

Software Engineering

4조

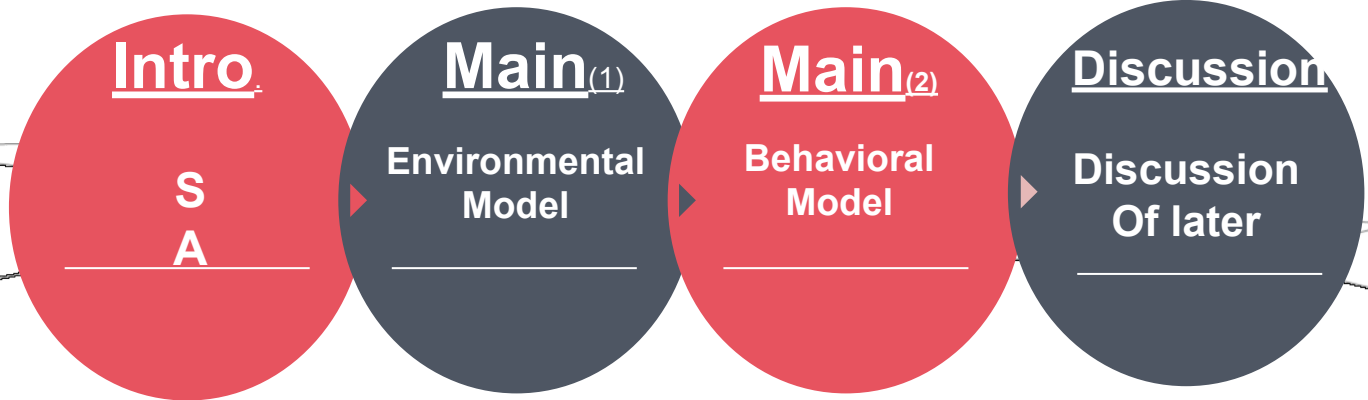
## Structure Analysis

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# CONTENTS



# Introduction SA

Complete requirements  
documentations

Reliability, flexibility  
and maintainability

Reduce the risk of  
system failure

Improve quality of  
system

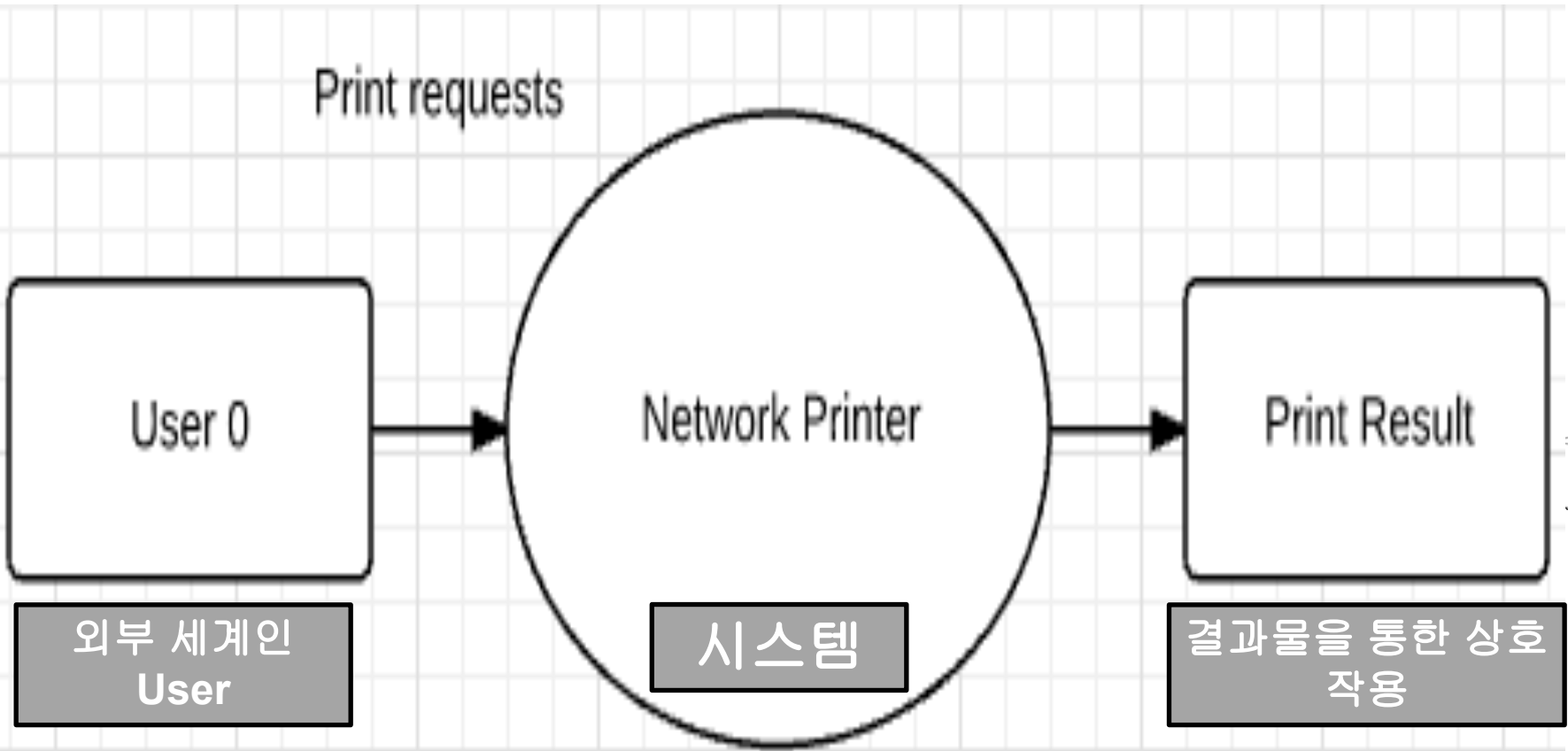
요청자의 요구를 명확하게 정리하고,  
좋은 시스템을 만들기 위한 도구

# Main 1. Environmental Model (Statement of purpose)



허가된 다중의 사용자가 이용가능하며, 사용자의 요청에 따라 Data를 출력하는 프린터를 만든다. 사용자 권한은 관리자에게서 얻으며, 2개 이상의 요청을 받을 시, 요청 순서대로 출력을 진행한다. 이를 위해 잉크와 종이가 필요하며, 이 상황은 LCD를 통해 출력된다. 사용자가 아니거나, 대기열이 가득찼거나, 종이나 잉크가 부족하면 출력을 할 수 없으며, 오류 메시지를 출력한다.

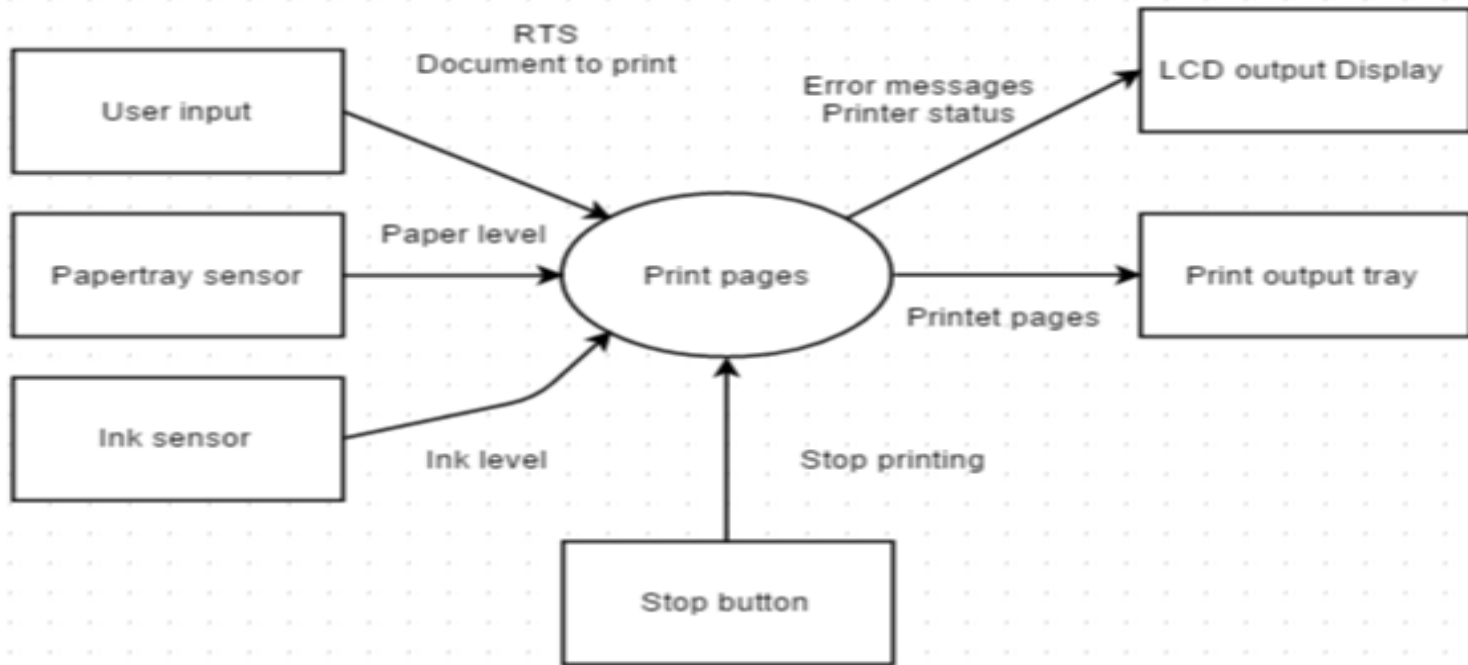
# Main 1. Environmental Model (System Context Diagram)



Terms	Definitions
<b>User 0</b>	The user console, sends print requests to the Network Printer to execute.
<b>Network Printer</b>	Receives Print requests and executes them by returning Print Result values.
<b>Print Result</b>	Result of network printer that has executed the print request sent from the User0.
<b>Print requests</b>	The data sent by the User0. It is the only input data the network printer receives from the User0.

# Main 2. DFD0

Network Printer level: 0

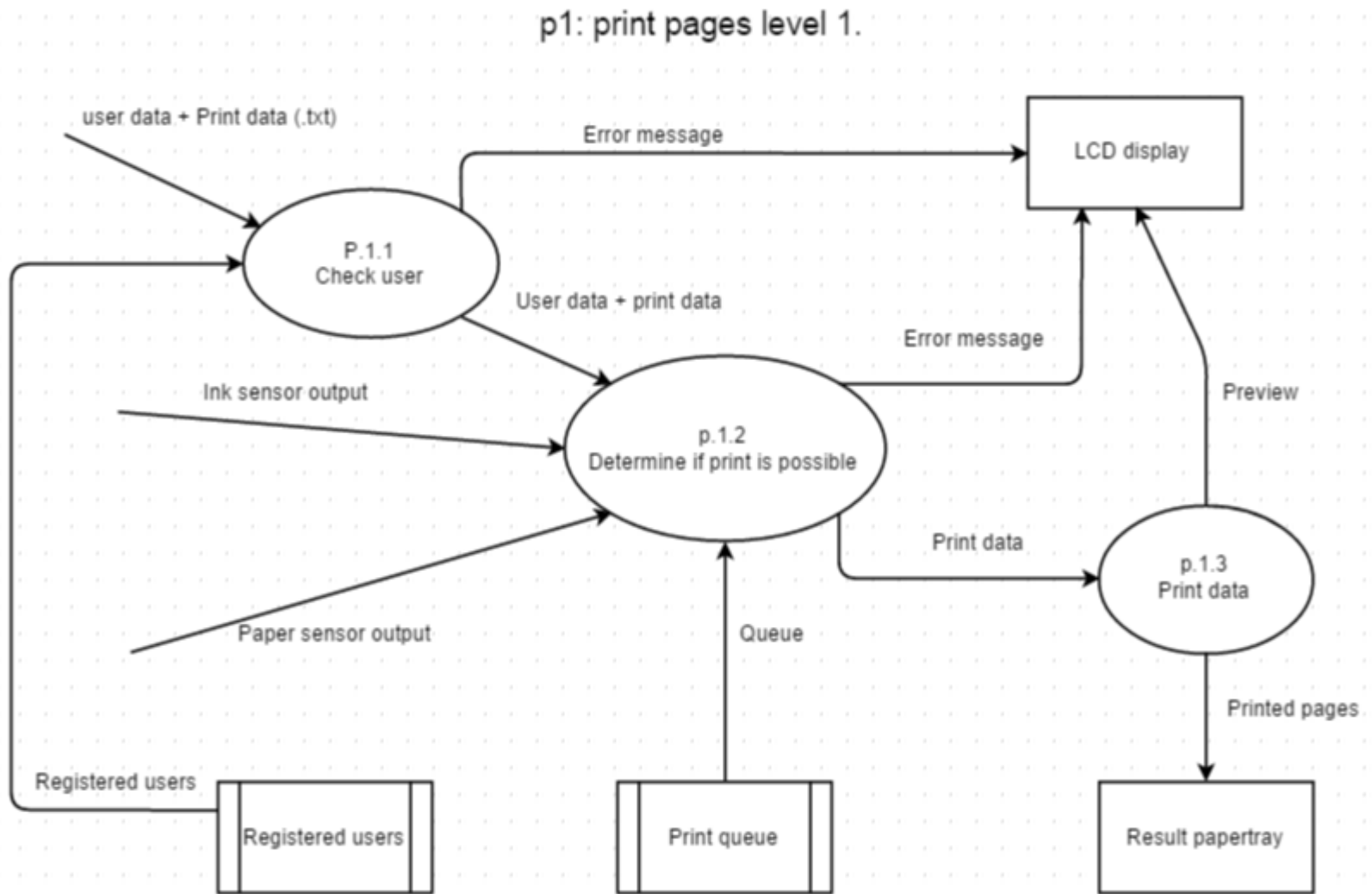


Input /Output Events	Definition	Format /Type
User Input	Requests to print data to printer in	struct
Papertray Sensor	Sends an int according to the level of paper left in the tray	Int
Ink Sensor	Sends an in according to the level of ink left	Int
Stop button	Sends a action event to the Print pages process to stop and stops the print process	Action Event
Printed pages	Send data to Printout Tray folder and saves it in yyyyymmddhhmmss.txt format	.txt
Error Messages	Sends display data showing what kind of error occurred.	Interrupt
printer status	send display status in current ink, paper, user requirement and printing status	struct

# Main 1. Environmental Model 2.3 EventList

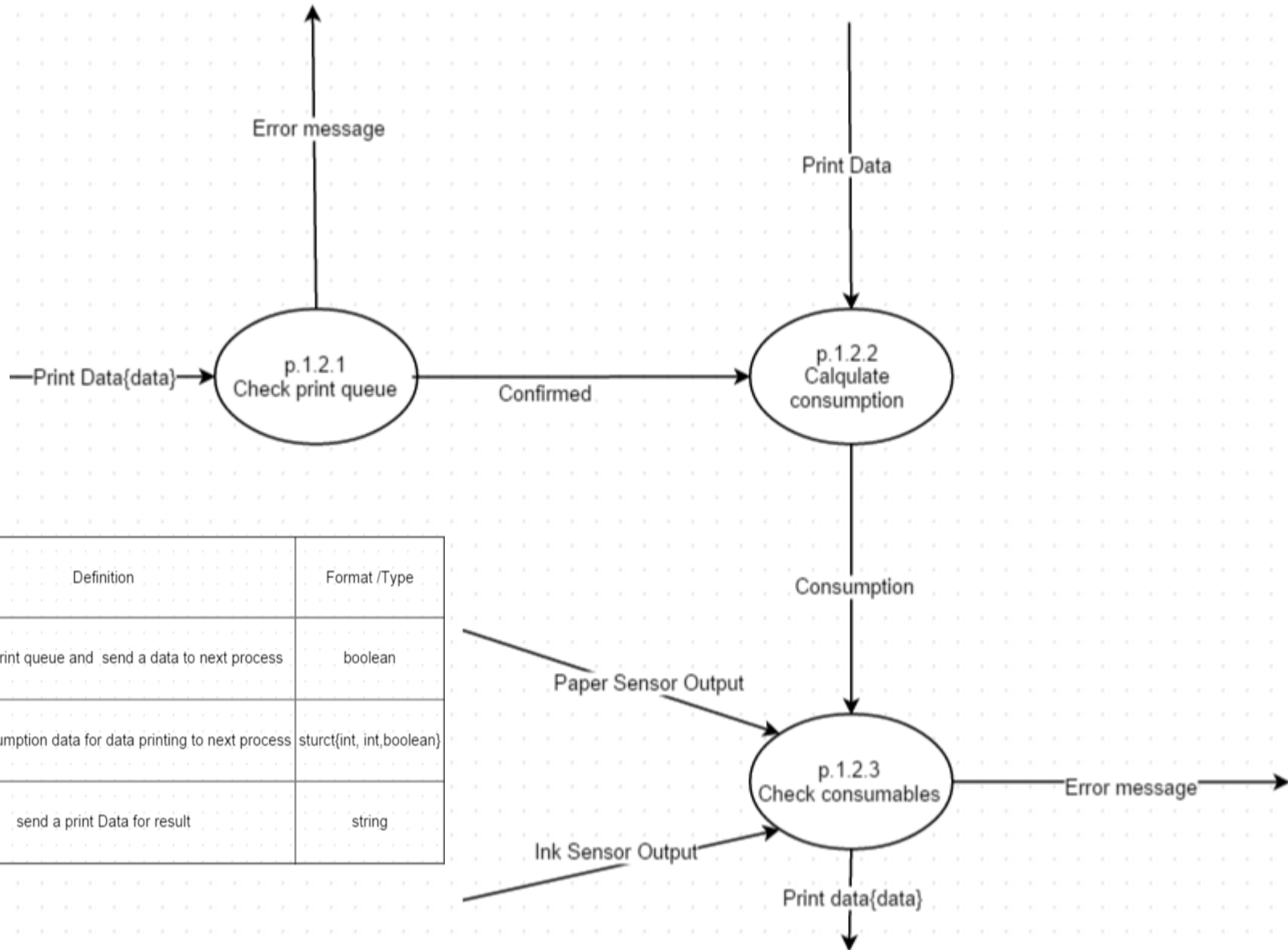
Input/ output event	Description
Print request	A PR is send from the console to the printer.
Stop request	The printers "stop" button is pressed telling the printer to abort the current print job.
Print {Data}	Prints the send data.
Printer Status 'Printing'	Displays the preview of the print request on the LCD screen.
Printer Status 'Servicing'	Warns the user that the printer is currently undergoing servicing by the Admin by displaying 'Servicing' on the LCD screen.
Printer Status 'Waiting'	Tells the user the printer is available for use by the displaying 'Waiting' on the LCD screen.
Show Print Preview	Displays the preview of the print request on the LCD screen.
Admin - register user {User}	User granted access to print
Admin - show user list	Displays a list of current registered users on the network printer in the console.
Admin - unregister user {User}	User deleted access to print
Admin - refill consumables	Admin refills consumable under command sending the printer into "Refill State"
Print error message - queue full	Displays error "Print queue full" on the LCD screen when a print request is received, and the print queue is full.
<b>Print error message - Refill consumables</b>	Displays error "Refill consumables" on the LCD screen when either the ink or paper level = NULL.
<b>Print error message - unregistered user</b>	Displays error "Unregistered User" when an unregistered user send a print request to the printer.
Save Print Result	The network saves the print result in the Paper tray folder.

# Main 2. DFD1



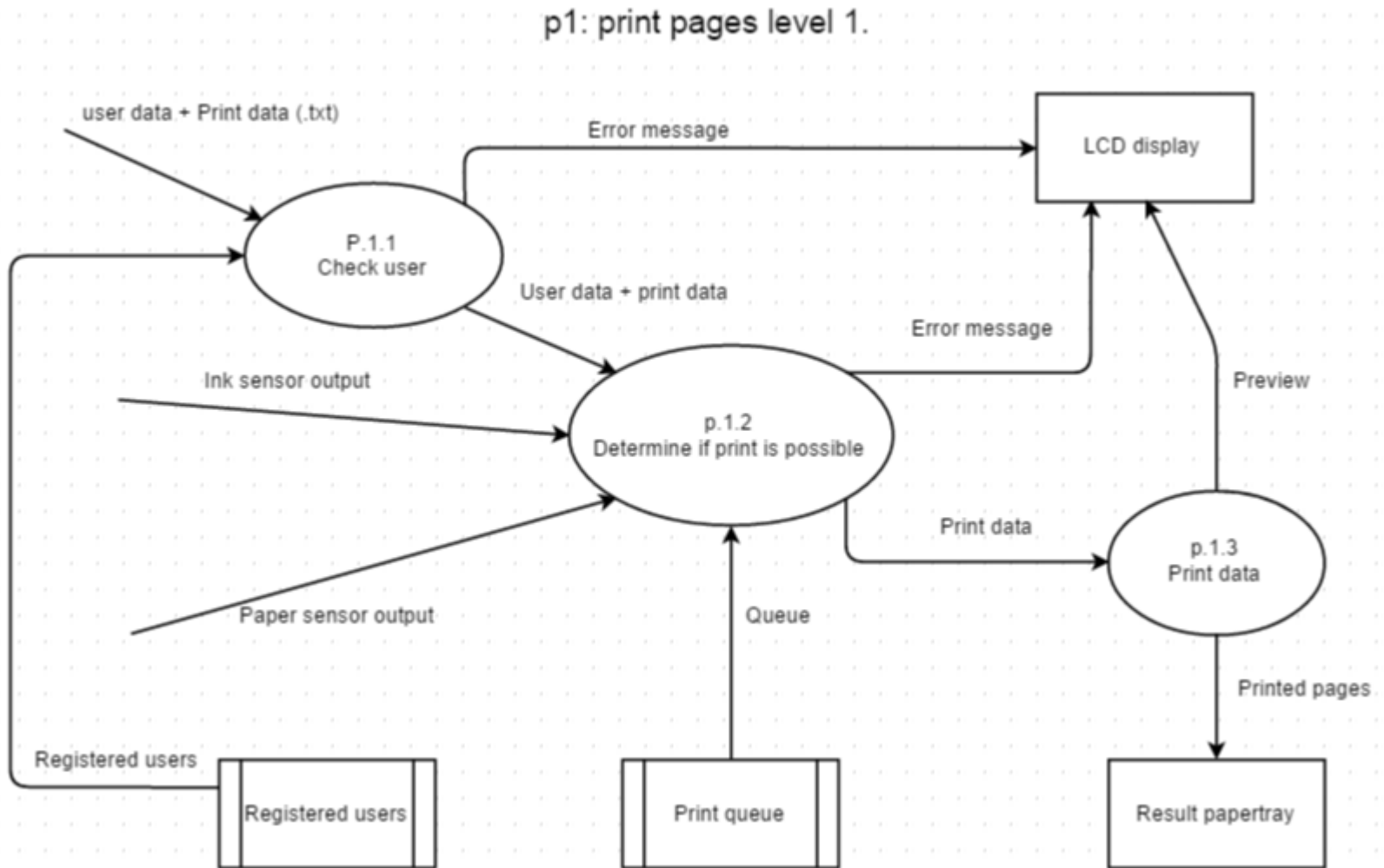


# Main 2. process specification of determine if is possible



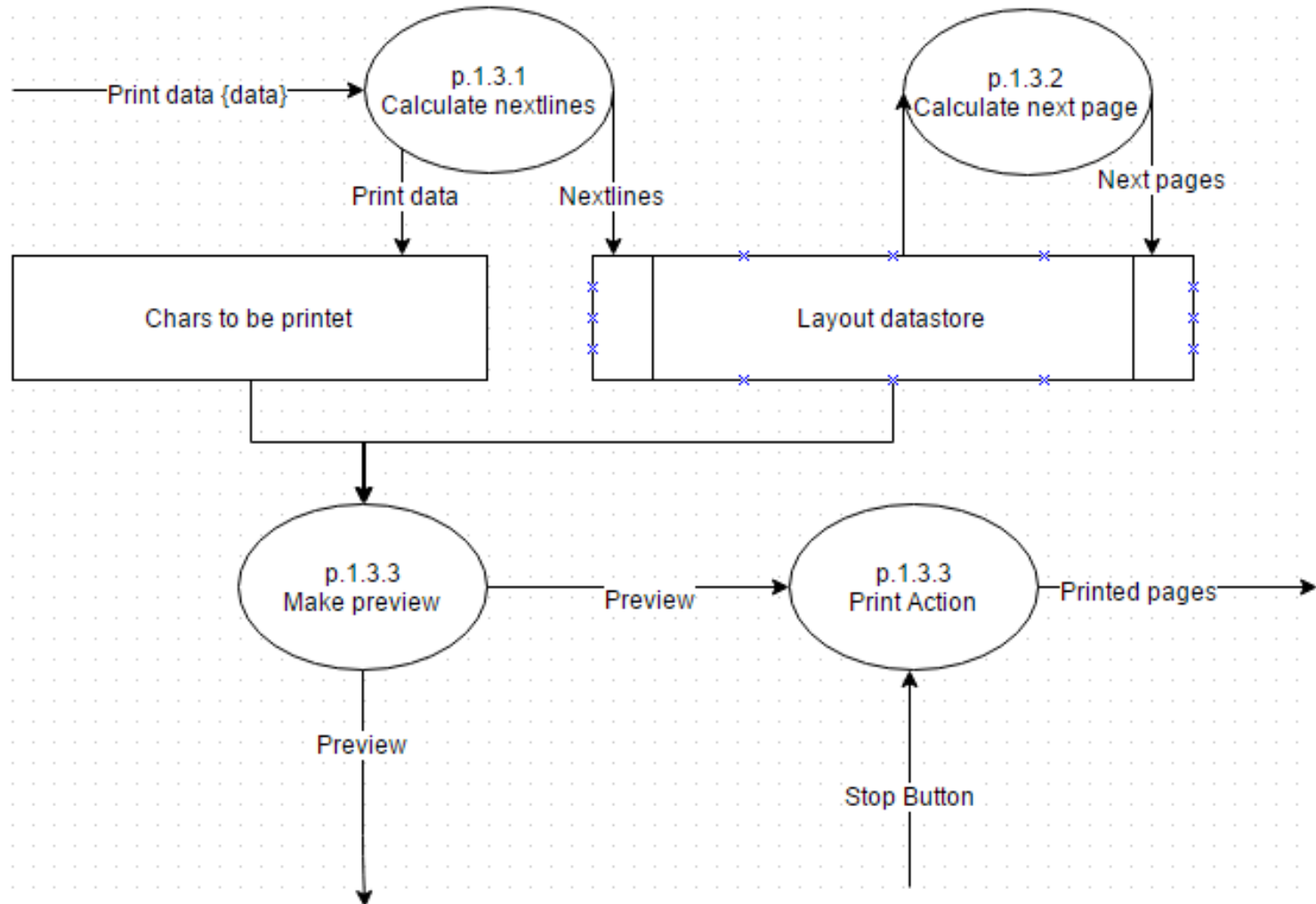
Input /Output Events	Definition	Format /Type
Confirmed	check the print queue and send a data to next process	boolean
Consumption	send a consumption data for data printing to next process	sturct(int, int,boolean)
print Data	send a print Data for result	string

# Main 2. DFD1

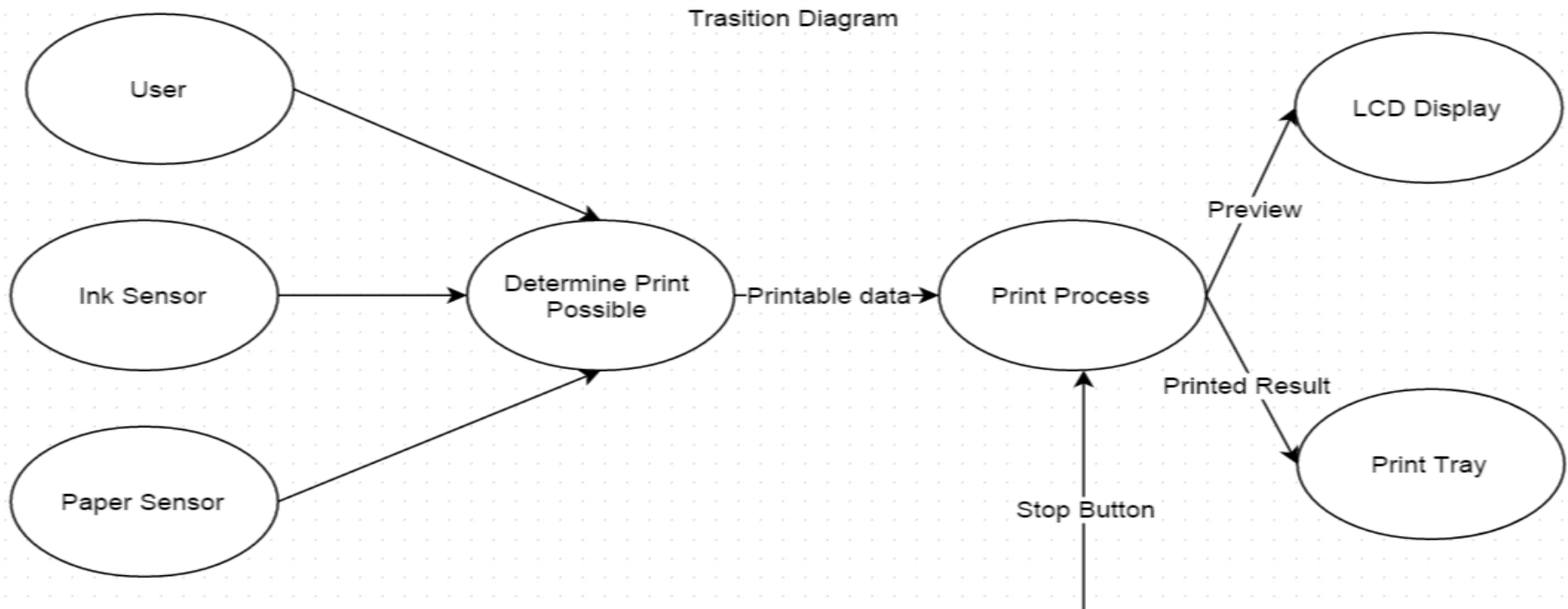


# Main2. process specification of print data

## p.1.3 Print data

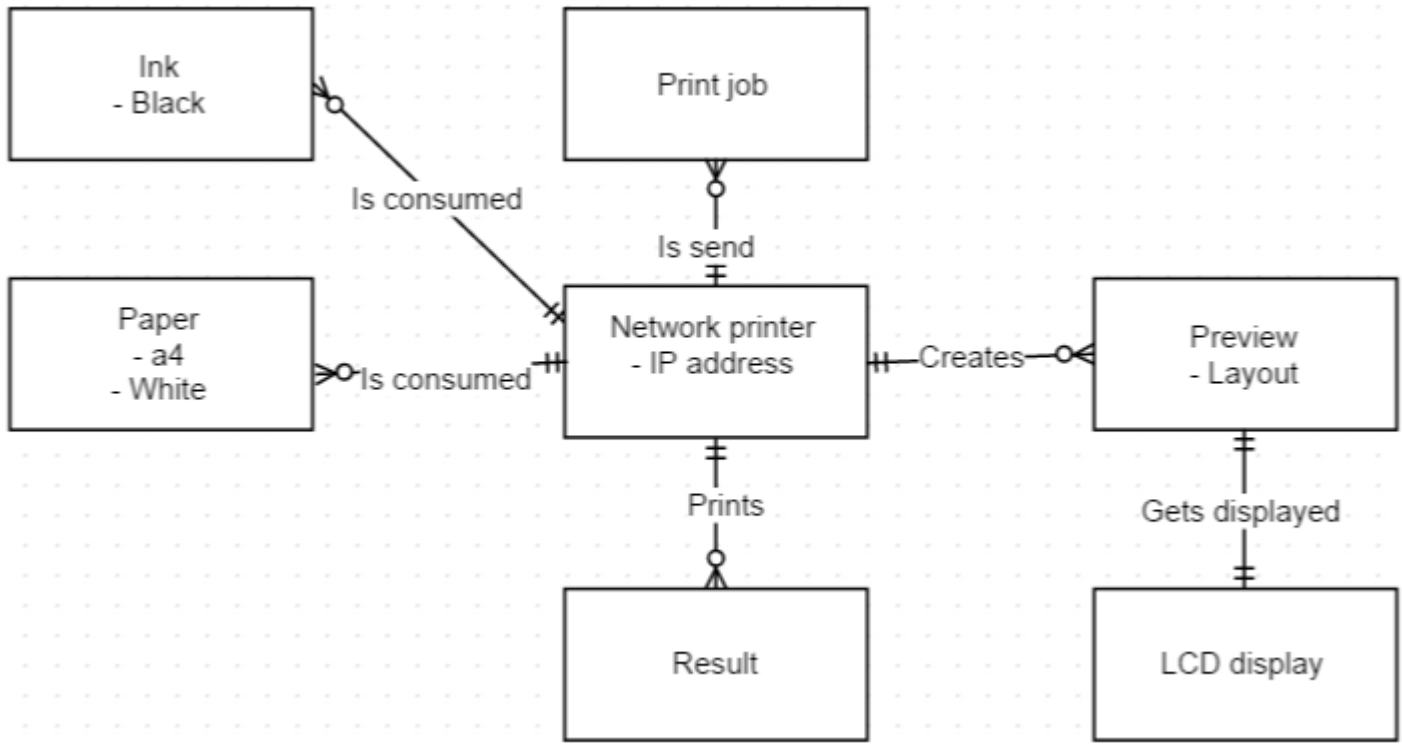


# Main 2. Transition Diagram



Input/Output Event	Description	Format / Type
User Input	User Information and print request data	.txt / interrupt
Ink Sensor	Sends amount of ink left to the printer	int / periodic
Paper Sensor	Sends amount of paper left to the printer	int / periodic
Printable Data	Data in .txt format is sent to the print process	char stream /interrupt
LCD Preview	The print process sends a preview of the print data to the LCD screen	char stream/interrupt
Printed Result	The print process sends a print result to the Print Tray which is saved as yyyyymmddhhmmss.txt format	char stream/interrupt
Stop Button	Sends interrupt signal to the Print process to stop the process	char / interrupt

# Main 2. entity Relationship Diagram



# Discussion

**Structured  
Design(SD)**

**Structured  
Charts**

**Entity Relationship  
Diagram**

**Data Dictionary**