CORPORATE INTRODUCTION

"

Quality is
the best business plan

John Lasster · PIXAR COO

NGLE CORPORATION

Quality of service is the most certain method
for great success in the business and is also NGLE's core value.

NGLE, consists of QA experts from IT companies, NHN, Wemade, Smilegate, NCSOFT and so on,
has been pursuing the highest quality based on various project experiences and advanced technology.

PLATFORM
CERTICIATION, BILLING, SOCIAL, ETC.

SERVICE
WEB, APP

GAME

PC · MOBILE · SMART TV · VR

We conduct the most effective testing for improvement in quality and performance verification with business characteristics and the sphere of business of clients.

OUR BUSINESS

Experience NGLE's professional plans for maximizing
the effects of activity about the quality.

Software testing

We conduct the most effective testing
for improvement in quality and
performance verification
making the best use of various testing tools.

Consulting for quality

We propose the customized QA Framework
by discovering the features of clients'
software for maximizing the effects
of activity about the quality.

Support for market management

We guide the Know-how about the policy
response on each kinds of markets such as
Apple App Store, Google Play, One Store,
Steam, Oculus, etc. and the featured
strategy.

1. Software testing

We conduct the most effective testing for improvement in quality
and performance verification making the best use of various testing tools.

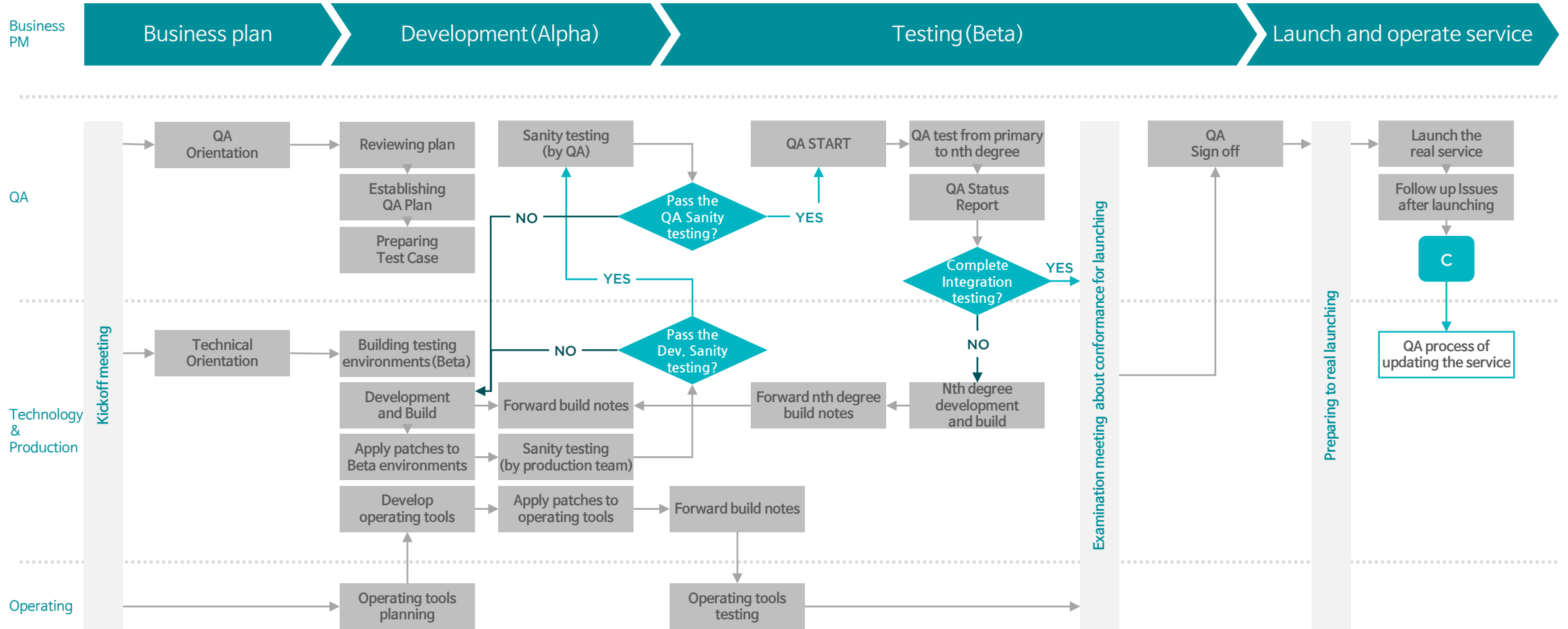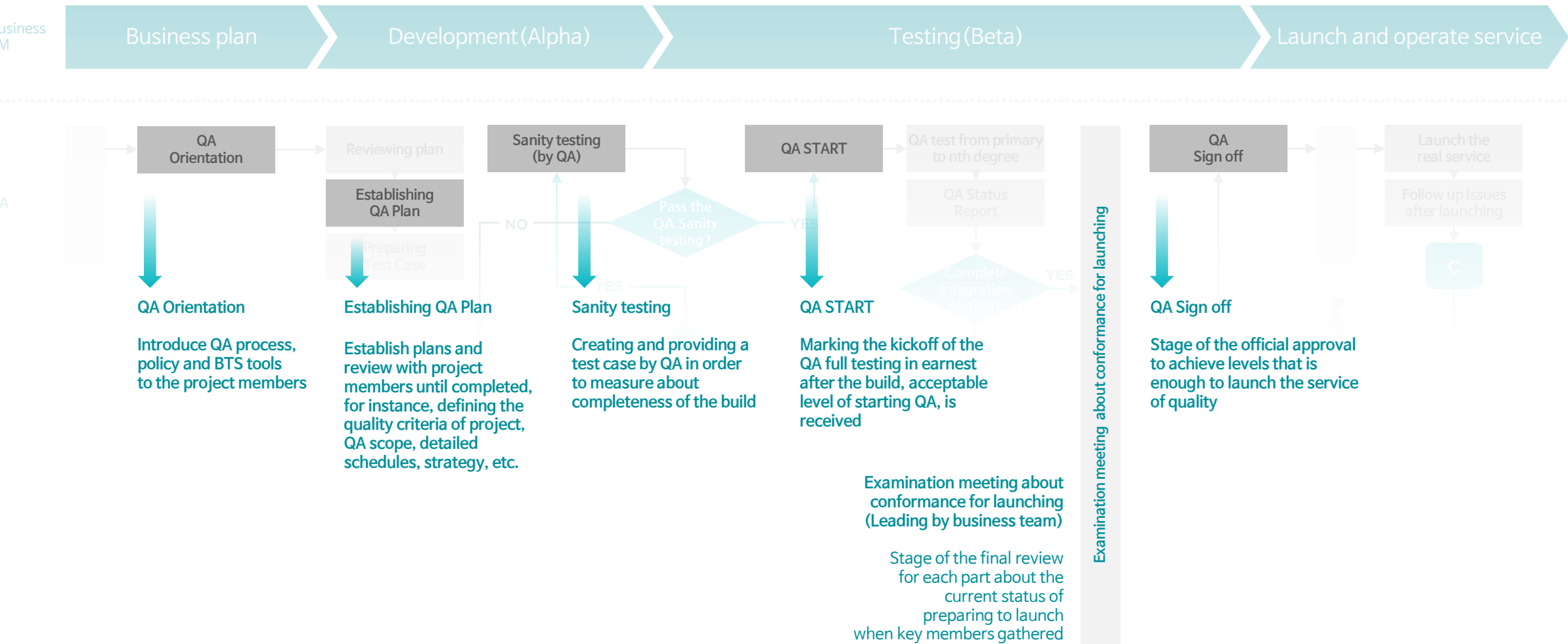| Sanity testing	Functionality testing	Security testing	Performance testing
Network testing	Compatibility testing	QA engineering	

QA PROCESS & MILESTONE

Provide the best process & milestone according to the business line, characteristics of organizations and the policy of clients

QA PROCESS & MILESTONE

Provide the best process & milestone according to the business line, characteristics of organizations and the policy of clients

Business PM

Business plan → Development (Alpha) → Testing (Beta) → Launch and operate service

QA

| QA Orientation | Reviewing plan | Sanity testing (by QA) | QA START | QA test from primary to nth degree | QA Sign off | Launch the real service |

Establishing QA Plan

Preparing Test Case

QA Status Report

Follow up Issues after launching

Pass the QA Sanity testing? — NO / YES

Complete integration testing — YES

QA Orientation

Introduce QA process, policy and BTS tools to the project members

Establishing QA Plan

Establish plans and review with project members until completed, for instance, defining the quality criteria of project, QA scope, detailed schedules, strategy, etc.

Sanity testing

Creating and providing a test case by QA in order to measure about completeness of the build

QA START

Marking the kickoff of the QA full testing in earnest after the build, acceptable level of starting QA, is received

Examination meeting about conformance for launching (Leading by business team)

Stage of the final review for each part about the current status of preparing to launch when key members gathered

Examination meeting about conformance for launching

QA Sign off

Stage of the official approval to achieve levels that is enough to launch the service of quality

2. Consulting for quality

We propose the customized QA Framework by discovering the features of clients' software for maximizing the effects of activity about the quality.

Evaluating and improving of quality process in the organization
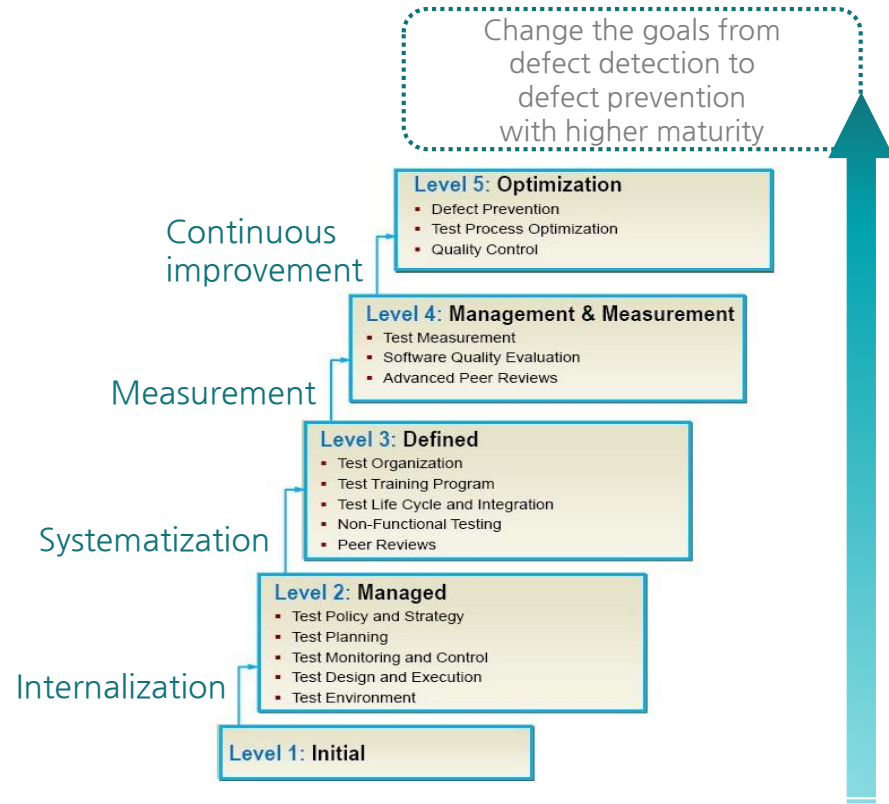
Consulting about the quality control solutions

Support to set up the quality control organization

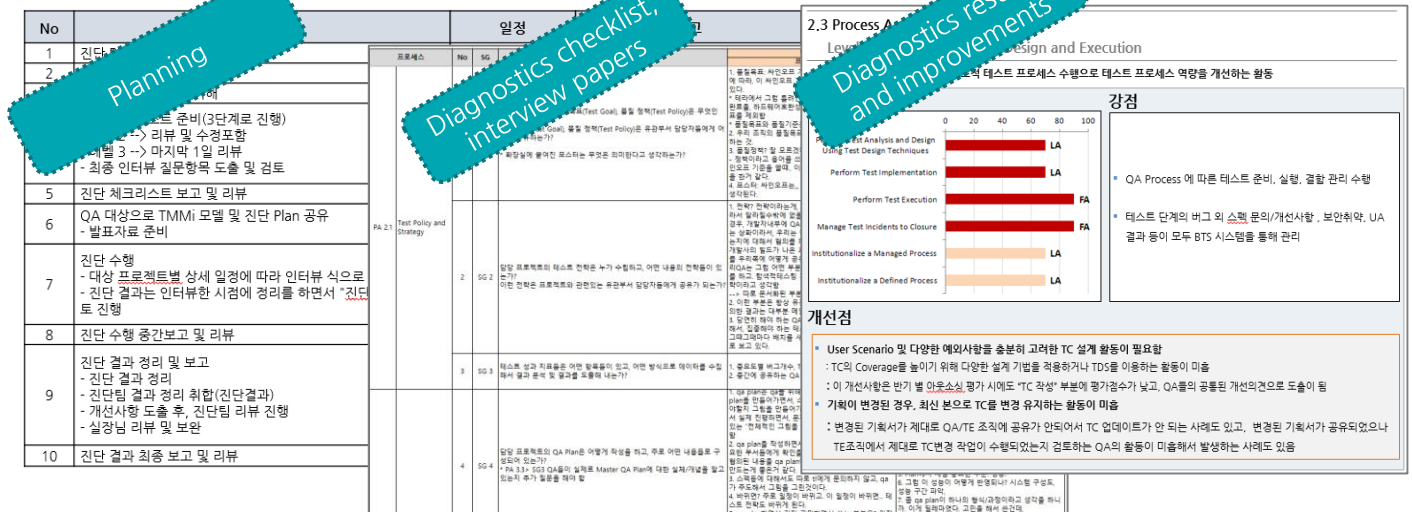Building and internalization for the test methodology

Consulting for the software testing

Assessment Model & Method

Proposal of direction for the quality improvements on the evaluating regarding clients' services and systems and support for the step-by-step improvement activity with business characteristics of clients
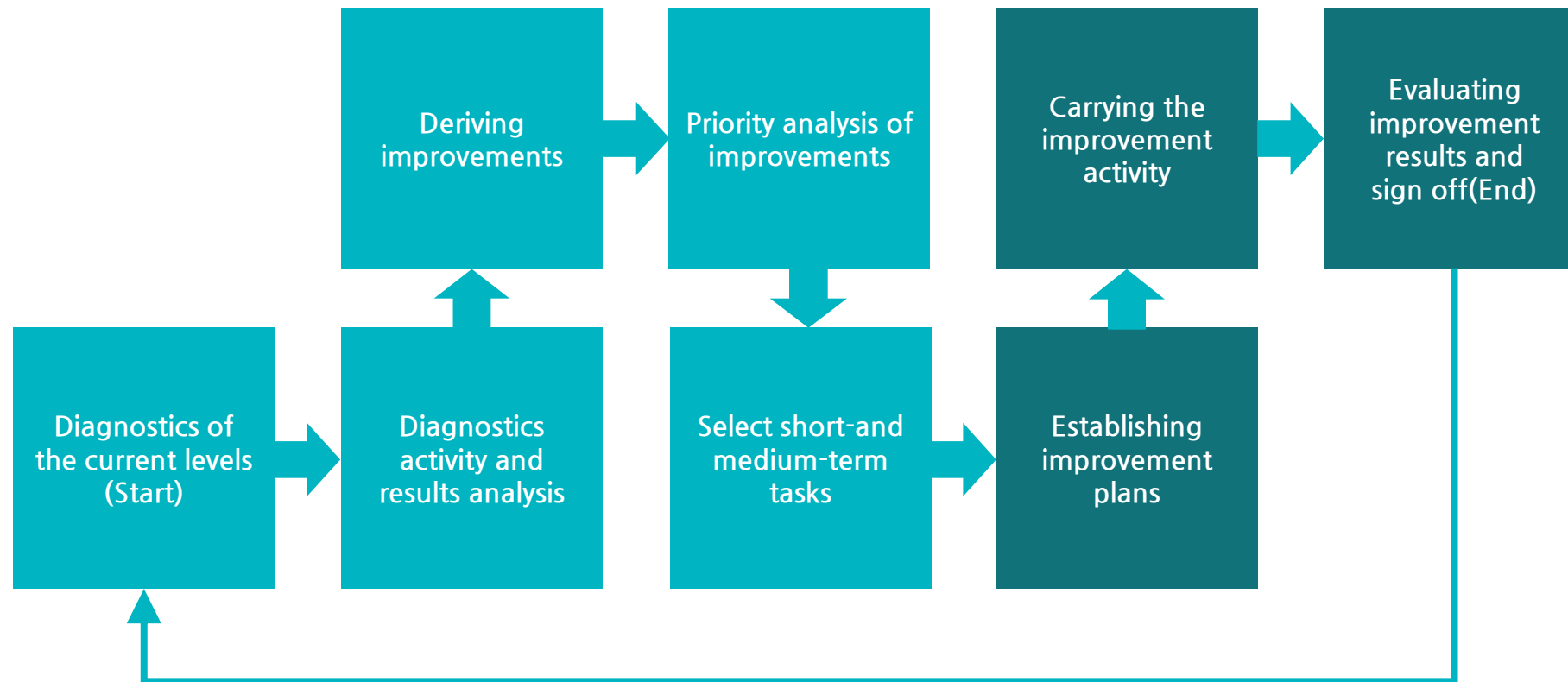
Change the goals from defect detection to defect prevention with higher maturity

Continuous improvement

Measurement

Systematization

Internalization

Level 5: Optimization
- Defect Prevention
- Test Process Optimization
- Quality Control

Level 4: Management & Measurement
- Test Measurement
- Software Quality Evaluation
- Advanced Peer Reviews

Level 3: Defined
- Test Organization
- Test Training Program
- Test Life Cycle and Integration
- Non-Functional Testing
- Peer Reviews

Level 2: Managed
- Test Policy and Strategy
- Test Planning
- Test Monitoring and Control
- Test Design and Execution
- Test Environment

Level 1: Initial

| Diagnostics planning | Interview & Reviewing documents | Phenomenon analysis & Producing improvement tasks | Share for diagnostics results |

TMMi® Assessment Method Application Requirements (TAMAR)

Planning

Diagnostics checklist, interview papers

Diagnostics results and improvements

Assessment Model & Method

Proposal of direction for the quality improvements on the evaluating regarding clients' services and systems and support for the step-by-step improvement activity with business characteristics of clients

3. Support for market management

We guide the Know-how about the policy response
for various markets and the featured strategy.

Guide to registration
for the application on
each kinds of markets

Analysis and
countermeasures
for deliberating
reject cases

Analysis of
featured guidance
about the markets'

Market management support program

Provide guides and technical support services and also establish a management process based on the Know-how about the policy response for various markets

Writing and providing detailed business manual for main markets	Establishing market management plan and process	Response for featured technical support on market and deliberate in advance
▪ App Store ▪ Google Play Store ▪ N Store/One Store ▪ Facebook	▪ Define market manager R&R and leading practices ▪ Establishing market account management policy ▪ Guide the ways to registration for application and the procedure for registering	▪ Demonstrate the featured guide and its application instances ▪ Technical support in the featured development phase ▪ Providing the featured checklist ▪ Providing the deliberated checklist ▪ Proposal of the ways to manage reject history ▪ Deliberate on the featured inspection in advance

(The examples of App Store guide listings)

(The examples of procedure for issuing certificates and provisioning)

(The examples of the featured checklist)

CLIENTS

kakao　　게임인재단　　**NAVER**　　SMART STUDY　　DASAN 핸디소프트

SUPERNOVA11　　SK telecom　　kakaogames　　AGE

NHN D&T　　JOYBOX　　SNMAC 성남모바일앱센터　　alt plus　　구나지 CABBAGE STUDIO

NCSOFT　　RIOT GAMES

Analysis system

'Analytics for system/Test-design/Verifying application and data' about the new version of "AceCounter",
which is Data Analysis Platform of NHN D&T Corp., holding clients the most in Korea.
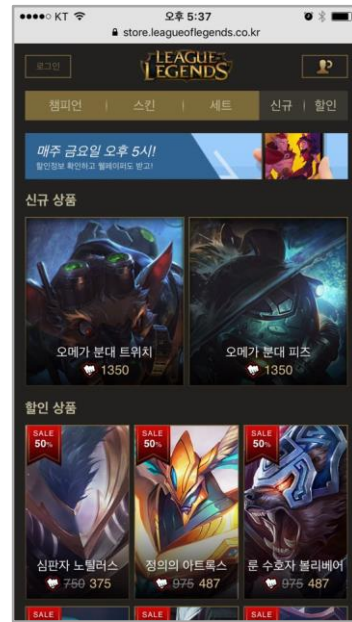
Mobile Service (Web, App)

Progress projects regarding various forms of Mobile Web or App Services such as Store, Community, Game Tab, Web Game besides enterprise in-company messenger and so on
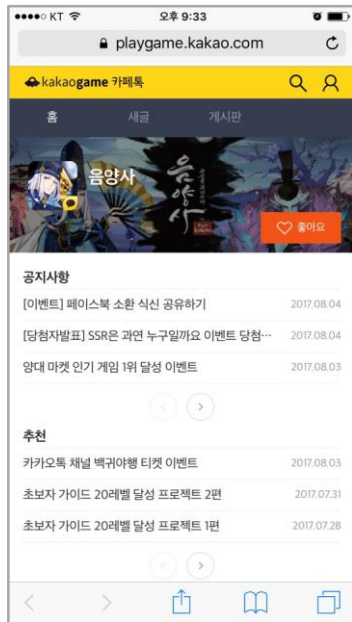
Kakaogame Cafe Talk

Mobile Web Store of
League of Legends for Riotgames

Gamestar for Kakao

Snackgame for Kakao
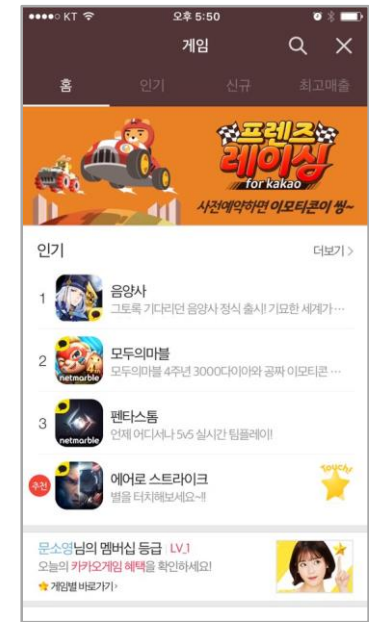
Game Tab for Kakao

AI, IoT Solution & Service

AI Speaker & Anti-theft system for the bicycle & Analysis, Design and Testing of Service App

AI Speaker (N Corp., S Corp.)

Interoperability Service/System

AI Speaker

Verbal Command

- Gathering Error and Crash Log
- Deficiency and Issue Report

- • Service App Verification
- • Device Verification
- • Verbal Commands testing
- • System/Service Interoperability testing

QA key products
- QA Plan
- Functional/Non-Functional/Interoperability Test Case
- Verbal command Test Case
- Issue Report (i.e., Deficiency Report)
- QA results analysis report

'Alton', Anti-theft IoT (H Corp.)

Dev. & Service Platform

Develop Testing Application for various forms of common platform that has no UI and owning Know-how about verification for thje API level function
Carry out the efficient testing through Regression Test Automation

Client

SDK (iOS)

SDK (Android)

SDK (Unity)

Gateway

Session

Open API

Game Platform Server

Auth	Infodesk	Item Delivery
Simple Login	Push	Promotion
Profile	Log Bucket	Coupon
Presence	Analyze	Leaderboard
Timeline	Social	Chatting

■ Basic function for publishing   ■ Function to support marketing

User Service

In App View   **Platform App**

Management Tool

Platform Admin   **Monitoring**   **Server Deploy**

Perform QA on game publishing platforms provided by K Corp. and N Corp.

- Automation and inspection of APIs provided by SDK and Server Open APIs

- SDK Interoperability testing by creating Test Application

- Inspection of guides for SDK developers (e.g., sample codes)

- Server Platform Performance testing

- Inspection of Management Tool and integration functional testing for across the platform

Automation

Create Test Client for the Platform SDK verification and implement automation using Test Automation Framework
from supporting by xCode, which is development tool for iOS
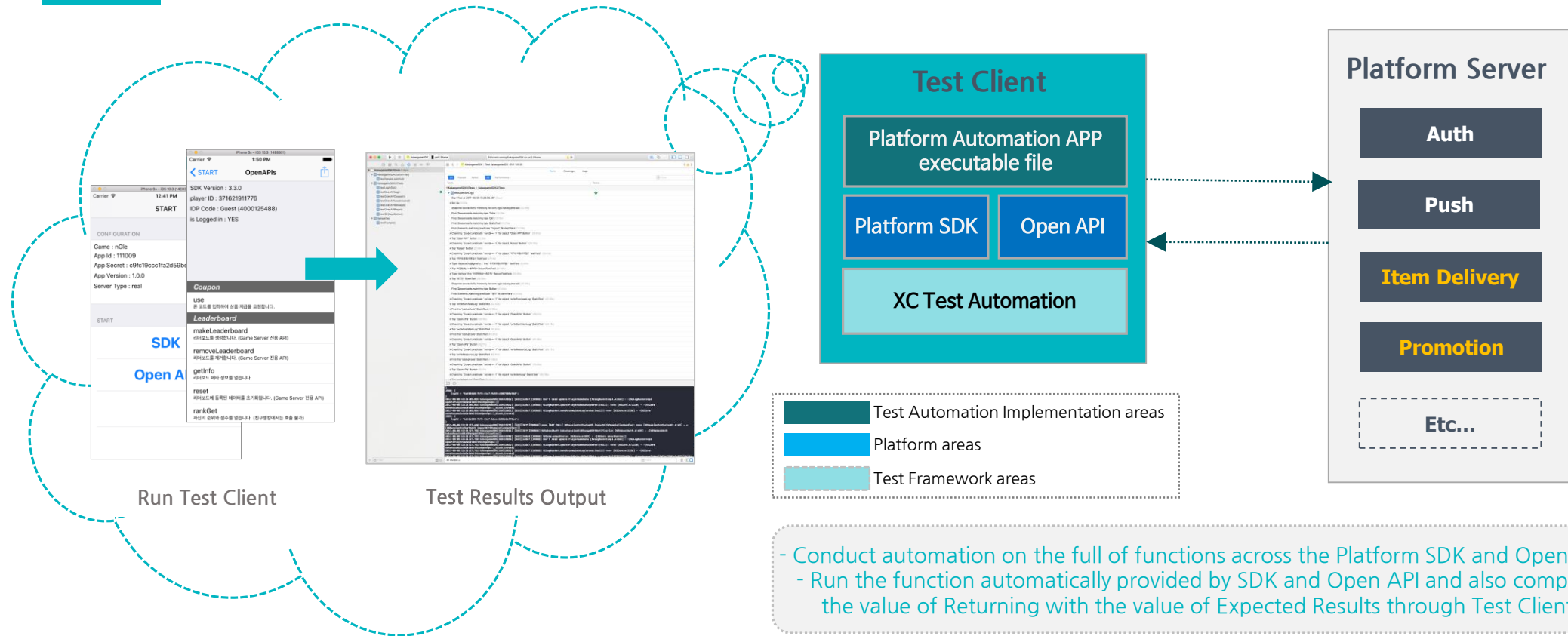
Run Test Client

Test Results Output

Test Client

| Platform Automation APP executable file |
| Platform SDK | Open API |
| XC Test Automation |

Platform Server

| Auth |
| Push |
| Item Delivery |
| Promotion |
| Etc... |

- Test Automation Implementation areas
- Platform areas
- Test Framework areas

- Conduct automation on the full of functions across the Platform SDK and Open API!
  - Run the function automatically provided by SDK and Open API and also compare
    the value of Returning with the value of Expected Results through Test Client

Performance test (Server Side)

Verify Application Logic and estimate H/W capacity through Server Side Performance testing,
reduce the costs of Infra and support stable service operation through system optimization and so on

Main verification entries and purposes

Infra check and optimization	Performance verification for Application Logic	System Performance check and optimization
Operating system H/W capacity verification	Discovering and eliminating bottlenecks if overloaded	

Performance test (Server Side)

Verify Application Logic and estimate H/W capacity through Server Side Performance testing,
reduce the costs of Infra and support stable service operation through system optimization and so on

Repeat steps until achieving the goals

Establishing Performance testing objectives → **Carrying out the test** → **Results Measurement/ Analysis** → **Improvement of System or Application** → **Securing the System Performance/ Stability**

	Preparation	Action	Reporting	Complete

NGLE Performance Engineer
- Requesting pre-material
- Reviewing Performance technology
- Establishing scenario
- Establishing Performance plan
- Reviewing Performance plan
- Sharing Performance plan
- Writing scripts
- Verification for the scripts
- Start Performance testing
- Performance testing from primary to nth degree
- Reviewing Performance results
- Finished Performance testing? — Yes / No
- Performance Status Report
- Performance testing Result

Technical PM
- Building beta version and applying to environments
- Building real version and applying to environments
- Monitoring

DBA/Infra
- Monitoring

Production Studio
- Forwarding prior information resources
- Forwarding build which is modified

Business PM
- Sharing the same business objectives

'Performance testing process' at NGLE

- Integration Performance Verification
- Unit Performance Verification
- Precheck Performance Verification

Performance test (Server Side)

Verify Application Logic and estimate H/W capacity through Server Side Performance testing,
reduce the costs of Infra and support stable service operation through system optimization and so on

Performance objectives(Based on the number of acceptable users)
- Based on the number of occupations for 5 minutes : **20,000 Users**(DAU 100,000)
- Based on 1 Server : **1,000 Users**

Performance testing targets
- Destination Server(WEB) (8 Servers)
  - *Conduct Performance testing up to 8 Servers which are destination servers*
  - *Estimate server quantities that are aimed at accepting 20,000 Users,*
    one kind of business objective, based on the Performance testing results
- Game DB(Mysql) : 2 Game DB Servers(Master-Slave design structure)
- Gate Server : 2 Gate Servers
- Gate DB (Mysql) : 2 Gate DB Servers(Master-Slave design structure)
- Cache Server(Redis) : 1 Cache Server
- Chat Server : 4 Chat Servers(1 Chat Controller, 3 Chat Gates)

Thread	19,800	21,000	23,100	26,250	30,000	
평균 TPS	4656	5049	5474	6118	7016	목표 TPS : 260 TPS
평균 MTT	52.1	52.4	53.8	57.4	230.6	목표 MTT : 200 ms 이하
CPU	61.5%	65.5%	70.6%	79.2%	92.5%	70% 이하
			5.3	7.7	10.2	4 이하

우선순위	Risk	상세 내용	장애 상황 및 기대 결과	확인 결과
상	Gate 서버 장애	Gate 서버 유저 인증 및 Game 서버의 공통 데이터를 관리함. Gate 서버는 2대로 이중화 되어 있음.	• Gate 서버 2대 중 1대 장애. - 정상 로그인 됨. - 게임 플레이 중인 유저는 정상적으로 플레이 되어야 함. • Gate 서버 2대 중 2대 장애. - 게임 접속 시도 유저는 접속이 되지 않음. - 게임 플레이 중인 유저는 정상적으로 플레이 되어야함.	기대 결과와 동일하며 특이사항 없음.
상	Game 서버 장애	Load Balance에 의한 분산 구조로 되어 있으며 서버 장애 시 나머지 서버가 처리하게 된다.	• Game 서버 2대 중 1대 장애. - 게임 플레이에 문제가 없어야 함. • Game 서버 2대 중 2대 장애 (모든 게임 서버 장애) - 게임 플레이가 되지 않아야 함.	기대 결과와 동일하며 특이사항 없음.
상	Cache 서버 장애 (Redis)	유저 Session 데이터를 관리하는 서버로 장애 시 해당 서버가 관리 하는 Session의 유저는 게임 실행이 불가능 하다	• Cache 서버 1대 중 1대 장애 (단일 노드 서버) - 게임 플레이가 되지 않아야 함.	기대 결과와 동일함. 서버 구성 총 단일 노드로 구성 되어 있어, 이중화 또는 Auto

- Decline the number of users that are entering the game server because of server load and occur problems that are returning the Gate Server errors
- Improving performance by changing the options for the Nginx and also making structure of the L4 which is load sharing structure in the front section of Gate Server

- As the Cache Server that controls user session data consists of one, it affects the whole of service in the event of a server failure
- Fixing the failure by keeping the H/W specifications down and also designing redundancy of Cache Server because the load, put onto the Cache Server, are not that high

Mobile Game

We have experienced not only domestic projects but a multitude of global projects.
We prepare game publishing or leading across the quality assurance by taking responsibility for the title,
'open' at Kakao & Kakaogames. In addition to that, we conduct the Functional testing and Interoperability testing for
PC & Mobile game projects which are worked by N Corp. and I Corp.

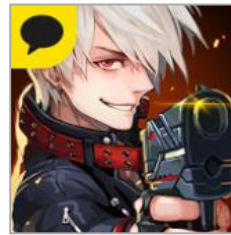| Come to my home | Monster Super League CBT | Hero Stone | Superstar Tennis | Kung Fu Panda 3 |

| Star Knights | Friends Sichuan Province | Friends Popcorn | Wanted Killer | Eumyangsa |
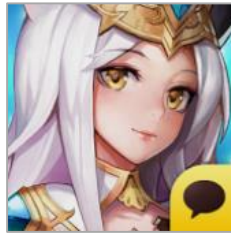
QA SOFTWARE & TOOLS

We conduct the most effective testing for improvement in quality and performance verification making the best use of various testing tools.

1

Mobile Remote Control Solutions

2

Network Simulation Environment

3

Performance testing & Monitoring

4

Defect & Issue Controls

1. Mobile Remote Control Solutions

Developers locating in the remote area directly plugged into the devices that NGLE has around 150 so they can <u>debug & identify the issues</u>

Screen & Control

Device   **USB**   Server   **IP Network**   Client PC
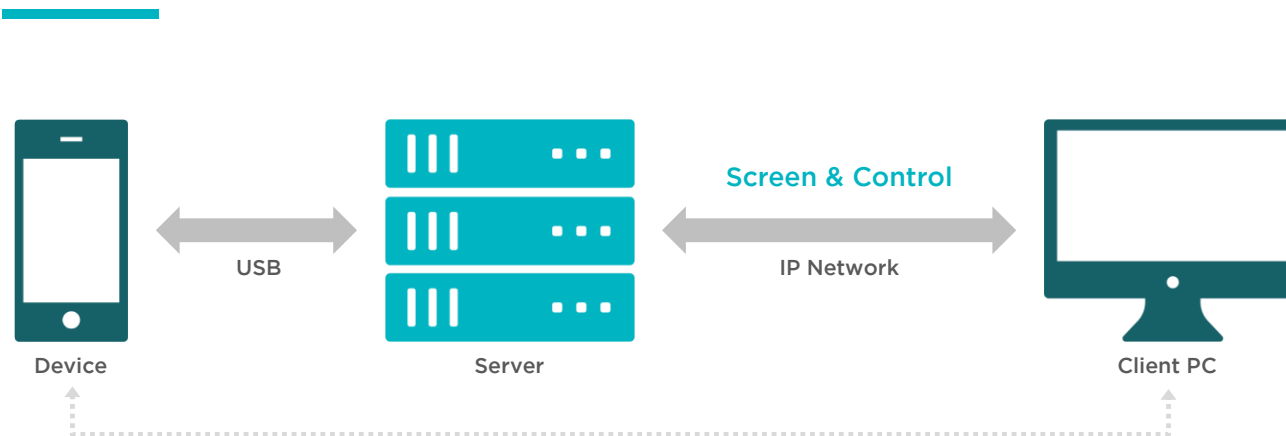
Support an effective debugging by utilizing the Mobile Remote Control Solutions

- Help control on your PC by viewing the device screen in the remote area

- Developers can debug directly from this device following interoperate with Eclipse and so on which is development tool

- Provide devices both Android and iOS

  (Henceforward we can phase in the category of tablets or iPads depending on the clients' needs)

2. Network Simulation Environment

Simulating on network environment with using network shaping tools

- Various tools for simulating on network environment with using Network State controls
  - Provide 3G, LTE and the average Download/Upload Bandwidth in each city of countries
    (the average Network Speed of the major 20 countries)
  - Set network pattern with elevator, subway and idiots Wifi
  - Set network environments to change over time (e.g., Bandwidth, Delay and Loss rate)
- Provide Pcap and har so that it enables you to packet capture and Web service Front-end Performance testing
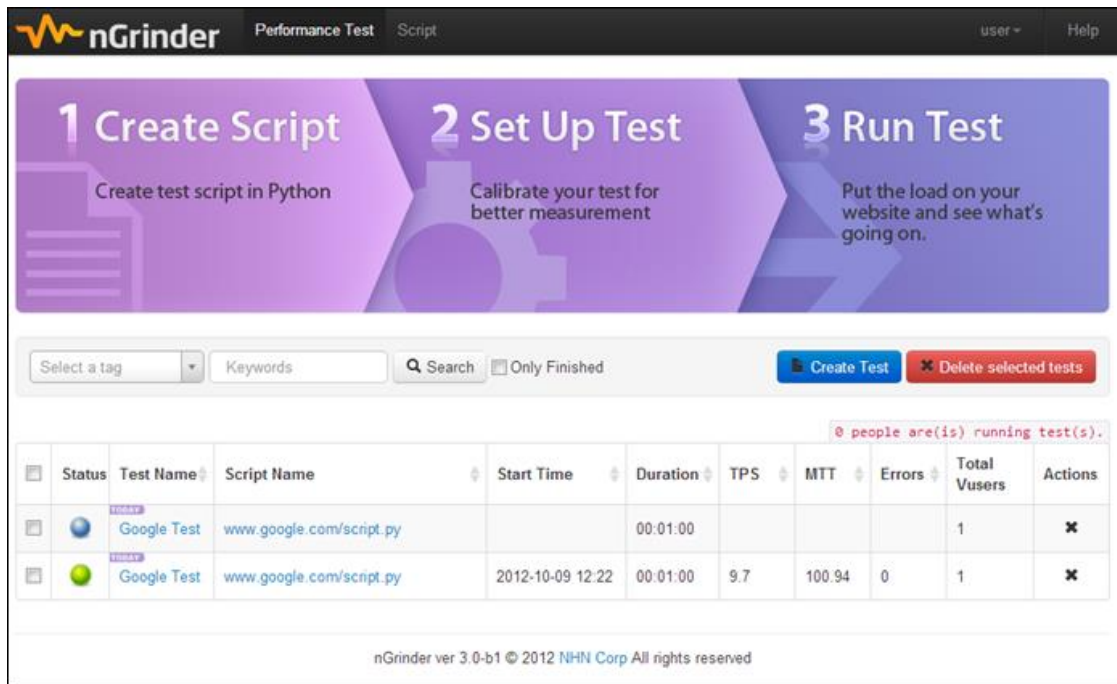
Under the circumstances like PVP match in real time, testing on network states that are set differently	Network environment changes are tested by simulating in accordance with movement of using public transportation	After getting through to the global market, doing tests on the local network speeds of the major target nations

3. Performance testing & Monitoring

Performance testing & Monitoring by utilizing the Open Source Project, "nGrinder"

- Intuitive Web Interface
- Test Process Adjustment
- Users can write and modify scripts
- Load occurs by placing threads and process
  on Performance testing targets system through virtual users
- Measure network usage, response times and TPS
  and collect the results from Performance testing

3. Performance testing & Monitoring

Performance testing procedures

1. Planning

Establishing
Performance testing plan

2. Analysis

| Performance Scenario Analysis on target services | Packet Analysis | Server API Analysis | Server Structure Analysis |

3. Implementation and Environment composition

| Performance Script Development | Verification for the script
Beta environment | Compose nGrinder Performance testing environment
For Live | Verification for the Live server environment |

4. Performance testing and Results analysis

| Performance testing & Monitoring | Failures testing | Performance testing results analysis and Results report |

4. Defect & Issue Controls

BTS system based on Jira (retain internally)

- Utilize the BTS system to control internal projects and issues by building internal to NGLE Corp.

- Support building if developers or publishers want to phase our BTS system

- Generate separate and independent projects if using our BTS system (In this case, costs are discounted also)

Retain abilities to make the best use of various BTS systems that are used in developers or publishers

- JIRA

- Mantis

- RED Mine

- Bugzilla

- Etc.

Current retention status of test devices

NGLE has around **150 Mobile devices** that includes both Android and Ios as well as utilize these devices

	ANDROID		
1	Galaxy S2	19	Vega Racer
2	Galaxy S2 HD LTE	20	Vega Racer 2
3	Galaxy S3 (LTE)	21	Vega LTE
4	Galaxy S3 (3g)	22	Vega R3
5	Galaxy S4	23	Vega S5
6	Galaxy S4 LTE A	24	Vega No.6
7	Galaxy S5	25	Vega iron
8	Galaxy S5 LTE-A	26	Vega iron2
9	Galaxy S6	27	Nexus 7 (2nd generation)
10	Galaxy S6 Edge	28	Nexus 7 (1st generation)
11	Galaxy A8	29	Nexus 5
12	Galaxy 7	30	Optimus LTE HD
13	Galaxy 7 Edge	31	Optimus vu
14	Galaxy Note	32	Optimus vu2
15	Galaxy Note 2	33	Optimus vu3
16	Galaxy Note 3	34	ASUS_zenfone (for North America)
17	Galaxy Note 4	35	OPPO_Mirror5 (for Southeast Asia)
18	Galaxy Note 5	36	HTC ONE (for North America)

	iOS
1	iPhone 4
2	iPhone 4s
3	iPhone 5
4	iPhone 5S
5	iPhone 5C
6	iPhone 6
7	iPhone 6S
8	iPhone 6+
9	iPad 2
10	iPad 4
11	iPad Mini
12	iPad Mini Retina
13	iPad Mini 3
14	iPad Air
15	iPad Air 2

OUR TEAM

NGLE consists of QA experts from IT companies, represent domestic.

We provide the best services with business characteristics and
the sphere of business of clients
based on various domain testing projects experiences.

KEY
MEMBERS
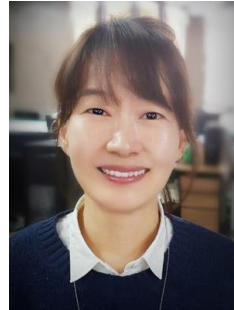
Moon So Young
CEO

ROLE
CEO

AREA & EXPERTISE

Expert on consulting for process and quality
- Evaluating and setting up the quality organization
- Improving quality process
- Building QA Methodology
- Planning and Publishing quality indicators by products characteristics

Major Professional Experience

Wemade Corp.
- Generalizing Publishing Technology – served as General Manager in Technical Support Office
- Planning QA Infra & Leading set up(i.e., QA Zone, Performance Zone, BTS System, Process, Methodology, etc.)
- Setting up Quality Control Office(i.e., Technical PM & Game Service QA, Performance TFT)
- Establishing QA Plan and Process

NHN Corp.
- Setting up Platform QA Team
- Building and Applying Platform QA Methodology
- Enhancing Game Services QA Organizations and QA Business
- Following up on pushing forward the Service Stabilization Indicators tasks and applying it

Handy Soft Corp.
- Certificating ISTQB(International Software Testing Quality Board) Instructor and Providing off-site training(more than 5 times)
- Examiner of CMMI Level 4 Certification
- Examiner of the Project Quality Controller which is being certified CMMI Level 3
- Leading QA among such as BPM Solutions

KEY MEMBERS

Jung Won Young
Executive Director

ROLE
QA Generalization, Expert

AREA & EXPERTISE
Expert on Non-Functional testing and Certification Judgment on market
- Performance testing on the side of App Client
- Compatibility testing
- Deliberating and Responding to Features on market (e.g., Apple, Google, One Store, Kakao, etc.)

Major Professional Experience

Wemade Corp.
- Game Service QA Team Leader
- Enhancing Game Service QA & QA Business (included launching domestic/global game services)
- Ref. External – QA/Launching match-up game for Smart TV

DeNA Corp.
- Open Platform Team
- Conducting Open Platform Certification Judgement for Mobile game and Launching Game Publishing service

NHN Corp.
- Game Service QA Team/Game Publishing QA Team
- Carrying out QA on a multitude of projects (e.g., Tetris, Z9Star, A new game of Yut, EoS, ASTA, etc.)

Teleca Korea Corp.
- Test Engineer
- Conducting Obigo Browser Benchmarking Testing and Devices Certification Judgement for T-mobile
- Conducting Obigo Product Testing / QA

KEY MEMBERS

Kim Dong Chun
Platform QA Office General Manager

ROLE
Platform & Performance Testing
Generalization, Expert

AREA & EXPERTISE
Expert on building quality infra
- Building Test Automation Environment
- Building management tools for test case (e.g., Quality Center, Test rail)
- Building Server Performance Testing Environment (e.g., Road Runner, nGrinder, Jmeter)

Major Professional Experience

Wemade Corp.
- Detached duty at a Wemad branch office in USA (for 1 Year) – Technical PM, Performance testing engineer
- Game Server Performance testing
- Mobile game & Platform Technical PM/Building BTS System

Actoz Soft Corp.
- Game Service QA & Performance testing
- Enhancing PC Online Game Performance Testing Environment

IMC Games Corp.
- Service QA Team Leader
- Designing and Developing Granado Espada DB
- Developing Game Operating Tool and Log Analysis Tool (for Web)

JoyOn Corp.
- DBA : Online business magnate, JoyOn Matgo (Hwatu), Poker, etc.
- Web : Developing Online Game Operating Tool

KEY
MEMBERS

Lee Jin Sung
Service QA Office General Manager

ROLE
Service QA Generalization, Expert

AREA & EXPERTISE
Market Certification Judgement and QA Expert
- Web Service QA / Mobile game QA
- Deliberating and Responding to Features on market (e.g., Apple, Google, One Store, Kakao, etc.)
- Planning and Publishing quality indicators by products characteristics

Major Professional Experience

Smilegate Megaport Corp.
- Game Service QA Team Leader
- Enhancing Game Service QA Process & QA Business (included launching domestic/global game services)
- Building and applying Mobile Platform (on STOVE) QA Methodology (cf. Responding from Dev. and QA to Launching)
- Managing Build for various markets (e.g., Google, Apple, Kakao, Facebook, One-store, N-store, etc.), Policy and internal guides

NHN Corp.
- Evaluating features of game and Carrying out QA for Winning Eleven and Winning Eleven 2014
- Leading the whole of QA on channeling games and a multitude of PC Online games (e.g., 'TAN', 'King of fishing', etc.)
- Leading QA on set of Hangame Portal & PC room environments
- Writing standard guidelines for Performance testing and Carrying out Performance testing
- Researching for Test Methodology and applying to QA Stages (e.g., Exploratory testing, Risk-based testing)

QA Team, in Auction Corp.
- Web Service QA

SW Solution LAB, Digital Media Research Center in Samsung Electronics Co., Ltd.

KEY
MEMBERS

Ko Ma Woon
Planning the Business & PM

ROLE
Planning the Business & PM

AREA & EXPERTISE

Planning, Operating and Analysis
- PM(Business, Development)
- Planning the Business & Establishing Business Model
- Planning and Operating the service and platform
- Planning and Operating Application

Major Professional Experience

S Mark Corp.
- Planning the Invisible Image codes service
- Planning the Service, application and Operating Platform

RS Media Corp.
- Launching Online Web Story Platform(e.g., Snack Book)
- Establishing and Planning service/operating platform, Planning Application

Wemade Corp.
- Operating with Global Marketing and Advertising Networks for Mobile Games(e.g., Heroes of Atlan, Wind Runner)
- Data Analysis(about LTV of each nations, K-factor and so on), Performing User Acquisition based on ROI

Voiceloco Corp.
- Supporting development of mVoIP R&D and Mobile Application
- Planning the Business/Service/Application

Neowiz Games Corp.
- Business PM for Online PC Game(e.g, AVA, DIZZEL, CROSSFIRE, S4LEAGUE, DUALGATE, etc.)
- Planning Business/Marketing/Operating/Service Strategy
- Supporting Domestic/Global Business and operation
- Planning game contents and update

Smart Play Corp.
- Managing Game Usage of PC users(like children), Planning Service/Carrying out QA

KEY MEMBERS

Ryu Ji Yeon
Platform QA Team Leader

ROLE
Platform & Performance, Expert

AREA & EXPERTISE
Expert on Platform/System and building test environment
- Building Server Performance testing tools and environments

Major Professional Experience

Nexon Corp.
- Technical PM for Mobile Game (e.g., HIT, Medal Masters, Super Fantasy War, Sangokushi Sousouden, etc.)
- Operating Mobile Game Live Service
- Supporting Platform Interoperability Technology

Wemade Corp.
- Technical PM for Mobile Game (Metal Skies, Dungeon Slayer, Iron Slang, Every town, pit-a-pat restaurant)
- Operating Mobile Game Live Service
- Supporting Platform Interoperability Technology

Neowiz Games Corp.
- Technical PM for overseas publishing games (e.g, AVA, Crossfire, S4 League, Sligger, etc.)
- Building overseas service game BI System

KEY
MEMBERS

Baek Ji Haeng
Web Service Development Team Leader

ROLE
Web Development Expert

AREA & EXPERTISE

Expert on Web Service Development
- Developing APIs for Mobile Web back-end
- Developing Game Management operating tools
- Developing Game Events
- Server Management

Major Professional Experience

LINE PLAY Corp.
- Developing Mobile Web Services
- Developing APIs for Web Server and Managing the Server
- Development PM of events

NHN Entertainment Corp.
- Developing Web Service of Poker and Carrying out Development PM
- Developing membership system of Hangame

NHN Technology Services Corp.
- Develop Web Services (e.g., Events and Web pages of Hangame)
- Developing Game Operating Tools (to use for Board Games, Publishing Games, Mobile Games, etc.)
- Developing membership system of Hangame
- Establishing and Developing the Internal Security Management System for IIMS

KEY
MEMBERS

Kim Jae Soo

Platform QA Team Leader

ROLE

QA Expert

AREA & EXPERTISE

Game QA Expert
- PC/Mobile game QA
- Global game(e.g., games in China)
- Non-Functional Testing(e.g., Exploratory testing)

Major Professional Experience

Wemade Corp.
- Leading QA and Launching a multitude of Mobile games(e.g., Viking Islands, Arksphere, cue up such as match game in real time, etc.)
- Launching Global Mobile games(e.g., Arksphere for Japan, Viking Islands for Global)
- Conducting QA for the masterpiece PC game(e.g., Changcheon 2, ICARUS)
- Leading deliberating QA for various markets on Mobile
- Conducting front-end Performance testing
- Researching for Mobile Security QA plans by utilizing various Hacking tools and applying to QA Stages
- Ref. External – QA/Launching match-up game for Smart TV

NCSOFT Corp.
- Operator and Test Engineer of AION and Lineage2
- Carrying out analysis on Auto Program and Log

KEY
MEMBERS

Jin Kwang Woo
Service QA Team 1 Leader

ROLE
QA Expert

AREA & EXPERTISE
Expert on Functional/Non-Functional testing for Application
- Applying Testing methods by products characteristics
- Establishing Network testing environments
- Mobile game QA Expert

Major Professional Experience

Wemade Corp.
- Game Service QA Team
- Leading Domestic/Global game QA (e.g., Viking Islands, Chunryong, Soul & Stone, etc.)
- Ref. External – QA/Launching match-up game for Smart TV

NHN Technology Services Corp.
- Carrying out QA for Casual games (e.g., A new game of Yut, A new Sichuan Province, Tetris, etc.)
- Leading Platform testing (e.g., iDoGame, GMS)
- Leading Mobile Platform testing (e.g., HSP, Payment, CGP)
- Carrying out Test Automation of Android Webtoon app
- Developing Nspeed (i.e., Network Testing Tool)
- Conducting front-end and back-end Performance testing

Nexon SD Corp.
- Test Engineer of Test Unit Team
- Carrying out QA for MMORPG ZerA

KEY
MEMBERS

Kim Seung Tae
Service QA Team 2 Leader

ROLE
QA Expert

Major Professional Experience

AREA & EXPERTISE
Expert on Functional/Non-Functional testing for Application
- Phasing in and evaluating management tools for testing (e.g., Quality Center, Test rail)
- Planning and Publishing quality indicators by products characteristics
- Establishing BTS and Performing Maintenance

Smilegate Megaport Corp.
- Leading Mobile game QA (e.g., Gentlehero, Qurare, Puzzle Chronicle, Explorers of Time, etc.)
- Leading Mobile Platform QA (e.g., STOVE)
- Building and Managing BTS System and Improving QA Process
- Managing Build for various markets (e.g., Google, Apple, Kakao, Facebook, One-store, N-store, etc.) and Policy

NCSOFT Corp.
- Carrying out QA at update stages for Lineage2, Lindvior and Epeisodion
- Task Force team for testing efficiency – Pushing forward the BAT and Script Test Automation

NHN Technology Services Corp.
- Leading QA for the masterpiece game Terra (at CBT, OBT, Commercialize and Live stages)
- Leading QA for Magicquiz and Winning Eleven Online at 1st CBT stage

KEY
MEMBERS

Lee Hyung Han
QA Team Leader of the China branch of NGLE

ROLE
QA Expert

AREA & EXPERTISE

Expert on Game QA
- PC/Mobile Game QA
- Carrying out FunQA and Analysis on game contents
- Funtional/Non-Functional testing

Major Professional Experience

Smilegate Megaport Corp.
- Carrying out QA at update and maintenance stages and leading test for Digimon Masters
- Improving QA Process and form template

NHN Technology Services Corp.
- Carrying out PC Game QA/Leading test
- QA for Terra (at OBT, Commercialize and Live stages), QA for Winning Eleven Online (at CBT, OBT, Commercialize and Live stages)
- QA for Devillian (at CBT stage), QA for Astar (at update and maintenance stages)
- Carrying out Mobile Game QA (Hopscotch SHINOVI MASTER and Jelly Monsters On The Rocks)

THANK YOU

www.ngle.co.kr