Open Source Open Platform

e-Government Standard Framework (eGovFrame)

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About NIA (www.nia.or.kr)
(National Information Society Agency)

- **NCA is a non-profit agency** responsible for developing national IT policy and projects in the public sector and established in 1987
  - National Computerization Act in 1986, Informatization Promotion Act of 1996

※ NCA : National Computerization Agency

* Key Role
  - National IT policy and Telecommunications Network Planning
  - e-Government Project Management
  - Information Systems Audit
  - Information Culture & e-Capacity Education
  - Information Resource Management Consulting

- **NCA → NIA** (October 4, 2006) by revision of legislation of Act

※ NIA : National Information Society Agency
I e-Government Journey in Korea
History of Korean e-Government

- **'87 ~ '94** Construction of National DB
  - Establishment of administrative DB on residence, real-estate, vehicle, etc.

- **'96 ~ '00** Digitalization of Unit Work Processes
  - Digitalization of procurement, patent, national tax, and customs, etc.

- **'01 ~ '02** Construction of e-Gov Infrastructure
  - Propulsion of 11 key initiatives including G4C and NEIS
  - Legislation of e-Government Acts

- **'03 ~ '07** Initiation of Administrative Simplification
  - Execution of 31 e-Government Projects including consolidated logistics and the sharing of administrative information

- **'08 ~** Expansion of Administrative Simplification
IT Governance

President

Presidential Committee On Gov’t Information Strategy

Mediation/Review/Consultation

Technical & Project Support

MOPAS
Administration, Technology, Support for common platform

Dept. Deployment
Dept. Deployment
Dept. Deployment

NIA

※※※※
MOPAS: Ministry of Public Administration & Security
※※※※
NIA: National Information Society Agency

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**Role of Organizations**

- **Presidential Committee on Government Information Strategy (PCGIS)**
  - Establish *e-Visions* for e-government
  - Coordinate & evaluate e-government initiatives

- **Ministry of Public Administration & Security (MOPAS)**
  - Establish e-government policies
  - Construct government-wide infra.

- **Ministries & Agencies**
  - Formulate and implement action plans for e-government projects

- **National Information Society Agency (NIA)**
  - Provide technical support for carrying out e-government projects
Key Achievements

Transparent and Efficient Government (G2G)
- Enhanced transparency in policy decision-making process by On-Nara BPS (Business Process System)
- Standardized common business forms used by central-local governments

Advanced Infrastructure
- Establishment of National Computing Information Center
- Development of e-government Standard framework

Onestop Public Service (G4C)
- Home document issuance possible through G4C for 32 types of information
- e-Tax administration through HTS (Home Tax Service)
- Customized welfare service through NWP (National Welfare Portal)
Key Achievements

Increased Efficiency and Transparency of Administration

- On-nara BPS: Paperless electronic administration through online services
  - On-nara BPS Usage Rate: 96% (2007), Available agencies: 71 central administrative agencies and local gov't
- e-People: Encouragement of participation in citizen suggestion and policy discussion as well as improvement of G2C services

Advanced Administrative Services & Enhanced Online Environment

- Beginning of “at-home citizen services” such as online civil appeals and tax services
- Change in citizens’ purchasing and financial patterns, such as e-banking transactions and Cyber stock trading

Initiate Korea’s Economic Growth

- Continued investment in national Informatization as a driving force for economic growth
  - IT’s contribution to national GDP growth: 23.4% (2008)
  - IT investment plan: 10 billion US dollars in facility investment in 2009~2013, 6 billion US dollars on R&D investment
Achieving the World’s Best e-Government

**International Awards**
- **Korea Immigration Smart Service (KISS)**
  - UN Public Service Award (‘07)
- **Information Network Village (Invil)**
  - World e-Gov Forum Award (‘06)
- **Korean Online e-Procument Service (KONEPS)**
  - WCIT Global Excellence Award (‘06)

**Model Case Selection**
- **Home Tax Service (HTS)**
  - OECD e-Tax Best Practice (‘06)
- **Online Public Participation Portal (OPPP)**
  - ‘Online Politics Trophy Top10’ (‘06)
- **Korea e-Trade Portal (uTradeHub)**
  - ‘World Advanced’ in APEC Report (‘05)

**International Certifications**
- **Korea Intellectual Property Office (KIPOnet)**
  - WIPO IT Standard (‘06)
- **Unified Online Custom Service (UNIPASS)**
  - ISO 9001, 20000 (‘06)
- **Korean Online e-Procument Service (KONEPS)**
  - UN/CEFACT Int’l Standard (‘05)
Current Status of Korea’s e-Government

Phase 1 [Foundation]
- Consolidation of internal administrative procedure and establishment of common basis
- Selective public service reform

Phase 2 [Service Advancement]
- Advancement of internal administrative procedure
- Expansion of integrated civil service

Level 1 Emerging
- Limited web presence

Level 2 Enhanced
- Regularly updated contents and information

Level 3 Transactional
- Visa, passport, birth records obtained online
- Taxes & fees paid online

Level 4 Seamless
- Seamless online service provided by agencies
- Converged public/civil services

We are Here!
To provide a single point of access for all government online services by connecting all the scattered government agencies’ portals

- provide ‘Easy to Access & Easy to Use’ e-Gov services to all citizens including minors

Single Point of Access

- Developing 7 major areas of citizen services
  - service map, power search, personalization, policies promoting, general admin.national info.

e-Gov Single Portal

- Expanding integrated authentication and site connection by developing the interconnection standard (11 more sites connected)
- Providing more citizen services (158 services)
Number of documents and visits have decreased through online civil service
- Civil information inquiry, petition & application, document inquiry and issuance, etc.

### Civil information inquiry and application

  - business registration, tax payment & certificates, factory registration, etc.

### Online document inquiry and issuance


### System interconnectivity

- Expanding authentic identification system, DRM system, and SSO
Information Sharing among Agencies

Civil service (20,000+)

Central government
12,625 Services

Local government
8,648 Services

Public agency
370 Services

Data linkage of 309 Agency

Central government
Tax, Business, Law, Army, Labor, etc.

Local government
Residents, Welfare, Auto, Real Estates, Construction, etc.

Court
Real-estate Registration, Birth certification

Information Exchange Network
Security and Privacy Protection
Prior Consent from Citizen

www.share.go.kr
Information can flow between central - local government and government and privates seamlessly
- All ministries and major banks now connected for information sharing system

Information sharing consolidated
- Administrative information shared among government and private companies
- resident, real estate, auto, corporation, tax, etc.
- Types of shared information expanded to 42
- Civil document issuance: 440M('03) → 150M('08) → 66% reduced

Participating organizations are expanded
- Organizations expanded from public sector centric to public and private sectors, including financial institutes
Critical Success Factors

Strong Government Leadership

- Leadership from the President
- Strategic and sustainable plans for 20 years
- Nationwide change management program
- Aligned e-Government projects with Performance Evaluation

IT Governance

- Informatization Promotion Committee chaired by the Prime Minister mediates and guides the administrative branches
- Revision of the legislative system for government process reform
Critical Success Factors

**Customer-oriented e-Government Services**
- Service development based on the needs of citizens, company and other organizations
- Civil Service closely related to everyday life

**Performance-based Program Management**
- Clear goals, objectives, short and long-term plans, with expected expenditure, income streams and deadlines
- Qualitative, Quantitative Performance Index (KPI) for nationwide level and each project level
- Designation of an officer or organizing body in charge of project performance

**Technology Support**
- Participation of experienced system Integration companies and specialized solution vendors
- Adoption of practical technology; GIS (Geographical Information System), LBS (Location-Based Service), Component Based Developing technology, etc...
II e-Governement Standard Framework (eGovFrame)
**However, a lot of challenges and issues**

**SW framework became a basic tool for e-Government**
(71% of e-Government system from 2004 to 2007).

*Samsung*(SYSTEMiER), *LG*(LAF/J), *SK*(Jgarnet)

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**Some barriers were identified in e-Government system**

- **SW framework provider** can only modify or extend application on the framework
- **Redundant development** of same functionalities
- **Framework is a expensive asset** that big vendors can afford to posses it
- **Major three IT vendors** dominate e-Government development

Unfair competition environment to SMEs
Enhances IT service quality because developers focus only on their business logic while all the technical issues are handled by SW framework.
## Benefit of Software Framework (2)

Reduction of TCO* and enhancement of ROI** can be achieved.

<table>
<thead>
<tr>
<th>System development</th>
<th>System operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>❖ Enhances 20~30% of productivity by reusing the design and source code</td>
<td>❖ Minimize incidents of error</td>
</tr>
<tr>
<td>❖ Simplifies and standardize the development process</td>
<td>❖ Improves efficiency through standardization of the operation process</td>
</tr>
<tr>
<td>❖ Enhances the system quality with help of proven architecture</td>
<td>❖ Secures the performance and stability</td>
</tr>
<tr>
<td>❖ Reduces the time and cost for the system development</td>
<td></td>
</tr>
</tbody>
</table>

* TCO : Total cost of ownership  
** ROI : Return on investment
What is eGovFrame?

e-Government Standard Framework
for developing and operating e-Government system

- **Basic functions** always needed to develop e-Government system
- **Composition** [eGovFrame + new functions] → e-Government system
- **Fair competition environment** created by sharing same basis
SW frameworks are a special case of software libraries in that they are reusable abstractions of code wrapped in a well-defined API. [ref: wikipedia]

* IS: Information system
Reforming e-Gov. Application Development

- Development with vendor’s frameworks
- Development with standard frameworks

Customer → RFP → Vendor A → Application 1 → Framework 1
Vendor B → Application 2 → Framework 2
Vendor C → Application 1 → Framework 3
Vendor D

Customer → RFP → Vendor A → Application 1
Vendor B → Application 2
Vendor C → Application 1
Vendor D → Standard Framework

Request for H/W, S/W, architecture, and application development
Request for application development

[Logos for NIA and Ministry of Public Administration and Security]
**Vision of eGovFrame**

**Vision**

Improve quality of e-Government services & efficiency of ICT investment

**Objectives**

- Reuse common functionalities
- Improve Interoperability
- Up-to-date ICT trends
- Remove vendor dependency
- Enhance SMEs competitiveness

**Strategies**

**Standardization**
- Establish SW framework standard for e-Government
- Provide stable technical infrastructure

**Openness**
- Ensure the neutrality of eGovFrame
- Open assets to the public & encourage participation

**Community**
- Share SW tools and technology by education
- Promote the utilization of eGovframe
Open discussion for developing eGovFrame

A lot of opinions and issues from many stakeholders

- Fear on dominated market collapse
- Concern on stable technical support
- Concern on project promotion centric by large companies
- Concerns on biz. effectiveness
- Reject the newly developed tools
Open innovation of eGovFrame

**Open Ecosystem**
- Founded open community with large and SMEs
- Established public-private cooperation center

**Open Sourcing**
- Developed with 11 large and SMEs and shared knowledge
- Utilized 40 Open Source Software (OSS)

**Open Outputs**
- Opened 664 thousand code lines & IPRs
- Carried out free training courses and 1,236 developers are certified

**Open Processes**
- Collected extensive opinions from over 500 stakeholders
- Ran over 20 public-private meeting
Open sourcing of eGovFrame

- Define basic functions and architecture
  ✓ Analyze 3 big vendor's frameworks and e-Gov. projects from 2004 to 2007
  ✓ 54 functions and 219 common components

- Define Open Source Selection Policy
  ✓ Open Source Evaluation Process
  ✓ License with no restriction on distribution and usage

- Evaluate candidate open sources (175)
  ✓ Functional/non-functional requirements
  ✓ Constraints for integration and interfaces

- Physically test candidate open sources (85)
  ✓ Basic functions
  ✓ Non-functional requirements (SW Quality)

40 open sources selected

[Major open sources]
- Biz. transaction: Spring & 22
- Data: ibatis, Hibernate & 1
- Development tool: Eclipse & 3
- Test tool: Junit & 5
- Distribution tool: Maven & 1
- Configuration Management tool: Subversion & 1
### eGovFrame: Four Environments

<table>
<thead>
<tr>
<th>Environment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development Environment</td>
<td>Provides the implementation (coding, debugging), test, distribution and configuration management tools for the effective development of applications based on the eGovFrame Runtime Environment.</td>
</tr>
<tr>
<td>Runtime Environment</td>
<td>Provides common runtime modules for running the SW applications.</td>
</tr>
<tr>
<td>Operation Environment</td>
<td>Provides operational tools for monitoring and operating SW application based on eGovFrame.</td>
</tr>
<tr>
<td>Management Environment</td>
<td>Provides management tools for maintaining and improving efficiently eGovFrame.</td>
</tr>
</tbody>
</table>
Functionalities of eGovFrame

Runtime Environment
- Presentation Layer
  - Ajax Support
  - Internationalization
  - MVC
  - Security
  - UI Adaptor

- Business Logic Layer
  - AOP
  - File Upload/Download
  - FTP
  - Marshalling/Unmarshalling
  - String Util
  - XML Manipulation

- Persistent Layer
  - Data Access
  - DataSource
  - Encryption/Decryption
  - Excel
  - Encryption/Decryption
  - Excel
  - File Handling

- Integration Layer
  - Message Service
  - Naming Service
  - Web Service

Operation Environment
- Monitoring Tool
  - Monitoring
  - Reporting
  - Administration Tool
  - Server Security Management
  - Logging Management
  - Resource Management
  - Administration

Development Environment
- Implementation Tool
  - Code Generation
  - Code Inspection
  - Debug
  - Editor
  - Methodology & Template

- Test Tool
  - Test Reporting
  - Unit Test

- Deployment Tool
  - Build
  - Deployment

- Conf. & Change Mgt. Tool
  - Configuration Mgt.
  - Change Management

Management Environment
- Operation Management Tool
  - Status Monitoring

Development Management Tool
- Version Management
- Issue Tracking

Environment
- Service Group
**eGovFrame : Development Environment**

**Implementation Toolset**
- Editor, Debugger, Development Procedures, Templates
  - Environment for Modeling, Editing, Compiling, Debugging
  - Guide for the Application Program Development
  - Automatic Code Generation based on Model-driven Templates
  - Code Inspection for the Source Code Integrity

**Test & Reporting Toolset**
- Environment for Testing, Reporting and Coverage Analysis
  - Supports Unit Test based on Junit
  - Test Result Reporting in HTML/XML/Excel format
  - Provides the Coverage Values and Code Region of the Test Case

**Deployment Toolset**
- Build / Build Automation
  - Build based on the Maven
  - Library Management using the Nexus Repository
  - Build Automation and Build Result Feedback using the Hudson

**Configuration Toolset**
- Environment for Configuration and Change Management
  - Source Code and Documentation Configuration Management based on the Subversion
  - Supports Registration, Resolution, Search and Notification of Issues
## OSS Adopted for Development Environment

<table>
<thead>
<tr>
<th>Group</th>
<th>Service</th>
<th>Open source SW</th>
<th>eGovFrame</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Development Tool</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analysis and design Editor</td>
<td>UML Editor</td>
<td>AmaterasUML</td>
<td>AmaterasUML</td>
</tr>
<tr>
<td></td>
<td>ERD Editor</td>
<td>AmaterasERD</td>
<td>AmaterasERD</td>
</tr>
<tr>
<td>Development Editor</td>
<td>Source Editor</td>
<td>Eclipse</td>
<td>Eclipse</td>
</tr>
<tr>
<td></td>
<td>DBIO Editor</td>
<td>N/A</td>
<td>Newly developed</td>
</tr>
<tr>
<td>Debug</td>
<td>Local Debug</td>
<td>Eclipse</td>
<td>Eclipse</td>
</tr>
<tr>
<td></td>
<td>Remote Debug</td>
<td>Eclipse</td>
<td>Eclipse</td>
</tr>
<tr>
<td>Code Generation</td>
<td></td>
<td>N/A</td>
<td>Newly developed</td>
</tr>
<tr>
<td>Code Inspection</td>
<td></td>
<td>PMD</td>
<td>PMD</td>
</tr>
<tr>
<td><strong>Test Tool</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit Test</td>
<td>Test Case</td>
<td>Junit</td>
<td>Junit</td>
</tr>
<tr>
<td></td>
<td>Mock Support</td>
<td>EasyMock</td>
<td>EasyMock</td>
</tr>
<tr>
<td></td>
<td>DB Support</td>
<td>DbUnit</td>
<td>DbUnit</td>
</tr>
<tr>
<td></td>
<td>Test Coverage</td>
<td>EMMA</td>
<td>EMMA</td>
</tr>
<tr>
<td></td>
<td>Test Automation</td>
<td>Ant, Maven</td>
<td>Ant, Maven</td>
</tr>
<tr>
<td></td>
<td>Test Reporting</td>
<td>Ant, Maven</td>
<td>Functions added</td>
</tr>
</tbody>
</table>
## OSS Adopted for Development Environment

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<tbody>
<tr>
<td>Distribution Tool</td>
<td>Build Tool</td>
<td>Maven</td>
<td>Maven</td>
</tr>
<tr>
<td></td>
<td>CI Server</td>
<td>Hudson</td>
<td>Hudson</td>
</tr>
<tr>
<td></td>
<td>Deployment</td>
<td>N/A</td>
<td>Newly developed</td>
</tr>
<tr>
<td>Configuration Management Tool</td>
<td>Configuration Management</td>
<td>Subversion</td>
<td>Subversion</td>
</tr>
<tr>
<td></td>
<td>Library Repository</td>
<td>Maven</td>
<td>Maven</td>
</tr>
<tr>
<td></td>
<td>Change Management</td>
<td>jTrac</td>
<td>Newly developed UI</td>
</tr>
</tbody>
</table>
Common components

Past eGovernment Programs

- A System
  - Application S/W
  - Application S/W
  - Application S/W
  - Common functions
  - Common functions
  - Common functions
  - F/W
  - H/W

- B System
  - Application S/W
  - Application S/W
  - Application S/W

- C System
  - Application S/W

- Reuse Common Components
  - Duplicate development of the same feature in each project
  - Business dependency in subsequent projects
  - Limited opportunities for SMEs

Current eGovernment Programs

- A' System
  - Application S/W
  - Application S/W

- B' System
  - Application S/W
  - Application S/W

- C' System
  - Application S/W

- Define Standard Framework

- Management System for eGovFrame
  - Development based on the standard framework
  - Productivity and quality improvement by reusing common components
Currently 219 Common Components are developed.

<table>
<thead>
<tr>
<th>Categories</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security</td>
<td>8 Services including Real Name Authentication and Rights Management</td>
</tr>
<tr>
<td>User Authentication / Directory Service</td>
<td>3 Services including General Login and Certificate Login</td>
</tr>
<tr>
<td>User Support</td>
<td>56 Services including User Management, Counsel Management, Survey Management, FAQ and Q&amp;A</td>
</tr>
<tr>
<td>Collaboration</td>
<td>28 Services including Board, Club Management and Community Management</td>
</tr>
<tr>
<td>System Management</td>
<td>25 Services including Common Code Management, Menu Management and Log Management</td>
</tr>
<tr>
<td>System / Service Interface</td>
<td>4 Services including Interface Statistics, Interface Org. Management</td>
</tr>
<tr>
<td>Statistics / Reporting</td>
<td>5 Services including Article and Connection Statistics</td>
</tr>
<tr>
<td>Utility Common Components</td>
<td>90 Services including Calendar and Format Conversion</td>
</tr>
<tr>
<td>(90 Components)</td>
<td></td>
</tr>
<tr>
<td>Sector</td>
<td>Projects with eGovframe</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>Administration</td>
<td>National citizen service portal system</td>
</tr>
<tr>
<td></td>
<td>Unified authentication system</td>
</tr>
<tr>
<td>Transportation</td>
<td>Seoul metropolitan rail transit management system</td>
</tr>
<tr>
<td></td>
<td>Driving record analysis system</td>
</tr>
<tr>
<td>Military</td>
<td>War fighting Symbology dev. &amp; management system</td>
</tr>
<tr>
<td></td>
<td>Defense Integrated Cost Management Systems</td>
</tr>
<tr>
<td>Education</td>
<td>University information management system</td>
</tr>
<tr>
<td></td>
<td>University information management system</td>
</tr>
</tbody>
</table>
Conclusion
**ROI analysis of e-GovFrame**

- By 2014, around 274 million dollars of budget saving are expected by applying eGovframe to e-Government projects

< Yearly improvement effects of productivity >

<table>
<thead>
<tr>
<th>Section</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total IT Budget</td>
<td>2,603</td>
<td>2,530</td>
<td>2,459</td>
<td>2,390</td>
<td>2,323</td>
<td>12,304</td>
</tr>
<tr>
<td>Development Cost</td>
<td>493</td>
<td>479</td>
<td>465</td>
<td>452</td>
<td>440</td>
<td>2,329</td>
</tr>
<tr>
<td>Cost saving</td>
<td>9</td>
<td>27</td>
<td>66</td>
<td>84</td>
<td>88</td>
<td>274</td>
</tr>
</tbody>
</table>

(Unit: 1 million dollar)
### Before

| Redundant development of similar functionalities in every projects |
| Vender Dependency due to framework delivered as black box |
| Disadvantage to SMEs who cannot afford to possess the framework |
| Difficult to maintain the system due to lacking on development standard |
| Spent longer time and effort to link the systems due to different framework |

### Now

| Reduction of redundant development by reusing 219 common components |
| Eliminating dependency to the provider by utilizing open sources framework |
| Enhancement of SMEs competitiveness through sharing standardised framework |
| Convenient to maintain the system with help of proven development standard |
| Enhances interoperability between systems by standardised framework |
Outcome and Achievement

ICT Competitiveness of IT SMEs

- Applied to 92 projects until Dec. 2010
- SMEs won 64% among them

International Recognition

- Sweep three awards from FutureGov
  - Gov. Organization of the Year
  - Technology Leadership
  - Gov. Transformation of the Year

Diffusion of Standard Framework

- Applied to private market such as banking, e-Biz., etc.
- Utilized to commercial SW

SMEs won 64% among them
Download and utilize the eGovFrame and Common Components from the eGovFrame portal (http://www.egovframe.go.kr)

<table>
<thead>
<tr>
<th>Function</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information and data</td>
<td>Introduces the eGovFrame and makes it available to download source codes, materials, and guides</td>
</tr>
<tr>
<td>Online support</td>
<td>FAQ, Q&amp;A, notifications</td>
</tr>
<tr>
<td>Service request</td>
<td>Technical assistance in the eGovFrame application projects</td>
</tr>
</tbody>
</table>

1. Download eGovFrame (Runtime/Development/Operation Env.)
2. Install eGovFrame (Unzip the files and configure properties)
3. Download Common Component (Import them into Development Env.)
4. Develop Application
5. Compile and Build
6. Run and Test
Future plans

- Kick off community foundation for eGovFrame globally

- Opening eGovFrame Lab for cooperating with developing countries
  - It will provide a physical space to experience eGovframe and training course

- Building human networking through education of eGovFrame
  - eGovFrame standardization, interoperability and educational materials for policy-makers
  - Training program for IT policy makers
  - Create the introduction material for eGovFrame

- Build English eGovFrame English portal and community site
  - Develop English eGovFrame portal
  - Develop English eGovFrame community site
What kind of benefit you have?

eGovFrame is...

- Invested over 13 million US Dollars that the aggregation of lesson-learned and past trials of e-Government in Korea

- Open, free and supported by Korean government
Thank you!

eGovFrame Center

egovframe@nia.or.kr