

WEARABLE SYSTEM FOR MONITORING POSTURE AND HUMAN MOVEMENTS

MS1 28/10/2025

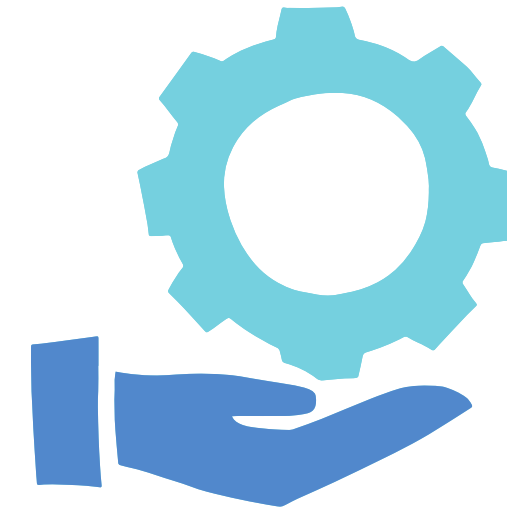


Beatriz Francisco N° 118638
Catarina Ribeiro N° 119467
Mariana Marques N°118971
Marta Cruz N° 119572
Matilde Rodrigues N°119714

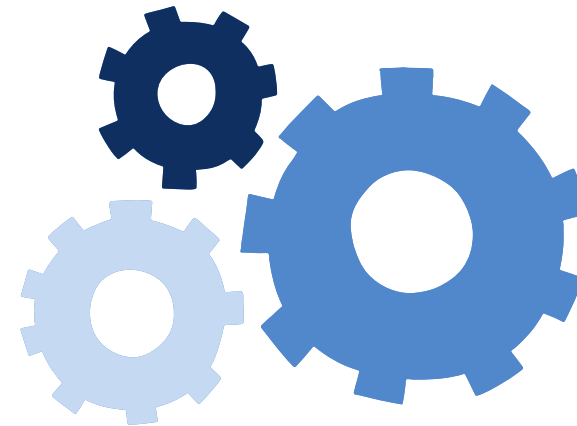
CONTEXT



Many people suffer from ergonomic problems that could be prevented with prior precautions.

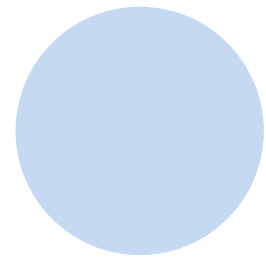


Develop a system that monitors human movement, heart rate and temperature through a wearable suit with sensors.

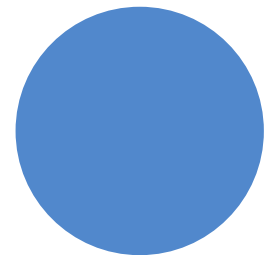


Capable of detecting and recording human body movements in real-time. And a feedback system that provides notifications and status updates when risky postures are detected.

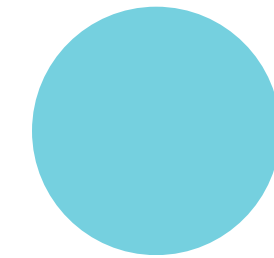
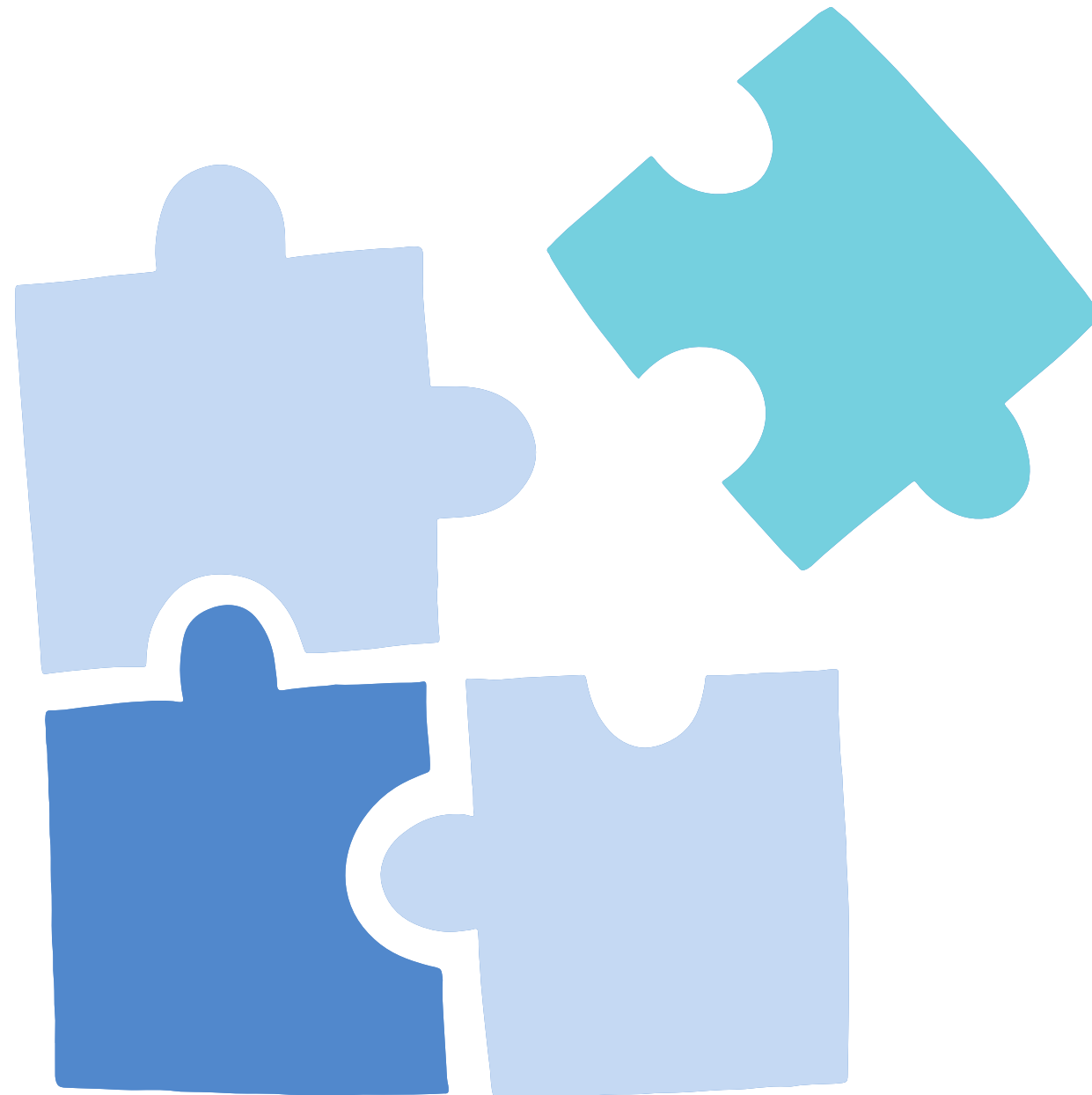
PROBLEM



Poor posture



Traditional methods



Wearable suit and
Feedback system

MOTION SUIT

Our project involves developing a suit equipped with sensors that measure body posture and detect anomalies



OUR TEAM



Marta Cruz
Software Architect



Beatriz Francisco
DevOps Master



Matilde Rodrigues
Hardware Leader



Mariana Marques
Team Manager



Catarina Ribeiro
Web Platform

GOALS



Advanced technology
integration

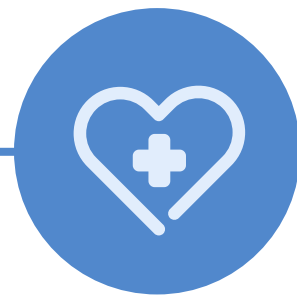


Data analysis and reports



Specialized Access
Management

GOALS



Strengthening safety and health



Reduce ergonomic risks

TASKS

T-1

Receive alerts for incorrect posture

T-2

View statistics on the dashboard

T-3

View real-time metrics on the dashboard

T-4

Customize app alerts

T-5

Set goals to improve posture

T-6

View real-time progress toward my goals

T-7

Calibrate the suit

T-8

Monitor the battery and manage energy efficiently

T-9

Access all collected information

T-10

Manage user accounts

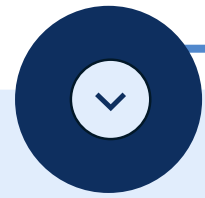
T-11

Analyze collected data

T-12

Compare data from different users

EXPECTED RESULTS



Improve the user's
posture



Functional suit with
sensors



Export data for
investigation purposes



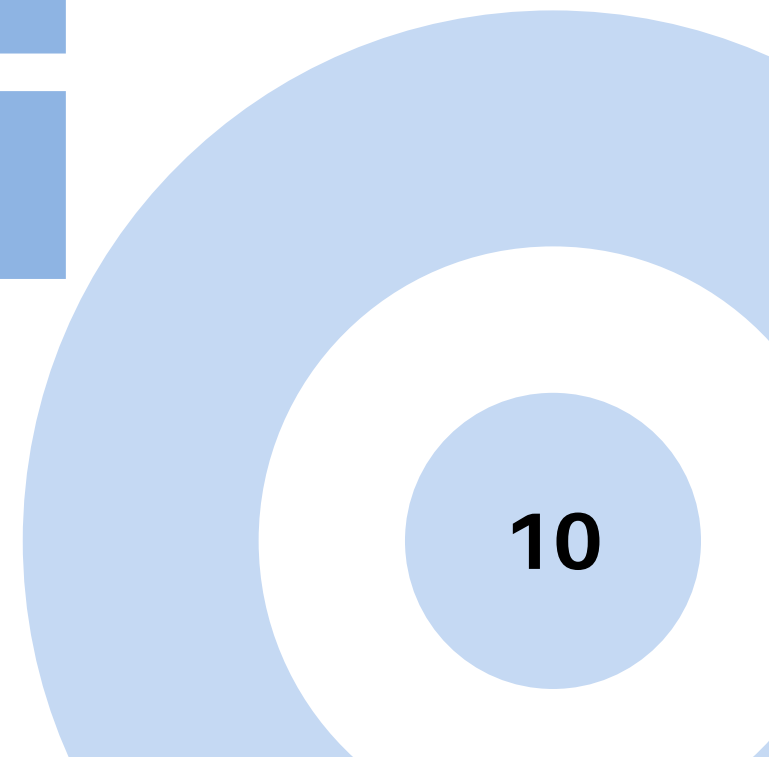
Sending alerts and display
user data





RELATED WORK

	DorsaVI	FlexiTrace	SmartPosture	SwordHealth	Current Suit	MotionSuit
Wearable Sensors	✓	✗	✗	✗	✓	✓
Performance Analytics	✓	✓	✓	✓	✓	✓
Real-Time Feedback	✓	✗	✗	✓	✓	✓
Gamification	✗	✓	✗	✗	✗	✓



PERSONAS



Suit User

- Factory Line Operator
- Construction worker
- Deti University Student

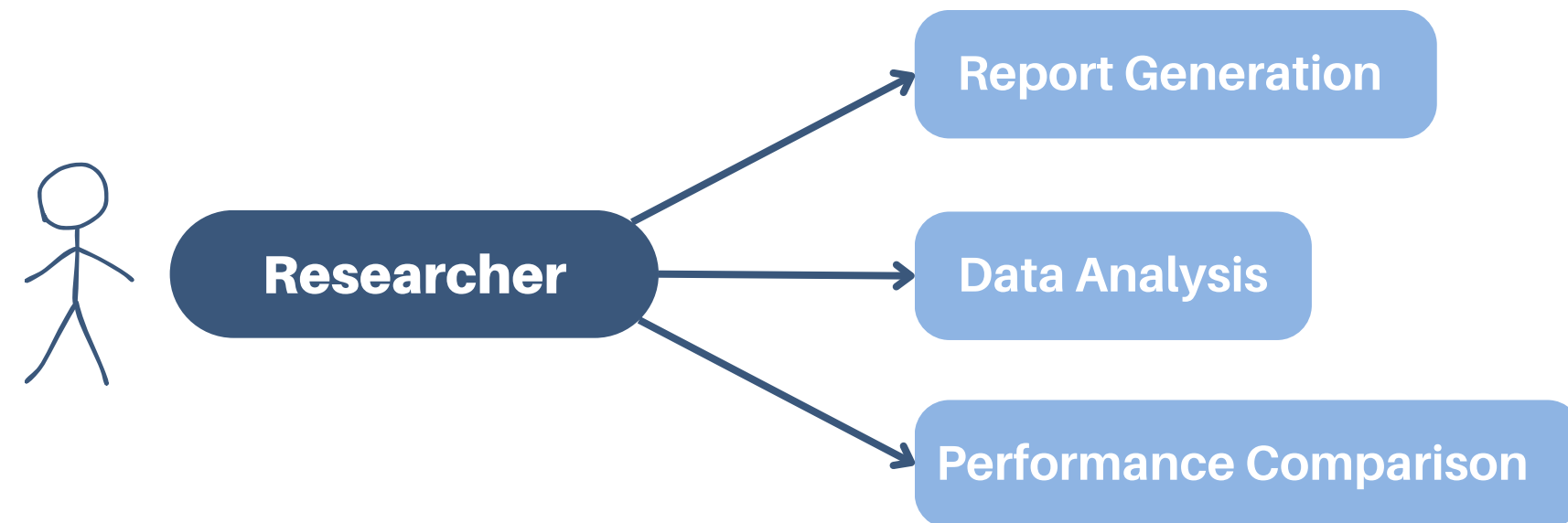
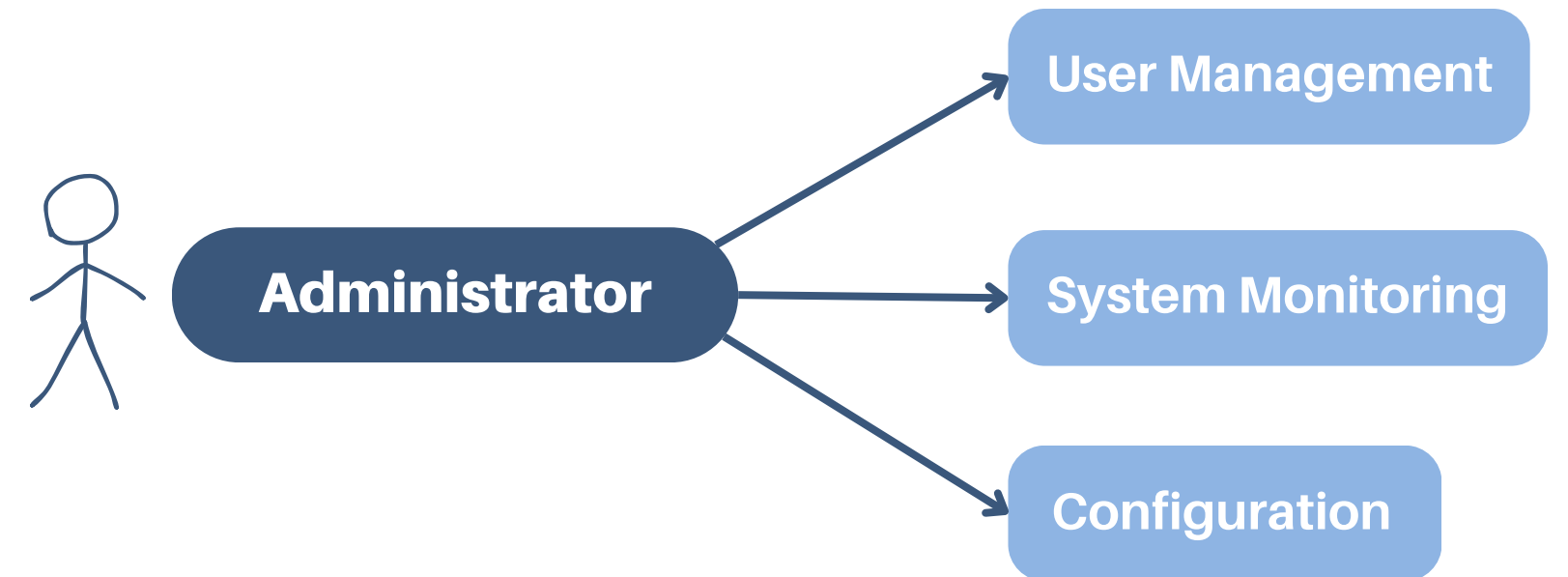
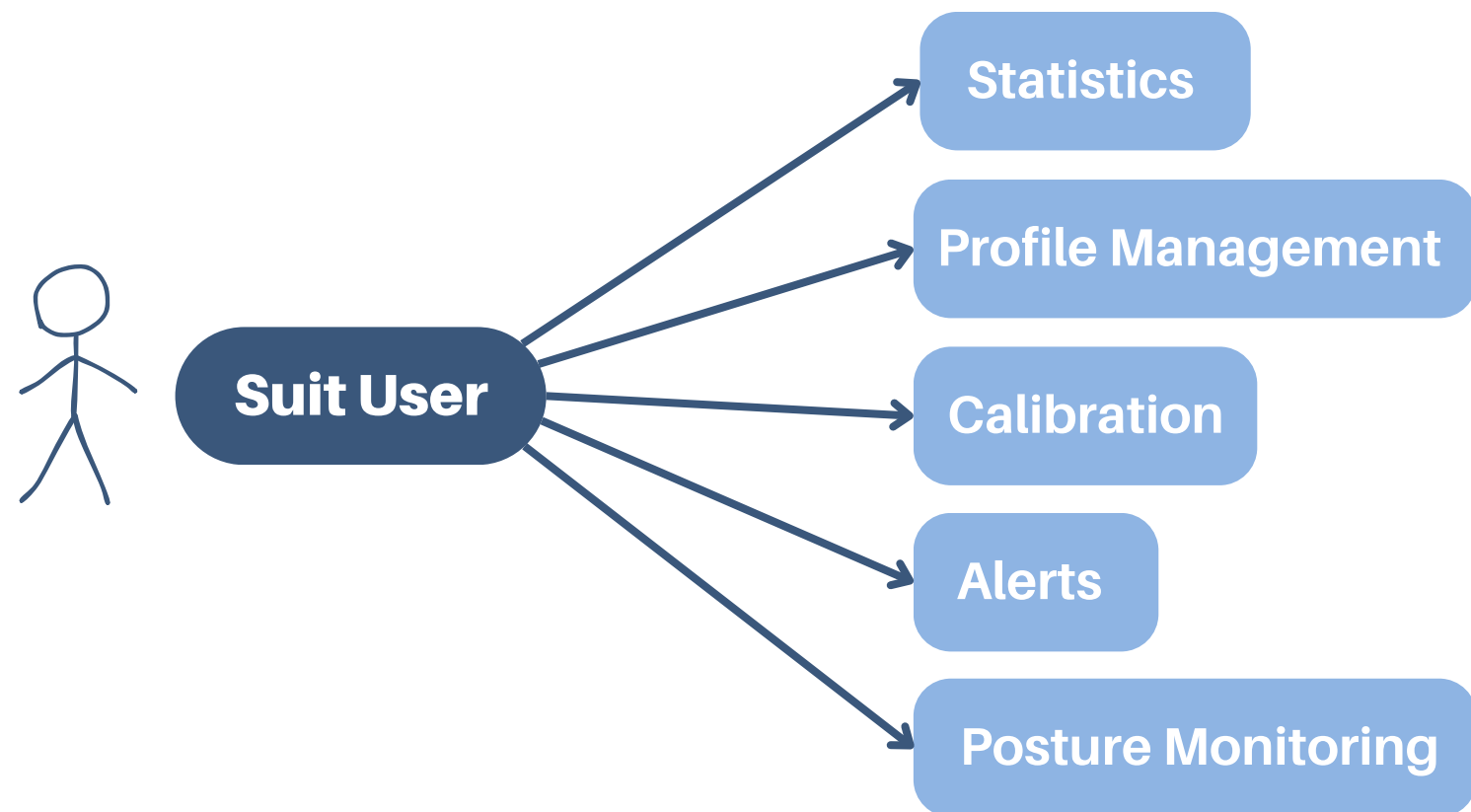


Researcher

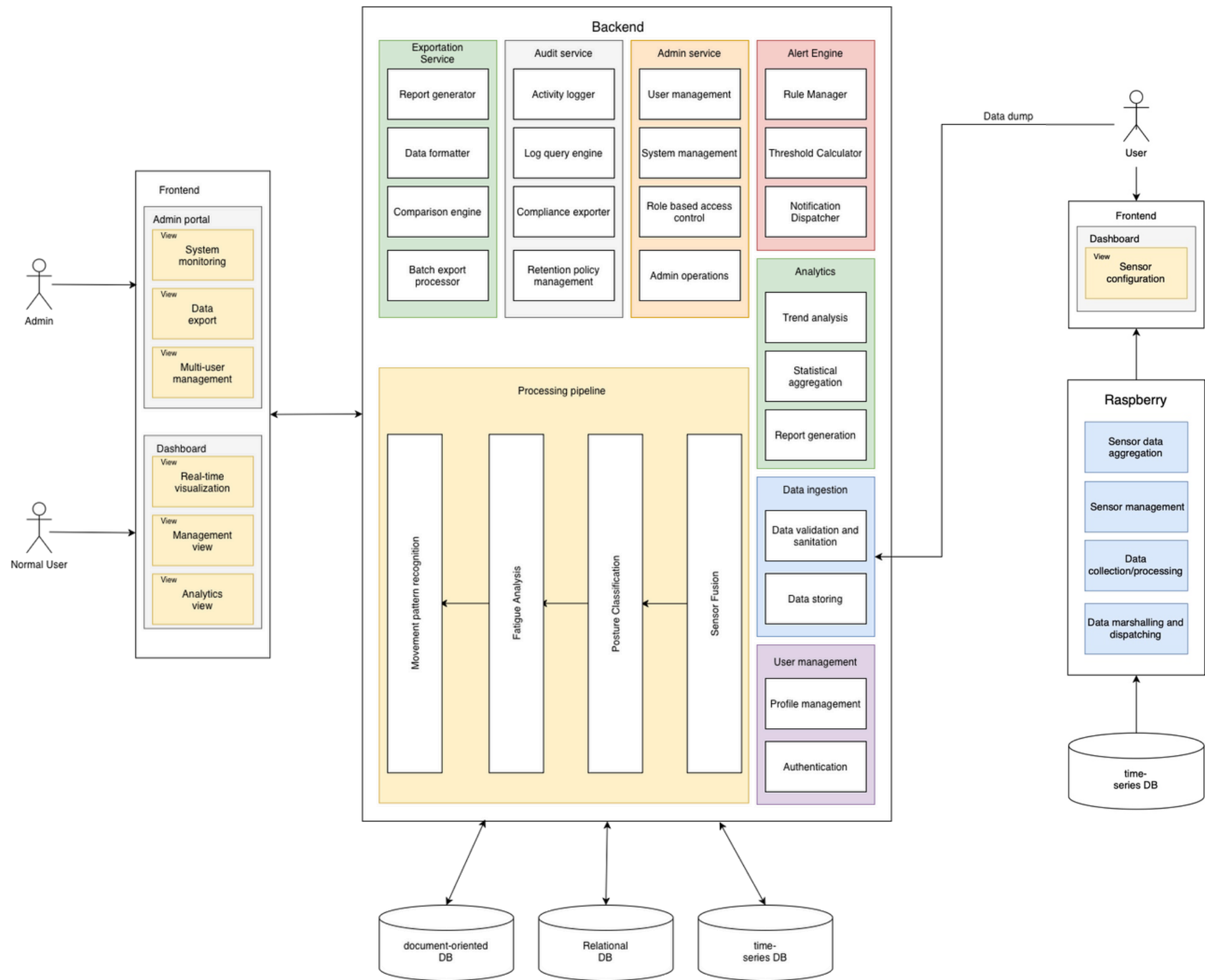


Administrator

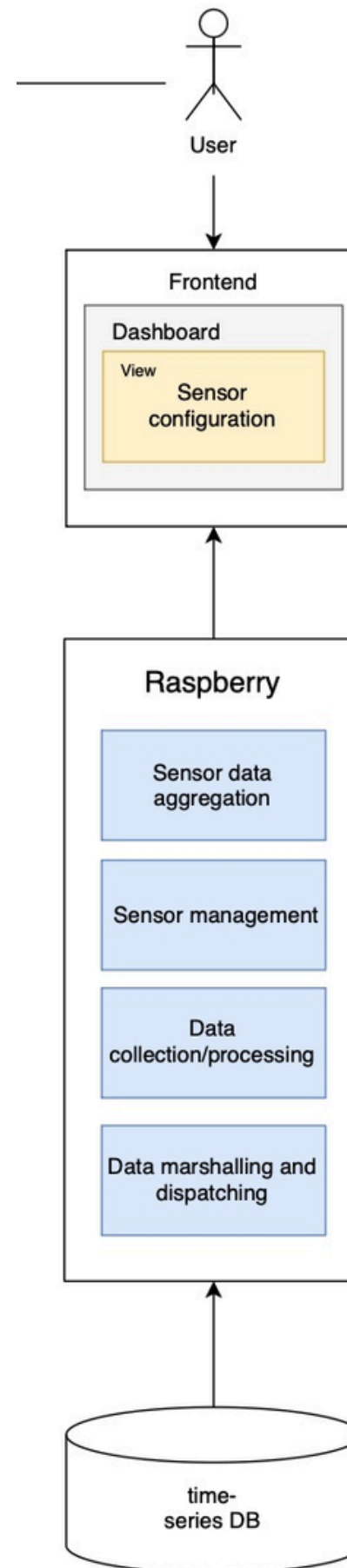
USE CASES



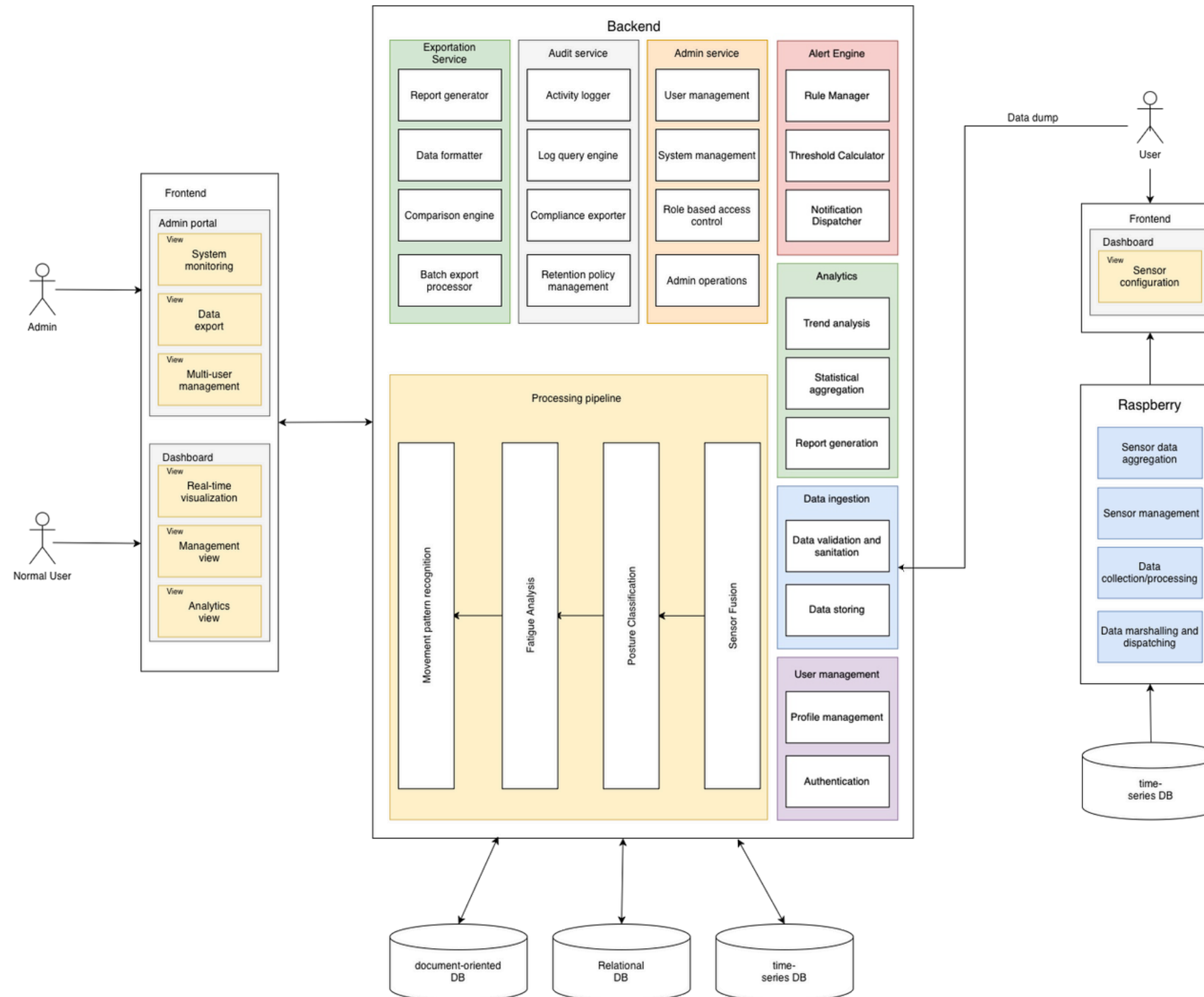
ARCHITECTURE



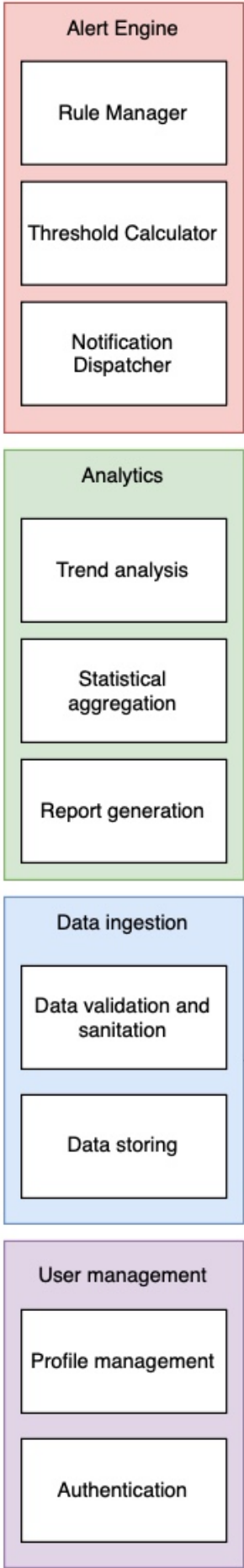
ARCHITECTURE



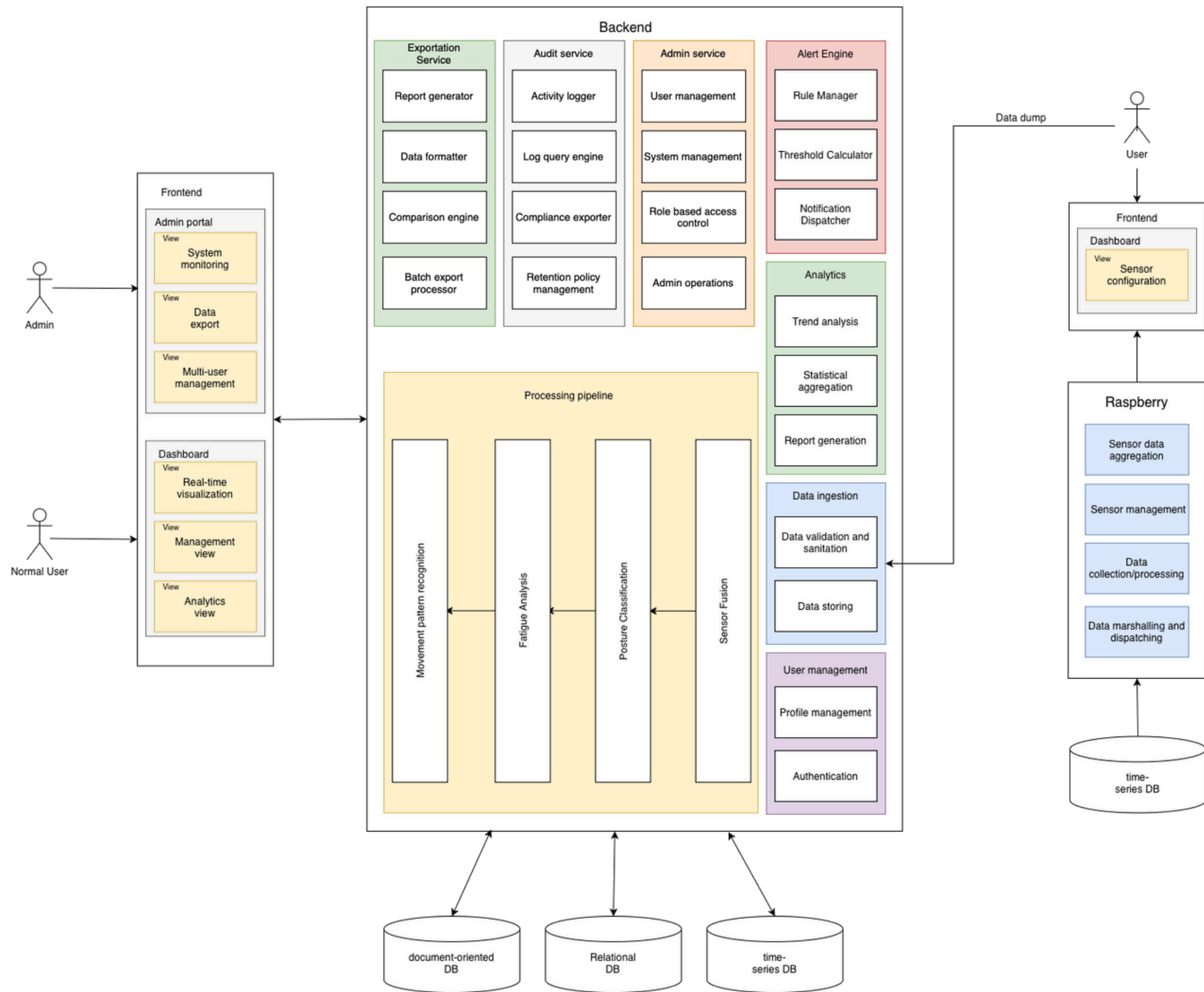
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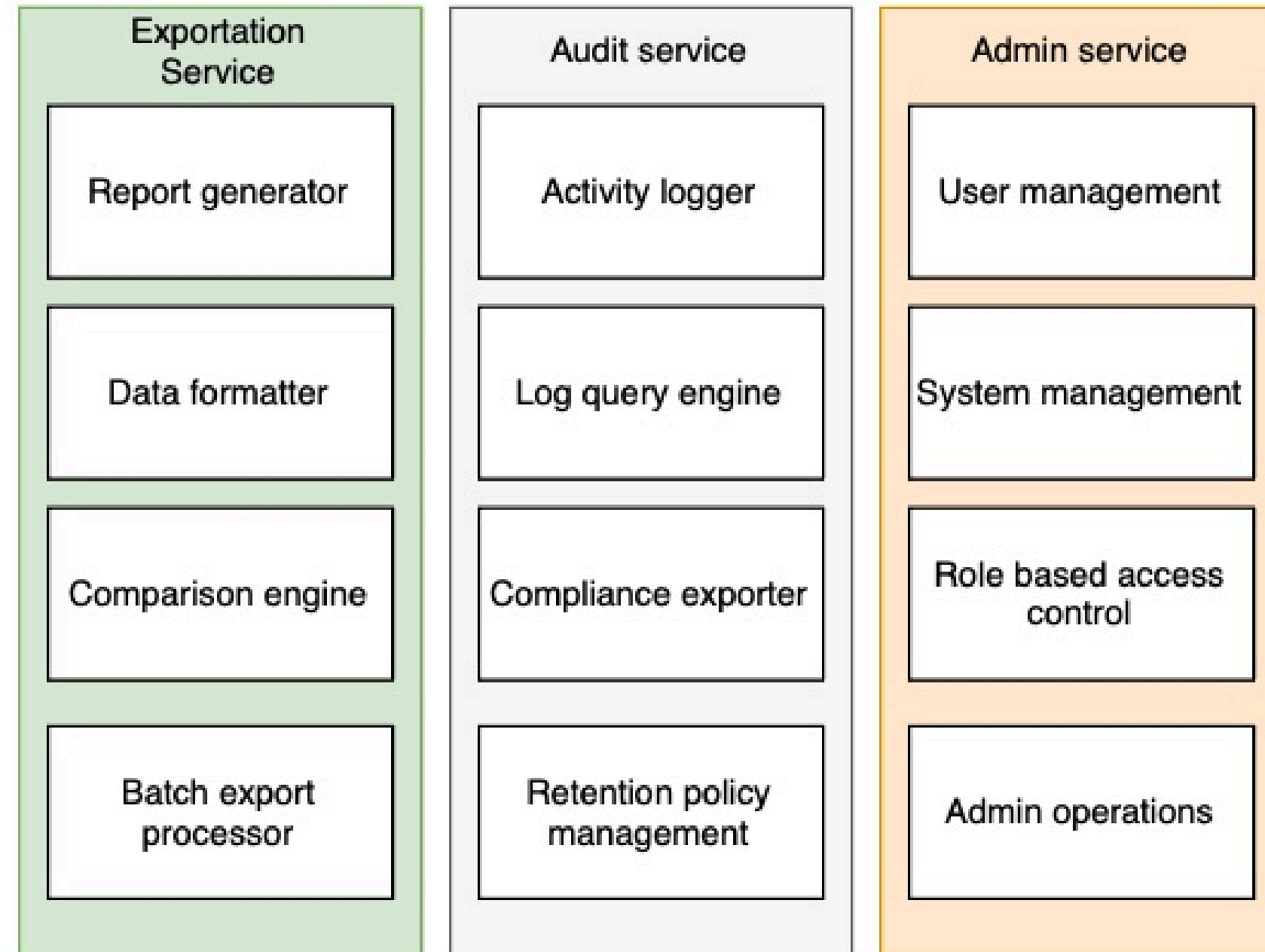
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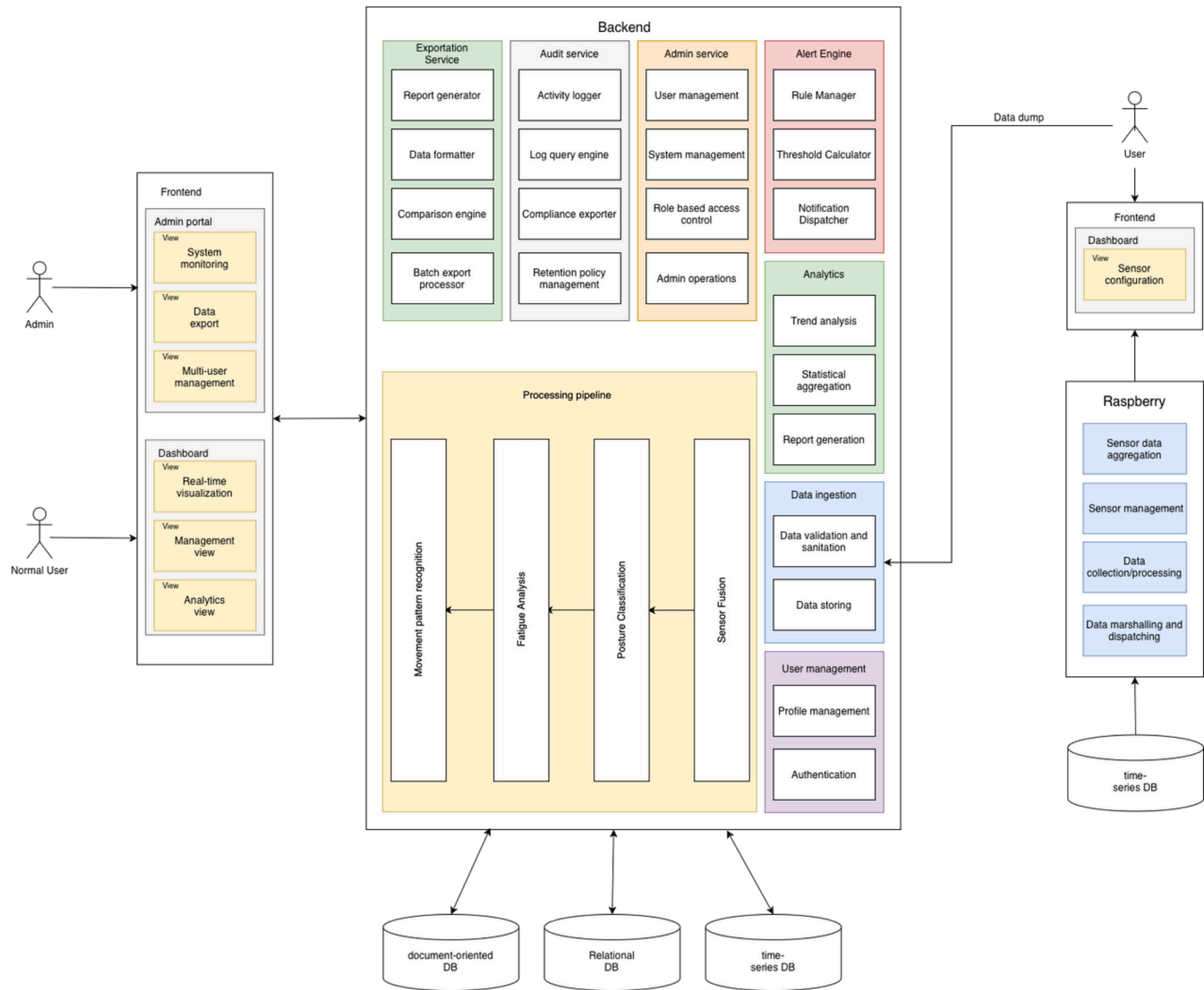
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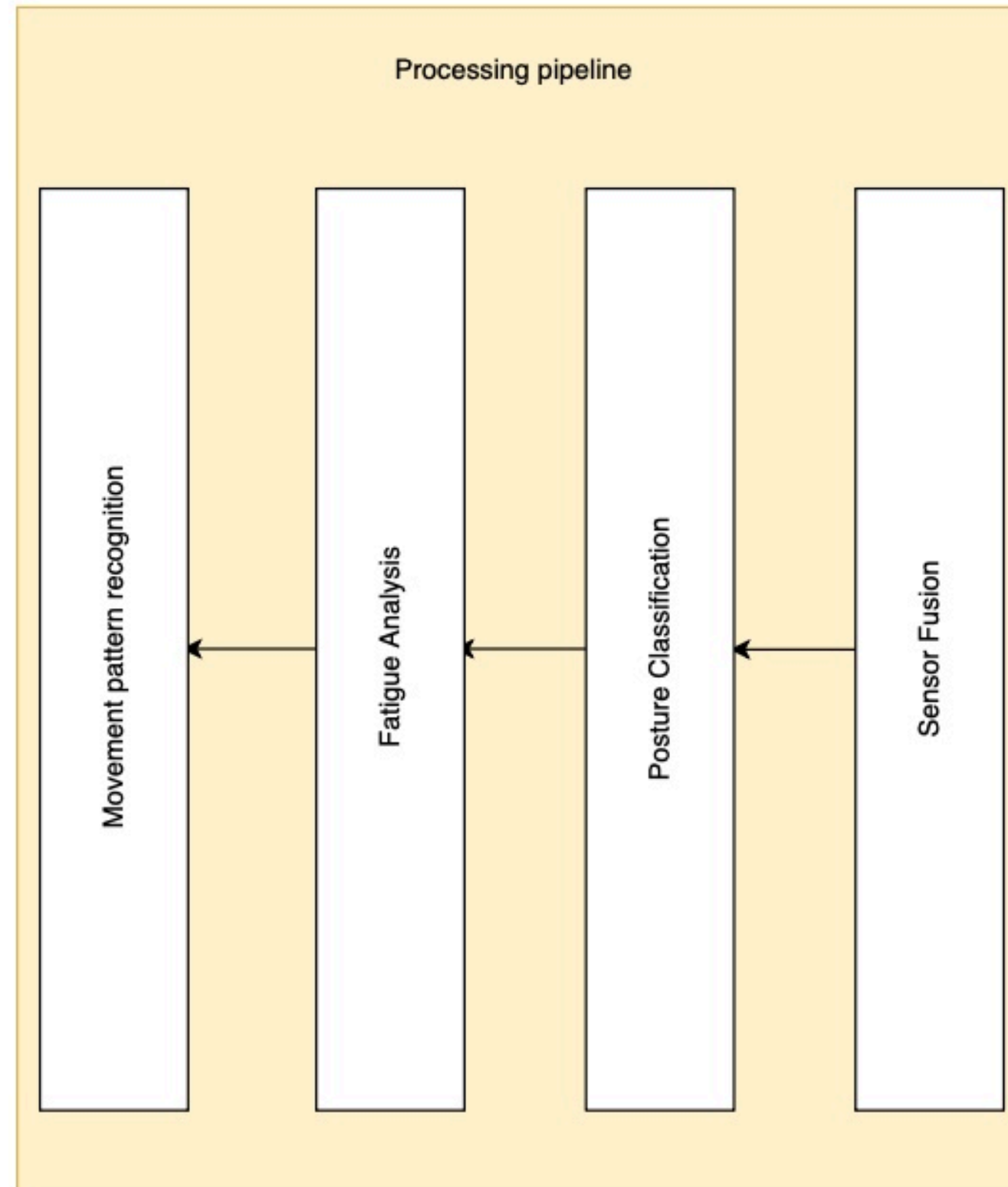
ARCHITECTURE



ARCHITECTURE



ARCHITECTURE



RISKS

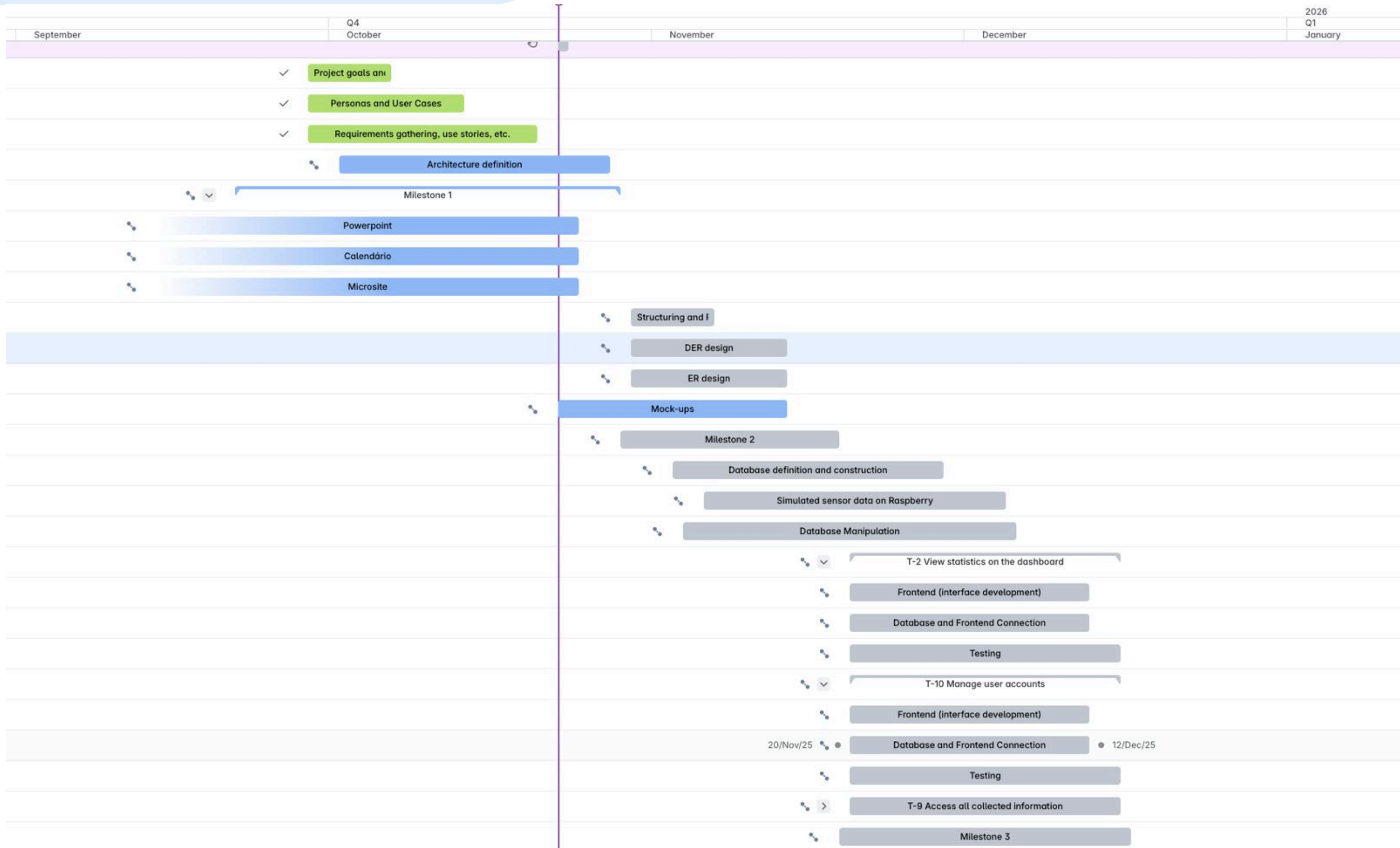
- Incomplete suit development
- Limited battery life
- Connectivity issues



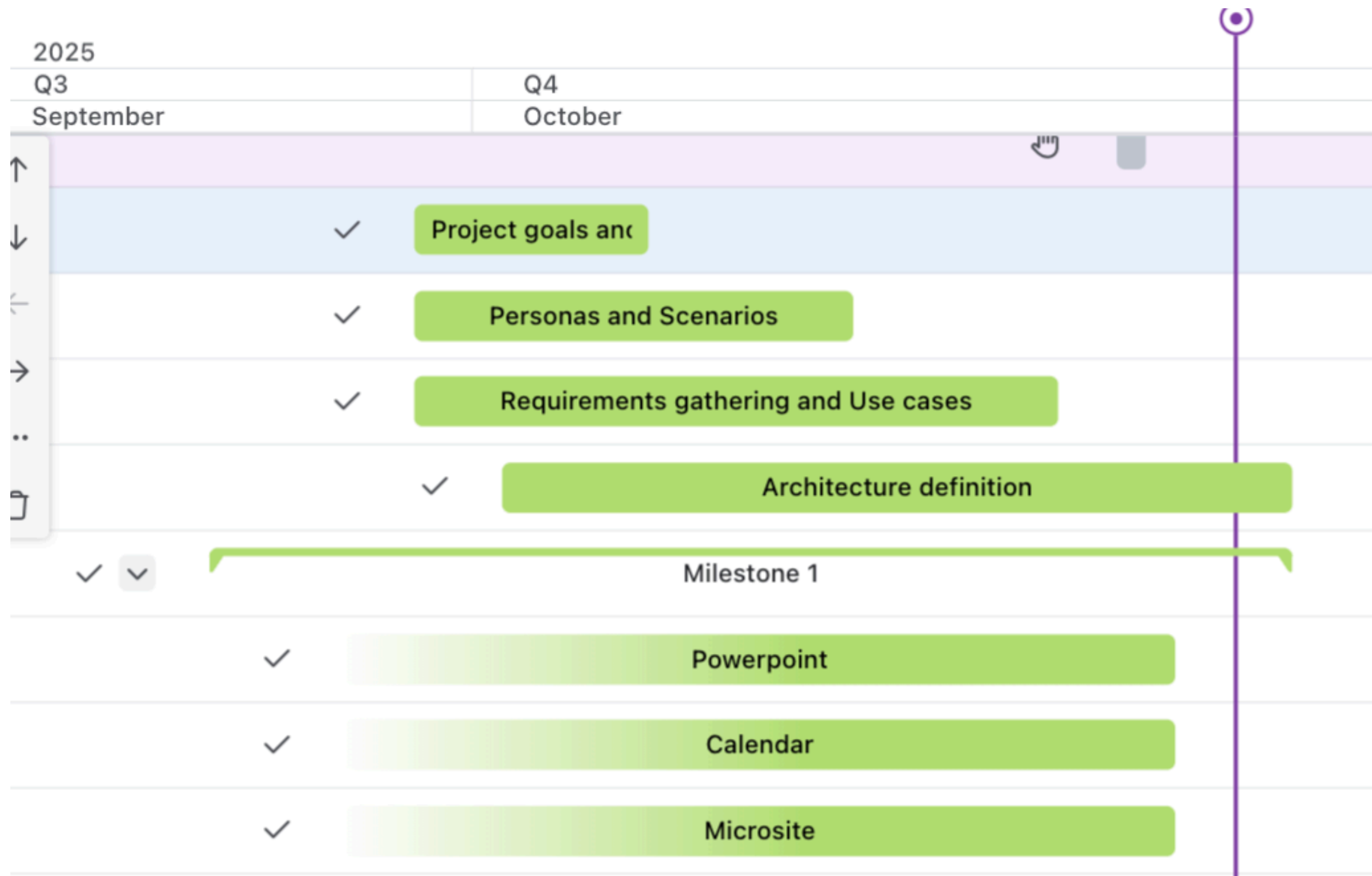
- Sensor calibration and reliability issues
- Accuracy of sensors due to different body types



CALENDAR



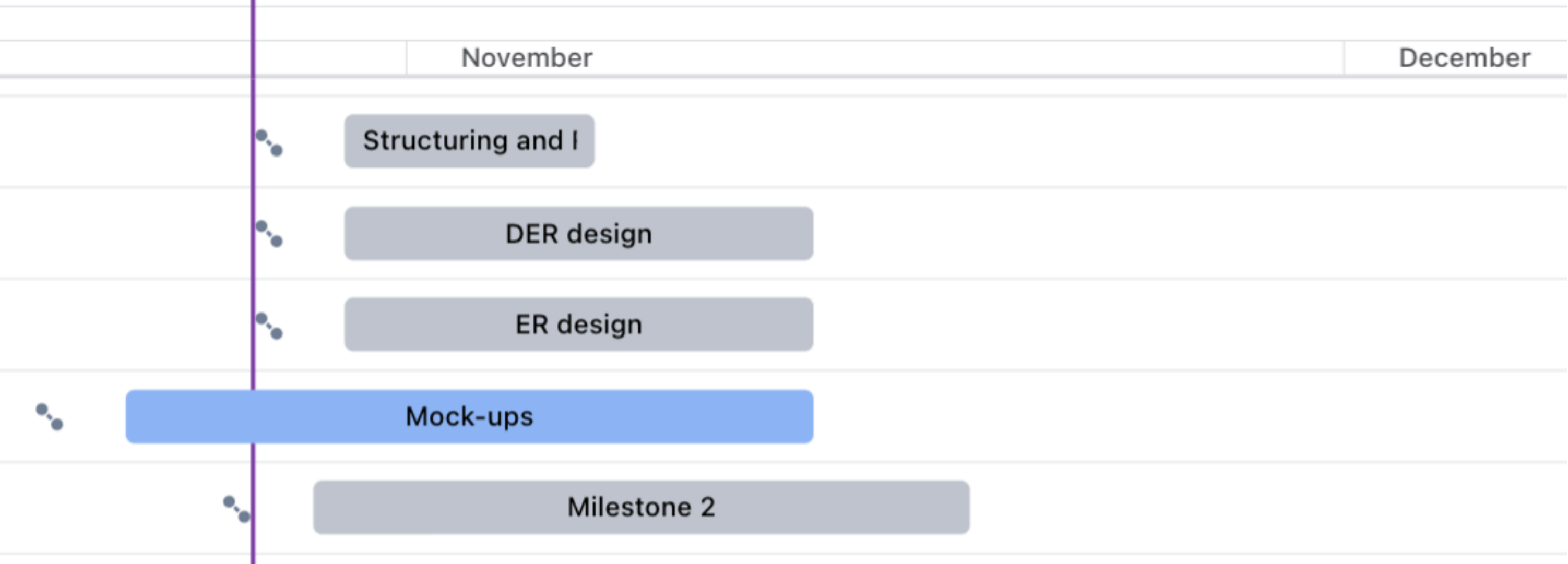
CALENDAR



CALENDAR

Module	Name	Assignee	Start date	Due date	Issue T...	Parent ...	Priority	Status
Inception	Project goals and overall expected fur	everyone	29/Sep/25 12:00 AM	06/Oct/25 12:00 AM	Task		Low	Done
Inception	Personas and Scenarios	Matilde RodriguesCatarina RibeiroMariana Marques	29/Sep/25 12:00 AM	13/Oct/25 12:00 AM	Task		Low	Done
Inception	User Stories	Mariana Marques	29/Sep/25 12:00 AM	20/Oct/25 12:00 AM	Task		Low	Done
Requirements	Requirements gathering and use case	Mariana MarquesBeatriz Francisco	29/Sep/25 12:00 AM	20/Oct/25 12:00 AM	Task		Low	Done
Architecture	Architecture definition	Marta CruzBeatriz Francisco	02/Oct/25 12:00 AM	28/Oct/25 12:00 AM	Task		High	Done
Milestone	Milestone 1	everyone	22/Sep/25 12:00 AM	28/Oct/25 12:00 AM	Task		Highest	In Progress
	Powerpoint	Matilde RodriguesCatarina RibeiroBeatriz Francisco		24/Oct/25 12:00 AM	Subtask	Milestone 1	High	In Progress
	Calendário	Mariana Marques		24/Oct/25 12:00 AM	Subtask	Milestone 1	Highest	In Progress
Communication	Microsite	Catarina Ribeiro		24/Oct/25 12:00 AM	Subtask	Milestone 1	Highest	In Progress

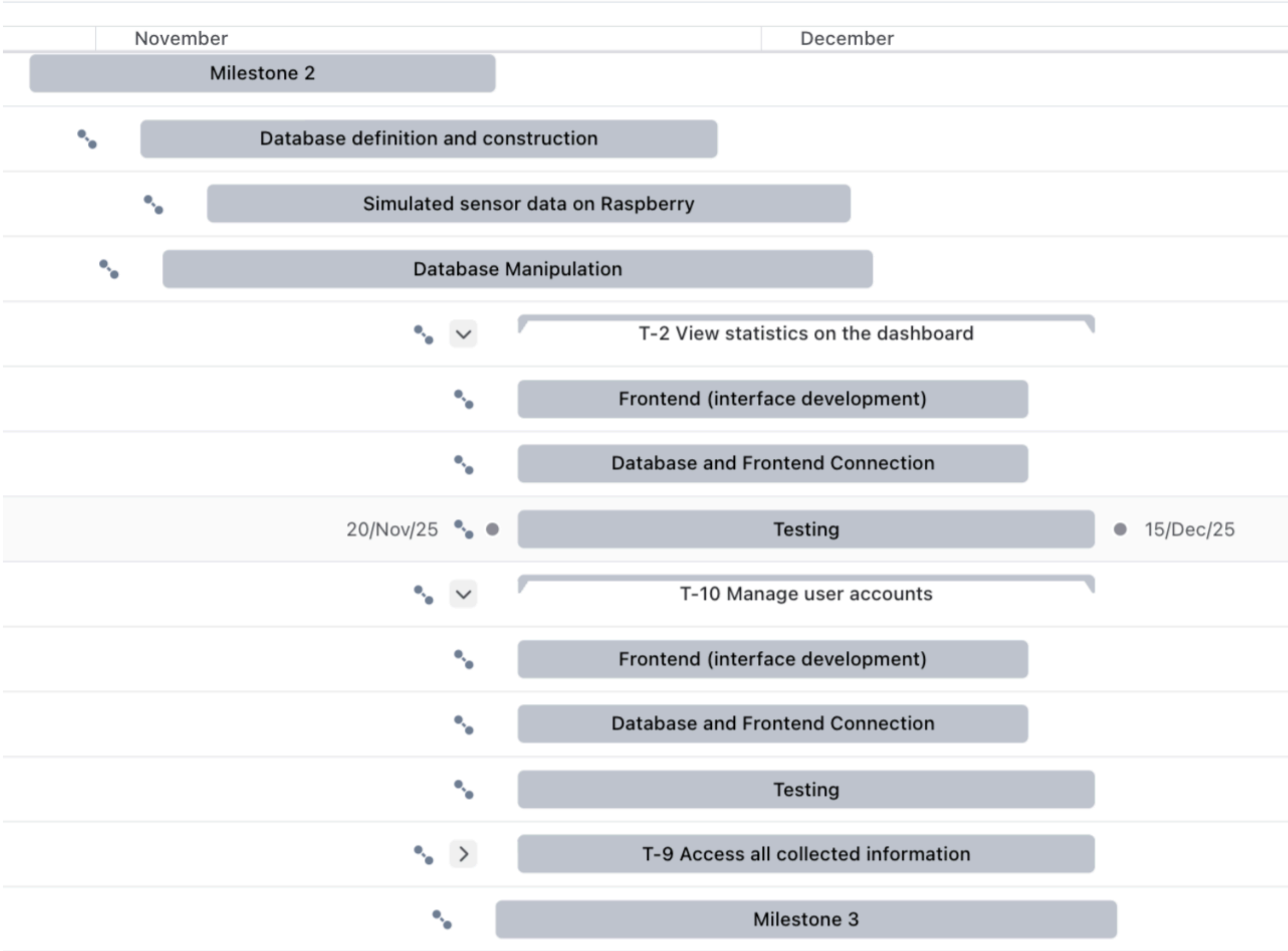
CALENDAR



CALENDAR

Database	 Structuring and Relationship between	everyone	30/Oct/25 12:00 AM	06/Nov/25 12:00 AM	Task		Medium	To Do
Database	 DER design	everyone	30/Oct/25 12:00 AM	13/Nov/25 12:00 AM	Task		Medium	To Do
Database	 ER design	everyone	30/Oct/25 12:00 AM	13/Nov/25 12:00 AM	Task		Medium	To Do
Prototype	 Mock-ups	everyone	23/Oct/25 12:00 AM	13/Nov/25 12:00 AM	Task		High	In Progress
Milestone	 Milestone 2	everyone	29/Oct/25 12:00 AM	18/Nov/25 12:00 AM	Task		Medium	To Do

CALENDAR



CALENDAR

Sensors	Simulated sensor data on Raspberry	Matilde Rodrigues Marta Cruz	06/Nov/25 12:00 AM	04/Dec/25 12:00 AM	Task		Medium	To Do
Database	Database definition and construction	Matilde Rodrigues Marta Cruz Catarina Ribeiro	03/Nov/25 12:00 AM	28/Nov/25 12:00 AM	Task		Medium	To Do
Database	Database Manipulation	Beatriz Francisco Mariana Marques Marta Cruz	04/Nov/25 12:00 AM	05/Dec/25 12:00 AM	Task		Medium	To Do
Task	T-2 View statistics on the dashboard	everyone	20/Nov/25 12:00 AM	15/Dec/25 12:00 AM	Task		Medium	To Do
Frontend	Frontend (interface development)	Mariana Marques Catarina Ribeiro	20/Nov/25 12:00 AM	12/Dec/25 12:00 AM	Subtask	T-2 View stati	Medium	To Do
Backend	Database and Frontend Connection	everyone	20/Nov/25 12:00 AM	12/Dec/25 12:00 AM	Subtask	T-2 View stati	Medium	To Do
Tests	Testing	everyone	20/Nov/25 12:00 AM	15/Dec/25 12:00 AM	Subtask	T-2 View stati	Medium	To Do
Task	T-9 Access all collected information	everyone	20/Nov/25 12:00 AM	15/Dec/25 12:00 AM	Task		Low	To Do
Task	T-10 Manage user accounts	everyone	20/Nov/25 12:00 AM	15/Dec/25 12:00 AM	Task		Low	To Do
Milestone	Milestone 3	everyone	19/Nov/25 12:00 AM	16/Dec/25 12:00 AM	Task		Low	To Do

CALENDAR

Task	T-3 View real-time metrics on the das	everyone		2nd Term	2nd Term	Task		Low	To Do
Task	T-1 Receive alerts for incorrect postur	everyone		2nd Term	2nd Term	Task		Low	To Do
Task	T-7 Calibrate the suit	everyone		2nd Term	2nd Term	Task		Low	To Do
Task	T-4 Customize app alerts	everyone		2nd Term	2nd Term	Task		Lowest	To Do
Task	T-11 Analyze collected da OPEN	everyone		2nd Term	2nd Term	Task		Low	To Do
Task	T-5 Set goals to improve posture	everyone		2nd Term	2nd Term	Task		Low	To Do
Task	T-6 View real-time progress toward m	everyone		2nd Term	2nd Term	Task		Low	To Do
Task	T-12 Compare data from different use	everyone		2nd Term	2nd Term	Task		Low	To Do
Task	T-8 Monitor the battery	everyone		2nd Term	2nd Term	Task		Lowest	To Do
Task	Milestone 4	everyone		2nd Term	2nd Term	Task		Low	To Do

COMMUNICATION



GitHub



GitHub



Git



Jira



Jira

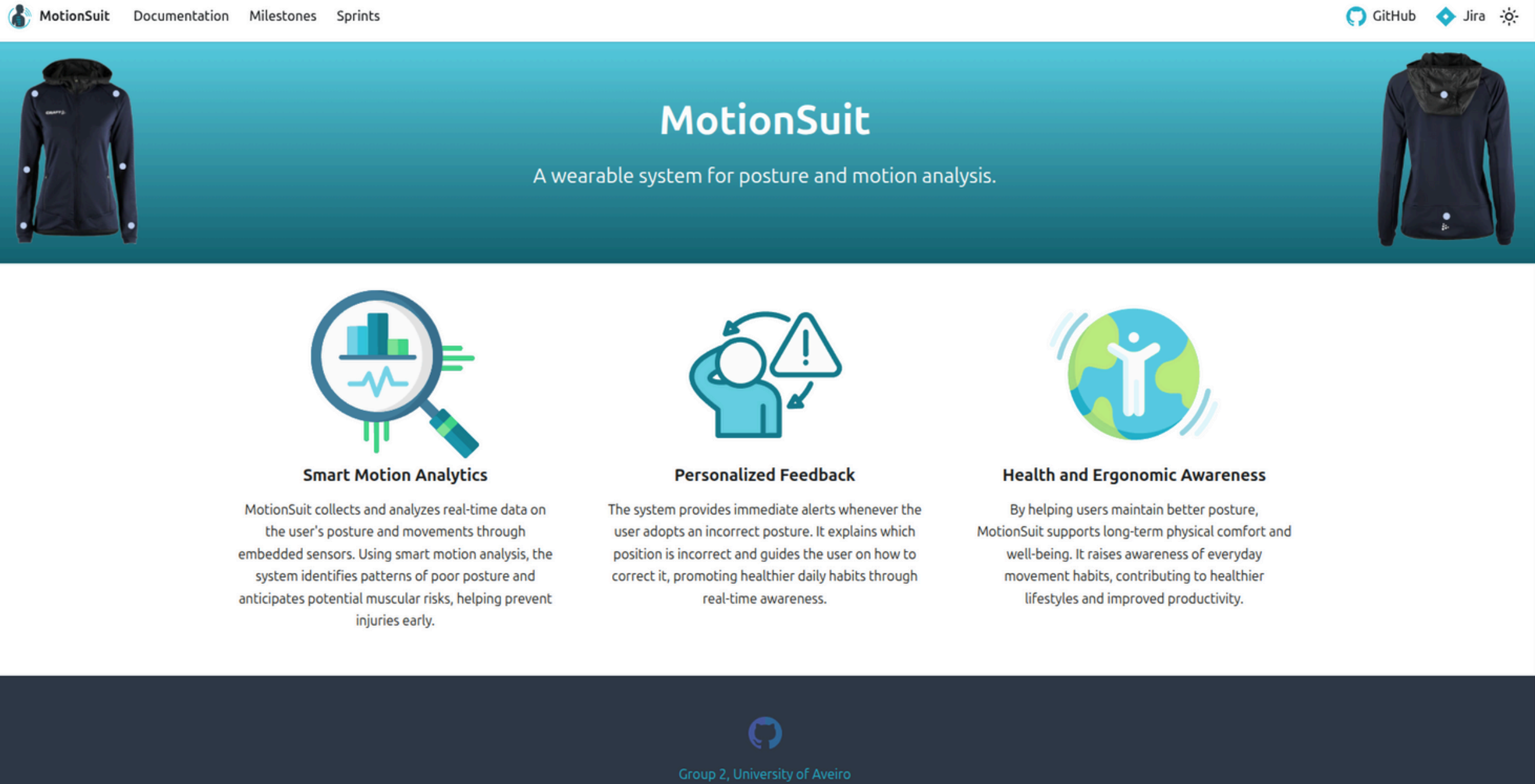


Discord



Notion

MICROSITE



<https://pei-motionsuit.github.io/microsite/>



**THANK
YOU!**

