



PTS : Public
Transportation
System

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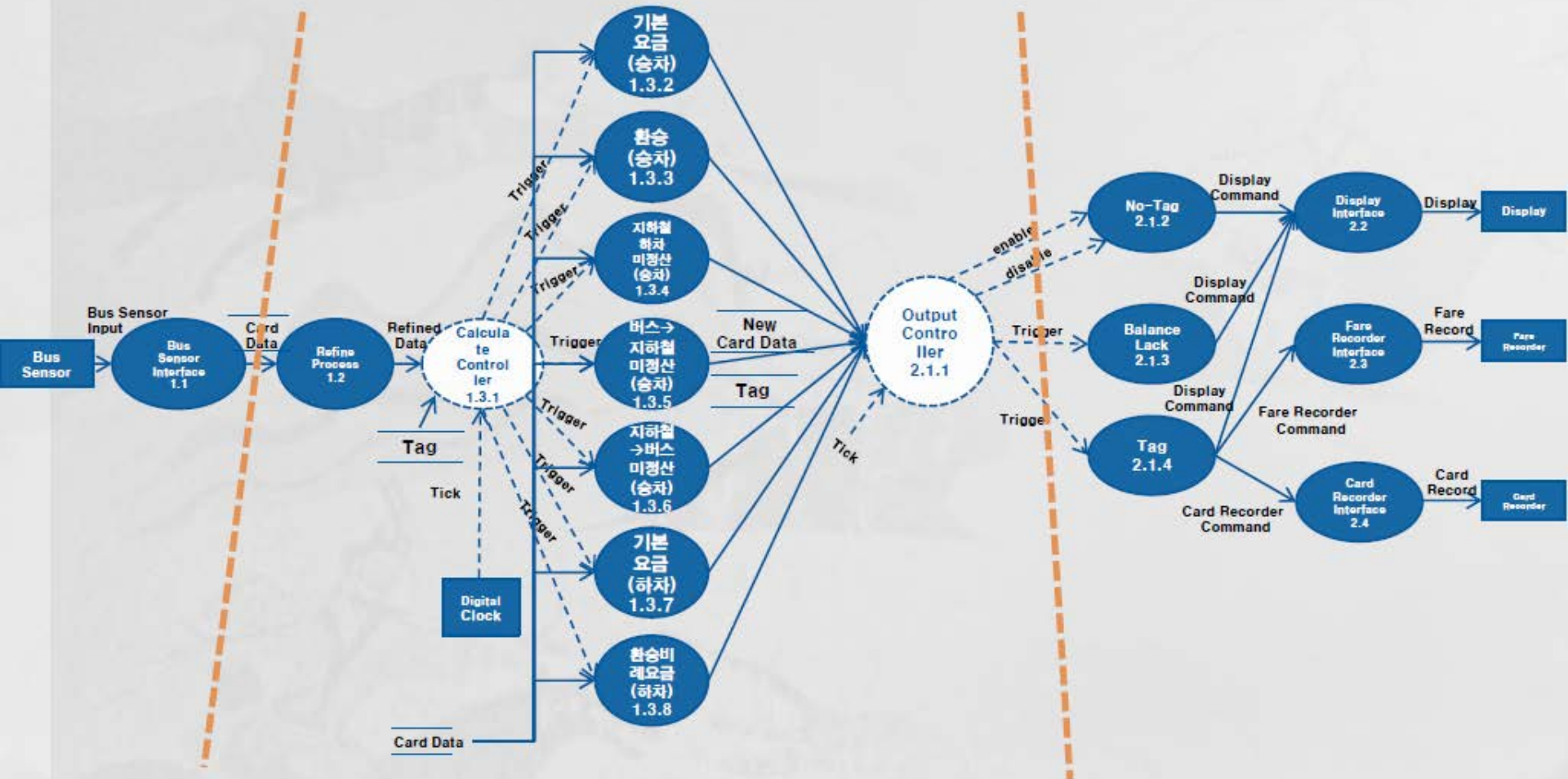
- StructureChart Analysis

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- Problem & Solution

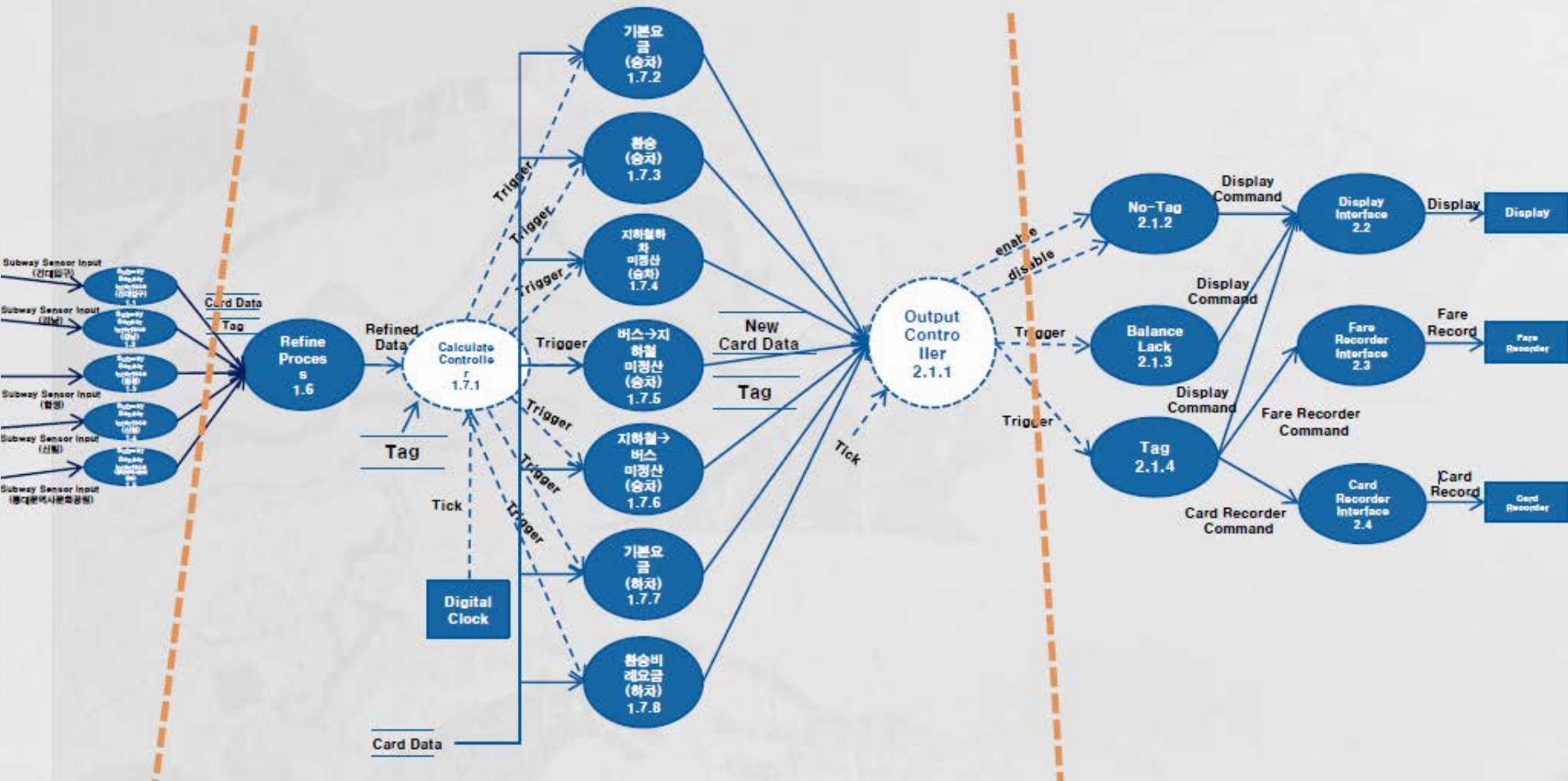
Structure Charts

-Transform Analysis (Bus)



Structure Charts

-Transform Analysis (Subway)



Structure Charts

-Transform Analysis (Adjustment)



UnitTest Analysis

- BUS -

Identifier.	Input Specification.	Output Specification.
BUS.UTC.120.000.	<u>newCD.inout == "OUT" && newCD.transport == "Bus" && CurTime - newCD.time < 200</u> Input.	TR = TRUE.
BUS.UTC.120.001.	<u>newCD.inout == "OUT" && newCD.transport == "Bus" && CurTime - newCD.time > 200</u> Input.	TR = FALSE.
BUS.UTC.120.002.	<u>newCD.sensorInfo == oldCD.sensorInfo && newCD.inout == "IN" && newCD.transport == "Bus" && oldCD.balance - newCD.balance == 1050.</u>	PTR = TRUE. D1 = TRUE.
BUS.UTC.120.003.	<u>newCD.sensorInfo == oldCD.sensorInfo && newCD.inout == "IN" && newCD.transport == "Bus" && oldCD.balance - newCD.balance != 1050.</u>	PTR = TRUE. D2 = TRUE.
BUS.UTC.120.004.	<u>newCD.sensorInfo != oldCD.sensorInfo && newCD.inout == "IN" && newCD.transport == "Bus".</u>	PTR = FALSE. D2 = TRUE.
BUS.UTC.120.005.	<u>newCD.sensorInfo == oldCD.sensorInfo && newCD.inout == "OUT" && newCD.transport == "Bus".</u>	PTR = TRUE. D1 = FALSE. D2 = FALSE.
BUS.UTC.120.006.	<u>newCD.inout == "IN" && newCD.transport == "Metro" && oldCD.balance == newCD.balance.</u>	D3 = TRUE.
BUS.UTC.120.007.	<u>newCD.inout == "IN" && newCD.transport == "Metro" && oldCD.balance != newCD.balance.</u>	D3 = FALSE.
BUS.UTC.131.000.	<u>Tag == 1 && inout == "IN" && Tr == FALSE && d1 == FALSE && d2 == FALSE && d3 == FALSE</u> Input.	Fare = 1050.
BUS.UTC.131.001.	<u>Tag == 1 && inout == "IN" && Tr == TRUE</u> Input.	Fare = 0.
BUS.UTC.131.002.	<u>Tag == 1 && inout == "IN" && d1 = TRUE</u> Input.	Fare = 1250.
BUS.UTC.131.003.	<u>Tag == 1 && inout == "IN" && d2 = TRUE</u> Input.	Fare = 1650.
BUS.UTC.131.004.	<u>Tag == 1 && inout == "IN" && d3 = TRUE</u> Input.	Fare = 1750.
BUS.UTC.131.005.	<u>Tag == 1 && inout == "OUT" && pTr == FALSE</u> Input.	Fare = 0.
BUS.UTC.131.006.	<u>Tag == 1 && inout == "OUT" && pTr == TRUE</u> Input && <u>CurTime - pTagTime < 400.</u>	Fare = 0.
BUS.UTC.131.007.	<u>Tag == 1 && inout == "OUT" && pTr == TRUE</u> Input && <u>CurTime - pTagTime = 400.</u>	Fare = 100.
BUS.UTC.211.000.	<u>Tag == 1 && Balance < Fare</u> Input.	<u>Balance_Lack()</u> .
BUS.UTC.211.001.	<u>Tag == 1 && Balance > Fare</u> Input.	<u>Tag()</u> .

UnitTest Analysis

- Subway -

Identifier	Input Specification	Output Specification
SUB.UTC.120.000	<u>newCD.inout == "OUT"</u> && <u>newCD.transport == "Metro"</u> && <u>CurTime - newCD.time < 200</u> Input	TR = TRUE
SUB.UTC.120.001	<u>newCD.inout == "OUT"</u> && <u>newCD.transport == "Metro"</u> && <u>CurTime - newCD.time > 200</u> Input	TR = FALSE
SUB.UTC.120.002	<u>newCD.sensorInfo == oldCD.sensorInfo</u> && <u>newCD.inout == "IN"</u> && <u>newCD.transport == "Metro"</u> && <u>oldCD.balance - newCD.balance == 1050</u>	PTR = TRUE D1 = TRUE
SUB.UTC.120.003	<u>newCD.sensorInfo == oldCD.sensorInfo</u> && <u>newCD.inout == "IN"</u> && <u>newCD.transport == "Metro"</u> && <u>oldCD.balance - newCD.balance != 1050</u>	PTR = TRUE D2 = TRUE
SUB.UTC.120.004	<u>newCD.sensorInfo != oldCD.sensorInfo</u> && <u>newCD.inout == "IN"</u> && <u>newCD.transport == "Metro"</u>	PTR = FALSE D2 = TRUE
SUB.UTC.120.005	<u>newCD.sensorInfo == oldCD.sensorInfo</u> && <u>newCD.inout == "OUT"</u> && <u>newCD.transport == "Metro"</u>	PTR = TRUE D1 = FALSE D2 = FALSE
SUB.UTC.120.006	<u>newCD.inout == "IN"</u> && <u>newCD.transport == "BUS"</u> && <u>oldCD.balance == newCD.balance</u>	D3 = TRUE
SUB.UTC.120.007	<u>newCD.inout == "IN"</u> && <u>newCD.transport == "BUS"</u> && <u>oldCD.balance != newCD.balance</u>	D3 = FALSE
SUB.UTC.131.000	Tag == 1 && <u>inout == "IN"</u> && <u>Tr == FALSE</u> && <u>d1 == FALSE</u> && <u>d2 == FALSE</u> && <u>d3 == FALSE</u> Input	Fare = 1050
SUB.UTC.131.001	Tag == 1 && <u>inout == "IN"</u> && <u>Tr == TRUE</u> Input	Fare = 0
SUB.UTC.131.002	Tag == 1 && <u>inout == "IN"</u> && <u>d1 = TRUE</u> Input	Fare = 1250
SUB.UTC.131.003	Tag == 1 && <u>inout == "IN"</u> && <u>d2 = TRUE</u> Input	Fare = 1650
SUB.UTC.131.004	Tag == 1 && <u>inout == "IN"</u> && <u>d3 = TRUE</u> Input	Fare = 1750
SUB.UTC.131.005	Tag == 1 && <u>inout == "OUT"</u> && <u>pTr == FALSE</u> Input	Fare = 0
SUB.UTC.131.006	Tag == 1 && <u>inout == "OUT"</u> && <u>pTr == TRUE</u> Input && <u>CurTime - pTagTime < 400</u>	Fare = 0
SUB.UTC.131.007	Tag == 1 && <u>inout == "OUT"</u> && <u>pTr == TRUE</u> Input && <u>CurTime - pTagTime = 400</u>	Fare = 100
SUB.UTC.211.000	Tag == 1 && <u>Balance < Fare</u> Input	<u>Balance_Lack()</u>
SUB.UTC.211.001	Tag == 1 && <u>Balance > Fare</u> Input	Tag()

UnitTest Analysis

Identifier.1	Input Specification.1	Output Specification.1
ADJ.UTC.120.000.1	Buffer != NULL.1	TF != NULL.1
ADJ.UTC.212.000.1	TF !=NULL.1	<u>Total_BusFare.1</u> <u>Total_SubwayFare.1</u>

- Adjust -

Problem & Solution

Problem

- 각 기능에 대한 모듈화가 부족함.
- 환승시 단말기의 ID값이 아닌 카드의 ID값이 저장되도록 코드 수정.
- 버스 / 지하철 / 정산 시스템이 동기화 되도록 코드 수정.