

 Portfolio

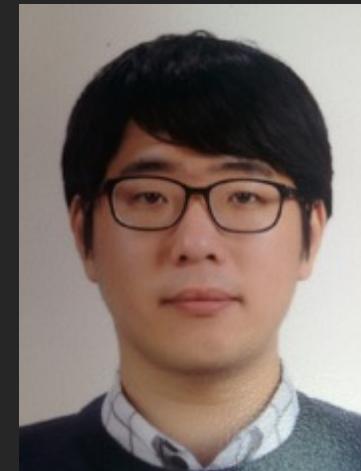
Park
Minchul

□ Contents

- Intro
- Software Technical Stack
- Backend Develop
 - ejabberd & Tsung - XMPP Signaling
 - IU - user info management server
 - Gateway - service gateway by graphql
 - Birthday - give a gift to friend's birthday
 - Dimple - Data aggregation server
 - Gaia - Cloud VSaaS
- Frontend Develop
 - Gift Reaction Project
 - Order Enhancement Project
- Infra Develop
 - Docker System using DC/OS
 - Building SmartCam Cloud System
 - Building Monitoring System using Zipkin
 - Service Java Version 8 UpgraPde
- Others
 - 26Area
 - Agile
 - S - Cube Project
 - Network Camera Video Coference
 - uC-OS II Porting
 - DPY - Do Performance Yourself

□ Intro

- Park Minchul
 - 1989.02.20
- Career
 - Kakao
 - 2014. 09 ~ Now
 - Hanwha Techwin
 - 2014. 01 ~ 2016. 9
 - Soongsil University
 - 2007.03 ~ 2014.02
 - Samsung Software Memebership
 - 2013.12 ~ 2014.01
- Homepage : knightpop.github.io/home
- LinkedIn : linkedin.com/in/parkminchul
- Blog : type-class.com
- Github : github.com/knightpop
- HackerRank : hackerrank.com/knightpop



□ Software Technical

- Language
 - Scala
 - Java
 - TypeScript
 - Python
 - PHP
 - Use any suitable language to solve the problem
- Backend
 - Play Framework & Akka
 - Finatra
 - Spring
 - Serverless
 - RxJava
- Frontend
 - React & Redux
- Infra
 - AWS & Azure
 - Mesos & Marathon & Docker



BACKEND DEVELOP



XMPP Signaling



EJABBERD & TSUNG

□ ejabberd & Tsung

- Development Environments
 - OS : AWS(Ubuntu 14.04 LTS)
 - language : Erlang, Scala
 - Framework : OTP, Akka
 - base open source solution - ejabberd
- Project Goal
 - Develop solution which replaces old Samsung SmartCam XMPP Server solution.
 - Upgrade and additional development Open Source Solution, ejabberd to meet service plan
 - Develop the Load Test Program to verify Signaling Server which can control the millions camera
 - upgrade and additional development Tsung - Open source Load Test Program to meet service plan
 - Develop new Load Test Program using Scala & Akka
- Project Achievement
 - Upgrade and additional development ejabberd to meet service plan - 30,000 TCP Connection per 1 instance(AWS c4.large)
 - Upgrade and additional development Tsung to meet service plan - 60,000 TCP Connection per 1 instance(AWS r4.large)
 - Develop new XMPP Load Test Program to meet service plan base on Akka - 20,000 TCP Connection per 1 instance(AWS c4.large)
- Project Feature
 - Occur massive TCP traffic using Erlang / OPT
 - System & Erlang VM Configuration to accept massive TCP traffic and obtain resilience
 - The experience of massive traffic and handling.

□ ejabberd & Tsung

- Development Role
 - ejabberd - Open Source Solution
 - Can maintain 30,000 TCP Connection per instance.
 - Develop the system for 20 instances can handle 60,000 TCP Connection
 - Develop and change Tsung - Open Source Load Test Program
 - Make 60,000 TCP Connection per 1 instance
 - Can occur 200 TCP Connection per second
 - Develop New Load Test Program Using Scala & Akka
 - Make 20,000 TCP Connection per 1 instance
 - Can occur 800 TCP Connection per second

User Info Management Server

kakao

IU

IU - User Info Management Server

- Development Environments
 - OS : CentOS 7.2
 - Language : Scala
 - Framework : Finatra
 - Protocol: finagle-thrift
- Project Goal
 - CRUD and manage user information in Kakao commerce(gift)
 - Gradually migrate legacy Monolithic Service with Micro Service
 - Develop Micro Service using Finatra
- Project Result
 - Replace Monolithic Service Feature with Micro Service Server
 - Introduce finagle-thrift to team
 - Introduce Zookeeper to team
- Project Feature
 - Develop Micro Service Using Finatra
 - Server Cluster Management using Zookeeper
 - Fast response calling API and comfortable Integration with finagle-thrift

□ IU - User Info Management Server

- Development Role
 - Server
 - Build micro server using Finatra
 - Make ‘Easy to Use’ API by Write Thrift IDL
 - API Client
 - Write both Scala client and Java client to achieve ‘Easy to Use’ API
 - Develop the new concept of the user account to Kakao Gift Service
 - Make new API(V2) to Develop the new concept of the user account. But compatible with Legacy System
 - Migrate legacy system to micros ever

Graphql API Server

kakao

GATEWAY

□ Gateway - Graphql API Server

- Development Environments
 - OS : CentOS 7.2 on Docker
 - Language : Typescript
 - Framework : Node + Graphql-Yoga
 - Protocol: graphql
- Project Goal
 - Serving data to inner other services in Kakao
 - Request schema is different from each service. (Because of each service has own domain)
 - The project run on DC/OS for high availability
- Project Achievement
 - #Tab(Shopping tab, request high traffic in Kakao) start use Gateway service
- Project Feature
 - The flexible protocol using Graphql
 - Achieve high availability using DC/OS and Docker

kakao

□ Gateway - Graphql API Server

- Development Role
 - Building a Docker system
 - Build high availability Docker Service
 - Auto-generate Graphql Shema + Quert
 - Auto-generate Graphql Schema and Query using Typed-Graphql
 - Dependency Injection using Typedi

Give a gift to friend's birthday

kakao

BIRTHDAY

□ Birthday

- Development Environments
 - Language : Scala, Typescript
 - Framework : Play, React, Finatra
- Project Goal
 - Inform to user friend's birthday in the first tab
 - Make user give a gift by Kakao Gift and make additional revenue
- Project Achievement
 - Improve usability
 - Inform user friend birthday instead of Facebook
 - Improve revenue
 - 18 billion additional income every year
- Project Feature
 - Receive huge traffic every 12 AM because people want to give gift A.S.A.P
 - Require rapid release. So, develop 1st, 2nd project parallelly

kakao

Birthday - 1st

- Develop Role
 - Develop alone except design
 - Front Page
 - Make 1st project page using React & Redux
 - Build Micro Server recommend user proper gift(from best data)
 - Because huge traffic every 12 AM so, adapt cache in the recommendation
 - Build service failover
 - Load Clock Log to analyze user data
 - Add Feedback API to check if the user really use birthday page

□ 1st Page View

KT LTE 오후 3:24 76% X

강혜영_Jul..님의 생일을 축하해주세요!

6월 7일

인기있는 생일선물

롯데시네마
롯데시네마 주말예매권(금~일)
10,000원

프렌즈리빙
[6월특가] 카카오퍼렌즈 언더더씨 드링크자 4종 택1
8,900원

peripera
1+1+1

KT LTE 오후 3:25 76% X

GS25
GS25 모바일 상품권 1만원권
10,000원

경복-사과
사과100%사과꽃향기 사과즙 100mlX50팩 (옐로우기프...
13,900원

스타벅스
아이스 카페아메리카노 Tall
4,100원

KAKAO FRIENDS

KT LTE 오후 3:25 76% X

베스킨라빈스
페밀리 아이스크림
19,500원

문화상품권
온라인문화상품권 100,000원권
100,000원

GS25
GS25 모바일 상품권 5천원권
5,000원

선물하기 홈에서 더보기

Birthday - 2nd

- Development Role
 - Project to improve service and revenue
 - Make 2nd project page using React & Redux
 - Build Micro Server recommend user proper gift(from user clustering algorithm)
 - Because huge traffic every 12 AM so, adapt cache in the recommendation
 - Load Clock Log to analyze user data
 - Add Feedback API to check if the user really use birthday page

Data aggregation Server

kakao

DIMPLE

□ Dimple - Data Aggregation Server

- Development Environments
 - OS : CentOS 7.2
 - Language : Scala
 - Framework : Finatra
 - Protocol : http rest
- Project Goal
 - Service layer which manufactures page view data from various Micro Service In Kakao Gift Service
 - Make new Service Layer, which can manufacture various data not from the view layer server but from Dimple Server
- Project Achievement
 - Make new module used prom reaction project
- Project Feature
 - aggregate many Micro Services data and make one JSON Object.

□ Dimple - Data Aggregation Server

- Development Role
 - Gift Inbox Detail Page Data
 - Make the new module in Dimple which can manufacture data
 - Change Architecture
 - Change Server Architecture to DDD Architecture

Cloud VSaaS



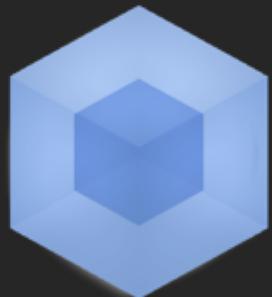
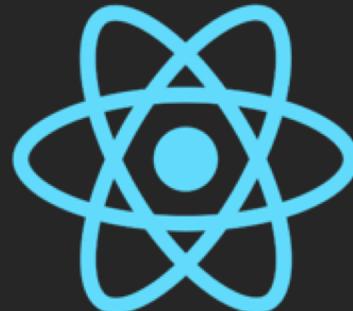
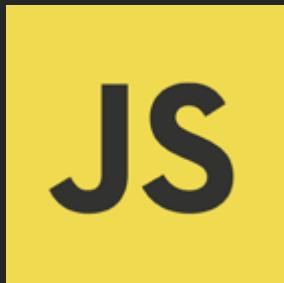
GAIA

□ Gaia - Cloud VSaaS

- Development Environments
 - OS : AWS(Ubuntu 14.04 LTS) & Azure(Ubuntu 15.10)
 - Language : Scala, Java
 - Framework : Play, Akka
- Project Goal
 - VSaaS Live Video Streaming on AWS Cloud
 - Playback Server Accept RTSP Stream and store video
- Project Result
 - Implement Auto Scaling and we can playback fluently even serviced in 3g data communication. It's Prototype
 - Develop playback server accept RTSP Video Stream and convert to MPEG-dash and send.
- Project feature
 - Service Signaling server using ejabberd.
 - Make EC2 Cluster Concurrent Server by Akka, Play
 - WebRTC Adaptive Streaming with Kurento Media Server

□ Gaia - Cloud VSaaS

- Development Role
 - Design and implement Live Streaming Server(POC)
 - Design and implement RTSP to WebRTC Transcoding, the live streaming server using Kurento Media Server
 - Design and implement AWS Instance Cluster(POC) Management and Business Logic Server
 - Design and implement Auto Scaling Instance management and Business Logic Server using Play Framework
 - Design and implement RTSP Endpoint server to playback RTSP Camera Video(POC)
 - Design and implement RTSP Endpoint using GStreamer
 - Design and implement Playback Server(POC)
 - Design and implement Playback Server connected with AWS S3 by changing Open Source eDash-Packager



FRONTEND DEVELOP



Renewal Gift InBox Page

kakao

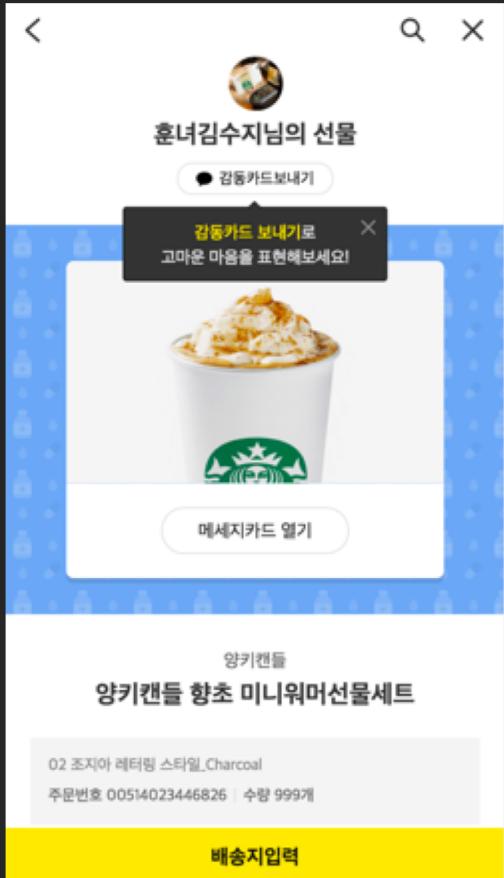
GIFT REACTION

□ Gift Reaction

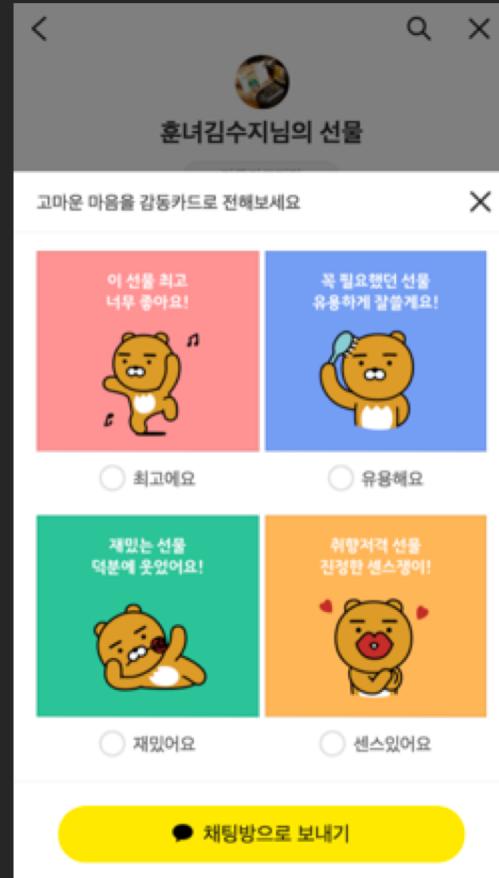
- Develop Environment
 - Language: TypeScript
 - Framework : React, Redux
- Project Goal
 - Project to aggregate data about people's feeling who receive the gift in Kakao Gift Service
 - Renewal page to replace legacy code(Angular JS 1) with React
- Project Achievement
 - Gift Reaction
 - Renewal Gift Inbox page.
 - Aggregate people's feeling who receive the gift in Kakao Gift Service
- Project Feature
 - Make the front page using TypeScript

kakao

□ Page Views



Inbox detail page



Inbox reaction page

kakao

Renewal Item page and Best tab

kakao

ORDER ENHANCEMENT PROJECT

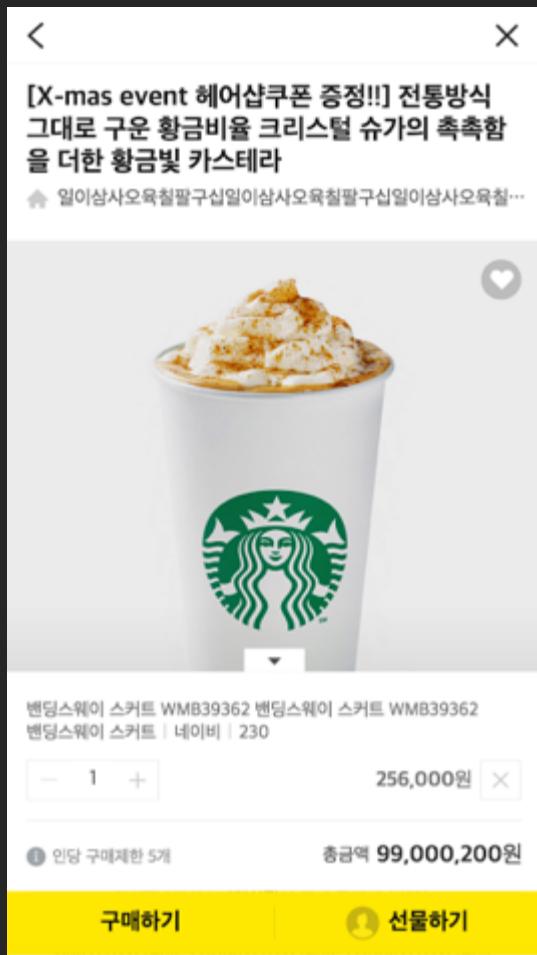
□ Order Enhancement Project

- Development Environments
 - Language : javascript es6
 - Framework : React, Redux
- Project Goal
 - Develop Web App frontend for Kakao commerce(gift)
 - Renewal page to replace legacy code(Angular JS 1) with React
- Project Result
 - Best tab page
 - Develop new Best Tab web page to launch new service
 - Renewal Order Project
 - Develop new Item Detail page to enhance UX
- Project Feature
 - Use React, Redux, es6 to Develop modularized front page

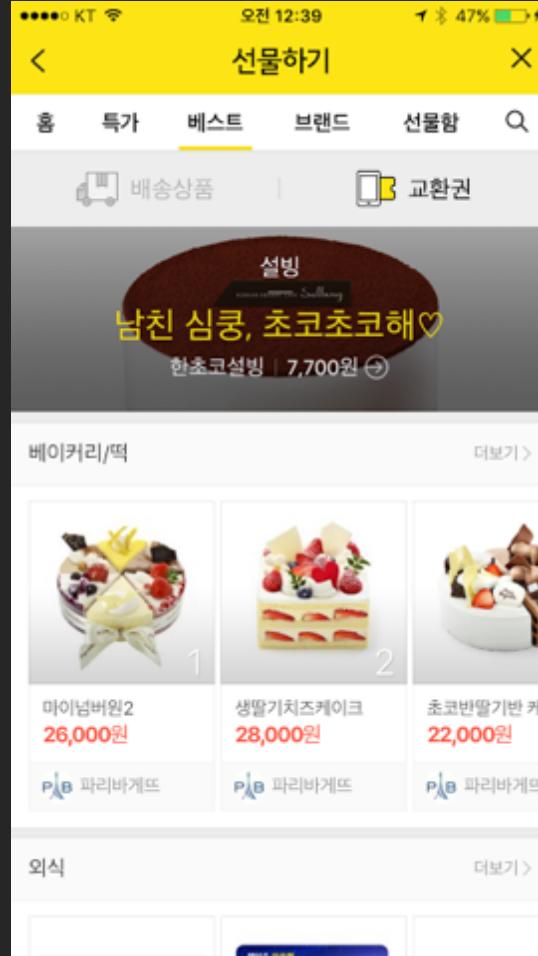
kakao

Page Views

Item Detail Page

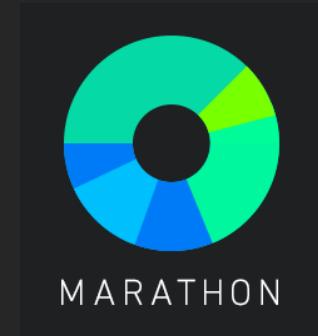


Gift Best Tab





INFRA DEVELOP



Build Container System

kakao

KAKAO GIFT DC/OS

□ Build DC/OS in Kakao Gift

- Development Environment
 - Mesos + Marathon + Docker
 - Kakao DK/OS
- Project Goal
 - Manage server and resource in Kakao Gift Service Efficiently
 - Easy and Fast to deploy
- Project Goal
 - Admin, Worker Develop Server Migration. (Primary)
 - Migrate all API server
- Project Feature
 - Migrate to Container Platform to legacy service with changing Container Native Service

AWS Cloud System



SAMSUNG SMARTCAM

□ Samsung SmartCam V2 Architecture

- Development Environment
 - Cloud Platform: AWS
 - EC2, RDS(RDS), ElasticCache(Redis)
- Project Goal
 - With eJabberd, build new Architecture in Samsung SmartCam
- Project Feature
 - Compatible with legacy System
 - The affordable system which 4 million Camera connect at the same time

Micro Service Monitoring System

kakao

ZIPKIN

□ Zipkin - Monitoring Service

- Develop Environment
 - Zipkin
- Project Goal
 - Trace Micro Service and find service bottleneck in real time
- Project Achievement
 - Integrate all server (except 1 legacy server). And find various service bottleneck
- Project Feature
 - Measure Round Time in Play, Akka, Finatra

Java 7 to Java 8 Version Up

kakao

SERVICE JAVA VERSION UP

□ Kakao Gift Service legacy Java Version up

- Development Environment
 - Play 1.4
 - Java 7
- Project Goal
 - Java version up to use API Client using Java 8
 - Migrate legacy system to Java 8 from Java 7
- Project Achievement
 - Migrate to Java 8 from Play 1.4 & Java 7
- Project Feature
 - Analysis Application base on Java migration document
 - Achieve resilience service by long-run test



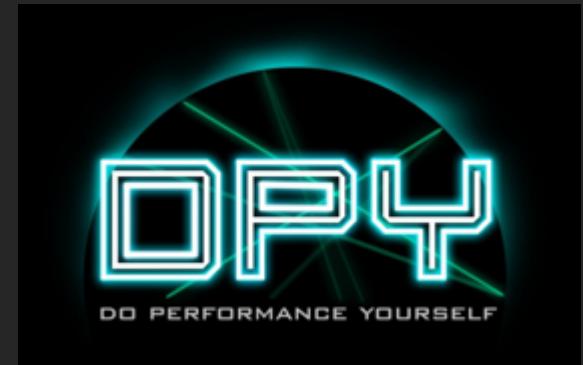
26Area



OTHERS



SAMSUNG
SOFTWARE
MEMBERSHIP



B Class Humor Community

26Area

26AREA.COM

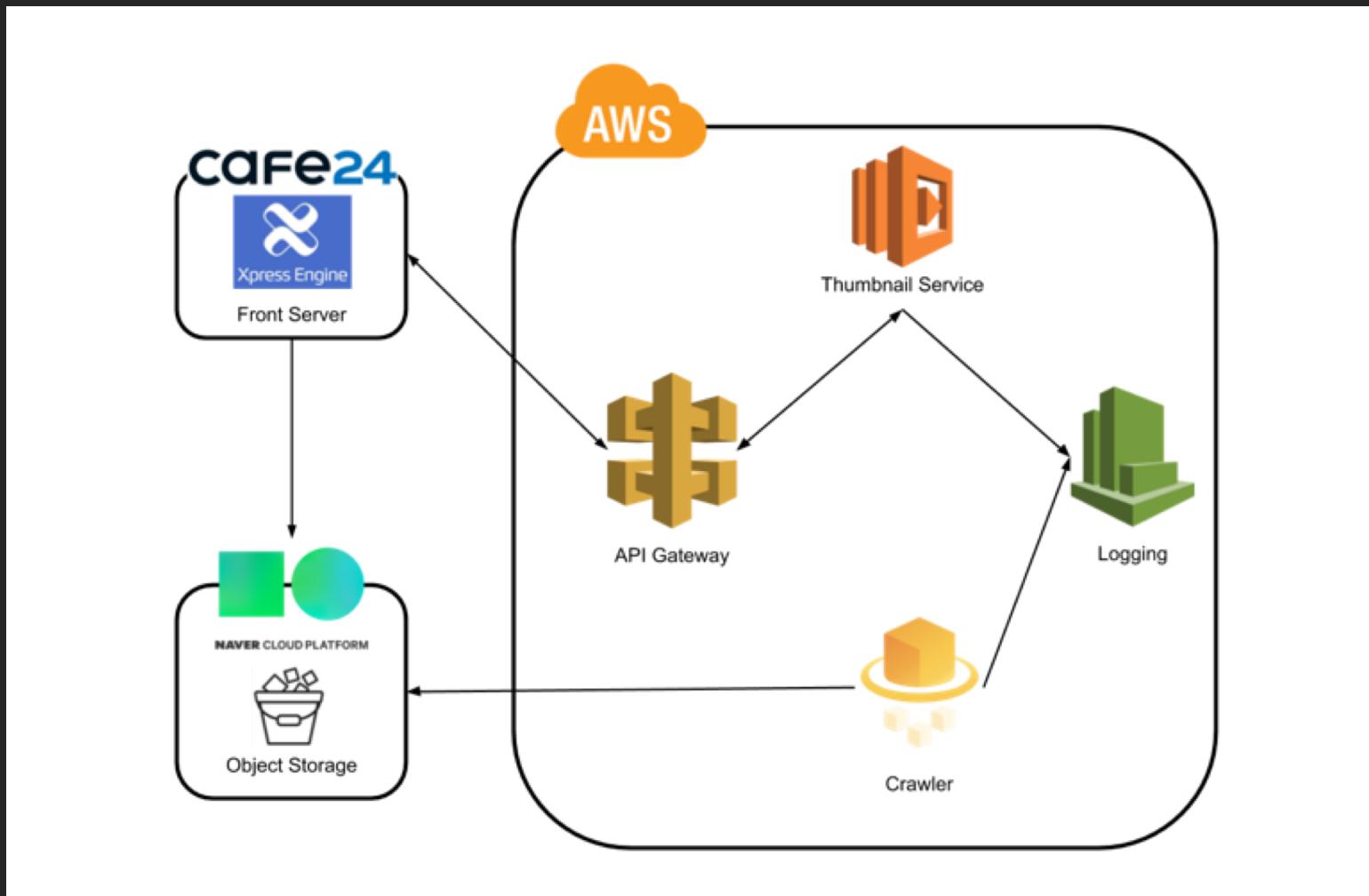
□ 26Area.com

- Development Environment
 - XE-Core(CMS Solution, PHP)
 - Serverless(Typescript)
 - Scrapy(Python)
- Project Goal
 - Gathering Humor Document In Korea Internet
 - Build community site to make user communicate each other
- Project Achievement
 - Fast release using XE
 - Serverless Docker using AWS Fragate
 - Auto-deploy using Serverless Framework
 - Currently(2018-08-26) 200 user
- Project Feature
 - Short money because it is side-project(\$20 / month)
 - Using various Cloud platform(AWS, NCloud, Cafe24)

□ 26Area.com

- Development Role
 - Build Site Using XE(CMS Solution)
 - Fast building using XE made by PHP
 - Using Cafe24 to reduce cost
 - Website Crawling Using Scrapy
 - Crawling Framework made by Python
 - Using AWS Fragate to reduce instance cost
 - Make Thumbnail Service Using Serverless Framework
 - Service on AWS Lambda
 - Smart Crop base on Shannon entropy
 - Operate Service
 - Operate stand alone because personal side-project

□ 26Area.com Architecture



Introducing agile to team

kakao

AGILE

□ Introducing agile to team

- Background:
 - Hard to make a balance between CS issue and technical issue
 - Number of bugs are growing because of technical debt
 - Become lower of Engineer's condition
- How to solve:
 - Adapt Agile to considering Kako Gift service environment.
- Introduction:
 - Scrum with product manager
 - Sprint Meeting
 - Introducing Scrum master
 - Introducing Scrum Board
 - Introducing Demo day

NVR/DVR Common



S - CUBE PROJECT

□ S - Cube Project

- Development Environments
 - OS : Ubuntu 12.04 LTS
 - Language : C++
- Project Goal
 - Make new generation NVR Platform To substitute existing Samsung Techwin NVR Platform, Sejong
- Project Result
 - Re-Design to concrete abstract Layer in existing architecture, and export hardware specific feature by XML to implement One Source Multiple Use
- Project feature
 - Collaboration with SRIB, India(Develop in India, in the field)
 - Aim One Source, Multiple Model

□ S - Cube Project

- Development Role
 - Camera Manager
 - Design and implement Network Camera management and PTZ control in the same network using protocol ONVIF and open source gSoap
 - Log Service
 - Design and implement the module to manage, store and search all logs made by NVR using SQLite and open source Kompex Wrapper
 - Code Coverage Test Case and Management
 - Code Test code to process Test Driven Development using Gcov, CPPUNIT

Samsung Techwin



NETWORK CAMERA VIDEO CONFERENCE

□ Network Camera Video Conference

- Development Environments
 - OS : Window 7
 - Language : C#(WPF)
- Project Goal
 - Develop Program which supports existed Samsung Techwin CCTV to using Video Conference
- Project Result
 - Video Conference multiple people using CCTV and RTSP
- Project Feature
 - Re-Use Existed CCTV



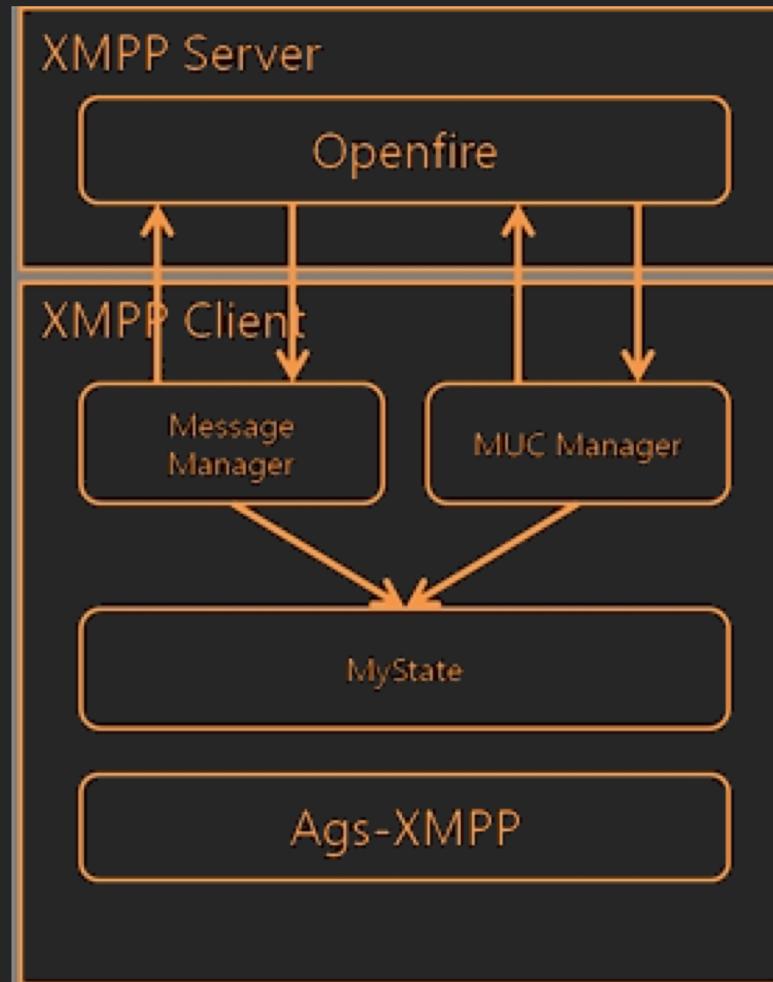
□ Network Camera Video Conference

- Project Role
 - Program View and Business Logic
 - Design and implement Program View using WPF and All the Model Controller, Business Logic Module
 - Chatting Module
 - Design and implement to manage member, chatting room in the chatting server
 - Design and implement Openfire chatting client using XMPP Library, AGS-XMPP
 - Vote Module
 - Design and implement vote module to vote specific subject in Videoconference



□ Network Camera Video Conference

- Chatting Module Block Diagram



□ Network Camera Video Conference

- UI Design



ARM Porting



UC - II OS

□ uC - II OS ARM Porting

- Development Environments
 - OS : Ubuntu 12.04 LTS
 - Language : C / ARM Assembly
 - Target Board : Odroid 7
- Project Goal
 - Port one of the RTOS operated in Window, uC - II OS to ARM Chip.
- Project Result
 - Make uC-OS II only operated in Power PC and Intel Chip to operate in ARM Architecture
 - Implement Dynamic scheduling like Linux nice value. Before, its burden to engineer
- Develop Environment
 - Use s5pc110 Chip, used in Samsung Galaxy S
 - Use ARM-none-eabi Cross Compiler

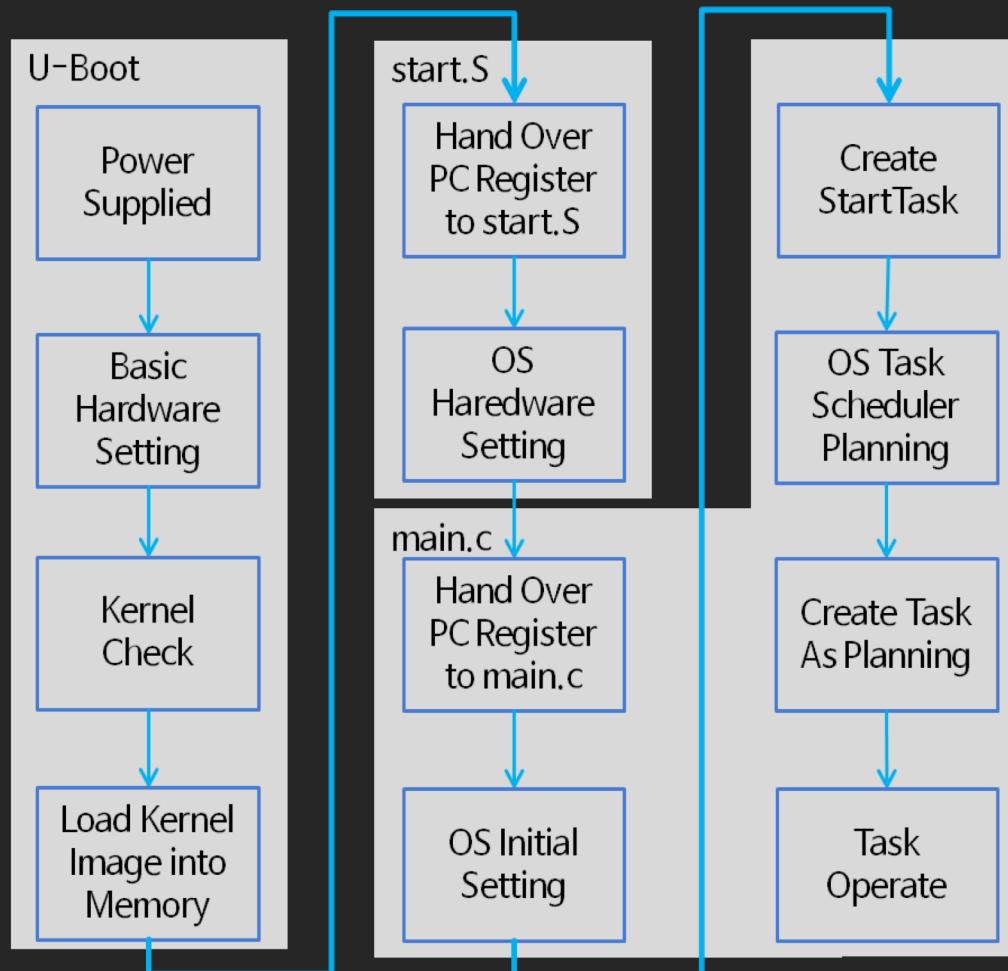


□ uC - II OS ARM Porting

- Develop Role
 - Revise U-Boot and make it load uC - OS Kernel image in s5pc110 chip
 - Write uC - OS - II chip dependent hardware setting code by ARM Assembly to enter main entry
 - Make chip dependent driver like U-ART
 - Write interrupt code to context switch
 - Change uC-OS II Scheduler to use the nice value like Linux
- Performance Test
 - Using Timer inside Board to Performance Test

□ uC - II OS ARM Porting

- uC - OS II Porting Kernel Operation



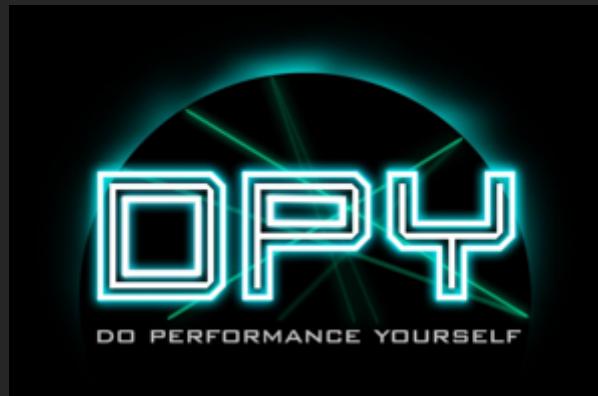
Do Performance Yourself



DPY

DPY - Do Performance Yourself

- Development Environments
 - OS : Window 7
 - Language : C#(Unity3D)
- Project Goal
 - Develop Interaction Media Performance Content using Kinect
- Project Result
 - Develop interactive digital art React to user behavior
- Project Feature
 - User motion capture using Machine Learning
 - Character Follow User by Unity 3D



□ DPY - Do Performance Yourself

- Project Role
 - Implement 3D Interactive Interface
 - Implement user UI, 3D motion, effect using Unity 3D
 - Implement module interact user and character
 - Implement interact module by Kinect and Zigfu
 - Implement Business Logic combine with another module
 - Combine machine Learning Module and DSP Module



□ DPY - Do Performance Yourself

- UI

