

Smart Laundry Room

The future of Laundry



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01

Introduction

Introduction *General description*

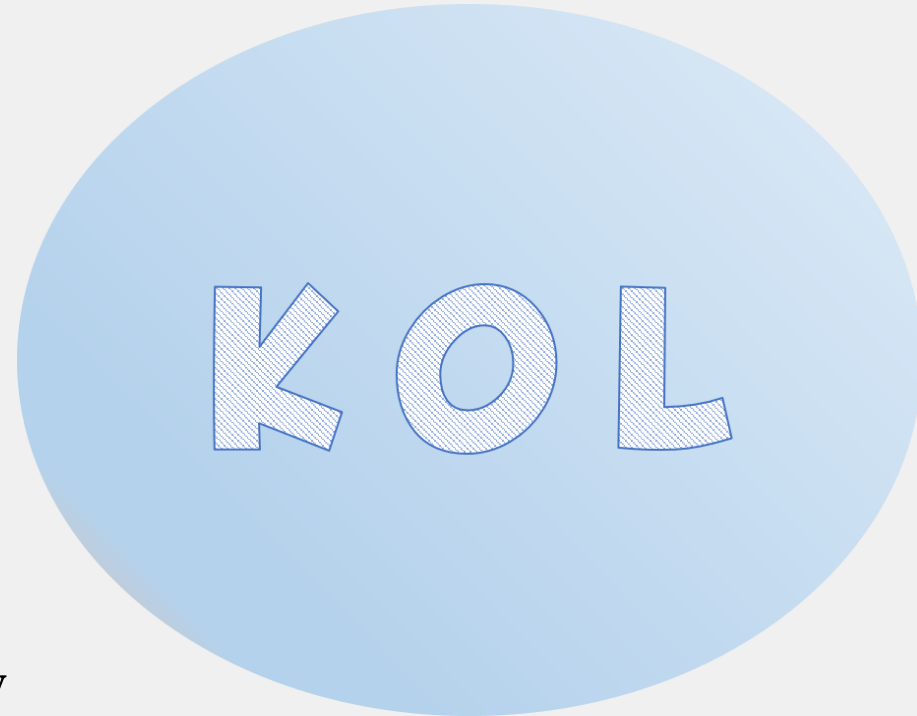
01 | Smart-laundry room application

02 | Inconvenient, insecure laundry system

03 | Automated time scheduling system

04 | Providing security with lock

⇒ **Effective and Convenient Laundry**



Introduction *Scope*

Step 1 :

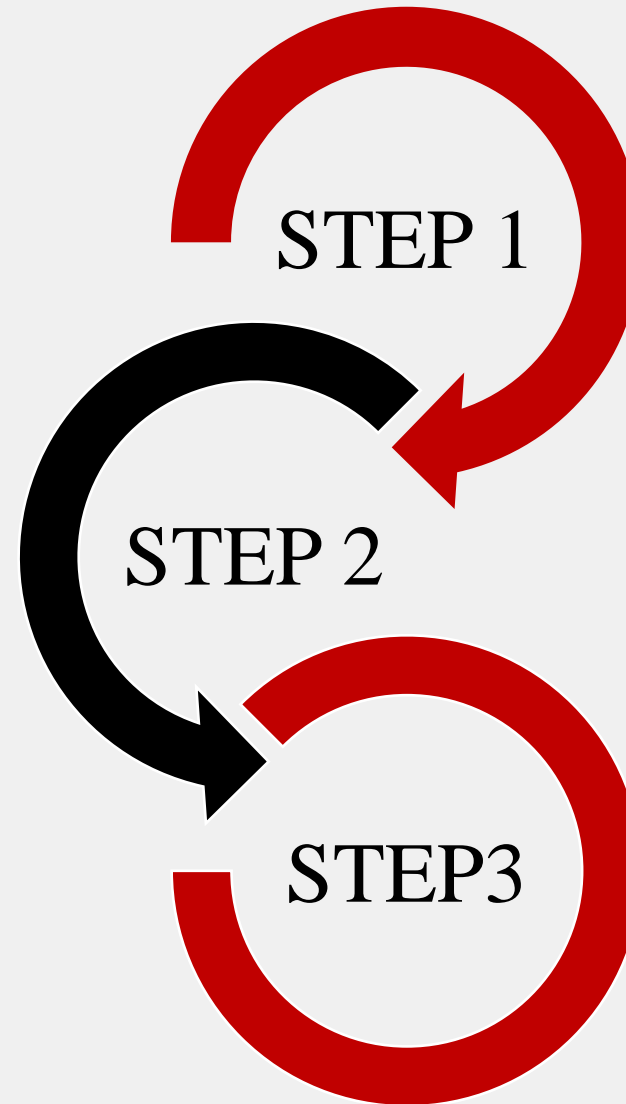
Run in any mobile environment
and on web browser

Step 2 :

Connected to public laundry room
inside the apartment

Step 3 :

A registered user can
book and pay the laundry



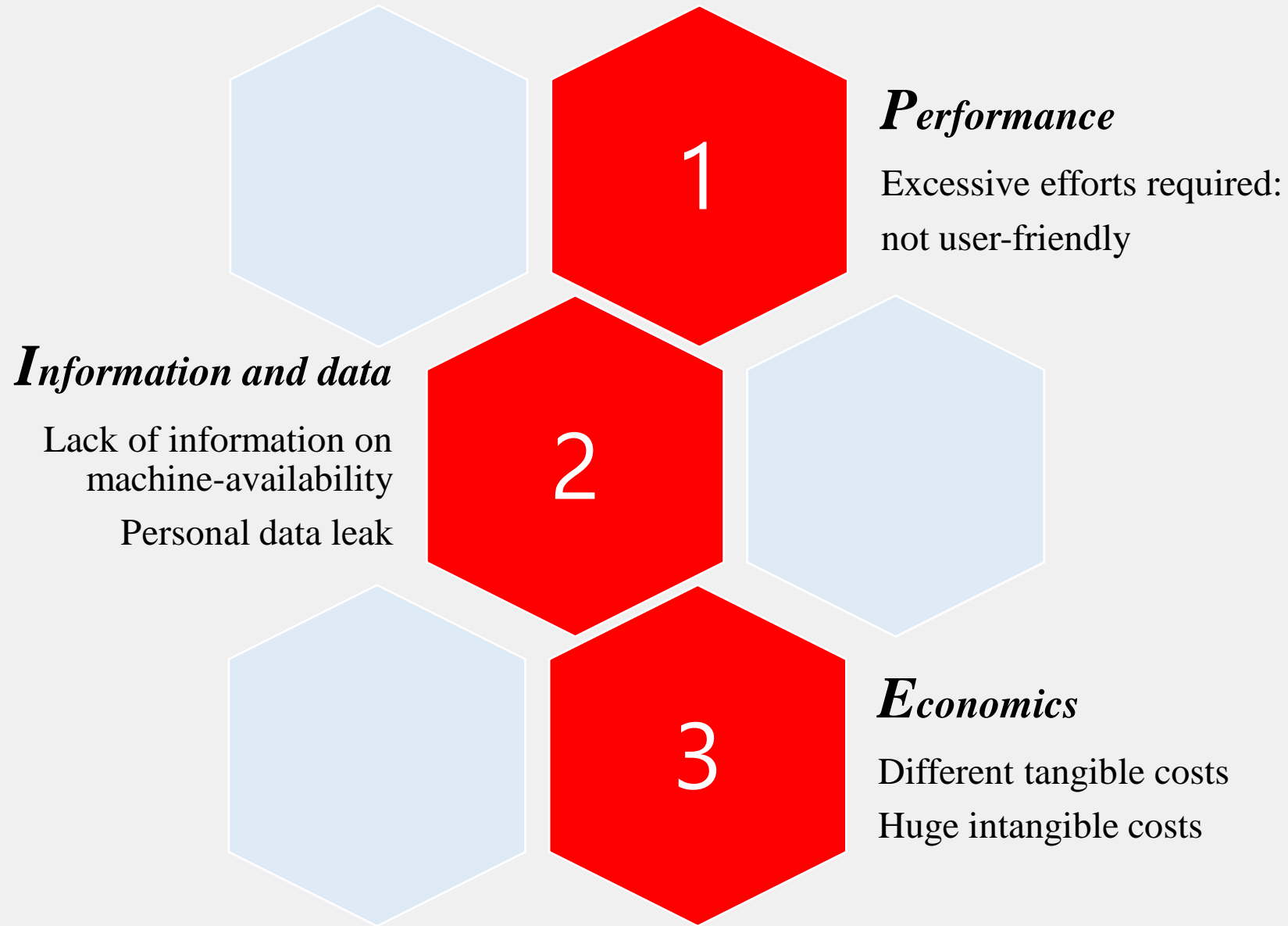
Result :

**The application will serve as a
helping hand for residents.**

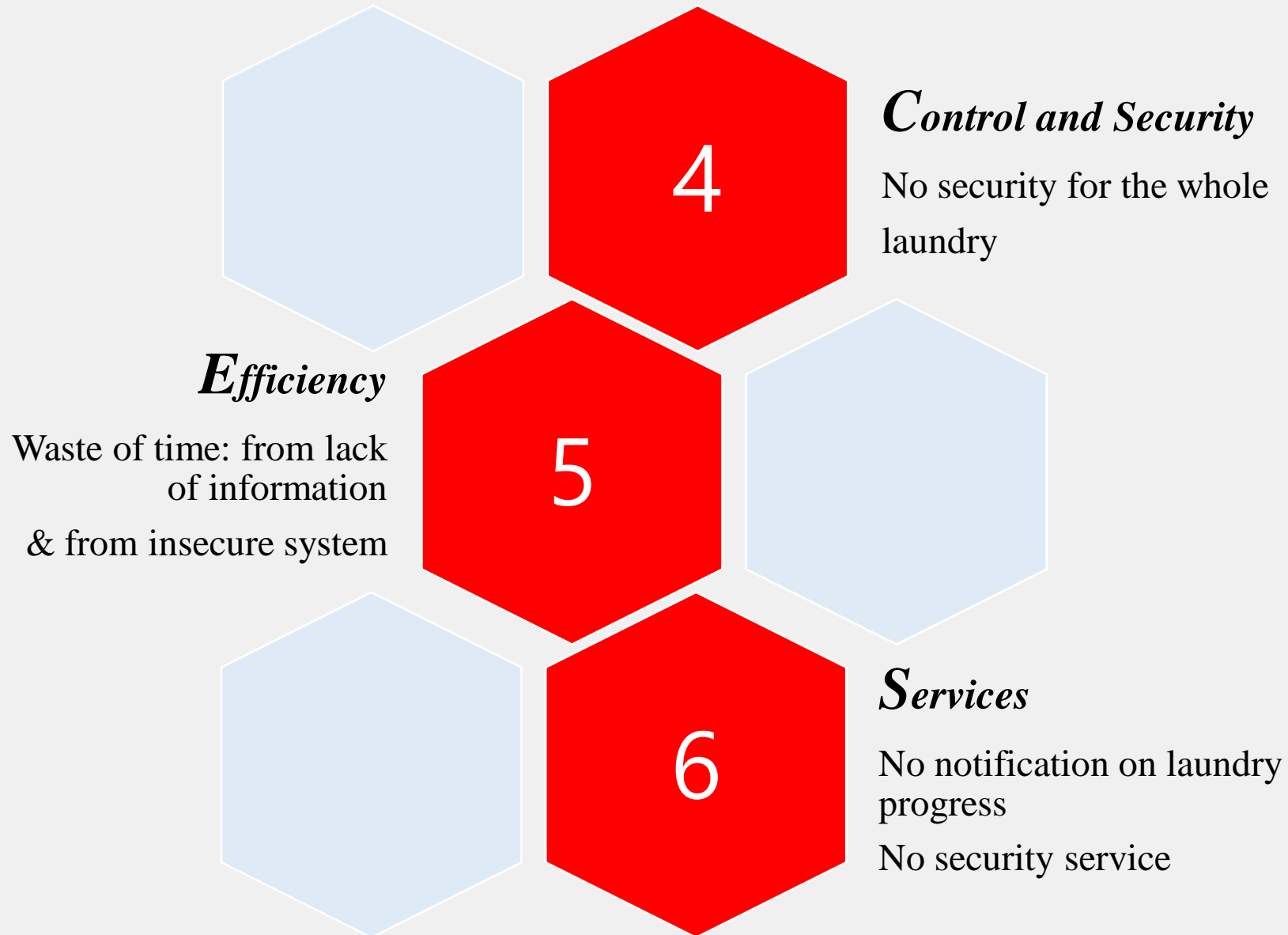
02

P.I.E.C.E.S.

P.I.E.C.E.S.



P.I.E.C.E.S.



03

Requirements and Use cases

Requirements

Functional requirements

Functional requirements	
Process	Information
Allow users to book the time to laundry <ul style="list-style-type: none">to cancel the bookingto pay when booking	Include real-time information on the status of each laundry machine (to be displayed to the user)
Notify the user when laundry is done	Include real-time tracking on the booked machine
Allow users to create an account.	Collect user information on the history of using the machine according to reservation / report system
Generate a code to unlock the machine (connected to each lock in each machine) <ul style="list-style-type: none">Provide authenticated users with a code to unlock the machine	
Warn the user who does not take one's laundry	

Requirements *Non-functional requirements*

Non-functional Requirements			
Operational	Performance	Security	Cultural & Political
Can be run on both mobile devices and computer <ul style="list-style-type: none"> • can be run on all the mobile/web environment 	Users can leave feedbacks	Laundry machines will be opened only by code which will be given to the user during booking process	User can choose the colour theme of application.
User can set the notification schedule according to their preference	Update machine information every 10 seconds	Only system managers can see the personal records of users.	Can be run in French or English.
Can be run on any environment that provides internet connection	Users will get the responses to their requests within a period of 15 seconds	Users can see their history of using the system	Shall not use icons that could be considered offensive in our market countries
		Only authenticated user can use the system	Support Canadian dollar currency

Use case Book

Use case name: book a laundry		Id: 1	
Short description: this feature allows a user to book time to laundry			
Trigger: user activates the booking form on the application			
Type: External			
Major Inputs		Major Outputs	
Description	Source	Description	destination
1. Booking form 2. user information 3. availability	1. user 2. user DB 3. system DB	1. Successful notification message with a code to open the machine 2. error message 3. revised user information (tracking the usage) 4. revised availability (time, machines)	1. user 2. user 3. user DB 4. system DB
Major steps performed		Information for steps:	
1. A user requests the booking form containing information about time to laundry, amounts of laundry, heat setting...		[I.1] Booking form	
2. The system checks the user information and availability and display the time slot		[I.2] User information, machine availability [O.2] Filled form	
3. If all the information from the user is valid, a successful notification message will be displayed with the code to open the machine.		[I.3] Valid form [O.3] Successful notification message	
4. If the information is wrong or invalid, it gets rejected and an error message is displayed		[I.4] Invalid form [O.4] Error Message	

Use case *Register*

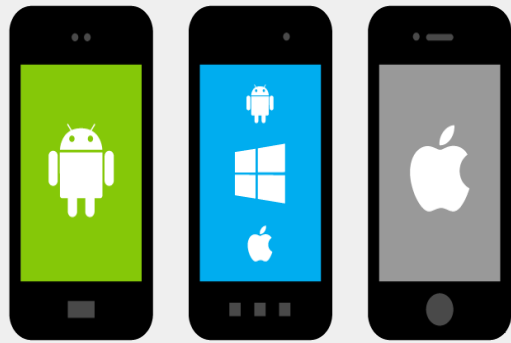
Use case name: register		Id: 2	
Short description: this feature allows a user to create an account for the application			
Trigger: User who doesn't have an account clicks the button register			
Type: External			
Major Inputs		Major Outputs	
Description	Source	Description	destination
1. User information 2. Registration form	1. user 2. user	1. Successful notification message 2. Error message 3. User information	1. user 2. user 3. user DB 4. system DB
Major steps performed		Information for steps:	
1. A user fills out an online registration form that contains his/her personal information (username, password, full name, address, e-mail address...)		[I.1] Registration form	
2. Validate the filled registration form		[I.2] User information [O.2] Validated information	
3. If all the information from the user is valid (username should be distinct, address should be one of the supporting building, etc.), a successful notification message will be displayed and a confirmation e-mail will be sent to the entered e-mail.		[I.3] Valid form [O.3] Successful notification message, Confirmation letter through e-mail	
4. If the information is wrong or invalid, it gets rejected and an error message is displayed		[I.4] Invalid form [O.4] Error Message	

04

Feasibility Analysis

Feasibility Analysis

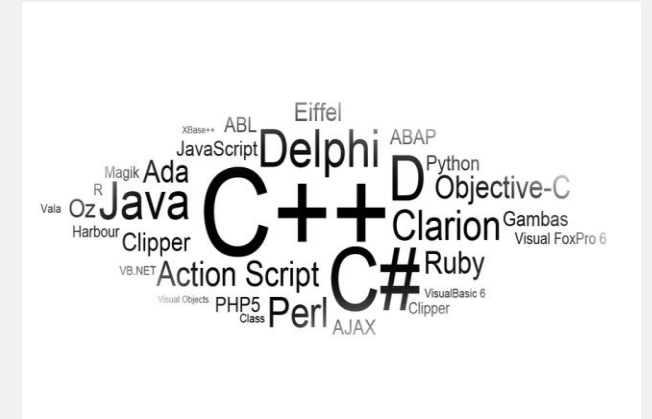
Technical feasibility



The application will be able to be run in any mobile platforms: Android, iOS, and Windows



A smart lock will be installed to existing laundry machines so that it can be connected to the application



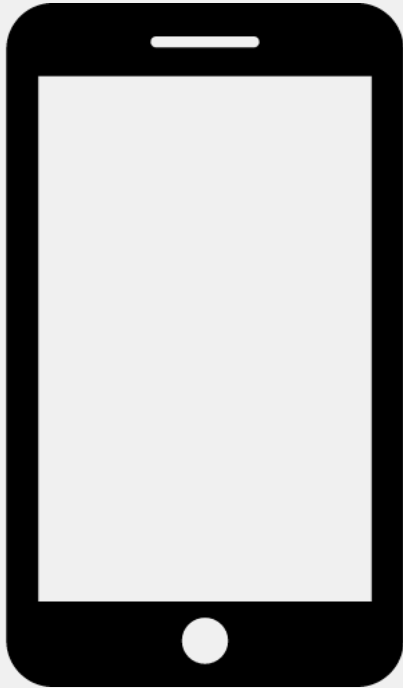
Some programming languages will be used to develop the application

Feasibility Analysis *Technical feasibility*



Feasibility Analysis

Operational feasibility



1. Easily readable interface
2. Account connected to the corresponding laundry room
3. Secure payment, fast processing, response time
4. Android, iOS, Windows supportive
5. Collect & display real-time data

Feasibility Analysis

Economical feasibility

Developmental Cost (yr 0)	
New hardware	\$ 5,500.00
Software	\$ 1,000.00
Installation	\$ 500.00
Design	\$ 1,000.00
Developmental salary	\$ 4,500.00
Database building	\$ 1,000.00
Training	\$ 500.00
Registration	\$ 100.00
Total cost	\$ 14,100.00

Operational Cost	
Administrative cost	\$ 2,000.00
Maintenance	\$ 1,000.00
Software upgrade	\$ 600.00
Yearly registration fee	\$ 100.00
Hardware repair	\$ 1,000.00
Communication charge	\$ 1,000.00
Total cost	\$ 5,700.00

Benefits	
Good will	\$ 4,000.00
Reduction in resident complaints	\$ 2,000.00
Increase in brand recognition	\$ 1,500.00
Advertisement	\$ 3,000.00
Total yearly benefit	\$ 10,500.00

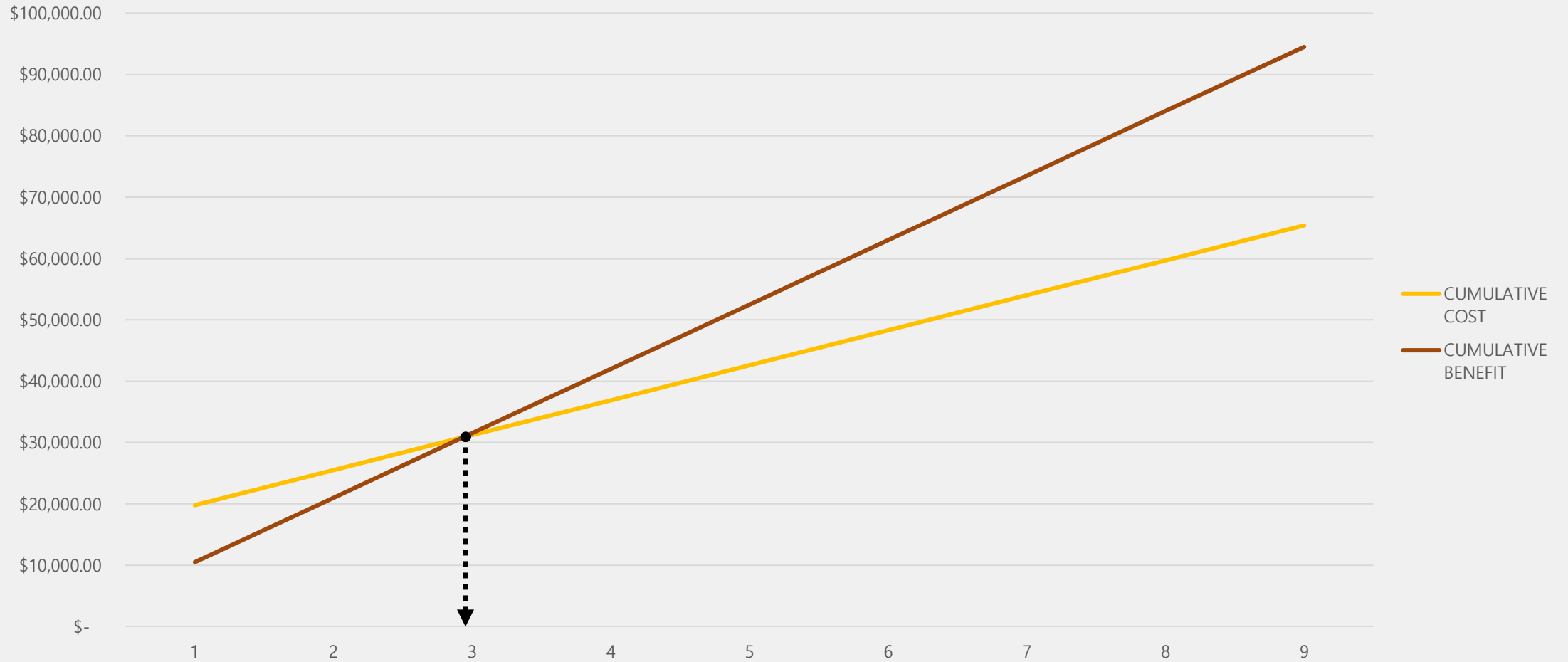
Feasibility Analysis *Economical feasibility*

Year	PV rate	COST	CUMULATIVE COST	PV COST	CUMULATIVE PV COST	BENEFIT	CUMULATIVE BENEFIT	PV BENEFIT	CUMULATIVE PV BENEFIT	Yearly NPV	CUMULATIVE NPV
1	0.9091	\$ 19,800.00	\$ 19,800.00	\$ 18,000.00	\$ 18,000.00	\$ 10,500.00	\$ 10,500.00	\$ 9,545.45	\$ 9,545.45	-\$8,454.55	-\$ 8,454.55
2	0.8264	\$ 5,700.00	\$ 25,500.00	\$ 4,710.74	\$ 22,710.74	\$ 10,500.00	\$ 21,000.00	\$ 8,677.69	\$ 18,223.14	\$ 3,966.94	-\$ 4,487.60
3	0.7513	\$ 5,700.00	\$ 31,200.00	\$ 4,282.49	\$ 26,993.24	\$ 10,500.00	\$ 31,500.00	\$ 7,888.81	\$ 26,111.95	\$ 3,606.31	-\$ 881.29
4	0.6830	\$ 5,700.00	\$ 36,900.00	\$ 3,893.18	\$ 30,886.41	\$ 10,500.00	\$ 42,000.00	\$ 7,171.64	\$ 33,283.59	\$ 3,278.46	\$ 2,397.17
5	0.6209	\$ 5,700.00	\$ 42,600.00	\$ 3,539.25	\$ 34,425.67	\$ 10,500.00	\$ 52,500.00	\$ 6,519.67	\$ 39,803.26	\$ 2,980.42	\$ 5,377.59
6	0.5645	\$ 5,700.00	\$ 48,300.00	\$ 3,217.50	\$ 37,643.17	\$ 10,500.00	\$ 63,000.00	\$ 5,926.98	\$ 45,730.24	\$ 2,709.47	\$ 8,087.07
7	0.5132	\$ 5,700.00	\$ 54,000.00	\$ 2,925.00	\$ 40,568.17	\$ 10,500.00	\$ 73,500.00	\$ 5,388.16	\$ 51,118.40	\$ 2,463.16	\$ 10,550.23
8	0.4665	\$ 5,700.00	\$ 59,700.00	\$ 2,659.09	\$ 43,227.26	\$ 10,500.00	\$ 84,000.00	\$ 4,898.33	\$ 56,016.73	\$ 2,239.24	\$ 12,789.46
9	0.4241	\$ 5,700.00	\$ 65,400.00	\$ 2,417.36	\$ 45,644.62	\$ 10,500.00	\$ 94,500.00	\$ 4,453.02	\$ 60,469.75	\$ 2,035.67	\$ 14,825.13
TOTAL		\$ 65,400.00		\$ 45,644.62		\$ 94,500.00		\$ 60,469.75			

Interest	0.1
NPV	\$ 14,825.13
ROI	44%
Payback	2.27

Feasibility Analysis *Economical feasibility*

Cost-Benefit Analysis



Feasibility Analysis *Cultural feasibility*



Feasibility Analysis *Scheduling feasibility*

	Expected Time (wks)	Immediate Predecessor	Major Deliverables	Oct		Nov				Dec				
				21	28	4	11	18	25	2	9	16	23	30
1. Feasibility study	0.5	-	Feasibility Study Report	■										
2. Requirement Collection	0.5	-	Requirement report	■										
3. Logic blueprint	0.5	1	System model	■										
4. Design programs and data structures	2	3	Input/output design Data flow structure Application interface Lock design		■	■	■							
5. Coding	3	4	Coded programs Smart lock				■	■	■					
6. Testing	2	5	Test data, test results							■	■			
7. Preliminary Documenting	1	6	System documentation draft									■		
8. Training	2	6	Trained user User manual									■	■	
9. Final Documenting	1	7, 8	System documentation											■
10. Installation	1	8	Operational system											■

1								9	
ET = 0.5								ET=1	
T=0	3	4	5	6	7	8		T=12	
2	ET = 0.5	ET=2	ET=3	ET=2	ET=1	ET=2	10		T=12
ET = 0.5	T=1	T=3	T=6	T=8	T=9	T=11	ET=1		
T=0							T=12		

THANK

YOU