CFG Generator (SASD)

Class B T10 → T8

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CFG Generator (SASD) Contents

Structured Analysis

- Statement of Purpose
- System Context Diagram
- Data Flow Diagram

Structured Design

- Structured Charts(Transform Analysis)
- Structured Charts(Advanced)

Statement of Purpose – CFG (1/2)

- The program for auto making system for Control Flow Graph, layout directivity Graph of analyze CFG for source

- Execution must be using by gcc compile, Cygwin

- Result printed on CUI, Can execute in Command Line instruction.
  -If input instruction has been wrong, print help message

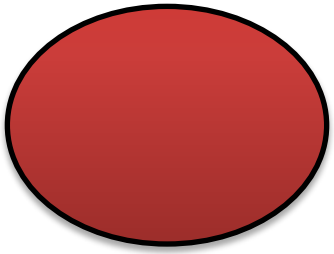
- Entering the code written in C language.
  If entering is successful the success message print
  If that fails, a failure message is output

- Code written in C language, which includes the Main Function Line about 100 to 200, User-defined header file, pointers are not allowed

Statement of Purpose – CFG (2/2)

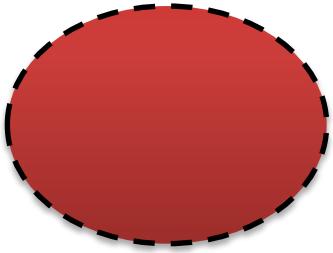
- When start converting, print "start" message.
- Block have "Start", "Finish" Nodes.
- Branching node have lower nodes, Depending on condition, distinguish output edge.
- Print CFG Converting process in CUI format
- Take code written in C language, generate report file converted to CFG

Notation



Data Process

Data Store



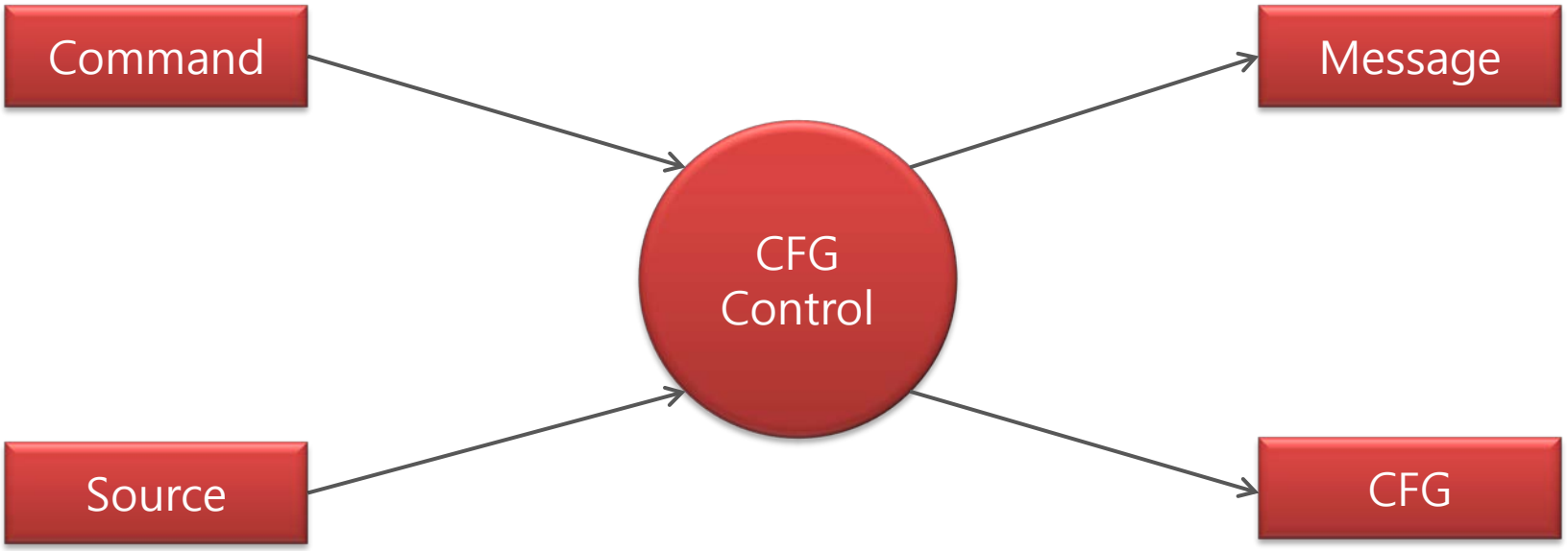
Control Process

Data Flow

Terminator

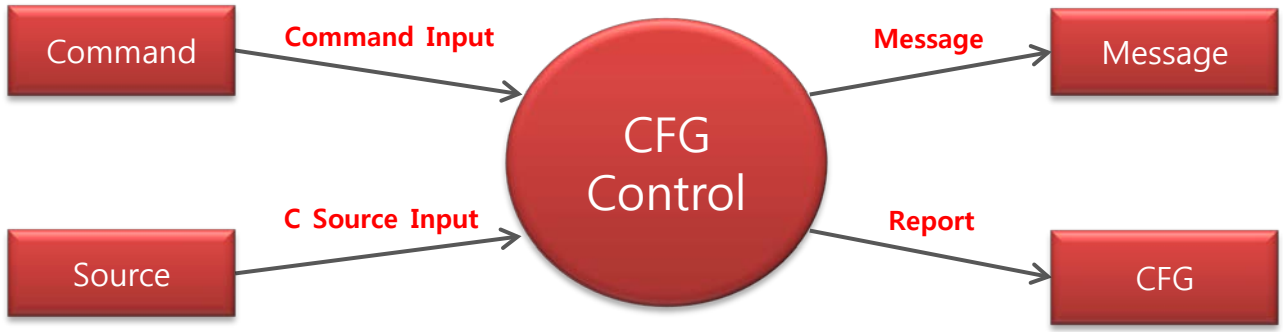
Control Flow

System Context Diagram

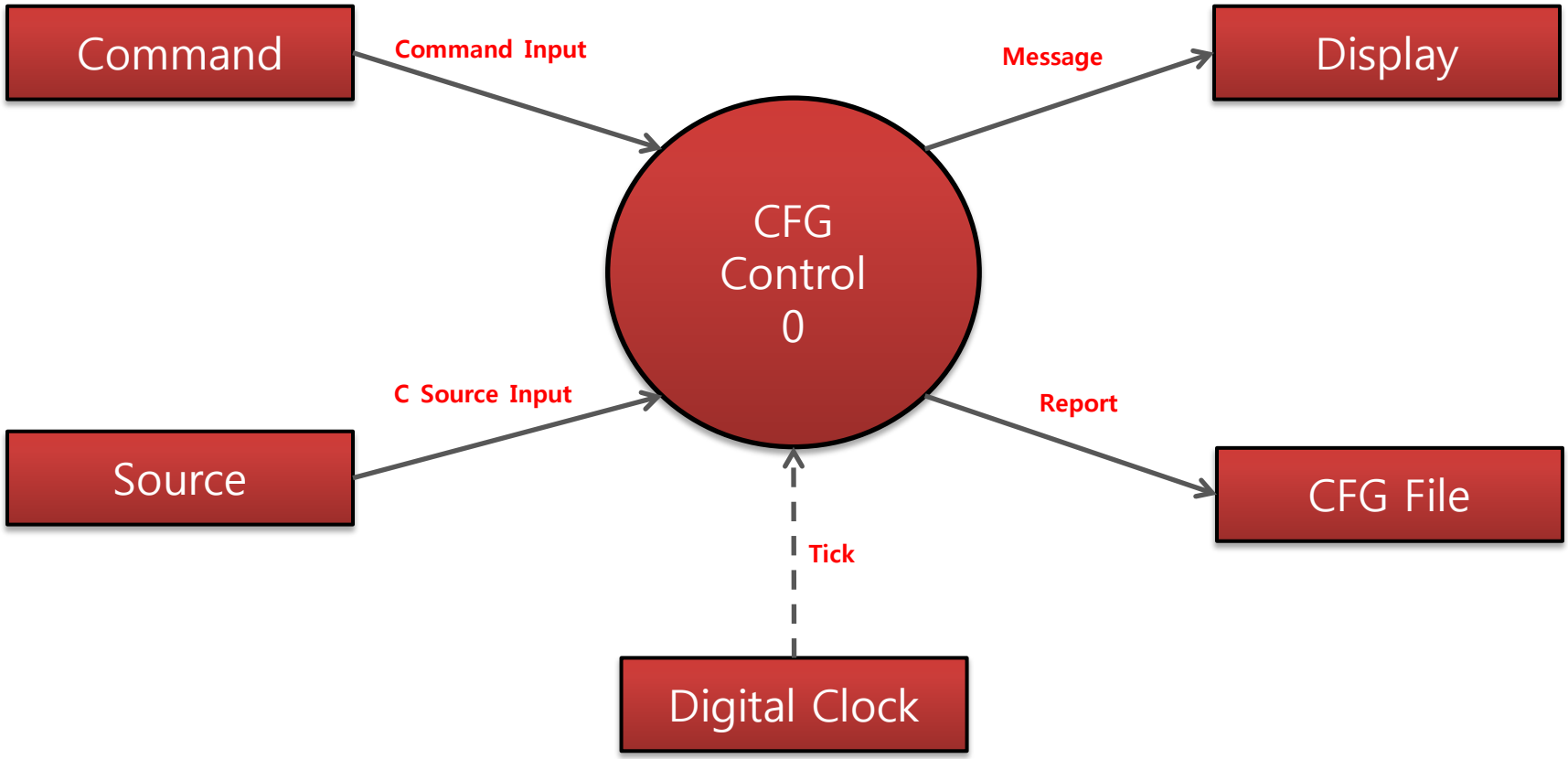


Event List

Input / Output Event	Description
Command Input	Input Data of Command form for execution
C Source Input	C Code Data File of form used to generate CFG
Message	Message of form sent to the CUI to Display
Report	Information about Report File generated in CFG File



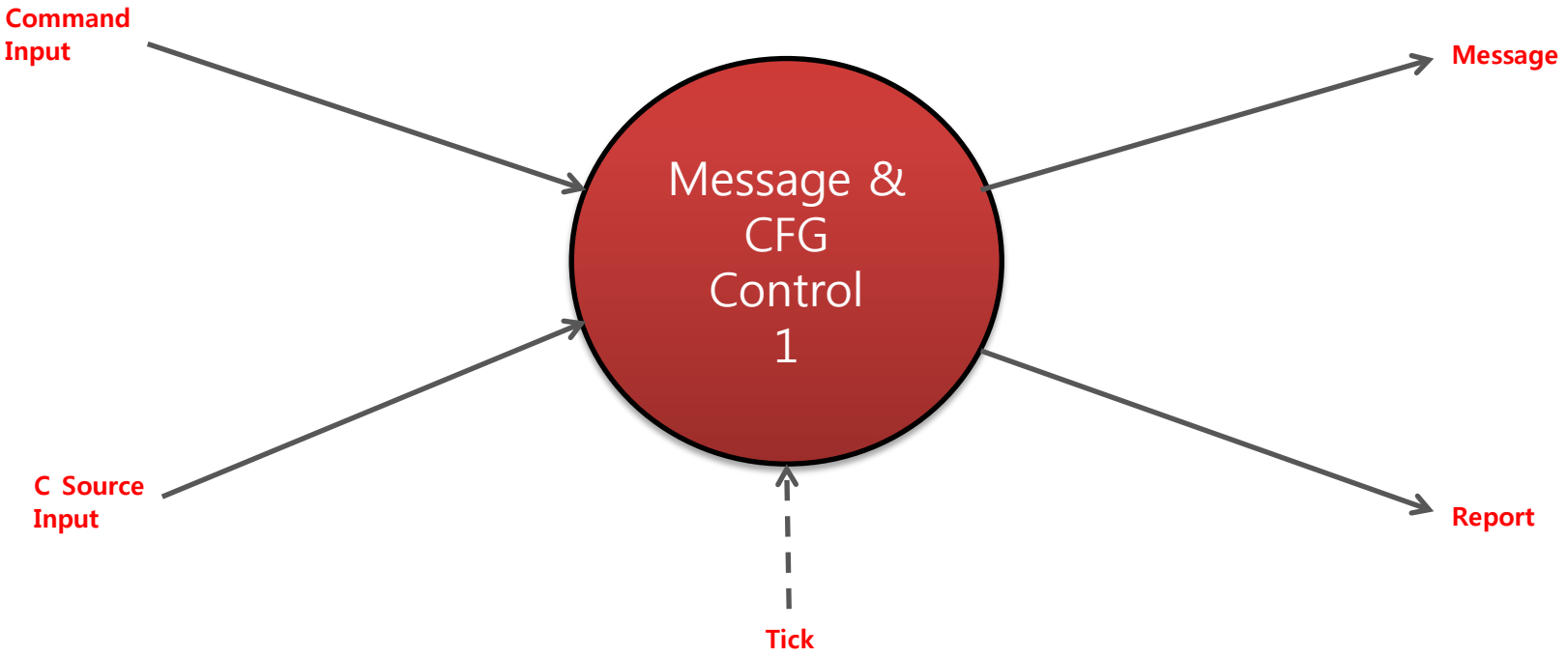
Data Flow Diagram Level 0



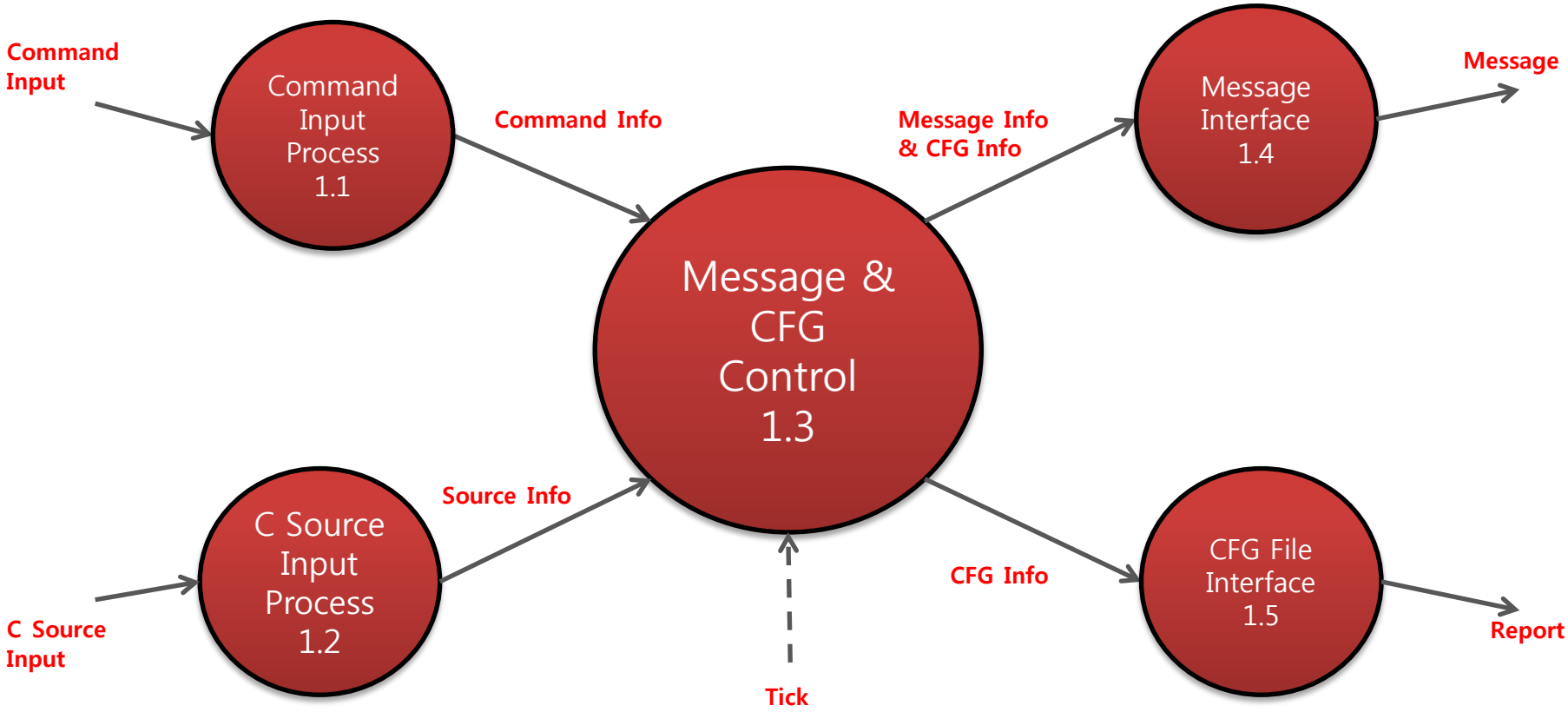
DFD Level 0 – Data Dictionary

Data Name	Description	Format
Command Input	Input Data of Command form for execution	Command Line
C Source Input	C Code Data File of form used to generate CFG	Source File
Message	Message of form sent to the CUI to Display	String
Report	Information about Report File generated in CFG File	Text File
Tick	Electrical signal to Check the status	Event

DFD Level 1


Command Input
C Source Input
Tick
Message & CFG Control 1
Message
Report

DFD Level 2


Command Input
Command Input Process 1.1
Command Info
Message & CFG Control 1.3
Message Info & CFG Info
Message Interface 1.4
Message
C Source Input
C Source Input Process 1.2
Source Info
Tick
CFG Info
CFG File Interface 1.5
Report

DFD Level 2 – Data Dictionary

Data Name	Description	Format
Command Info	The Success & Failure about the command Input	True, False
Source Info	Success & Failure for input C Code, To converting CFG for converted Source	True, False / Transformed Source
Message Info	Program execution, Success & Failure Message for reading C Code, Information of CFG Converting process	String
CFG Info	Information of CFG Converting process	String

DFD Level 2 – Process Specification

Reference No.	1.1
Name	Command Input Process
Input	Command Input
Output	Command Info
Process Description	Processing Input Data in Command Line Type. Input success & failure(True, False) will be sent to the Control Process.

Reference No.	1.2
Name	C Source Input Process
Input	C Source Input
Output	Source Info
Process Description	Enter the C Code, export input success & failure(True, False). Converted source information is stored in Data Store, can be handled by Control Process

DFD Level 2 – Process Specification

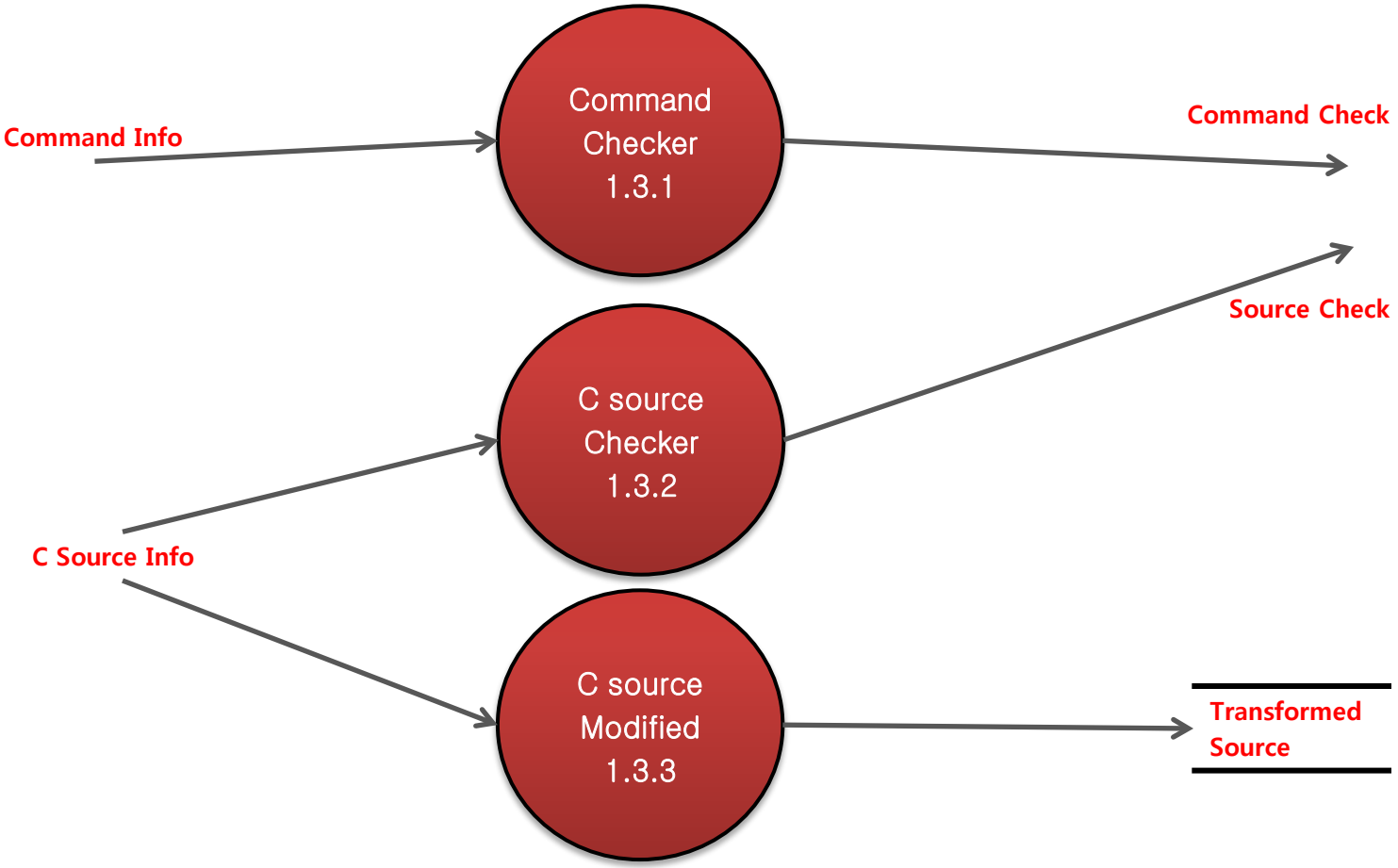
Reference No.	1.3
Name	Message & CFG Control
Input	Command Info, Source Info
Output	Message Info, CFG Info
Process Description	Accept command and input C Code ,The data is passed for execute success & failure(True, False) and processing information by CFG generated on the steps to Message Interface and CFG File Interface

Reference No.	1.4
Name	Message Interface
Input	Message Info, CFG Info
Output	Message
Process Description	Information for output messages on the CUI processed by the Control Process pass to Display Terminal, in Message of String Type

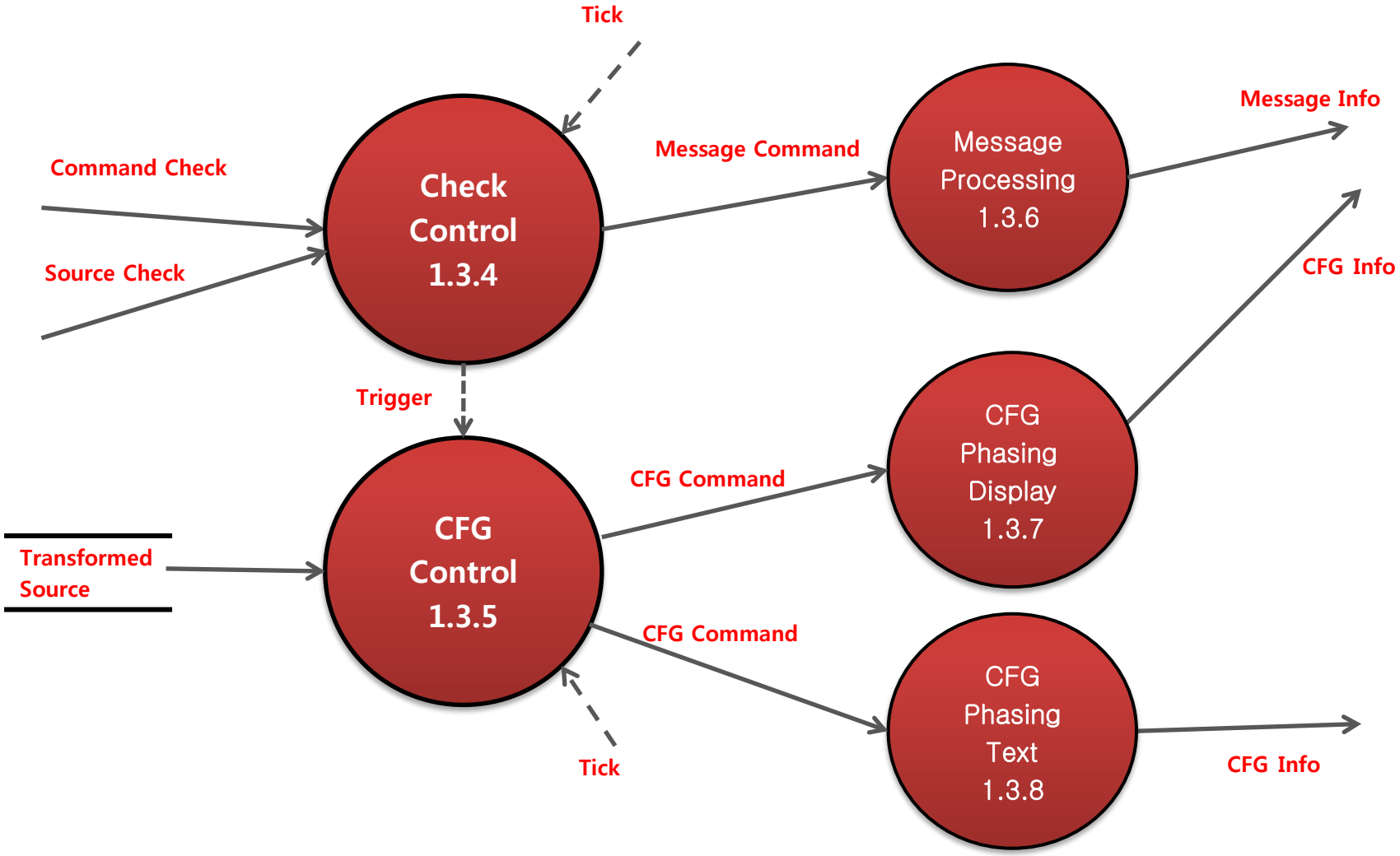
DFD Level 2 – Process Specification

Reference No.	1.5
Name	CFG File Interface
Input	CFG Info
Output	Report
Process Description	Information for CFG processed by the Control Process save in Textfile type , pass to CFG File terminal

DFD Level 3


Command Info
Command Checker 1.3.1
Command Check
Source Check
C source Checker 1.3.2
C Source Info
C source Modified 1.3.3
Transformed Source

DFD Level 3


Tick
Command Check
Source Check
Check Control 1.3.4
Message Command
Message Processing 1.3.6
Message Info
CFG Info
Trigger
CFG Phasing Display 1.3.7
CFG Command
Transformed Source
CFG Control 1.3.5
CFG Command
CFG Phasing Text 1.3.8
Tick
CFG Info

DFD Level 3 – Data Dictionary

Data Name	Description	Format
Command Check	Command Line input success & failure	True, False
Source Check	C Code input success & failure	True, False
Transformed Source	As Data Store, converted Source saves for convert to CFG	Block List

DFD Level 3 – Data Dictionary

Data Name	Description	Format
Message Command	Information for Message from the printing Success Processing Control is passed to Message Interface.	Success, Help, Fail
CFG Command	Information for command by CFG Generator is pass to CFG Interface	Node add, Node Modified, Edge Type, Connected

DFD Level 3 – Process Specification

Reference No.	1.3.1
Name	Command Checker
Input	Command Input
Output	Command Check
Process Description	Processing input data in Command Line Type, input success & failure(True, False) is passed to Check Control

Reference No.	1.3.2
Name	C Source Checker
Input	C Source Input
Output	Source Check
Process Description	C Code input success & failure(True, False) is passed to Check Control

DFD Level 3 – Process Specification

Reference No.	1.3.3
Name	C Source Modified
Input	C Source Input
Output	Transformed Source
Process Description	CFG Control to handle the C Code inputs, converted source information (Block List) is stored in Transformed Source (Data Store)

Reference No.	1.3.4
Name	Check Control
Input	Command Check, Source Check
Output	Message Command, Trigger
Process Description	Processing Input Data Type of Command Line , depending on the input success & failure(True, False) is passed for the Message of type String to Message Processing. When input is success, Check Control send "Trigger" to CFG Control.

DFD Level 3 – Process Specification

Reference No.	1.3.5
Name	CFG Control
Input	Transformed Source, Trigger
Output	CFG Command
Process Description	Processing the Block List received from Data Store, exporting Node of Information, Edge of the kinds, Connection in String Type.

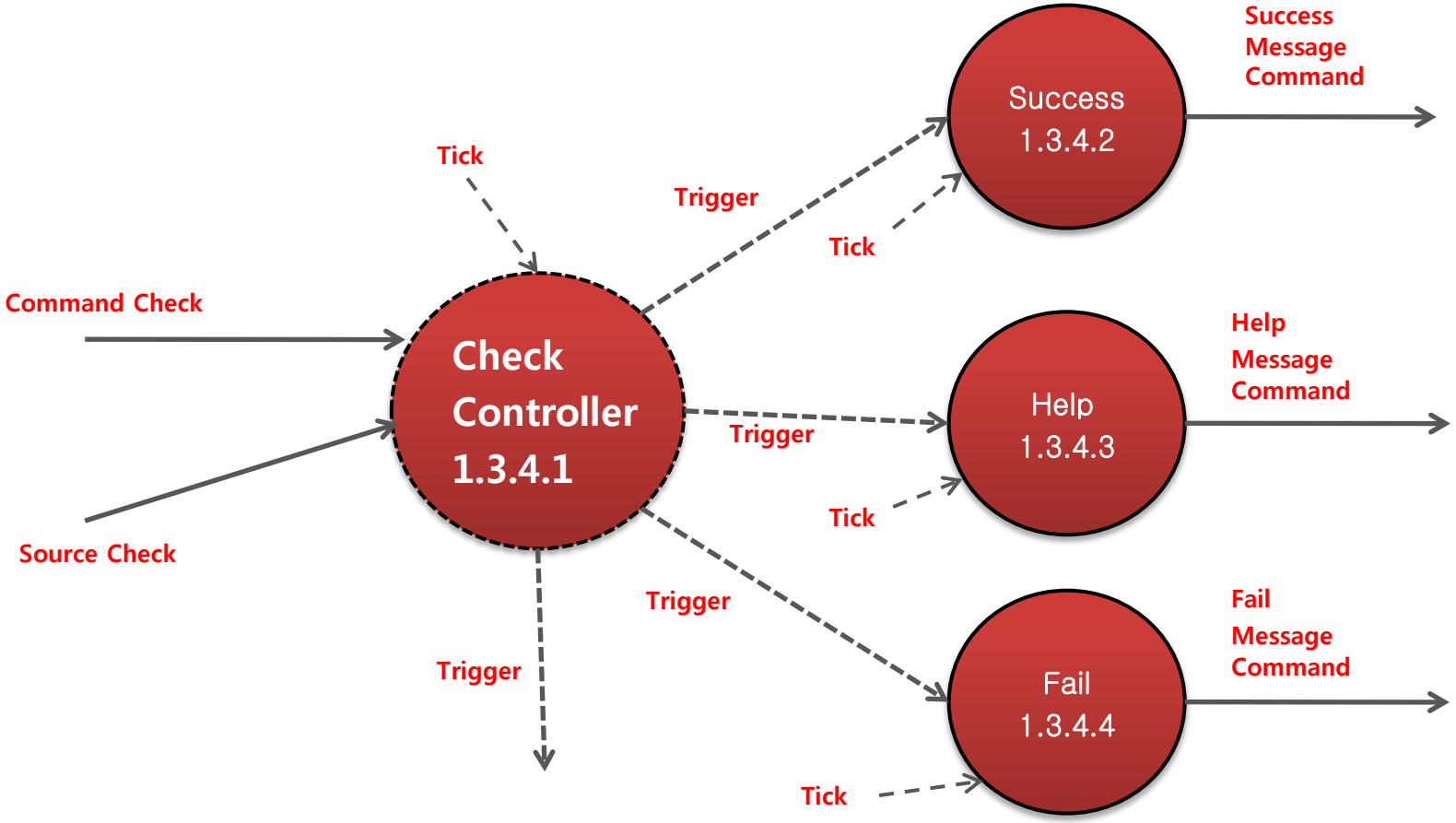
Reference No.	1.3.6
Name	Message Processing
Input	Message Command
Output	Message Info
Process Description	Depending on Message Command received from Check Control, output Message determined String Type sending to the Message Interface.

DFD Level 3 – Process Specification

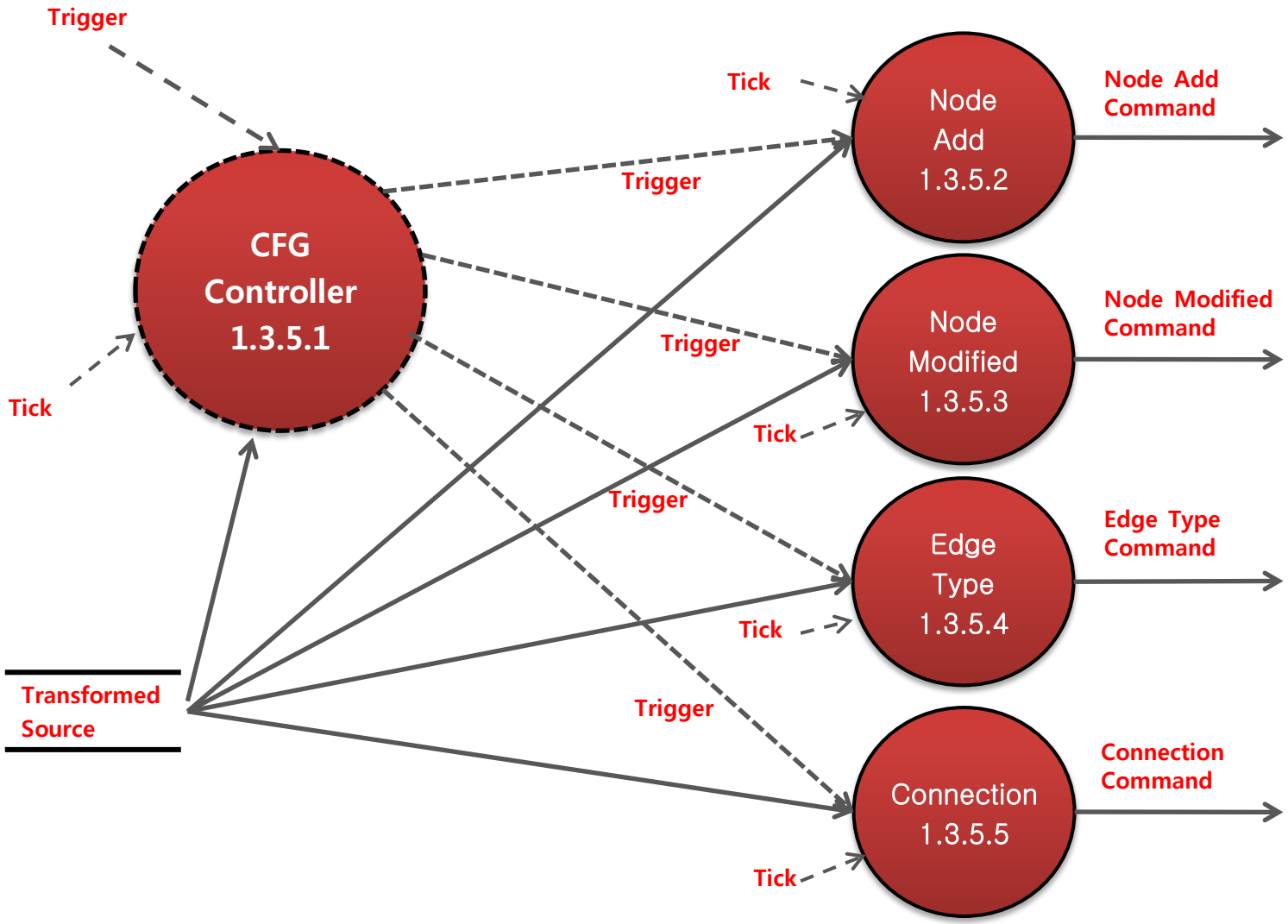
Reference No.	1.3.7
Name	CFG Phasing Display
Input	CFG Command
Output	CFG Phase
Process Description	Send CFG converting process in String Type to Message Interface.

Reference No.	1.3.8
Name	CFG Phasing Text
Input	CFG Command
Output	CFG Phase
Process Description	Send CFG converting process in String Type to CFG File Interface.

DFD Level 4


Success
1.3.4.2
Success
Message
Command
Tick
Trigger
Tick
Command Check
Check
Controller
1.3.4.1
Help
1.3.4.3
Help
Message
Command
Trigger
Tick
Source Check
Trigger
Trigger
Fail
1.3.4.4
Fail
Message
Command
Tick

DFD Level 4


Trigger
Tick
Node Add Command
Node Add 1.3.5.2
Trigger
CFG Controller 1.3.5.1
Trigger
Node Modified Command
Node Modified 1.3.5.3
Tick
Tick
Trigger
Edge Type Command
Edge Type 1.3.5.4
Tick
Transformed Source
Trigger
Connection Command
Connection 1.3.5.5
Tick

DFD Level 4 – Data Dictionary

Data Name	Description	Format
Success Message Command	Data that can be printed Input Success Message.	String
Help Message Command	Data that can be printed the help manual.	String
Fail Message Command	Data that can be printed the Input Failure Message and Terminate program.	String

DFD Level 4 – Data Dictionary

Data Name	Description	Format
Node Add Command	Information that required to add new Node.	Node Information
Node Modified Command	Information that Modified Node	Node Information
Edge Type Command	Information that defined the "Type of Edge".	Edge Information
Connection Command	Information that Connected between one Node and the another Node.	Edge Information

DFD Level 4 – Process Specification

Reference No.	1.3.4.1
Name	Check Controller
Input	Command Check, Source Check
Output	Trigger
Process Description	Control Process that confirms the Input C code and commands success & failure(True, False) and send the suitable Trigger and Process.

Reference No.	1.3.4.2
Name	Success
Input	Trigger, Tick
Output	Success Message Command
Process Description	If the Input of C code and commands is successful, send the suitable Message in String type.

DFD Level 4 – Process Specification

Reference No.	1.3.4.3
Name	Help
Input	Trigger, Tick
Output	Help Message Command
Process Description	If command Input is unvalid, send the suitable help manual in String type.

Reference No.	1.3.4.4
Name	Fail
Input	Trigger, Tick
Output	Fail Message Command
Process Description	If C code Input is unvalid, send the suitable Message in String type.

DFD Level 4 – Process Specification

Reference No.	1.3.5.1
Name	CFG Controller
Input	Trigger, Transformed Source
Output	Trigger
Process Description	Decide Depending on Entering the Block list that make Node, modify Node, define Edge Type and Connection status and then send the suitable Trigger and Process.

Reference No.	1.3.5.2
Name	Node Add
Input	Trigger, Tick, Transformed Source
Output	Node Add Command
Process Description	Make the new Node and define Node Type and the contents.

DFD Level 4 – Process Specification

Reference No.	1.3.5.3
Name	Node Modified
Input	Trigger, Tick, Transformed Source
Output	Node Modified Command
Process Description	Change information in Node

Reference No.	1.3.5.4
Name	Edge Type
Input	Trigger, Tick, Transformed Source
Output	Edge Type Command
Process Description	Define Type for will be created Edge

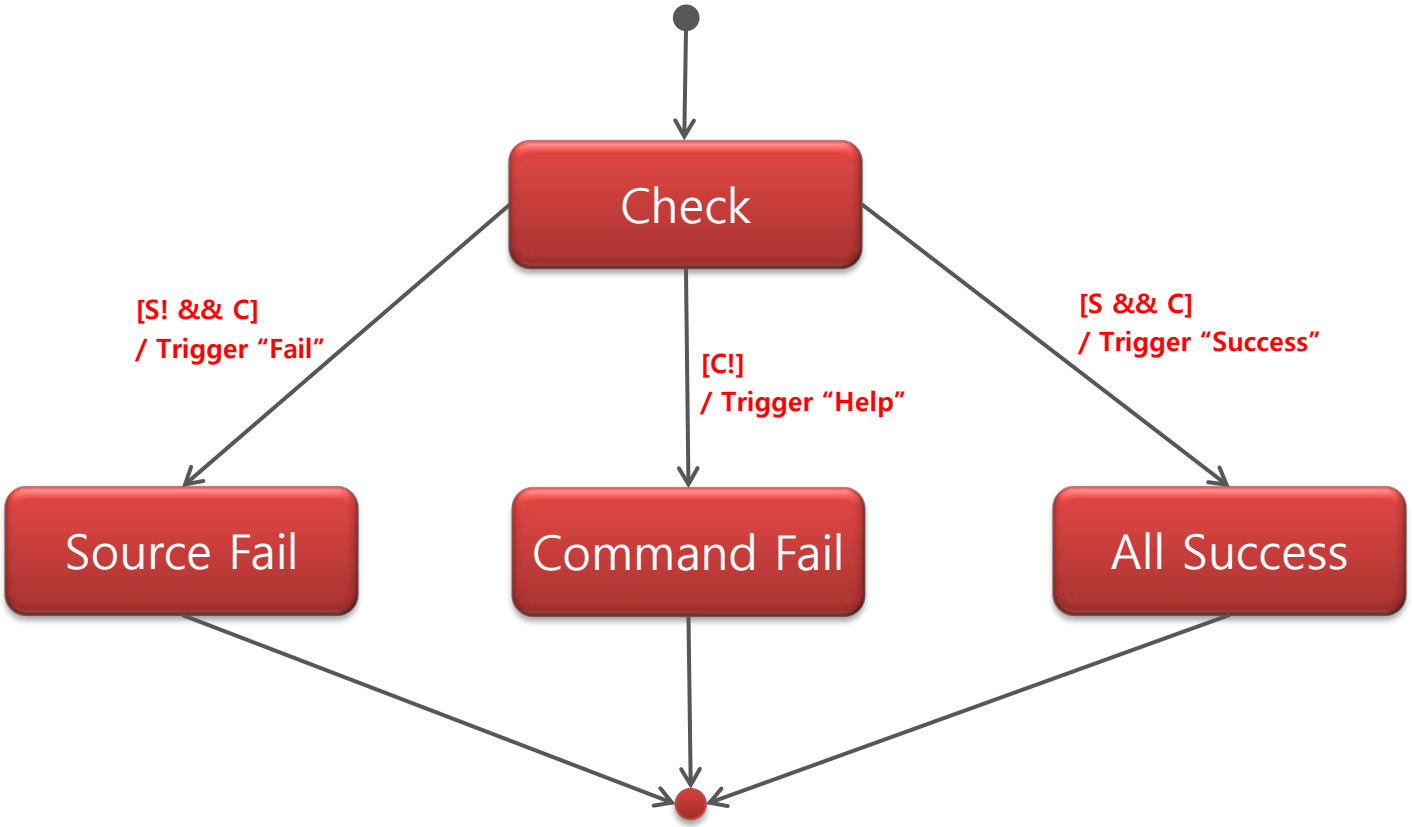
DFD Level 4 – Process Specification

Reference No.	1.3.5.5
Name	Connection
Input	Trigger, Tick, Transformed Source
Output	Connection Command
Process Description	Connect between one Node and the another Node in Type Edge defined

DFD Level 5

S	Source Input of Success
C	Command Input of Success

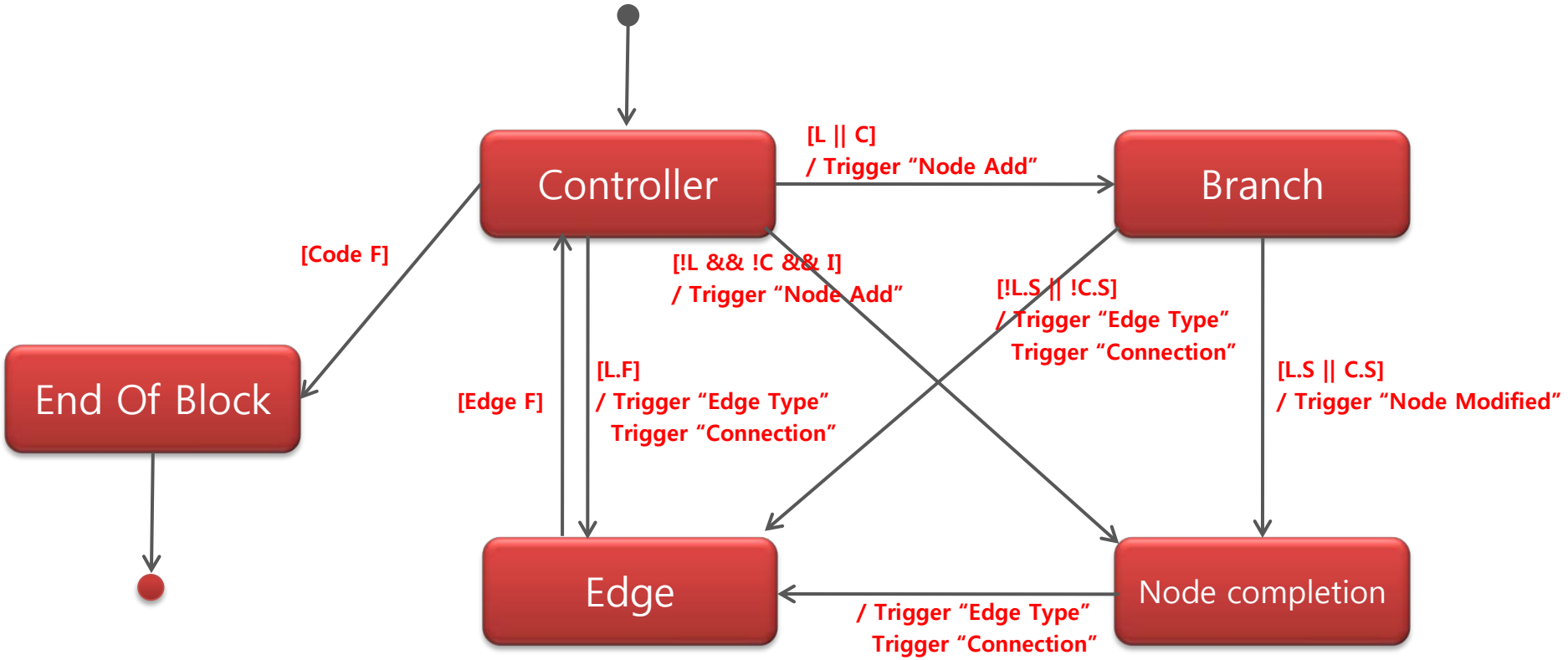
State Transition Diagram for Controller 1.3.4.1 (Check Controller)



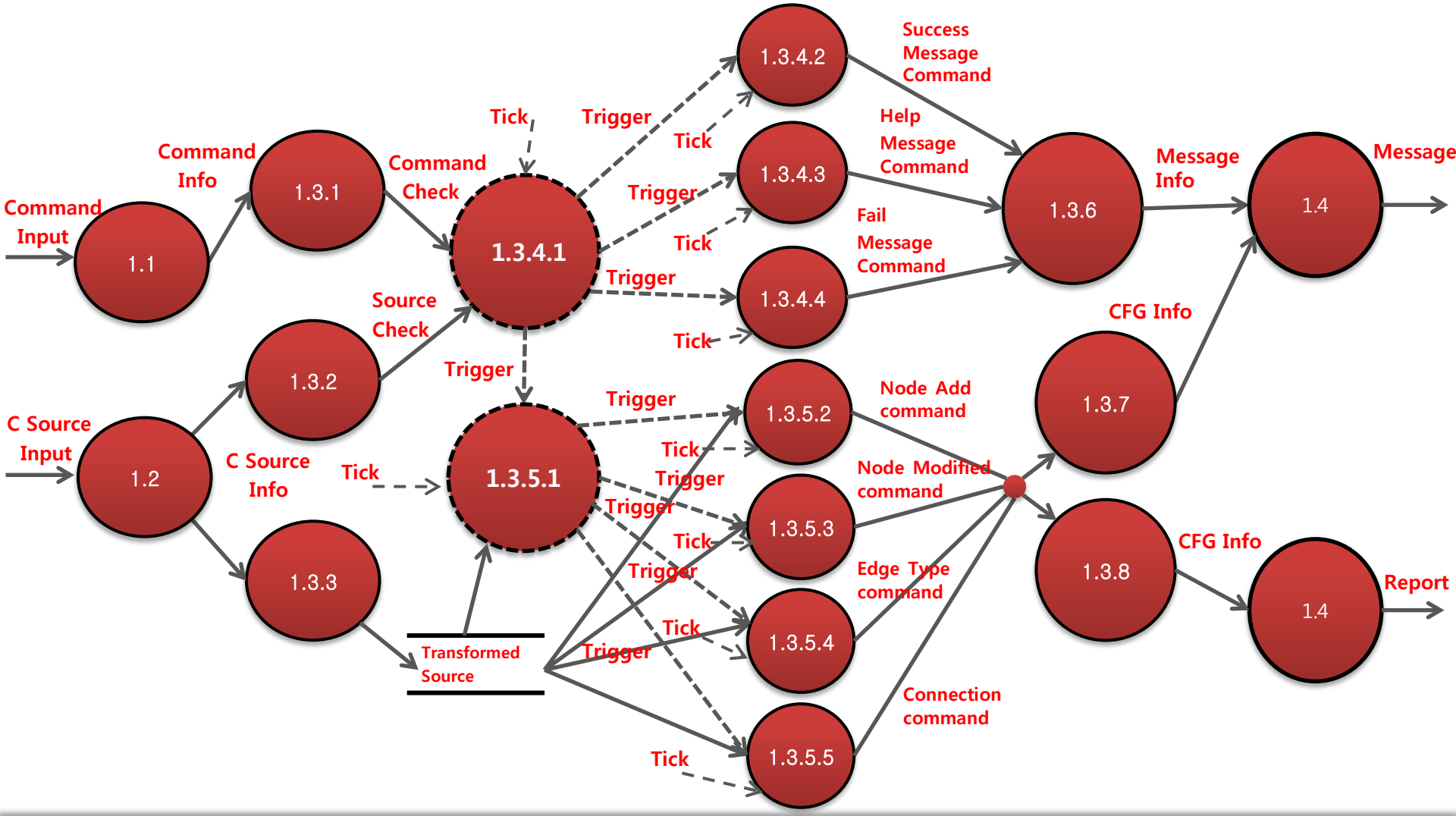
DFD Level 5

L	In Loop
I	If Just Block
C	In Condition
F	Finish (Line)
S	Start Line

State Transition Diagram for Controller 1.3.5.1 (CFG Controller)



DFD Total


1.1
Command Input
1.3.1
Command Info
1.3.2
C Source Input
1.2
C Source Info
1.3.3
Tick
Command Check
1.3.4.1
Source Check
Trigger
Tick
1.3.5.1
Transformed Source
Trigger
1.3.4.2
Success Message Command
Tick
Trigger
1.3.4.3
Help Message Command
Tick
Trigger
1.3.4.4
Fail Message Command
Tick
1.3.6
Message Info
1.4
Message
CFG Info
1.3.7
Trigger
1.3.5.2
Node Add command
Tick
Trigger
1.3.5.3
Node Modified command
Tick
Trigger
1.3.5.4
Edge Type command
Tick
Trigger
1.3.5.5
Connection command
Tick
1.3.8
CFG Info
1.4
Report

CFG Generator (SASD) Contents

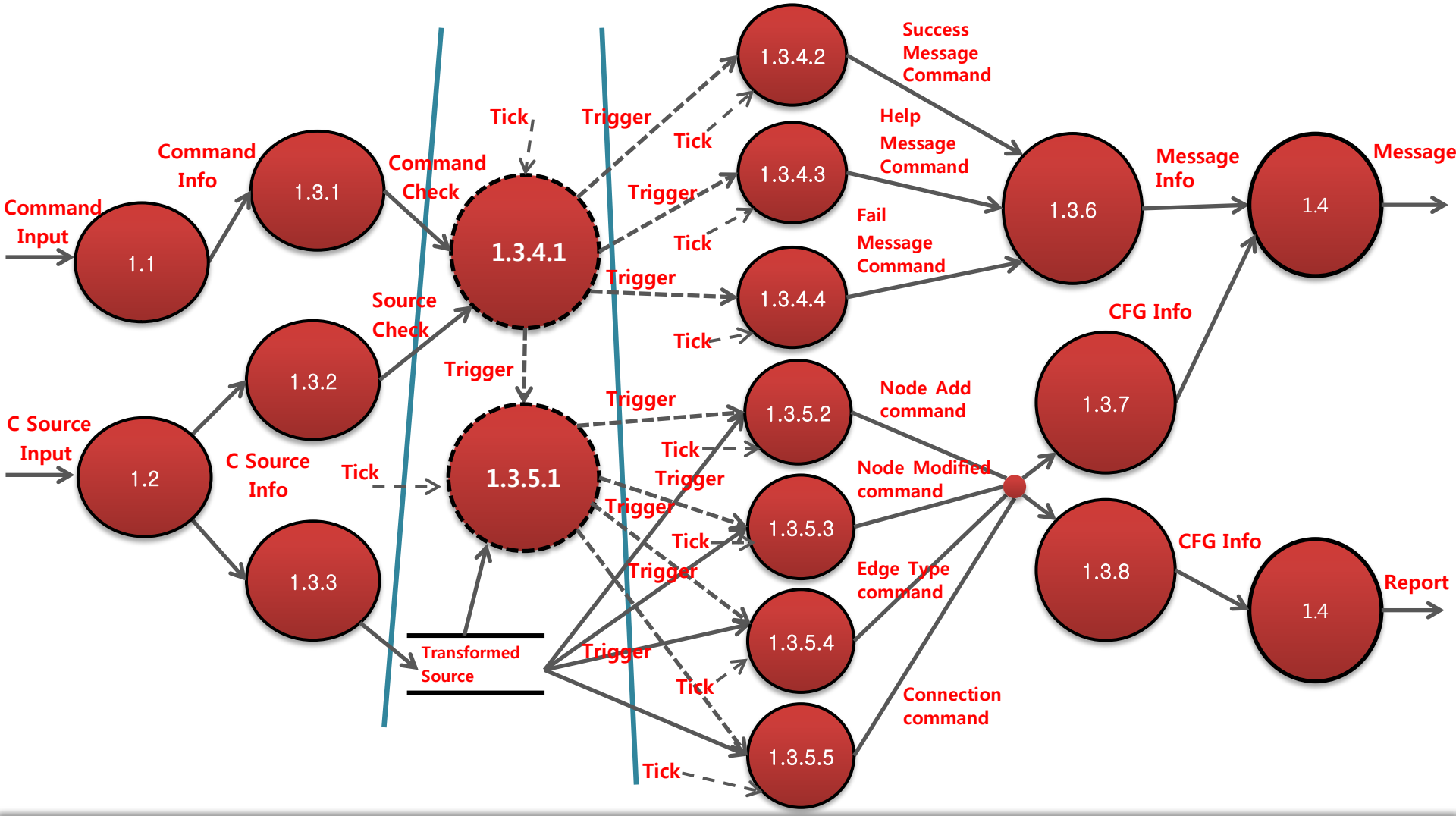
Structured Analysis

- Statement of Purpose
- System Context Diagram
- Data Flow Diagram

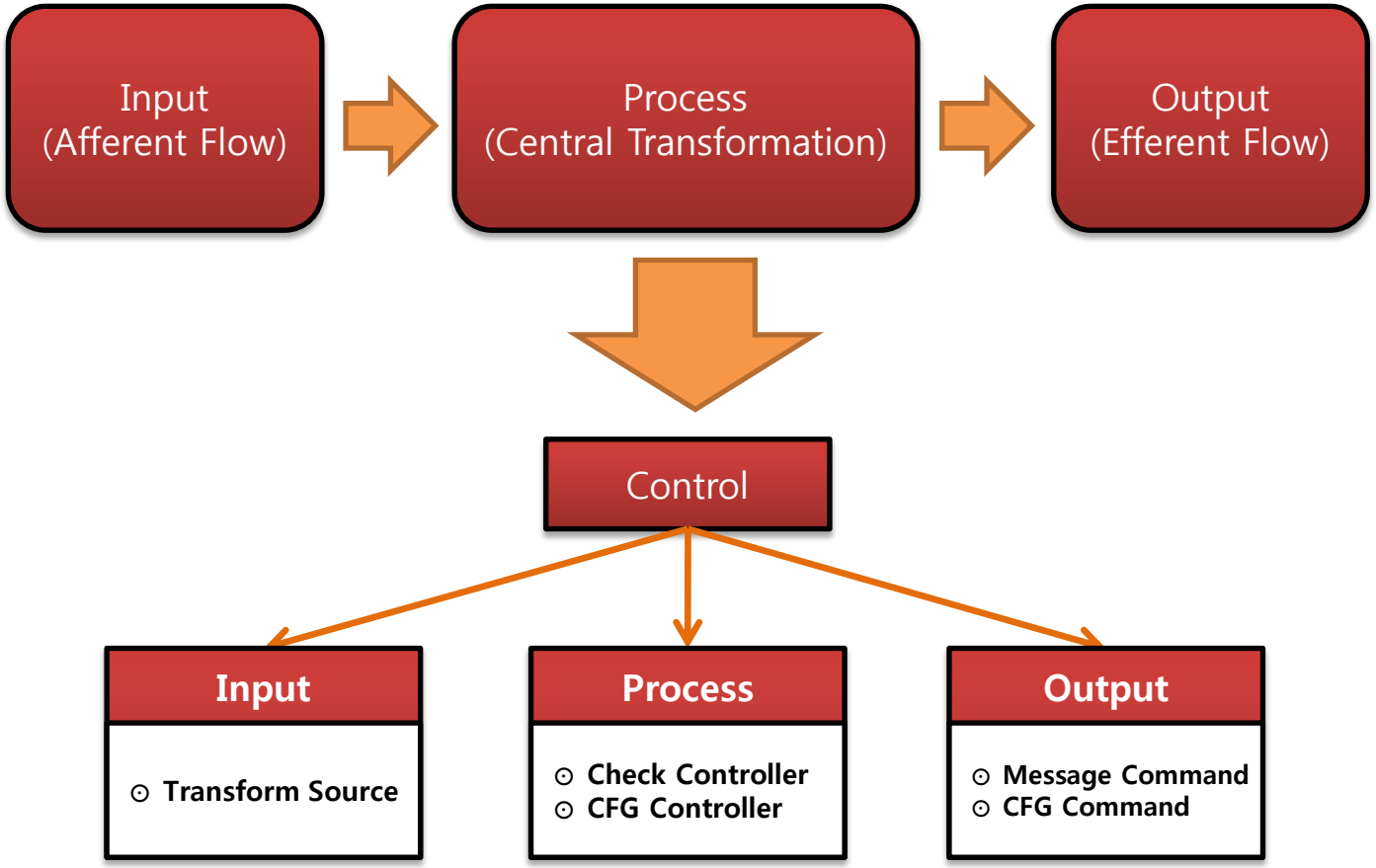
Structured Design

- Structured Charts(Transform Analysis)
- Structured Charts(Advanced)

DFD Total

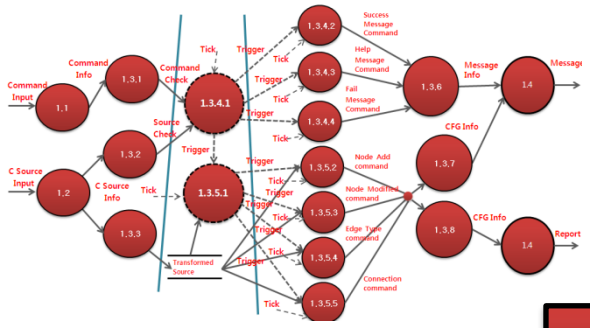

Command Input
1.1
Command Info
1.3.1
C Source Input
1.2
C Source Info
1.3.2
1.3.3
Tick
Command Check
1.3.4.1
Source Check
Trigger
1.3.5.1
Transformed Source
Tick
Trigger
1.3.4.2
Success Message Command
Tick
Trigger
1.3.4.3
Help Message Command
Tick
Trigger
1.3.4.4
Fail Message Command
Tick
Trigger
1.3.5.2
Node Add command
Tick
Trigger
1.3.5.3
Node Modified command
Tick
Trigger
1.3.5.4
Edge Type command
Tick
Trigger
1.3.5.5
Connection command
Tick
1.3.6
Message Info
1.4
Message
CFG Info
1.3.7
1.3.8
CFG Info
1.4
Report

Structured Chart – Transform Analysis



Structured Charts

- CFG Generator(Advanced)



Q n A ?