GERMAN INTERNATIONAI UNIVERSITY
الجامعة الألمانية الدولية

Requirements Engineering

Lab 4

Requirements Modeling

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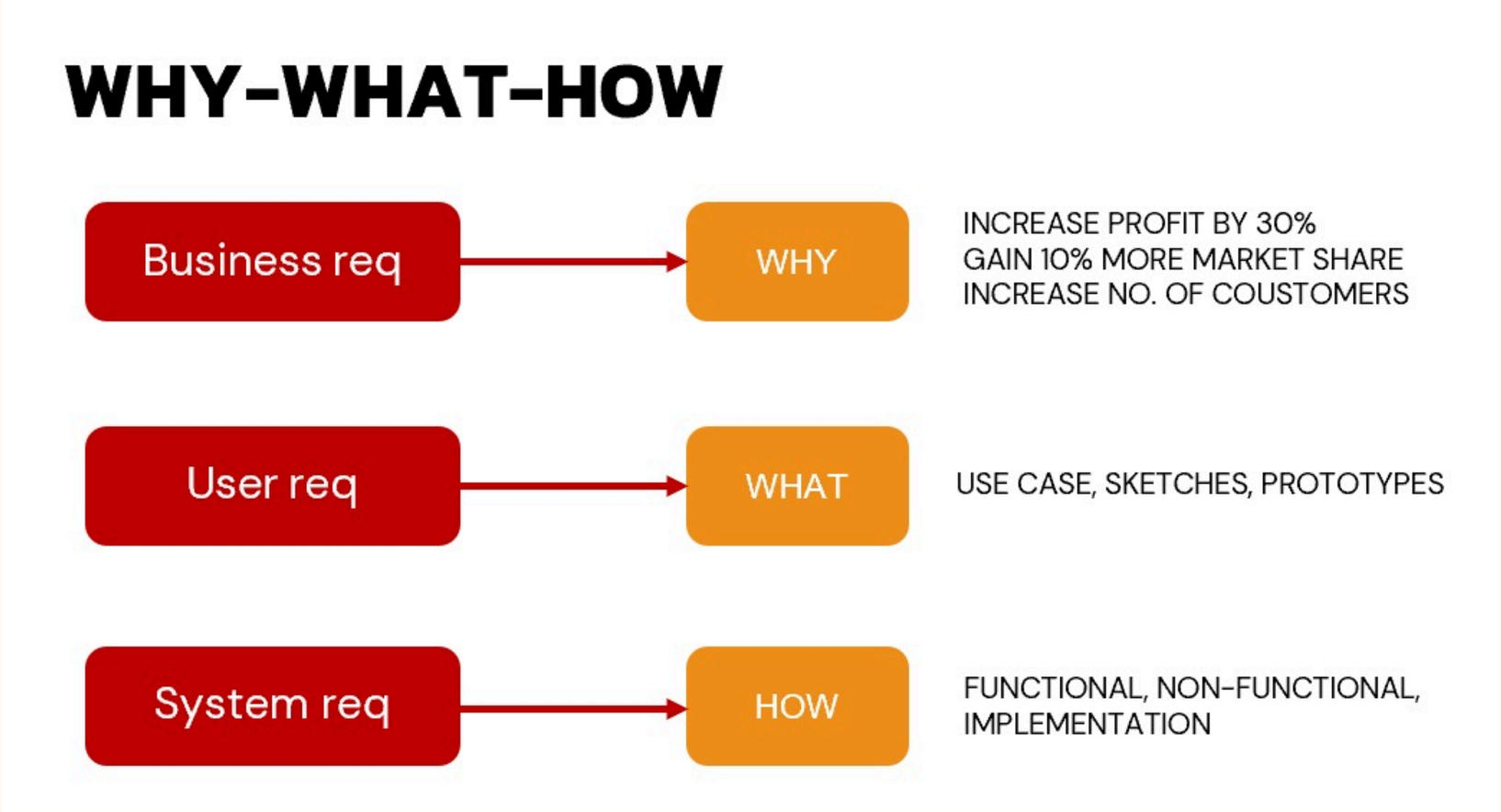
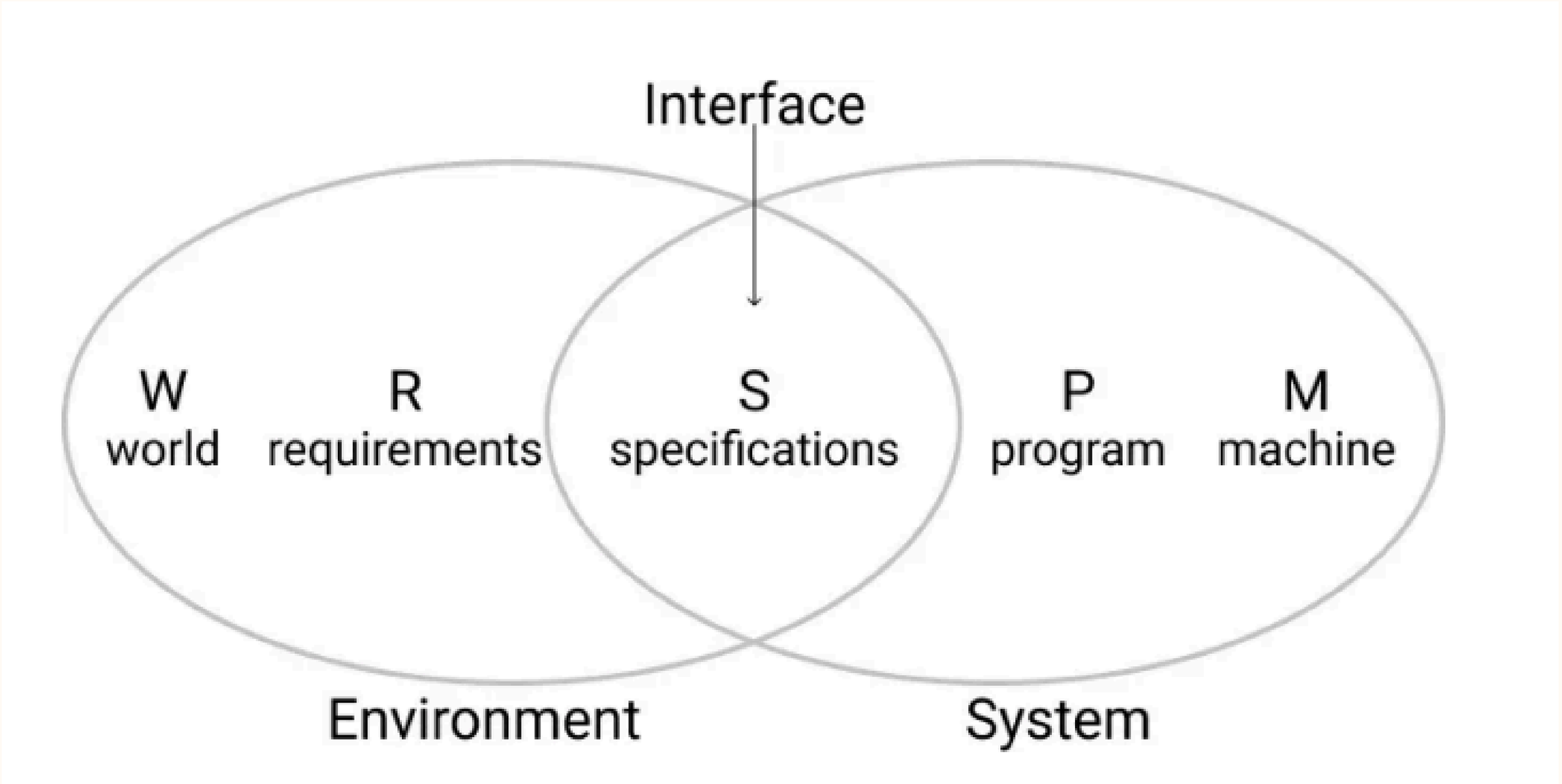
The Why-What-How Model



The WRSPM Model

- Serves as a guide to comprehend real-world problems particularly in distinguishing between requirements and specifications.
- Requirements exist within the problem domain, representing users' needs to solve specific issues.
- Our task involves translating these requirements into software specifications, which constrain how our computer or system addresses the problem, falling within the solution (computer) domain.

The WRSPM Model



The WRSPM Model

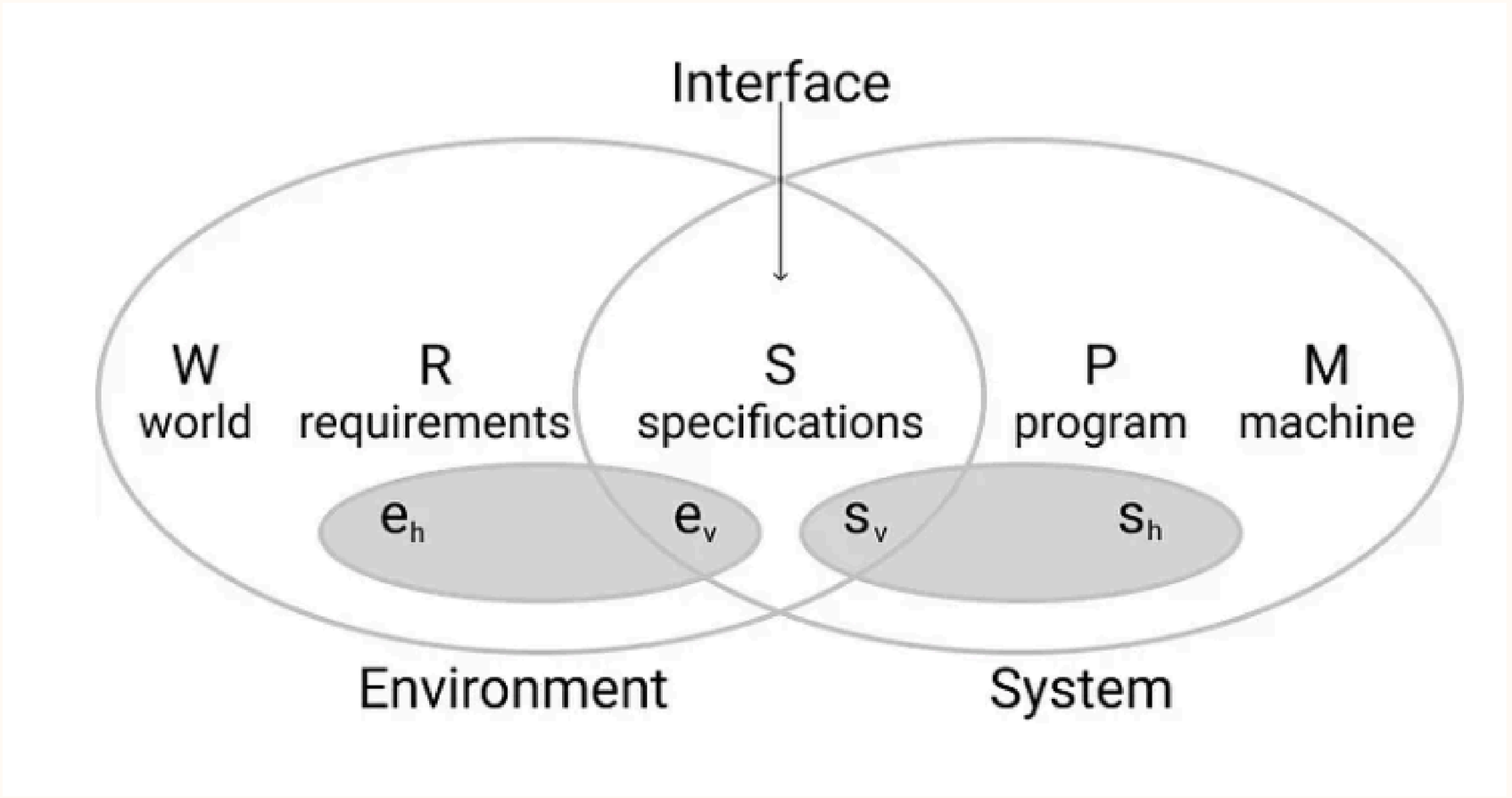
- **W** (World Assumptions): These are universally accepted truths influencing our system and problem domain. Capturing these assumptions is challenging but crucial.
- **R** (Requirements): Users express their needs in the problem domain language. For instance, a user wants to withdraw money, and the ATM represents the solution.
- **S** (Specifications): Specifications bridge requirements and the system, detailing how the system meets the user's needs. It's written in a system language, explaining in plain terms what actions the system will perform. For example, to withdraw money, the user inserts a card, inputs a PIN, etc.
- **P** (Program): Software developers create the program to fulfill specifications, comprising all the code and underlying frameworks.
- **M** (Machine): This pertains to hardware specifications, encompassing components like the roller for money distribution and the lockbox.

The WRSPM Model

- **Within WRSPM aspects, we consider four variables:**

1. **Eh** — These are elements of the environment hidden from the system, representing parts that users desire. For example, the card is an Eh element.
2. **Ev** — These are elements of the environment visible to the system, such as the data generated when reading a card's mag strip and entering a PIN number.
3. **Sv** — These are elements of the system visible in the environment, like buttons and screen information.
4. **Sh** — These are elements of the system hidden from the environment. For instance, the roller inside the machinery, unseen by the user, ensures that the machinery obtains approval from the bank before dispensing money.

The WRSPM Model

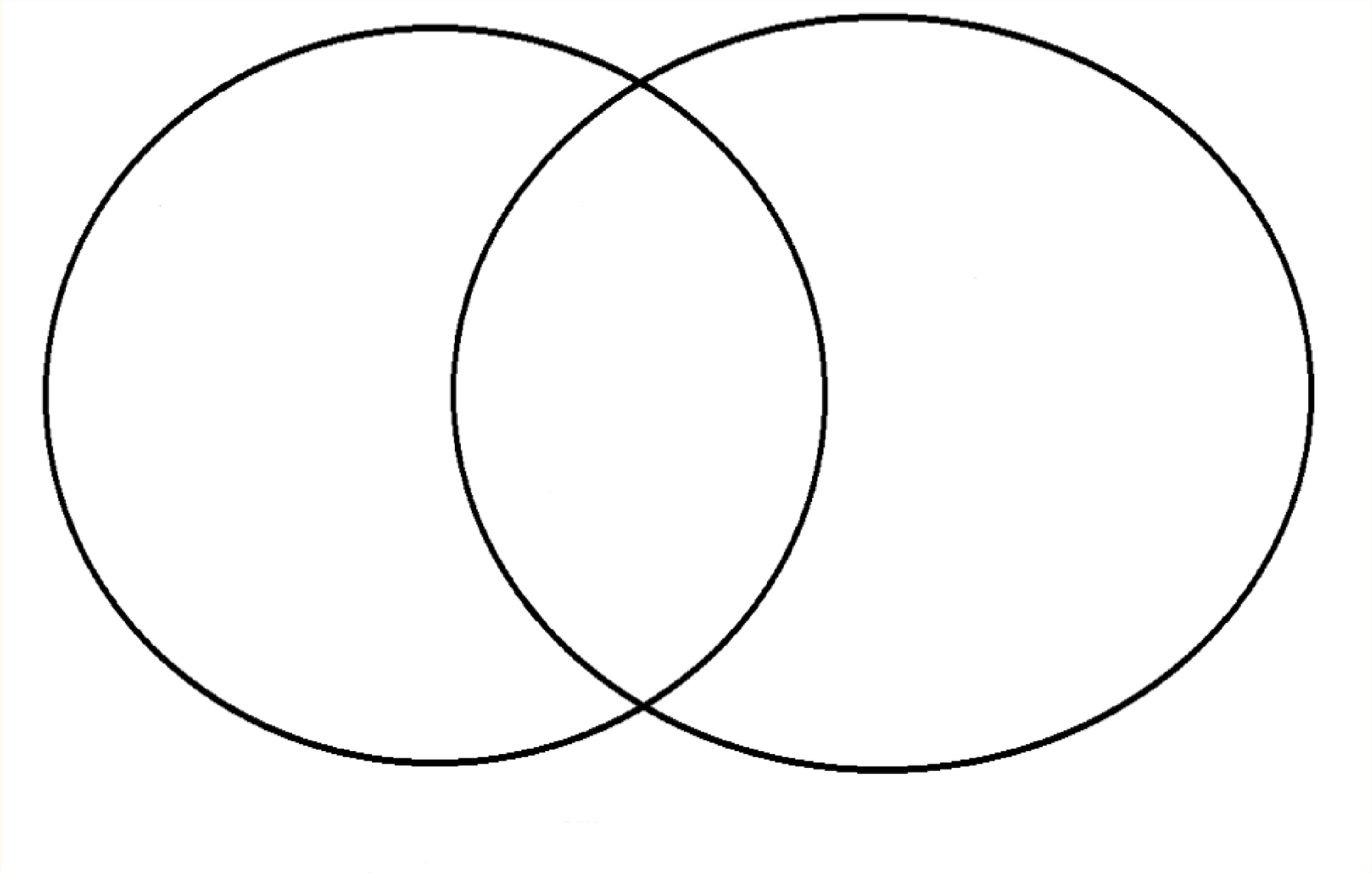


Question 1

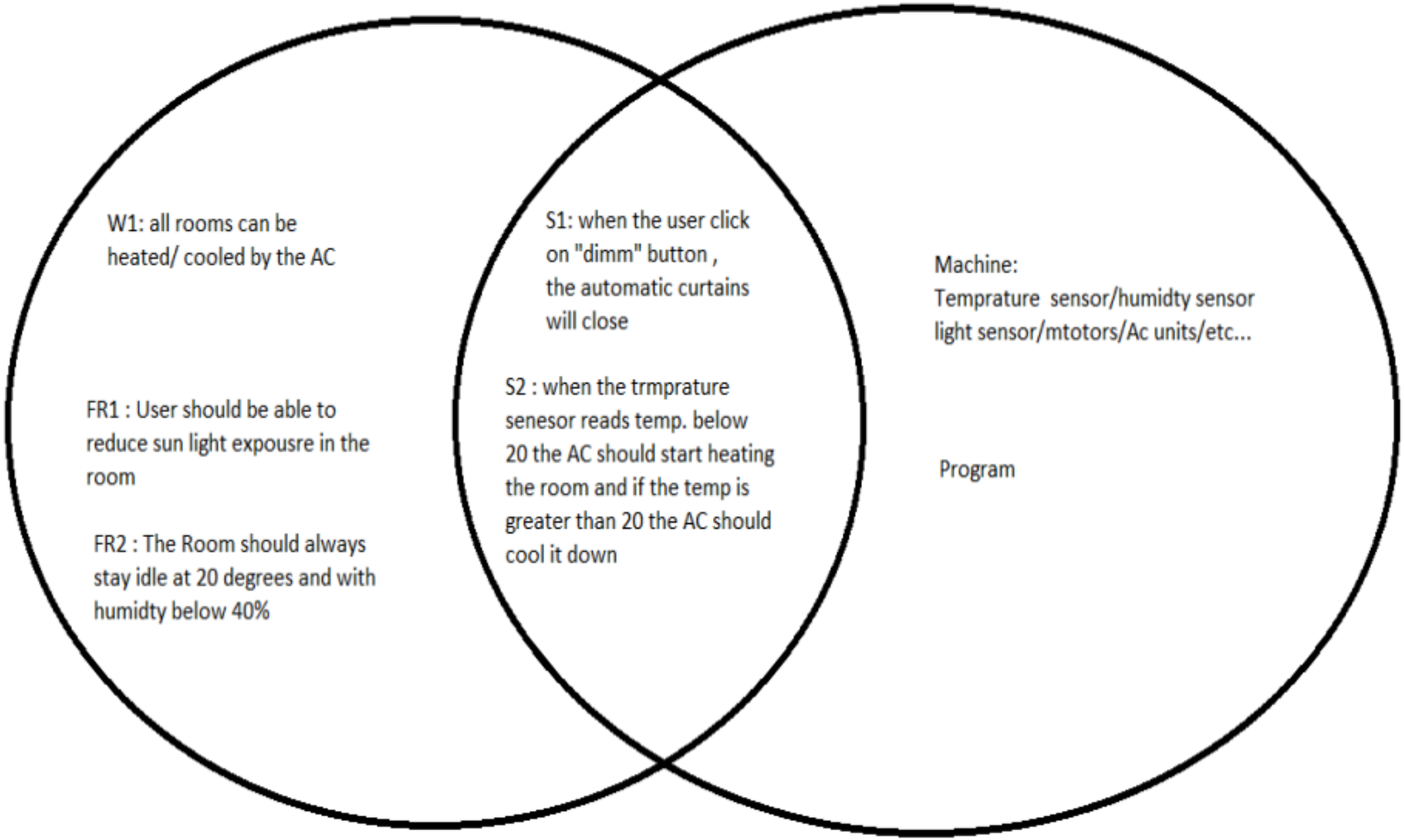
Your team is asked to implement a system that manages a smart home. The smart home system allows the owner of the house to have fully automated climate control inside different rooms of the house, by using air conditioning ,automated curtains, temperature and humidity sensors your system should be able to adjust the lighting and temperature of the room to meet the clients criteria.

- Create a simple Reference Model (WRSPM) representing this scenario

Answer 1



Answer 1



eh: sun location/the user's location
ev :the temp. of the room
sv : the AC cooling/heating
sh : the calculation of the room's temp

Question 2

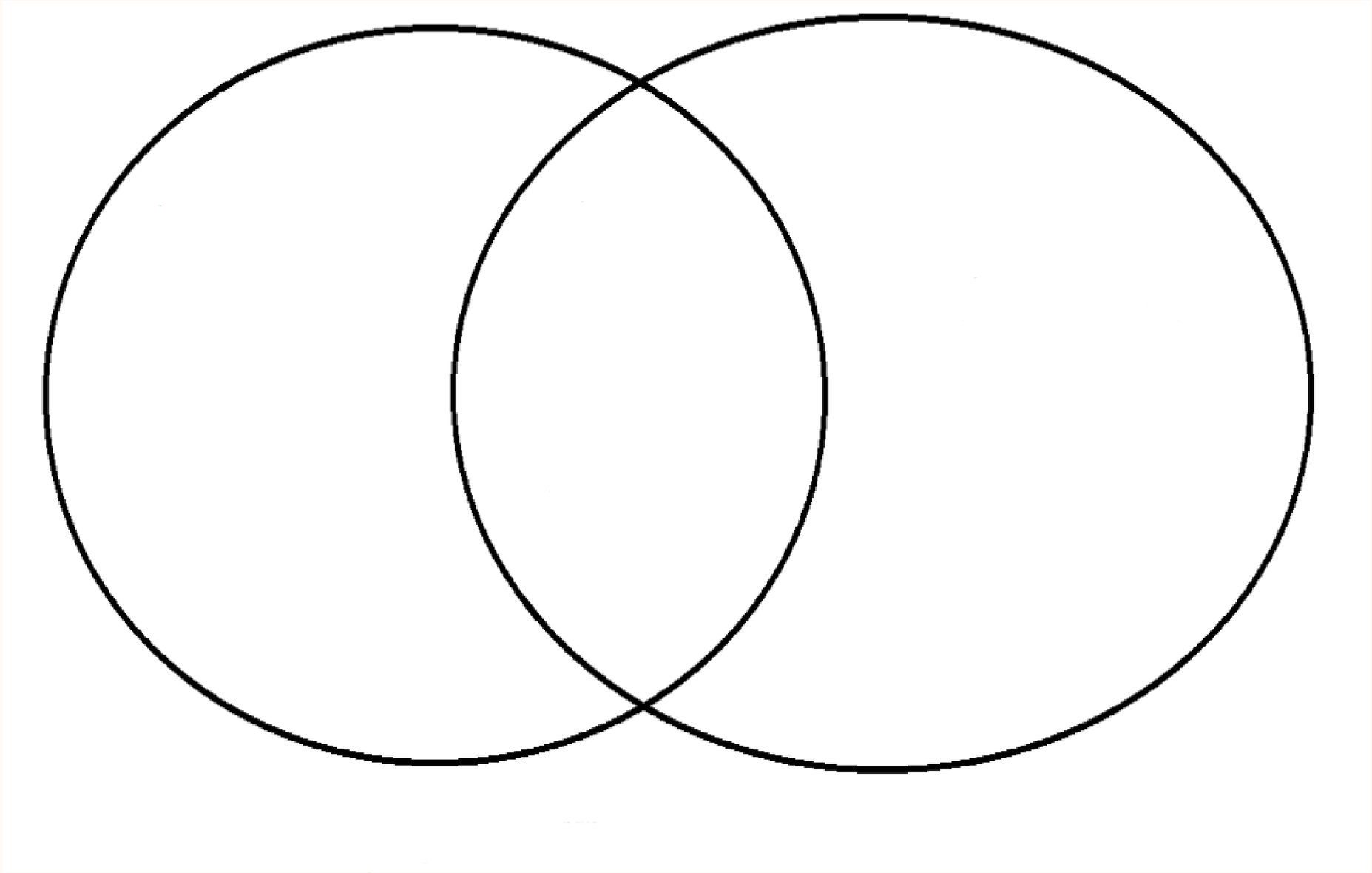
You are asked to create a smart farming system. All animals in the smart farm have wifi tags impeded under their skin specific to each animal type Each animal type has his own feeding, grooming and sleeping place, The system should be able to track the location of each animal as well as notify the barn keepers in case any animal was missing or went to a wrong place (a cow running loose in the hen house for example)

1. Suggest a way in which the system is built so that the barn keepers have full surveillance of all animals.
2. Create a simple Reference Model (WRSPM) representing the previous scenario.

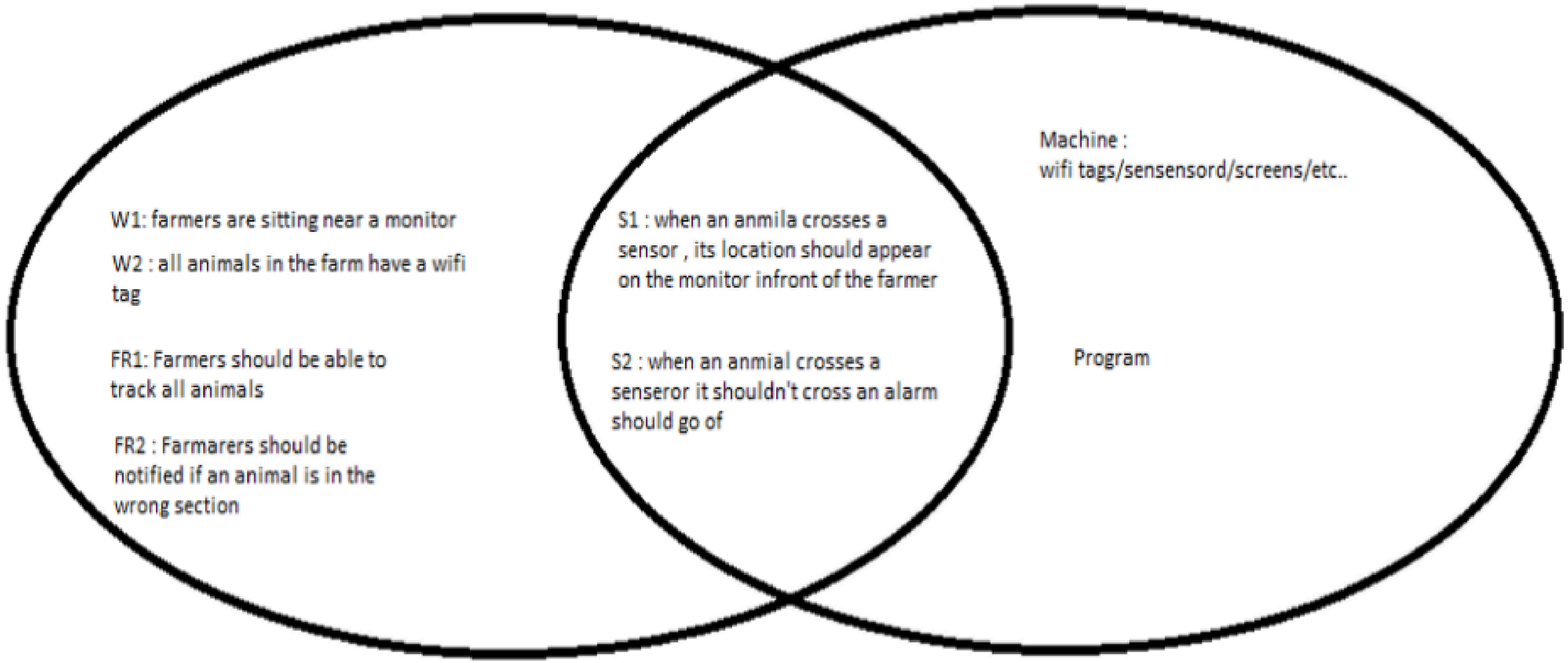
Answer 2

1. One simple system can be represented by a group monitor that has a map of the farm. Each wifi tag is to be read by any near by sensor and based on the location of the sensor A dot representing the animal can be displayed on the map. Whenever an animal crosses a sensor in the wrong section of the farm the dot representing it on the map will start flashing on and off and a simple peep notification will be fired to grab the attention of the farmers around.

Answer 2



Answer 2



eh : farmers locations
ev : animals locations
sv : monitors displying info
sh : how the senesors locate the animal internaly

Thank You!

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