Online Carbon Emission Trade System (OCETS)

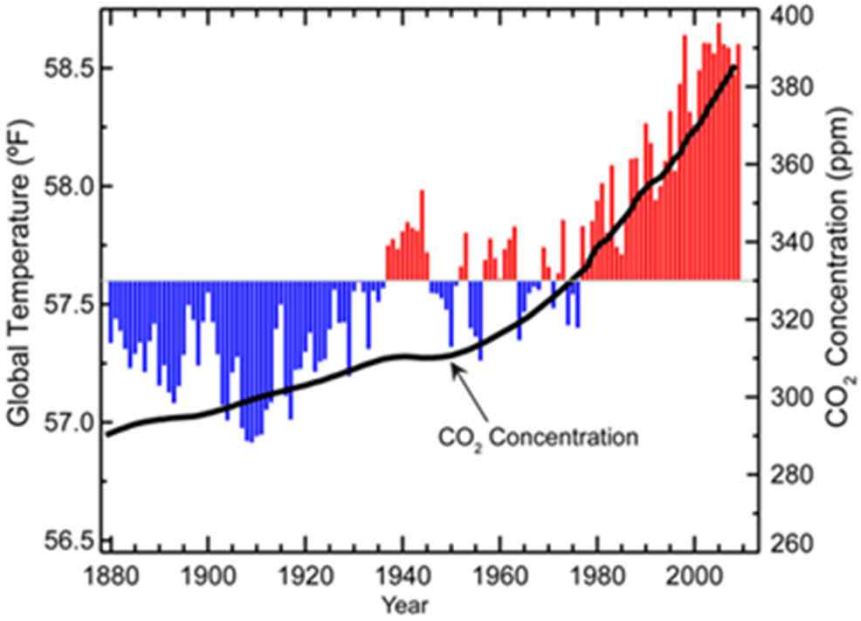
Team 8
HyoSeung Park
KyeongSeok Yang
JoonKap Park
DaeSoon Kim

Contents

- Introduction
- Elicitation, Understanding and Structuring
- Modeling and Analysis
- Prototype
- Gathered Requirements
- Expected result
- Preview of OCETS

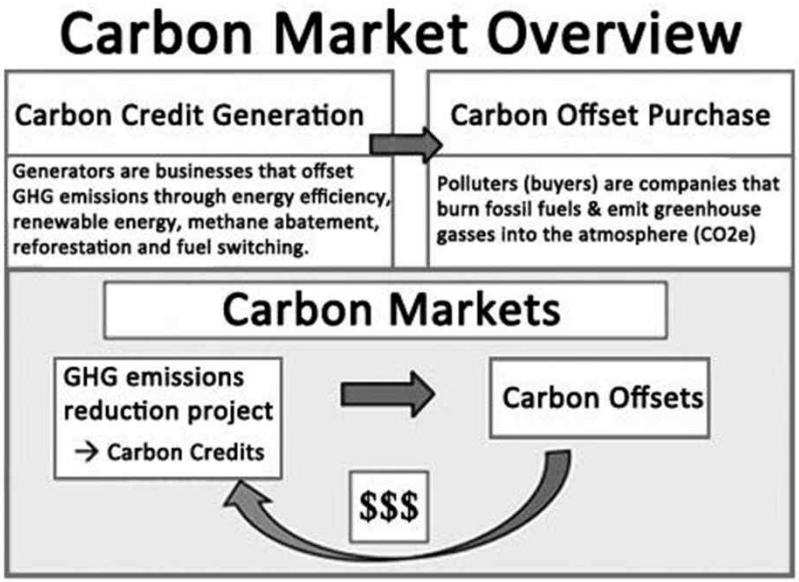
Introduction

Background



- Since the 18th century, greenhouse gas consistently increased
  ->Main cause of global warming
- Climate Change Convention for prevention of global warming
  -> Adopt kyoto protocol(1997)
- Effort of all over the world for reduction of carbon emission and greenhouse gas based on kyoto protocol
  -> Creation of carbon emission trade market

Overview



- Carbon emission is allocated for participants
- Carbon emission may be bought or sold out of necessity
- Participants should try to keep for their carbon emission allocation.
  -> reduction of carbon emission

Objective

- Reduce trial and error when making system
- Make suited for Korean system
- Make profit for enterprise
- Develop easy system(easy to see, to learn, to use)

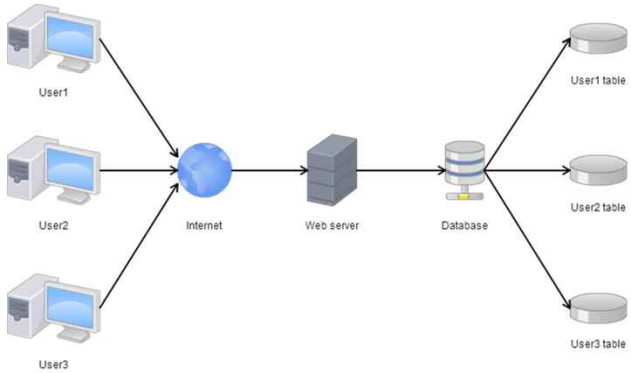
Elicitation, Understanding and Structuring

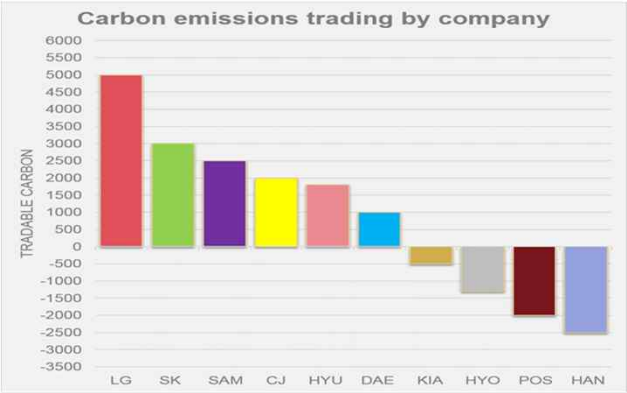
Background Work

Survey papers and Meeting for Idea discussion

- Domain identifying
- Decide to provide carbon emission trade and solution
- Decide to develop for web-based system

System Overview



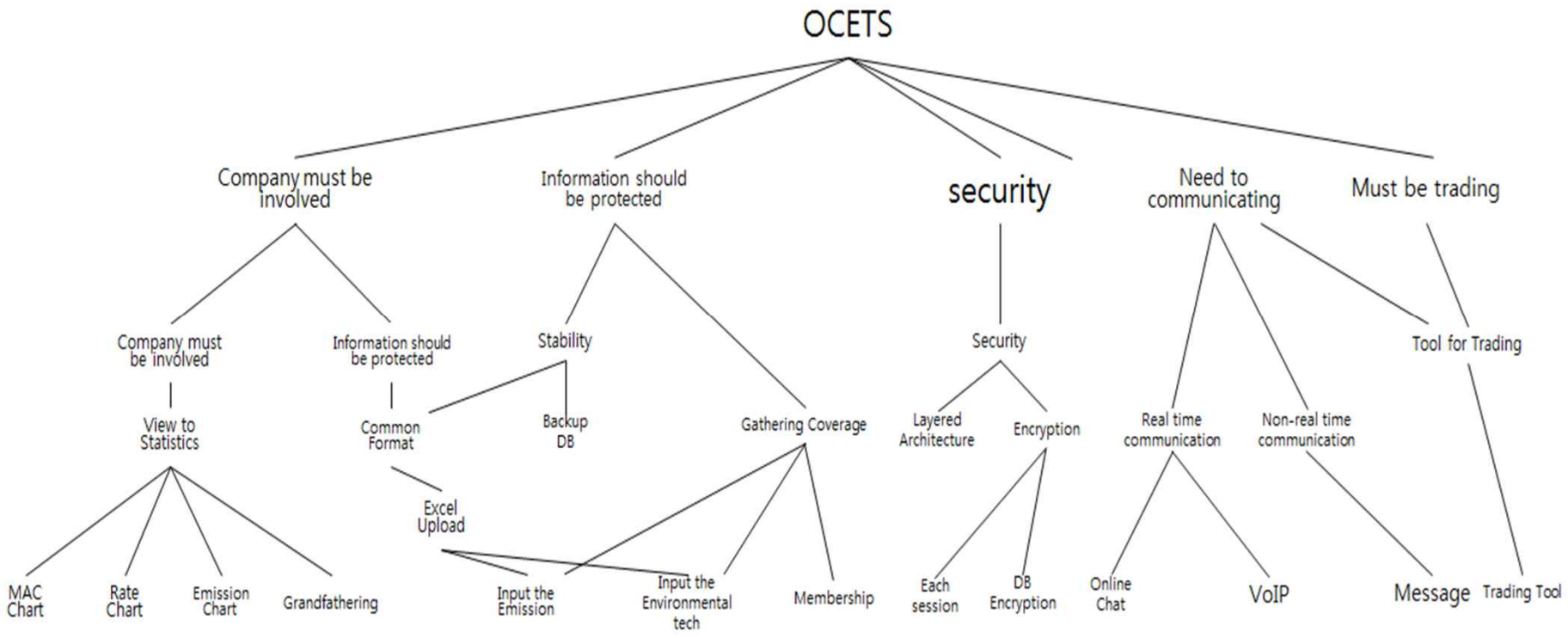


1. Use appropriate method for 24-hour real-time service and provide information of various corporations on the website.
2. Give the authority of the administrator account to the government manager for managing the entire information of the corporations.
3. Every functions are available on the web interface for the convenience of the users.
4. Users are connected to OCETS through web browser and can trade carbon emission credits.
5. Each data of the users are managed by each table of the database.

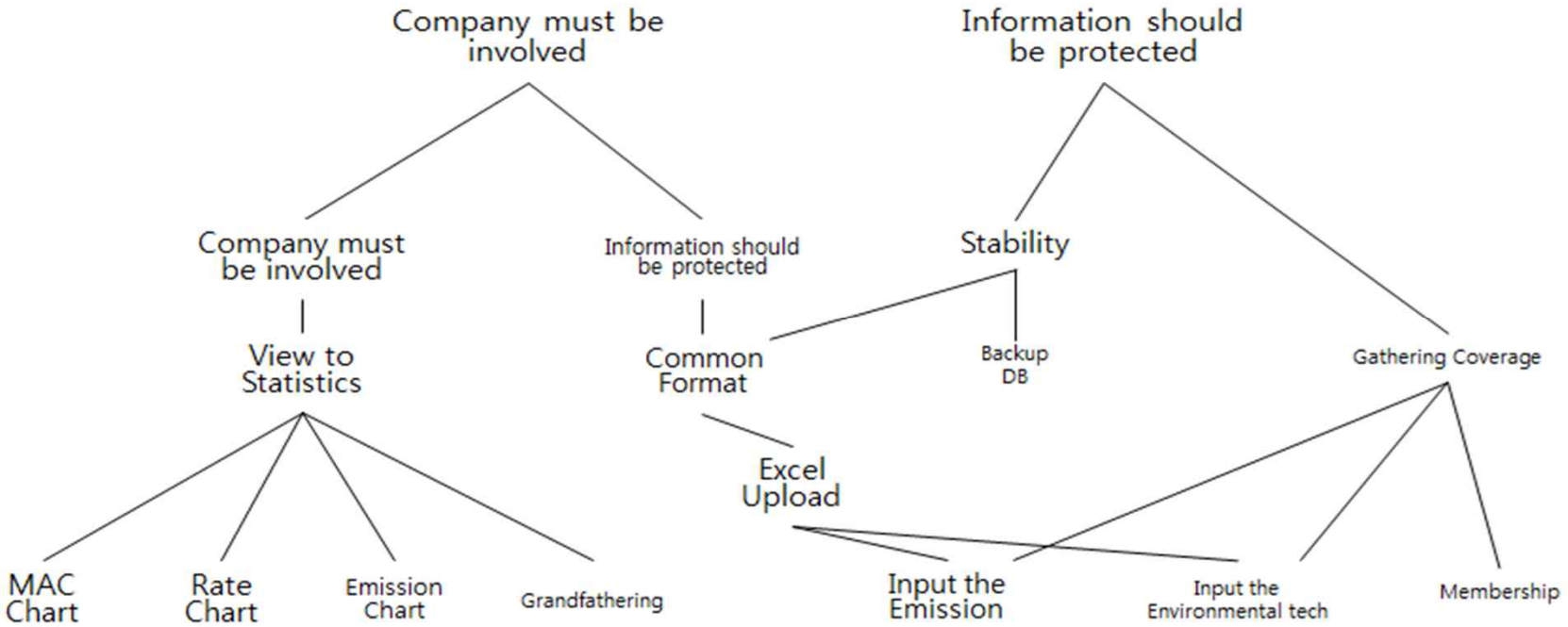
Modeling and Analysis

Goal-Based Approach
Scenario-Based Approach
Usecase Diagram

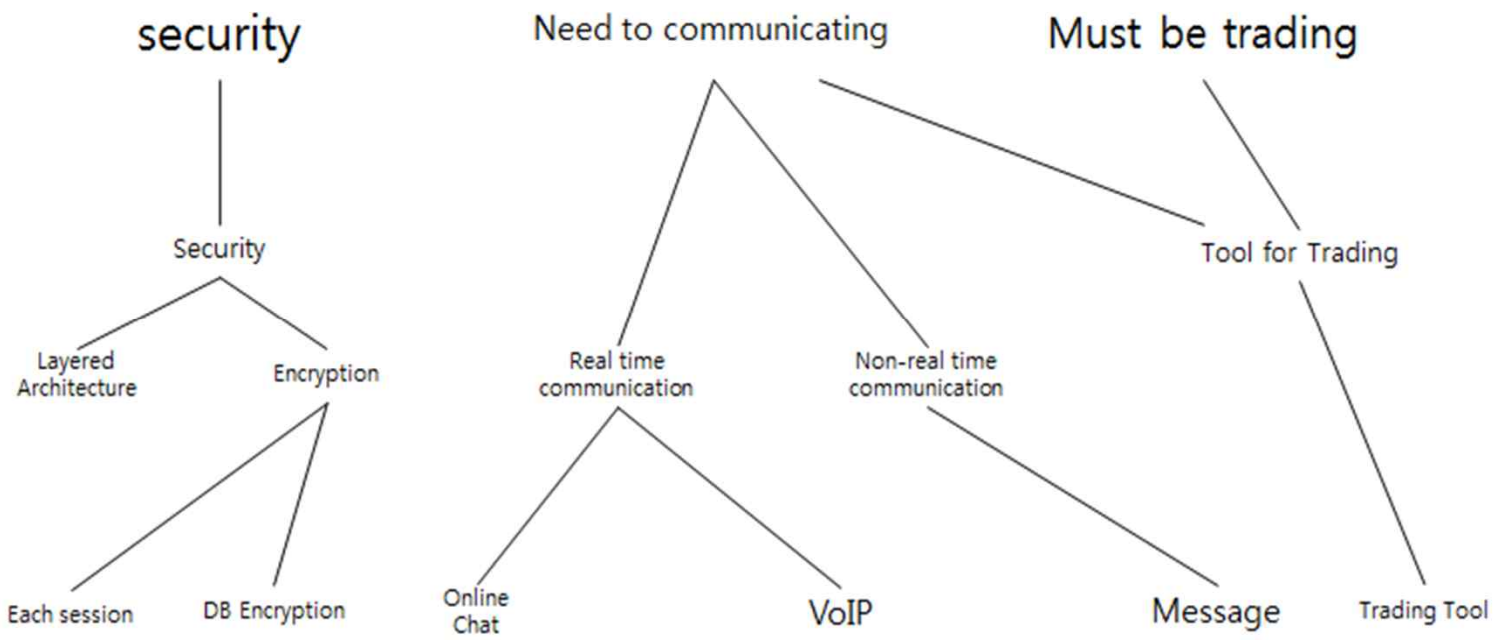
Goal-based Approach



Goal-based Approach



Goal-based Approach



Scenario-based Approach

why Scenario-based model?

- imagine usage of user
- show probable story to the user
- elicit requirements
- analysis user’s requirements

Scenario-based Approach

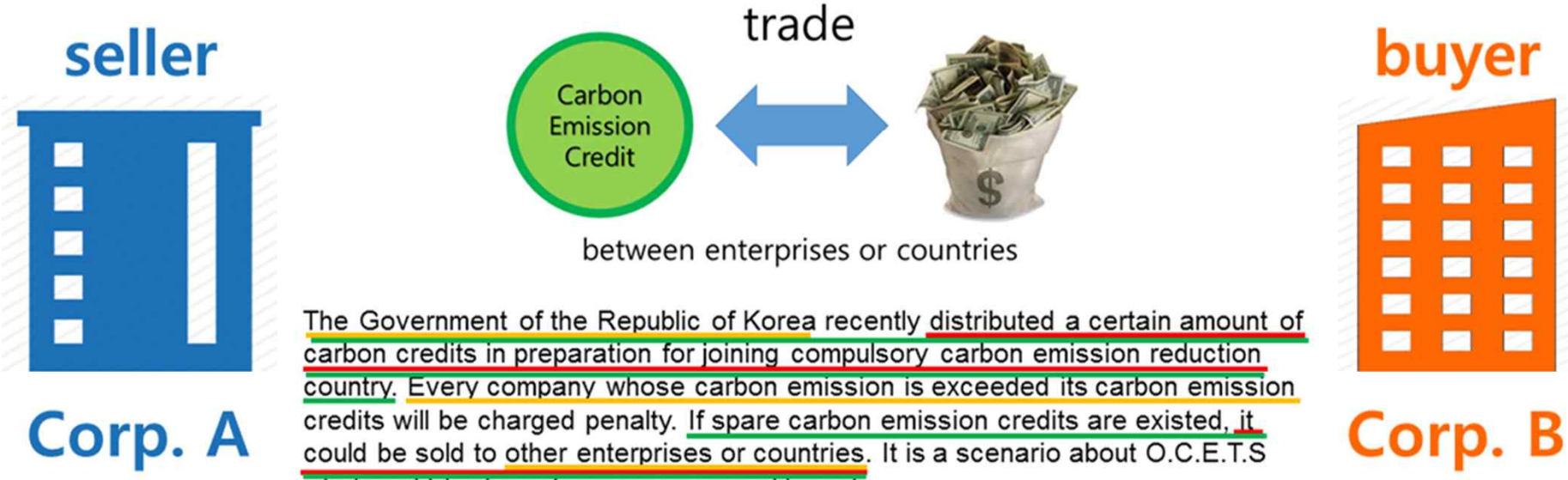
Scenario is composed of

- intro: background
- case 0: scenario for both
- case 1: scenario in seller's view
- case 2: scenario in buyer's view

case 1, 2 are same story with different view

Scenario-based Approach

Intro: Background of the Scenario



The Government of the Republic of Korea recently distributed a certain amount of carbon credits in preparation for joining compulsory carbon emission reduction country. Every company whose carbon emission is exceeded its carbon emission credits will be charged penalty. If spare carbon emission credits are existed, it could be sold to other enterprises or countries. It is a scenario about O.C.E.T.S what could trade carbon emission credits on-line.

Actors — Goals/Objectives — Background/Domain

Scenario-based Approach

CASE 0: Scenario of both Corp.A and Corp.B

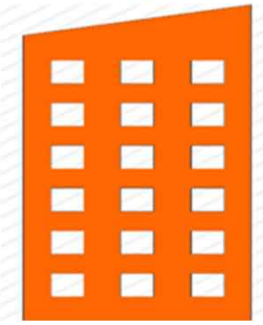
seller

Corp. A

A1, A2, A3 are members of corporation A. And B1, B2, B3 are members of corporation B. A1 and B1 are team members. A2 and B2 are team leaders. And A3 and B3 are CEO. A1, B1 who are in charge of carbon emission trading of company A, B had to buy license of O.C.E.T.S for using it. During trial period of 1 week using O.C.E.T.S is free, but after that period, users who want to use it have to pay for license of O.C.E.T.S (weekly, monthly, annually license available).

After buying license of O.C.E.T.S, main ID is issued by name of corporate A, B so that members of A, B will get subdivided ID. Since final approval should made by A3 and B3 who are in charge of it, A1 and B1 have to issue corporate ID to obtain approval of A2 and B2 which is also applied to A3 and B3. A1 and B1 who has admin account enrolled A3 and B3 as corporate member in modification menu of corporate information.

buyer



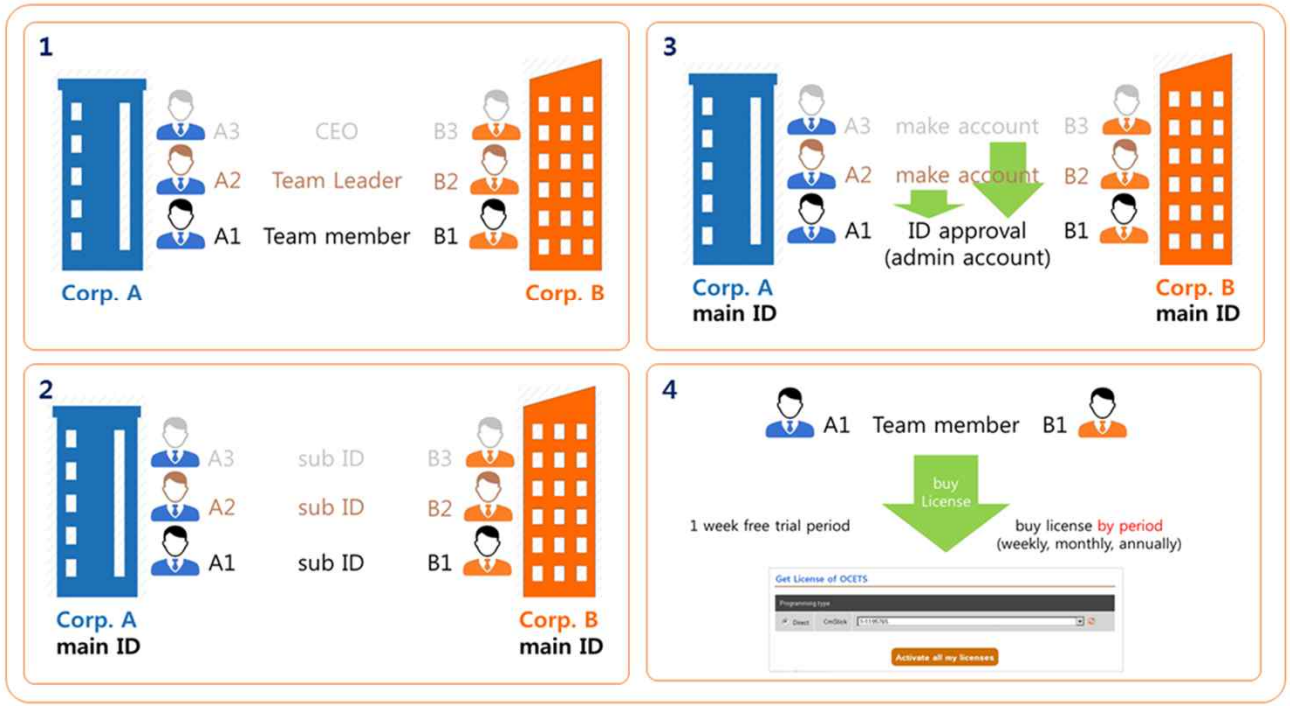
Corp. B

Actors — Goals/Objectives — Background/Domain

Scenario-based Approach

CASE 0: Scenario of both Corp.A and Corp.B

make ID & buy license



Scenario-based Approach

CASE 1: Scenario of **Corp. A**

A1, an employer of corporation A, connected to O.C.E.T.S dot com through web browser by putting his ID and password into the login form. In a "statistics" menu, considering MAC Chart simulation and recent situation, corporation A decided to sell carbon emission credits, because it seems to be more profitable than reducing carbon emission by developing environmental technique. Therefore A1 needs to be approved by A2 and A3. After approval, in "sell" menu, A1 saw prices and credits registered by sellers. Also saw sorted by highest to lowest or by average. After seen in "statistics", A decided to sell as a same price as lowest price now. A1 enrolled in "sell" menu by pushing "selling credits" button.

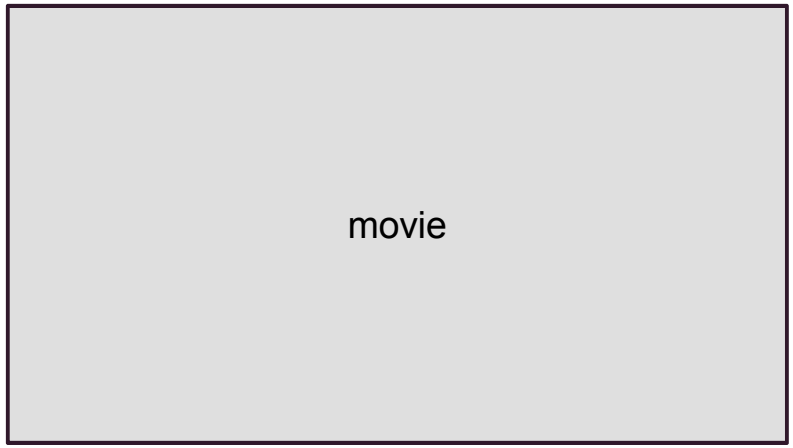
Though corporate A received an inquiry about a price reduction from corporation B, team leader A2 and CEO A3 expressed intention of deny. Therefore A1 sent a message to B1, about impossibility of discount. Despite the denial of discount from corporation A, corporation B decided to purchase. So B1 pushed "buying credits" button in "buy" menu. Clicking "selling approval" button by A1, A2 and A3, trade of carbon emission credits are carried out successfully.

Actors — Goals/Objectives — Background/Domain

Scenario-based Approach

Scenario, expressed in Video Mockup

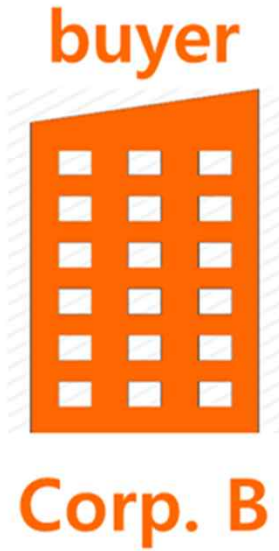
part of scenario CASE 1 (Selling Scenario of Corp. A)



Scenario-based Approach

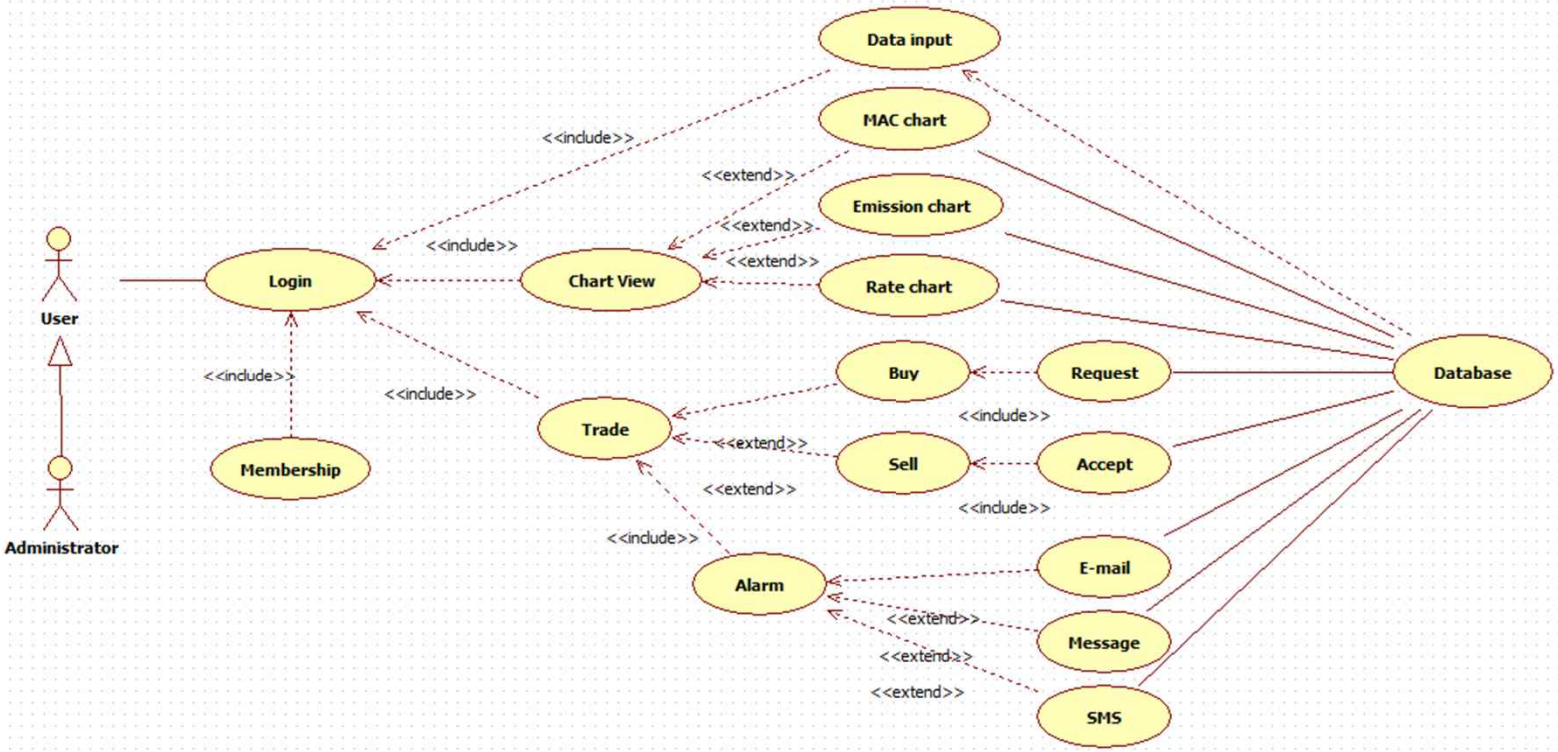
CASE 2: Scenario of Corp. B

B1, an employer of corporation B, connected to O.C.E.T.S dot com through web browser by putting his ID and password into the login form. B1 set "auto alarm service" be ready for future purchase. This function will notice pop-up message when average price reached previously set price. In "statistics" menu, A1 saw quantity of credits trading sorted by country or corporation, market value, etc from carbon trading control center in real-time. From MAC charts A1 checked tendency of the carbon trading market. B1 set manually set the amount of the carbon emission credits as corporation B needed in advance. After this step, B1 perform simulation in "simulation" menu whether buying credits will be profitable for A or not. Output is printed and sent to the boss B2. Since boss ordered employee to look for intention of price reduction of corporate B which has intention of selling carbon emission credit, they asked corporate B about it using OCETS messaging function. Though corporate A sent a message of deny, Corporate B made a decision to purchase it based on various information chart. Therefore, they clicked "purchase" button in purchase application. After pressed the button they checked a message which was written "After the transactions are completed within a certain period, you can cancel the deal again however carbon emission credit which was used before canceled cannot be canceled" and made a final applicant by re-clicking. Processing final approval starts with A1 to A3 in corporate A, both corporate accomplished carbon emission credit transaction.



Actors — Goals/Objectives — Background/Domain

System Use Case

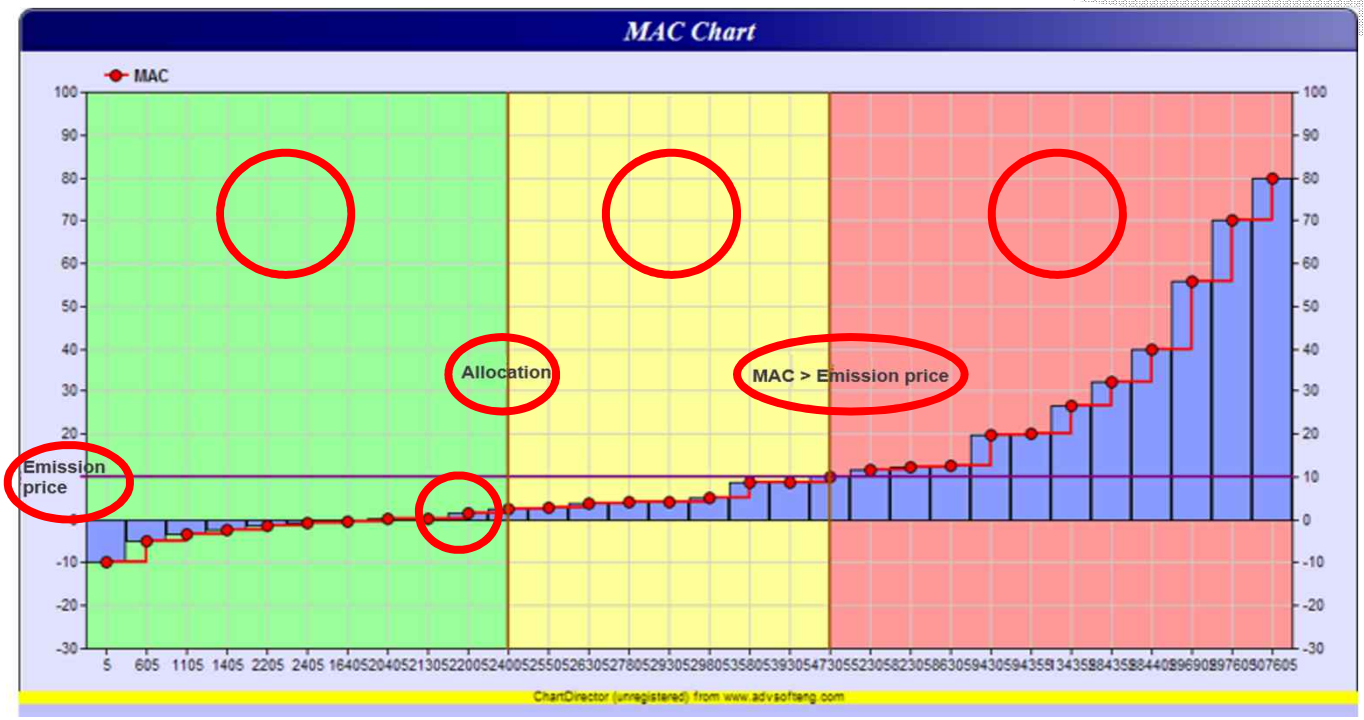


Prototype

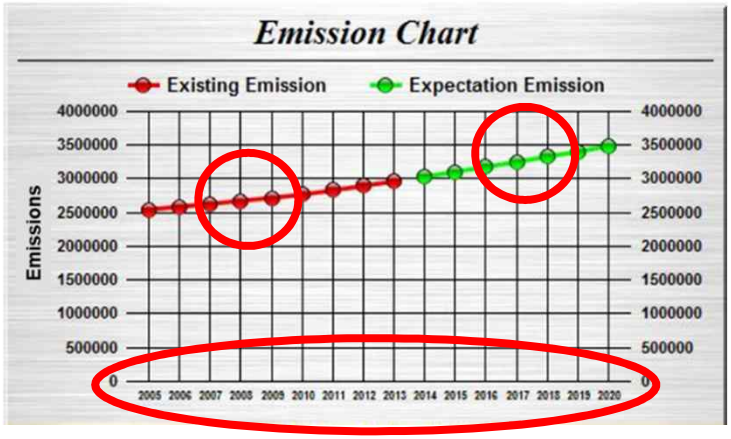
System Configuration

System Configuration

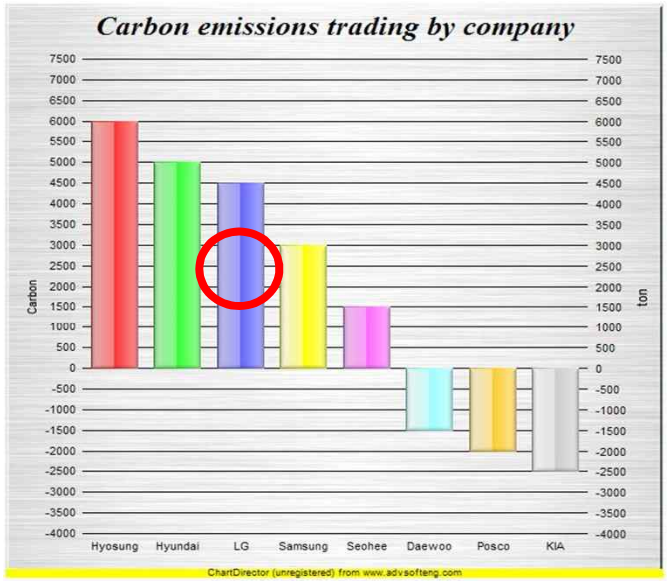
System Configuration



System Configuration



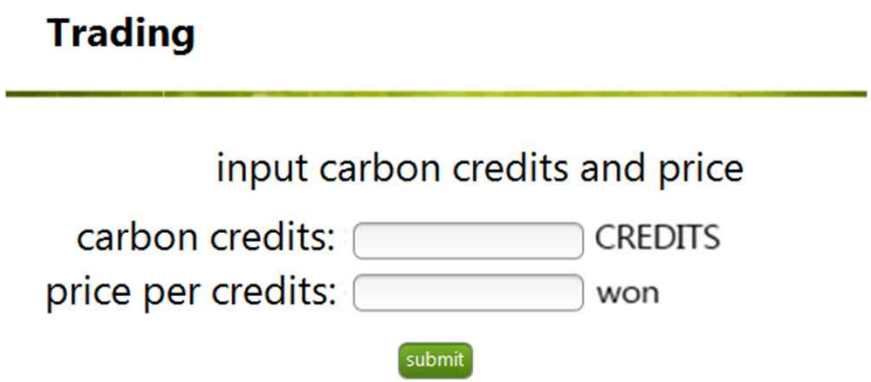
System Configuration



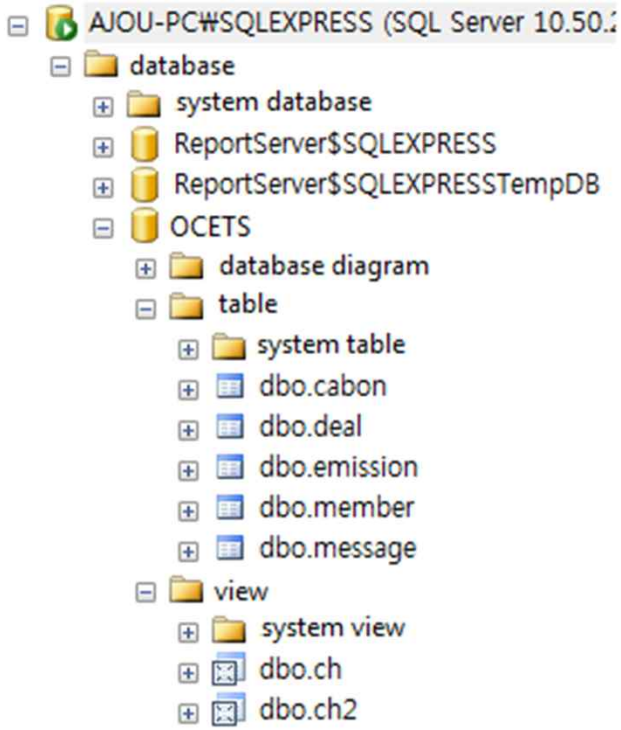
Company	Introduce	Request
Samsung	Samsung will protect the environment.	
Hyundai	Hyundai will protect the environment.	
KIA	KIA will protect the environment.	
Posco	Posco will protect the environment.	
Hyosung	Hyosung will protect the environment.	
LG	LG will protect the environment.	
Daewoo	Daewoo will protect the environment.	
Seohee	Seohee will protect the environment.	

Deal Contact

System Configuration



System Configuration



Gathered Requirements

Gathered Requirements

Elicitated Requirements

Functional Requirements	Non-Functional Requirements
Save price of carbon emission credits and information of users	Save information safely
Membership join, login	Collect essential information (Not collect private/sensitive information)
Different authority by users	
Connect to OCETS through web browser	24-hours connection to web site
Calculate profit or loss when buy or sell	Short waiting time when connecting, trading ...
Buy license(free period, weekly, monthly, yearly, annually)	
Generate ID of each company and employee	ID of company, accessible to sub-ID user

Gathered Requirements

Elicitated Requirements

Functional Requirements	Non-Functional Requirements
Display information of company requested for trading	Recently updated information of company
Display by graphical chart	Easy to see the chart, Fast loading
Get average market price by calculatng average of them	
Sort data by price	
Trade(buy, sell)	Make it secret who traded and how much they payed or got others cannot see message, no loss when sending message directly re-act button
Message(to the buyer or seller …)	
Push button(sell/ buy credits, sort by highest to lowest…)	

Gathered Requirements

Requirements summary

Property	Metric
Maintainability	To need standard format of document
	Restrict data gathering coverage
	Periodically and automatically backup
Availability	24-hours connection to web site
	Short waiting time when connecting, trading ...

Property	Metric
Usability	Easily see the chart
	Can see details of the chart
	Easily see the prediction of the future data
	Easy to input info, to upload
	Easy to see the chart, Fast loading
	ID of company, accessible to sub-ID user
	Recently updated information of company
	Convenient to communicate with users.

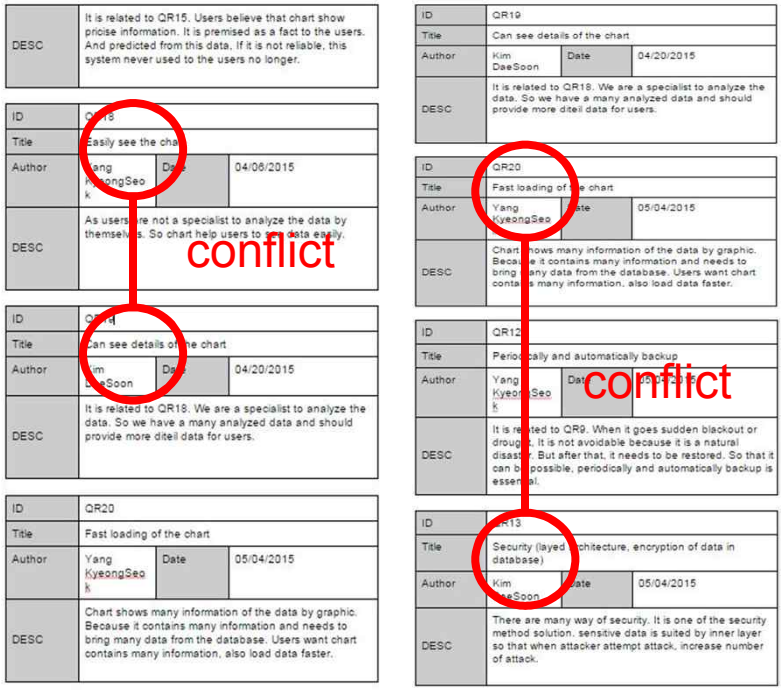
Gathered Requirements

Requirements summary

Property	Metric
Security	make it secret who traded and how much they payed or got others cannot see message, no loss when sending message directly re-act button
	Save information safely
	Information not to be exposed to others
	Safely conserve data
	Encryption of user password
	To need certification of user

Property	Metric
Security	Secured message.
	Security (layed architecture, encryption of data in database)
	Collect essential information (Not collect private/sensitive information)
Reliability	Probability of failure per system down time shall be low.
	The chart should be reliable
	Prediction be accurate as estimated

Gathered Requirements



ID	Hyo	Kyeong	Joon	Soon	Dong	hoon	Yoon	Total
FR1	9	7	5	6	6	8	6	47
FR2	3	6	4	3	4	5	3	28
FR3	4	6	8	6	7	7	6	44
FR4	6	5	3	6	7	6	6	39
FR5	6	9	3	5	7	6	5	41
FR6	8	10	10	9	9	10	10	66
FR7	10	8	10	10	8	10	8	64
FR8	10	10	10	8	8	10	8	64
FR9	6	8	5	8	9	7	8	51
FR10	3	6	7	5	6	8	4	39
FR11	3	4	3	6	5	5	5	31
FR12	4	3	7	6	6	7	7	40

Gathered Requirements

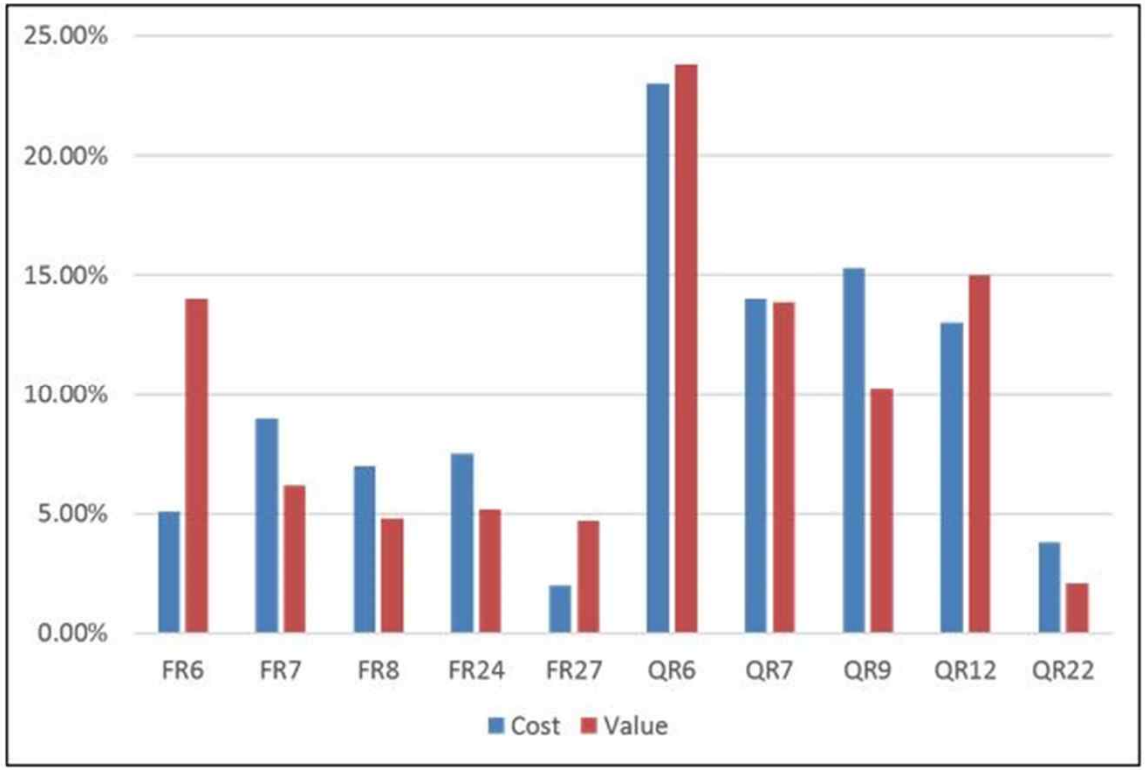
Value

Value	FR6	FR7	FR8	FR9	QR6	QR7	QR9	QR12	QR16	QR22
FR6	1	5	7	7	1/3	1/5	1/3	1/3	5	7
FR7	1/5	1	3	5	6	1/5	1/3	1/3	1/3	5
FR8	1/7	1/3	1	4	5	1/6	1/4	1/4	1/5	3
FR9	1/7	1/5	1/4	1	1/3	1/5	1/5	1/3	5	4
QR6	3	1/6	1/5	3	1	1/9	1/5	1/5	1/7	2
QR7	5	5	6	5	9	1	3	3	2	8
QR9	3	3	4	5	5	1/3	1	3	1/3	7
QR12	3	3	4	3	5	1/3	1/3	1	1/3	5
QR16	1/5	3	5	1/5	7	1/2	3	3	1	9
QR22	1/7	1/5	1/3	1/4	1/2	1/8	1/7	1/5	1/9	1

Cost

Cost	FR6	FR7	FR8	FR9	QR6	QR7	QR9	QR12	QR16	QR22
FR6	1	1/5	1/2	3	5	1/7	1/3	1/5	1/3	7
FR7	5	1	1/5	7	3	1/5	1/3	1/5	3	5
FR8	2	5	1	3	5	1/9	1/5	1/6	1/5	7
FR9	1/3	1/7	1/3	1	3	1/3	2	1/5	3	7
QR6	1/5	1/3	1/5	1/3	1	1/7	1/6	1/7	1/6	2
QR7	7	5	9	3	7	1	3	2	3	9
QR9	3	3	5	1/2	6	1/3	1	2	3	7
QR12	5	5	6	5	7	1/2	1/2	1	3	5
QR16	3	1/3	5	1/5	1/3	6	1/3	1/3	1	5
QR22	1/7	1/5	7	7	1/2	1/9	1/7	1/5	1/5	1

Gathered Requirements

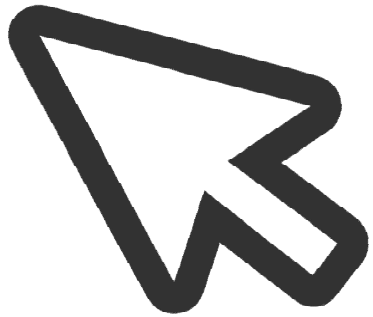


Expected result

- Make profits of the companies
- Market price will be stabilized and settled
- Easy (easy to see, easy to learn and easy to use) system
- Help Korean economic activation
- More opportunities to work for
- Clean Korea

Preview of OCETS

OCETS.com



Click!

Thank you!