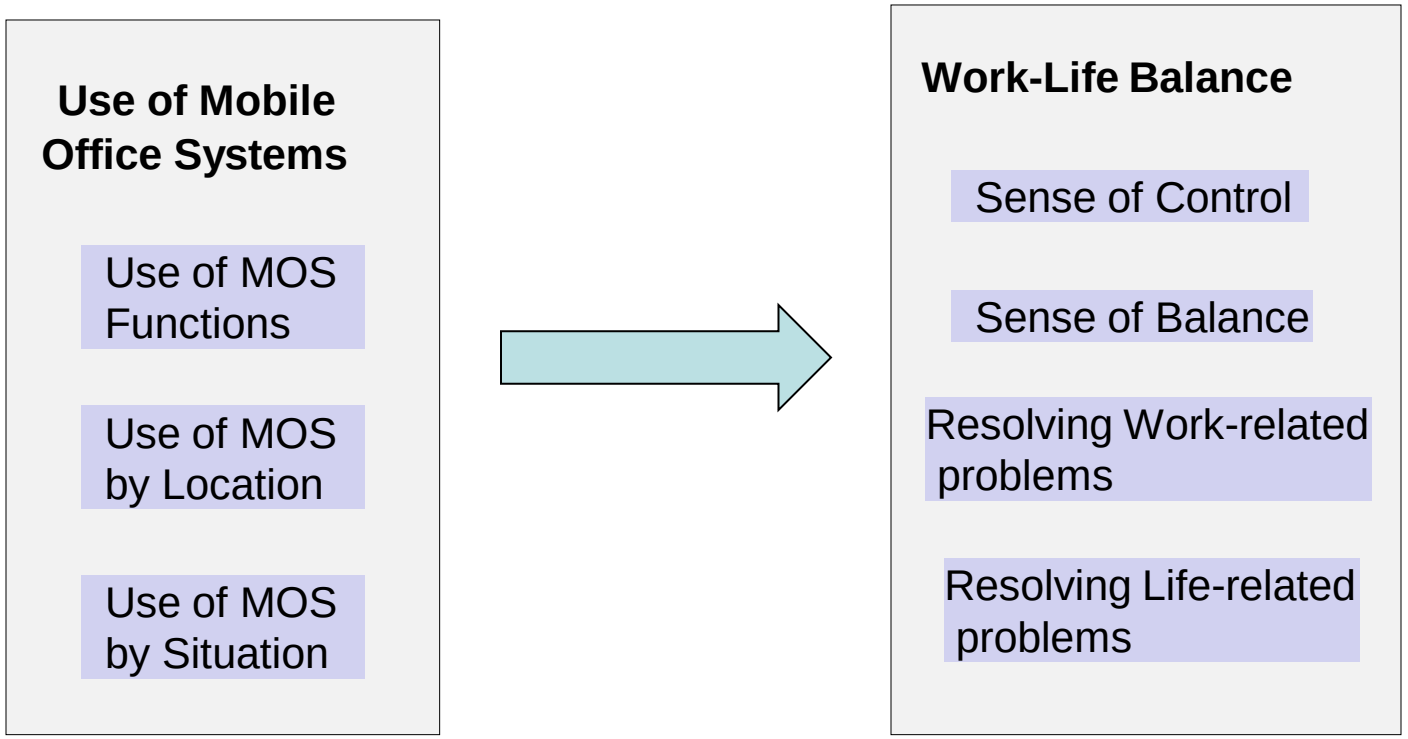
4. Increased level of overall mobility of future organizations may create new organizational culture of communication, information sharing, and decision making.

Survey 2: Work-Life Balance and MOS

- **Work-Life Balance has been used as a surrogate measure to Happiness (Quality Of Life).**
- **WLB implies the balance between individual's career (economic stability) and personal life (privacy).**
- **MOS has the potential to improve WLB.**

- **215 respondents using MOS participated in the research.**

Survey 2: Work-Life Balance and MOS



Survey 2: Work-Life Balance and MOS

Independent Variables

Variable	Definition
Use of Function	Reporting and approval function Search function Scheduling function Communication function
Use by Location	Use in office Use in field site Use outside the company
Use by Situation	Use on business trip Use at off-hour and weekend

Survey 2: Work-Life Balance and MOS

Dependent Variables

Variable	Definition
Sense Of Control	Achievement of work and life goals Overall sense of self-control Sense of control in work commitment Sense of control in life commitment Interruption of life by work Interruption of work by personal life
Sense Of Balance	Balance between work and life Balanced work achievement and self-improvement Satisfaction with work and life
Resolving Work Problem	Solving problems when an exception situation occurs Solving work problem when family problem occurs Solving work problem when health problem occurs
Resolving Life Problem	Solving life problem when schedule change is required Solving life problem when weekend work is needed Controlling time for hobby

Survey 2: Work-Life Balance and MOS

- **Overall model was not significant.**

- **Item-wise analyses revealed a few significant relationships**

Sense of Control
- Use of MOS outside the company (t=2.471**)
- Use of MOS on business trip (t=2.256*)

Sense of Balance
- Use of reporting/approval function (t=2.132*)
- Use of search function (t=4.100**)
- Use of MOS at office (t=3.418**)
- Use of MOS on business trip (t=3.764**)

Resolving life-related problems
- Use of MOS at field site (t=2.260*)
- Use of MOS on business trip (t=2.584**)

Conclusion from Survey 2

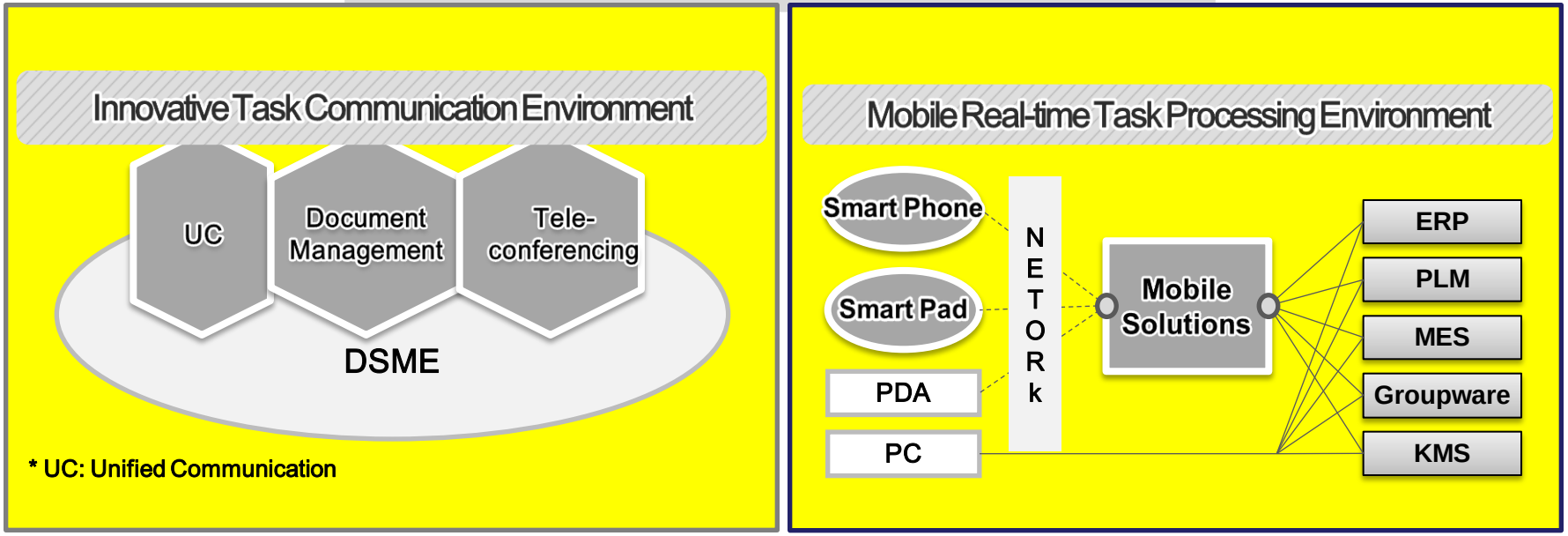
1. MOS is not yet matured enough so to improve WLB.
2. Found the possibility that the use of MOS can contribute to the improvement of employee's quality of life.
3. The use of MOS on business trip has a consistent positive impact to employee's WBL.
4. MOS should evolve further to help people work better and lead balanced life along with the provision of organizational supports (education, encouragement, institutional and cultural changes).
5. More research is called for on the relationship between MOS and the quality of life (happiness) beyond traditional dependent measures such as performance, use or satisfaction.

Private Sector Case: Daewoo Shipbuilding and Marine Engineering (DSME)

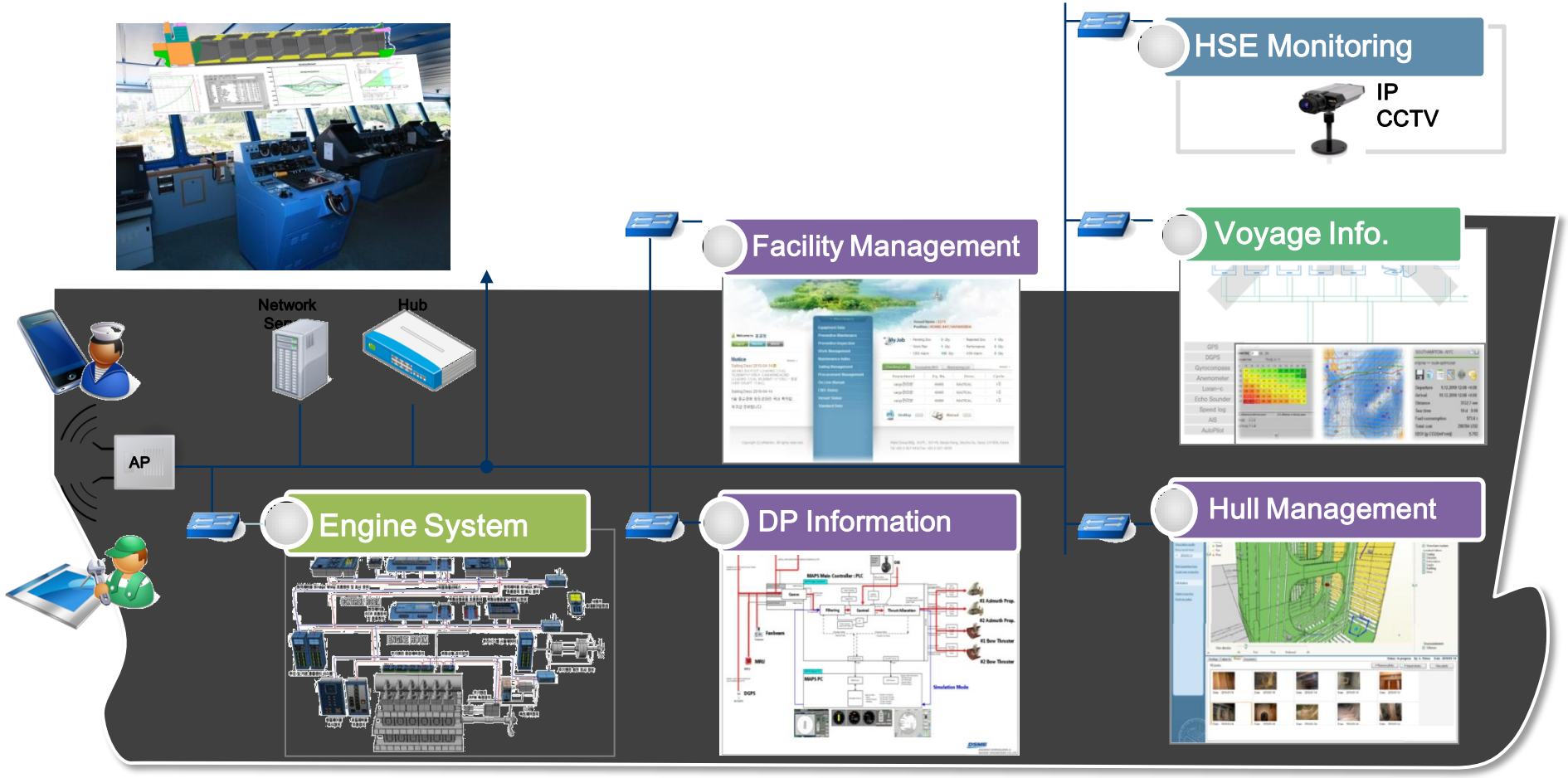
DSME Employee: 30,000+
Revenue: 12 Billion USD
Yard Size: 5,000,000 square meter

DSME Vision for Smart and Mobile Application

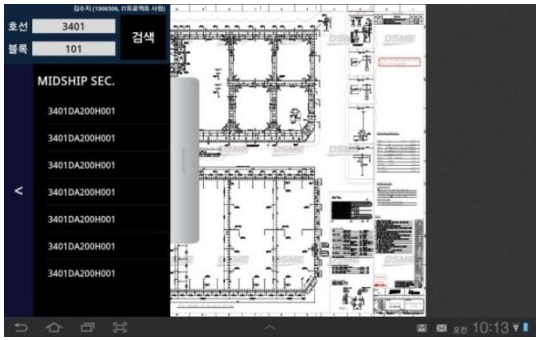
- Smart Ship
- Smart Shipyard
- Smart Office

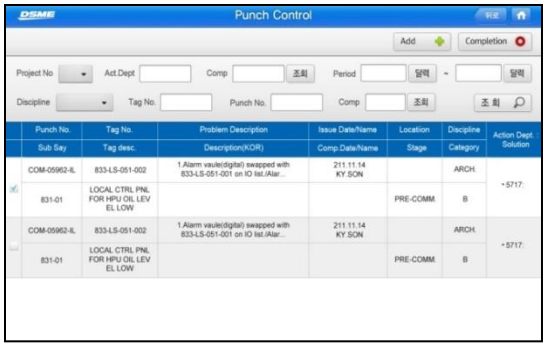


Integrated Ship Information System



Smart Shipbuilding Yard



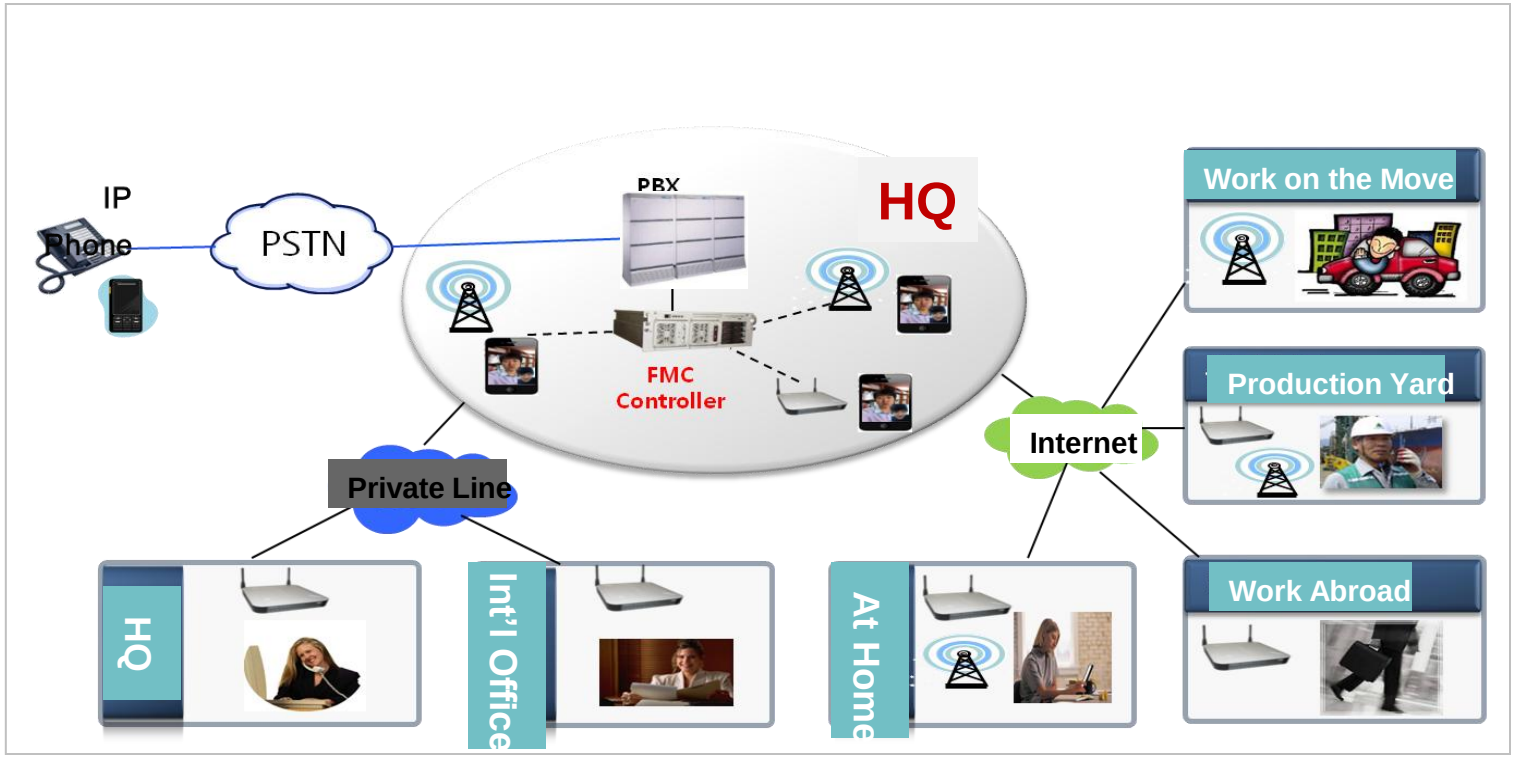


Mobile Portal:

- Electronic reporting and approval,
- Document management,
- Retrieval of contents including personnel information.

DSME Mobile Communication Environment

- IP Telephony(One IP Address per each employee)
- Fixed-Wireless Integration
- Data/voice UC (DSME and affiliates)
- Personal tools (Click to Call, Personal Tele-conferencing, etc.)



Effects of Mobile Office System in DSME

1) Improved Productivity and Connectivity

2) Improved Coordination in shipbuilding yard

3) Effective monitoring of the ship condition and stasus

4) Reduction in coordination costs

5) Improved customer satisfaction

6) Decreased costs and risk (in design and assembly of structure)

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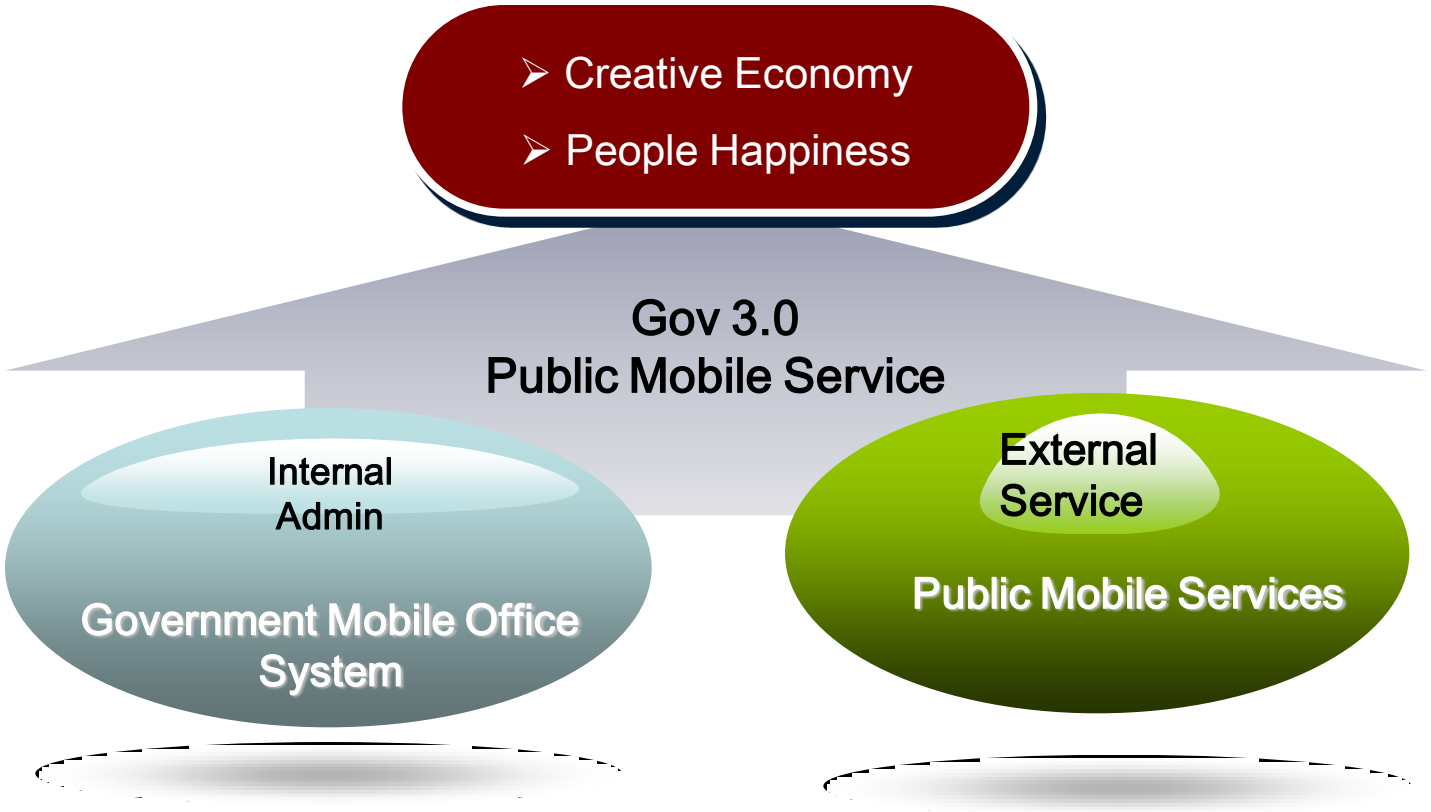
Nature of Government & Public Sector Mobile Service

1) Governmental administration is not only 'internal management' but it also has strong 'external effect' which is related to industry, economy, education, society, politics, and culture.
2) Government mobile service involves large number of huge database related to public health, tax, education, industry, weather, tourism, and socio-technical infrastructure.
3) Opening and sharing of public Information is a complicated and difficult mission but required to draw businesses and application development for mobile platform.
4) A lot of data sensitive to citizen privacy is involved.
5) Cross-Ministry collaboration is a must for effective service, which requires overcoming bureaucratic 'silo' structure.

New Government Initiative



New Gov 3.0 initiative is based on open, participative interaction with citizen with a focus on creative economy and quality of life.

Public Mobile Service Environment of Korea

Index	
UN e-Government Survey 2010, 2012	
- e-Gov development index	Rank 1
- e-participation index	Rank 1
ITU ICT Survey 2012	
- ICT development index	Rank 1
OECD Survey 2012	
- m-Government index	Rank 1
World smart-phone market share	
- Samsung	Rank 1
- LG	Rank 3
WMC Global Mobile Award 2013	
- SK Telecom 4G-LTE	Rank 1
Use of smart phone	
- number of users	35 million
- % out of total population	70%

Structure of M-Government Initiative in Korea

Mobile Government Service Roadmap

Mobile Service Implementation
- web-based public service
- new technology application
- administration support service

M-Government Service Roadmap
-2011 Introduction
-2012~13 Diffusion
-2-14 Stabilization

Mobile Government Service Common Platform

Mobile Service Common Platform
- Service support
- Mobile Security Framework
- Storage and Back-ups

Mobile Government Service Development Support Center

Mobile Service Development Environment Standard

Mobile Government Service Promotion Infrastructure

M-Government Governance Structure
- Mobile service life-cycle management
- Roles and responsibility management

Mobile Service Legislation

Mobile Service Guidelines

MOS and mobile service in Public Sector example

Tax Reporting and Administration

Government Knowledge Management

Smart learning (Officials Training Institute)

Government Officials SNS

Prosecution Service MOS

Mobile Government Administration Portal

Farming and Economy Census (Statistics Bureau)

Emergency Reporting And Management

Public Sector Case: SMRT

Seoul Metropolitan Railway Transit

- ✓ Public Company owned by the City of Seoul
- ✓ Operate Metro Lines 5, 6, 7, 8 with total length of lines of 152Km
- ✓ 148 Stations, 6 Train Plants, and 1,560 coaches
- ✓ Daily Passengers: 3.39 Million per day
- ✓ Fare Revenue: 1.3 Billion KRW (1.2 Million USD) per day

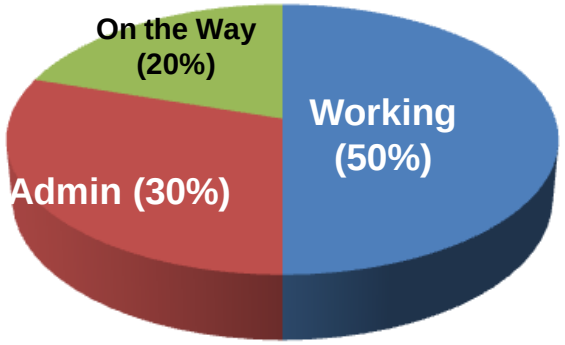
- Offices and Facilities are scattered all around the city of Seoul.
- Major Facilities: 30,000 units
- Total Facilities and Equipment: 1,100,000 units

Evolution of Task Processing Process, 1994~2009

• (1994~2005) Manual Process

Technicians approached each facility, checked, and prepared paper report.

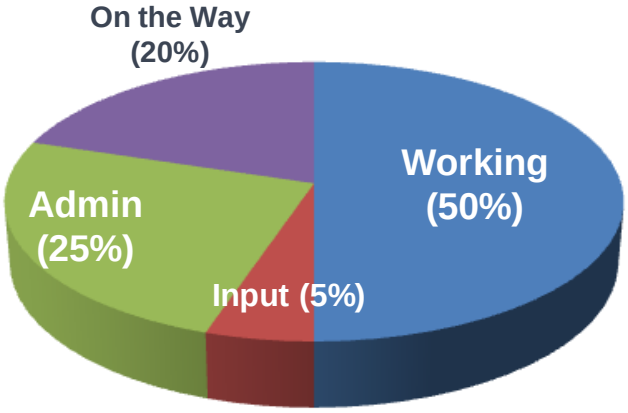
- ✓ **Multi-step reporting process**
- ✓ **Overwhelmed by vast amount of documents**
- ✓ **Lack of information utilization**
- ✓ **Insufficient Working Hours**



• (2006~2009) Computerized Process

Manual preparation of document at the location of facility. After keying-in, data is analyzed and used later.

- ✓ **Time spent for Working and On- the-Way remained same.**
- ✓ **Part of Admin time is used for keying in data.**
- ✓ **Improved Data Utilization.**

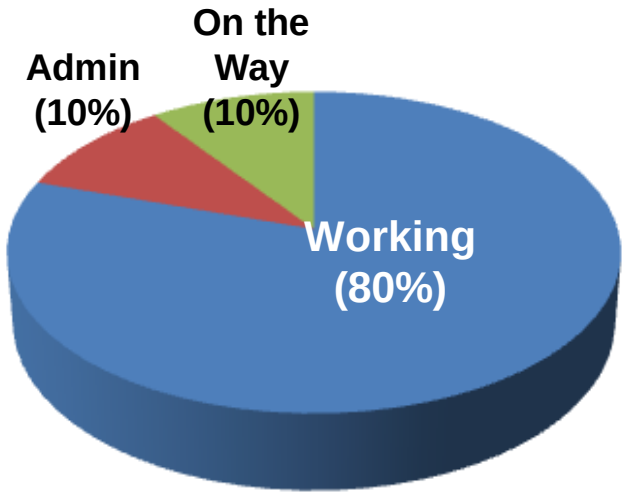


Adoption of New Mobile Task Environment, 2010

- After the adoption of ST&F(SMRT Talk & Flash) System,
- Employees do no have to commute to the HQ office.
  - ✓ Download daily work-order at home in the morning.
  - ✓ Directly commute to the field.
  - ✓ Process task and report remotely.

✓ Productivity increase (10%).

✓ Overcome space and time restrictions.



1) ST&F Facility Failure Reporting System

- **Any employee can easily report failure situation at the spot.**
- **Request maintenance using mobile phone with no spatial or chronological limits.**
- **No need to go to the office for requesting and reporting maintenance.**

Problem report using ST&F bar-code capture

Failure report using office communication system

Failure report by citizen report to call center

✓ **Fast and accurate response to facility failure or prevention of failure.**
✓**ONE-STOP processing of maintenance request and report.**

2) ST&F Barcode System

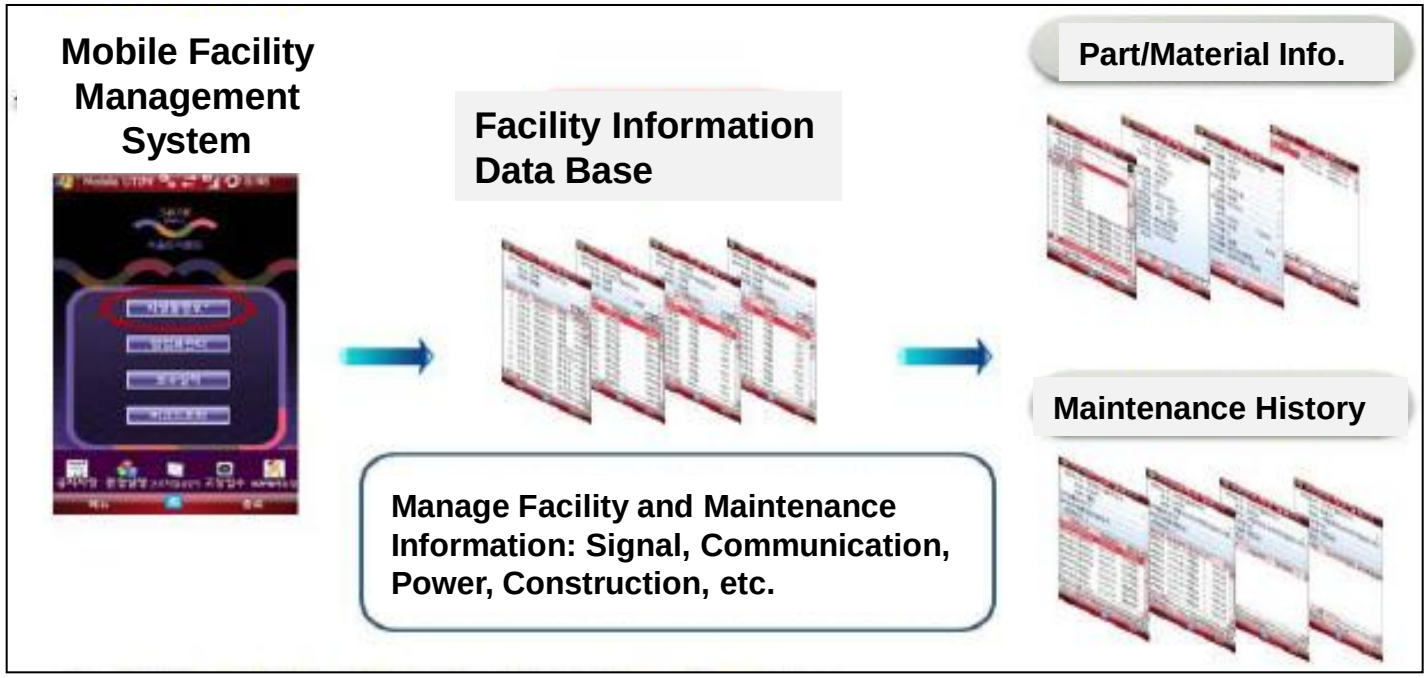
- Use smart phone MOS to capture the barcode (QR code tag) of a facility.
- Facility history review, failure report, maintenance result reporting.
- Quick, accurate, and easy to use.

✓ All employees can contribute to the monitoring of facility functioning

✓ High quality customer-repose services.

3) ST&F Facility History Management System

Technical/functional specifications of facilities and maintenance history can be retrieved and reviewed using MOS.



✓**One-Stop on-the-spot processing of facility information.**
✓ **Improved efficiency in field task processing.**

Effects of New MOS at SMRT

1) Productivity Increase

2) Agile response and repair: response time reduction from 2 hours to 20 minutes

3) Preventive monitoring of failure by all employees: 40% decrease in failure

4) Reduced performance gap between experts and novices due to easy application of standardized tools.

5) Extended business opportunities: export ST&F system to other companies

6) Improved reputation: benchmark visits from companies in Canada, Singapore, China, etc.

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CONCLUSION

1) Both in private and public sector, mobility-intensive economic and nomadic social activities are becoming the norm.
2) Success of the adoption of mobility technology depends on our understanding of the task and context.
3) Mobile connectivity can be the determinant of both productivity and improved quality of life.
4) Mobility technology is not yet matured.
5) On-line and mobile Intellectual capital and contents will become more inter-operational.
6) We need to better understand the pros and cons of the effects of mobility, multi-tasking, and multi-platform.

THANKS.