Systems Design Project

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WEEK 3

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Systems Design Project

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Project Overview

The aim of this Systems Design Project is to research, understand, visualize, synthesize and design for problems from socio, economic, cultural, political, technology, sustainability perspectives that are complex, uncertain, interconnected and form a system within defined boundaries. With that brief in mind we started looking at different areas based on our collective interests, knowledge and possibilities of interventions. Last presentation we took you through some of our secondary research and how we used it to set the project scope to the Indian Medicinal System.

Recap

Identifying Subsystems
In the last report, we identified and mapped the following 3 subsystems onto connection circles.

- **The Prescription Subsystem**
    - *Diagnosis, Treatment and Prescription*
- **The Procurement Subsystem**
    - *Medicine Production, Accessibility and Availability*
- **The Usage Subsystem**
    - *Patient Consumption, Awareness and Medication Errors*

Holistic System Map
The variables we identified during our secondary research were mapped to each other using direct and inverse signifier lines. Possible delays in the connections were also taken into consideration.
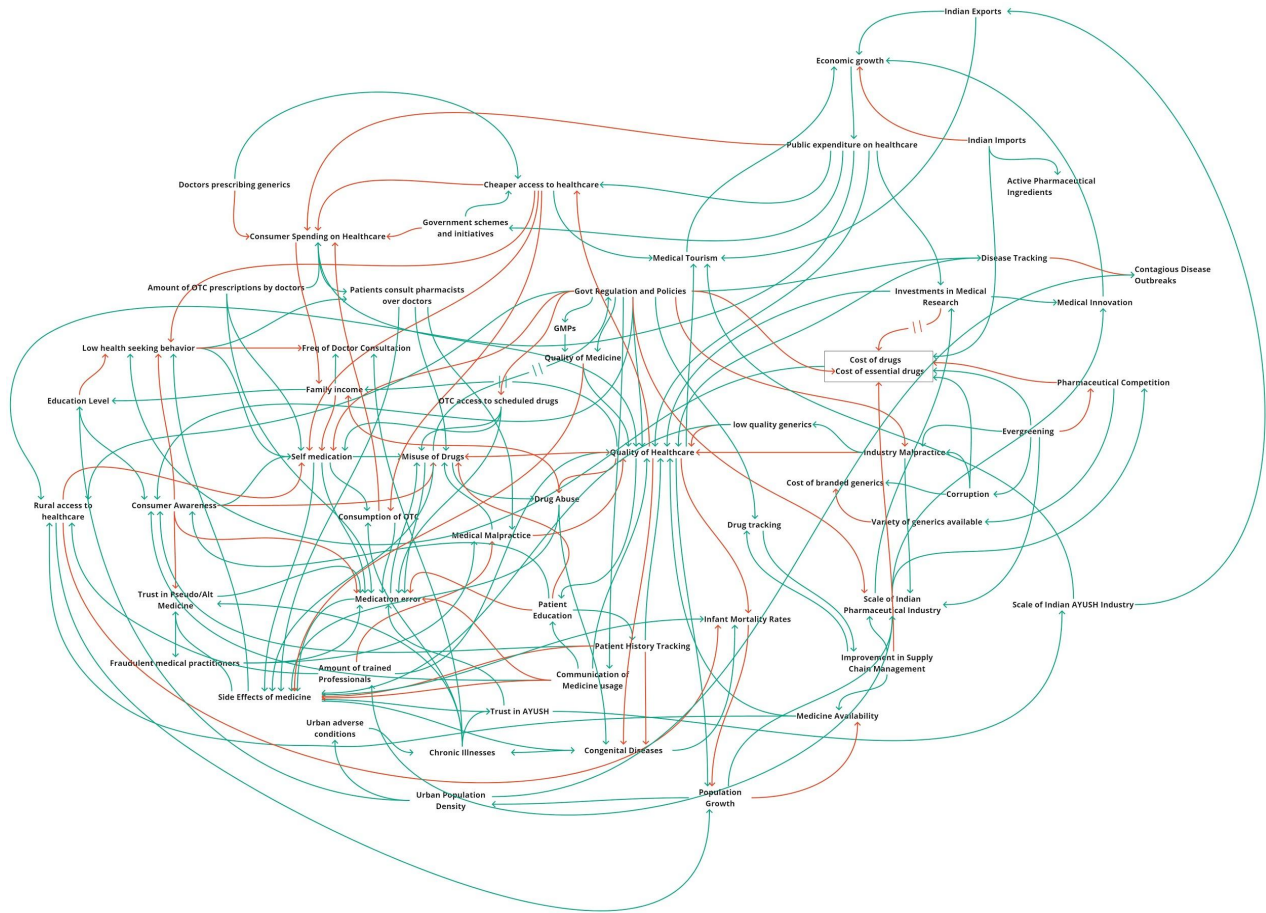
Possible Opportunities

The insights from our system mapping have been summarised into these 5 problem areas where we can intervene:

- **Over-the-Counter Access to Medicines**
- **Patient Medical Info Tracking**
- **Consumer Medication Errors**
- **Patient Education**
- **Rural Accessibility**

Opportunities Identified

In the previous report we identified 5 problem areas which showed promise for intervention and we did a quick mapping to understand the interconnections between these areas.
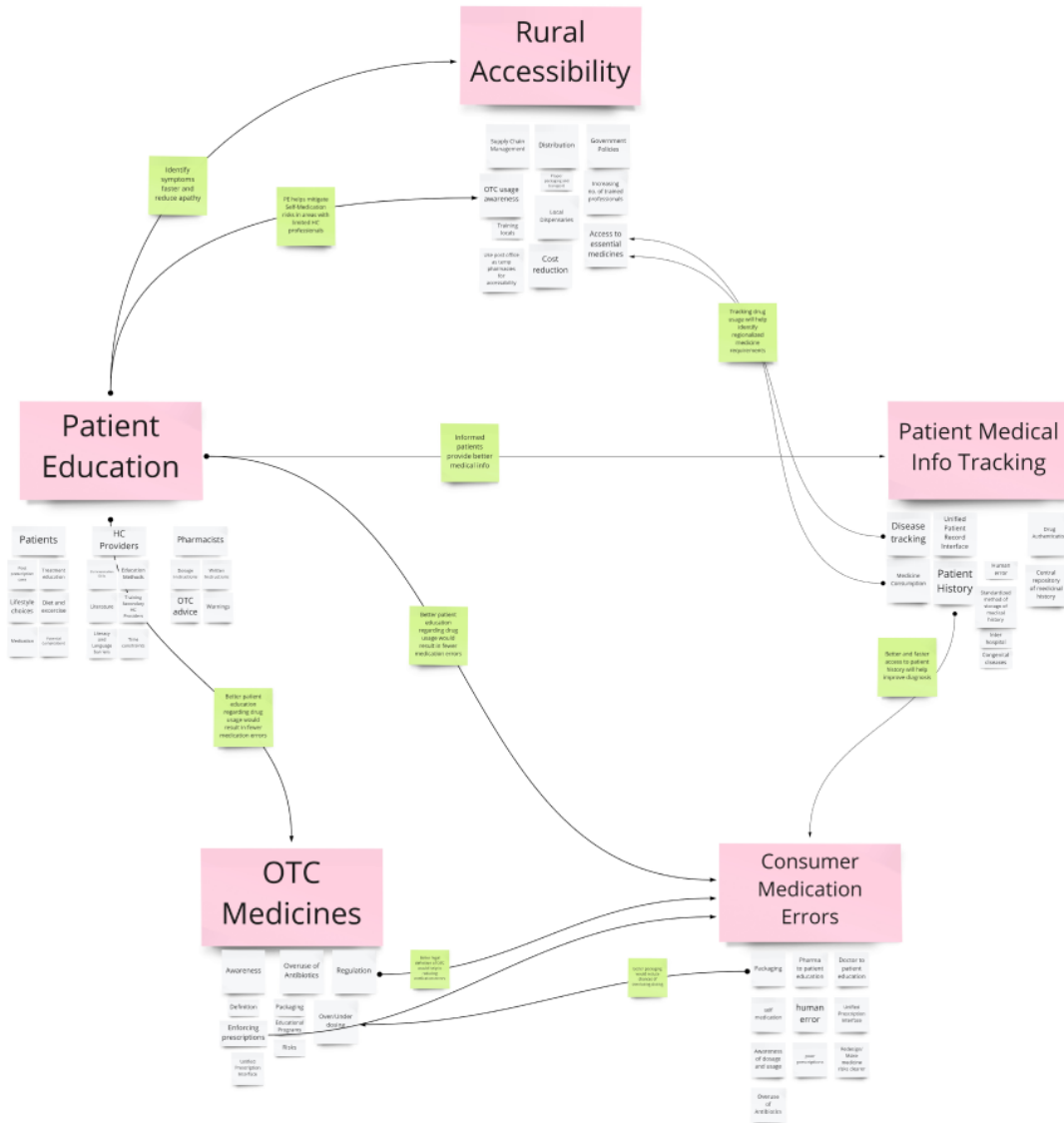
We inferred connections such as:
- Improved patient education about drug usage results in fewer medication errors.
- Better access to patient medical history will improve diagnosis.
- Patient education helps mitigate self-medication risks in areas with limited access to healthcare.

Final Problem Space

Through these connections we saw that **Patient Education** had the most potential scope to impact the system. It was the problem space with the most connections with the other segments of the healthcare system. It especially had many interconnections with OTC abuse and medication errors.

Problem Statement

Once we fixed on a problem space, we started working on a concrete problem statement based on our study of that space. And we identified 3 major areas within patient education:

1. **Patient Effort**,
   which includes some level of independent diagnostic & treatment action by the patient. Even something like tracking symptoms well.

2. **Communication**
   That is, the communication between the patient and the doctor and the quality of this communication.

3. **Insufficient Attention**
   We noticed a trend of patient claims about insufficient attention from doctors which includes rushed diagnoses, quick treatments and not feeling heard.

And hence we consolidated the following problem statement:

> **Ineffective communication** between doctors and patients leaves patients with an **insufficient understanding** of their condition and treatment, and leaves them unable to perform subsequent self-care. Doctors have to diagnose incomplete or inaccurate information.

This statement bridges all 3 of the areas we had identified.

Stakeholders
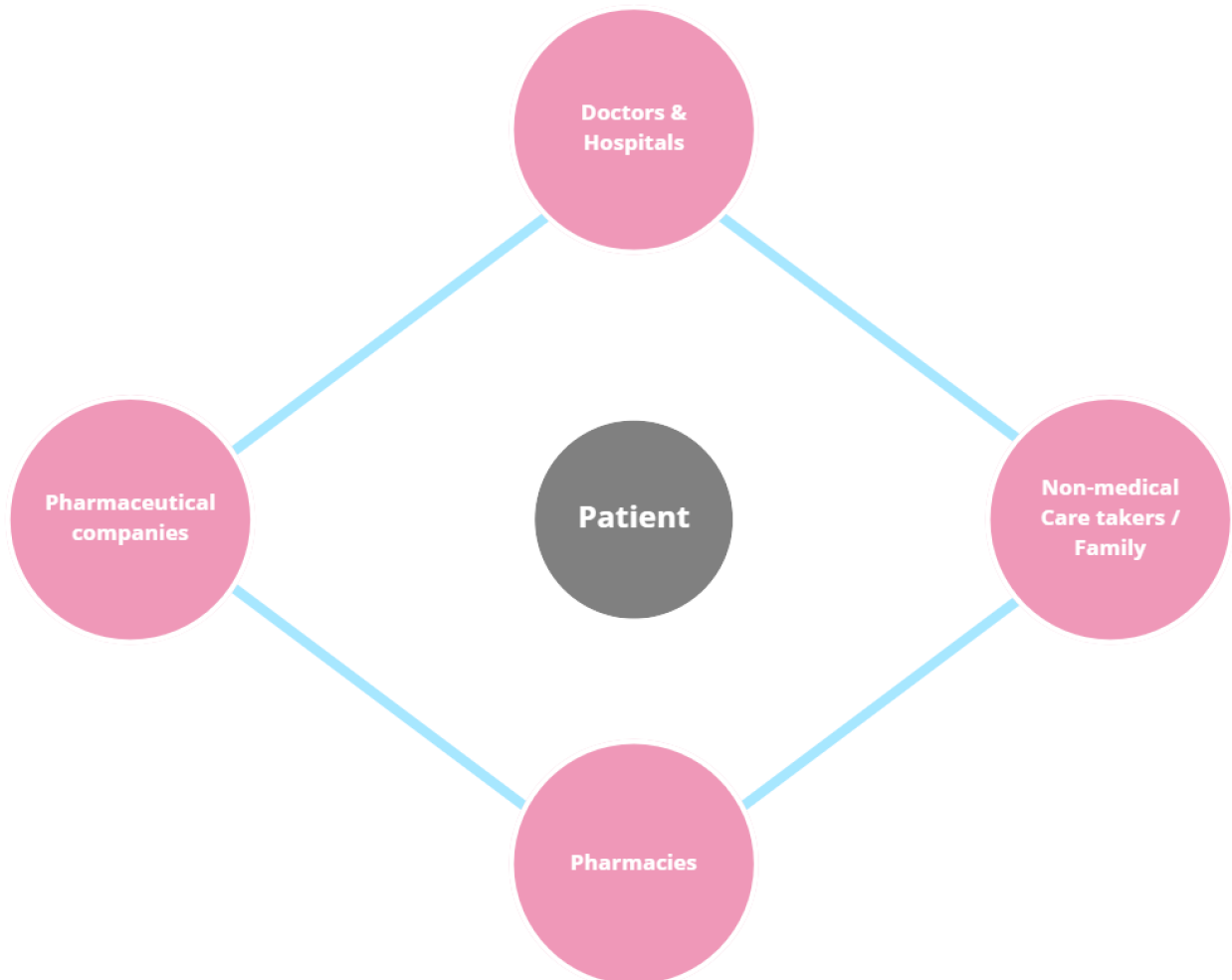
Parallely, we worked on identifying the stakeholders of this system. Our main focus was on the **patients** and so they are our primary stakeholders. We also identified other stakeholders who are integral to the system surrounding the patients, **doctors** and hospitals, Non Medical care providers like **family and caretakers**, **pharmacies** and pharmaceutical **companies**.

Primary Research

Once the stakeholders were identified, we set up interviews to gather primary, first hand data and insights from them. We interviewed doctors, patients, medical students and pharmacists.

11 — Patients **3** — Doctors **3** — Pharmacists

The patients we interviewed ranged from ages 20 to 60 years. There were also a range of patients from completely healthy except for infrequent visits to the doctor to chronic patients who rely on daily medication and self diagnoses as well as frequent doctor visits.

Among the doctors we interviewed, we met general practitioners, who usually see patients for a shorter period of time and mostly deal with acute illnesses, and specialists who look after patients with chronic illness and have fostered strong relationships with their patients. We also interviewed a medical student to get an idea of what doctors are taught in regards to patient communication and diagnostic methods.

We also interviewed three pharmacists from retail stores and pharmacy franchises.
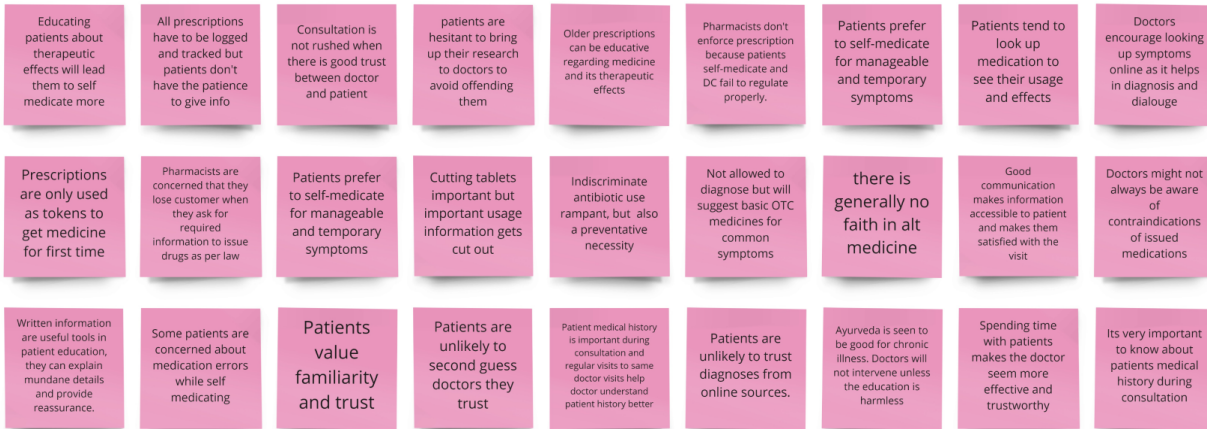
Insight Summary

From the primary research we collected a plethora of insights.

We then clustered them into more relevant insight summaries.

These insight summaries helped us validate and sometimes invalidate some of our secondary research and general assumptions, hence allowing us to prioritize issues for our ideation.

|								
Educating patients about therapeutic effects will lead them to self medicate more	All prescriptions have to be logged and tracked but patients don't have the patience to give info	Consultation is not rushed when there is good trust between doctor and patient	patients are hesitant to bring up their research to doctors to avoid offending them	Older prescriptions can be educative regarding medicine and its therapeutic effects	Pharmacists don't enforce prescription because patients self-medicate and DC fail to regulate properly.	Patients prefer to self-medicate for manageable and temporary symptoms	Patients tend to look up medication to see their usage and effects	Doctors encourage looking up symptoms online as it helps in diagnosis and dialogue
Prescriptions are only used as tokens to get medicine for first time	Pharmacists are concerned that they lose customer when they ask for required information to issue drugs as per law	Patients prefer to self-medicate for manageable and temporary symptoms	Cutting tablets important but important usage information gets cut out	Indiscriminate antibiotic use rampant, but also a preventative necessity	Not allowed to diagnose but will suggest basic OTC medicines for common symptoms	there is generally no faith in alt medicine	Good communication makes information accessible to patient and makes them satisfied with the visit	Doctors might not always be aware of contraindications of issued medications
Written information are useful tools in patient education, they can explain mundane details and provide reassurance.	Some patients are concerned about medication errors while self medicating	Patients value familiarity and trust	Patients are unlikely to second guess doctors they trust	Patient medical history is important during consultation and regular visits to same doctor visits help doctor understand patient history better	Patients are unlikely to trust diagnoses from online sources.	Ayurveda is seen to be good for chronic illness. Doctors will not intervene unless the education is harmless	Spending time with patients makes the doctor seem more effective and trustworthy	Its very important to know about patients medical history during consultation

We compiled some of our **key insights**:

1. Patients prefer to self-medicate for manageable and temporary symptoms.
2. All prescriptions have to be tracked but the patients don't usually have the patience to give information during purchases.
3. Consultation doesn't feel rushed when there is good trust and communication between the doctor and patient.
4. Doctors encourage looking up symptoms online beforehand as it helps diagnosis and dialogue.
5. Indiscriminate antibiotic use is rampant but it is also a preventative necessity.
6. Pharmacists aren't allowed to diagnose but still regularly recommend basic OTC medications if asked.
7. Doctors might not always be aware of contra-indications of issued medicines.
8. Written information is a useful tool in patient education for explaining seemingly mundane details and also to provide reassurance.
9. People have some faith in Ayurvedic treatments for chronic illness and doctors don't intervene or reject it unless the alternative treatment can potentially cause harm.

Preliminary Ideation

Some ideas were identified that we believe will positively affect the system. Being a system level problem, the final solution has the potential to include one or more of these multiple ideas to address the issue from multiple angels and to ensure a sustainable solution
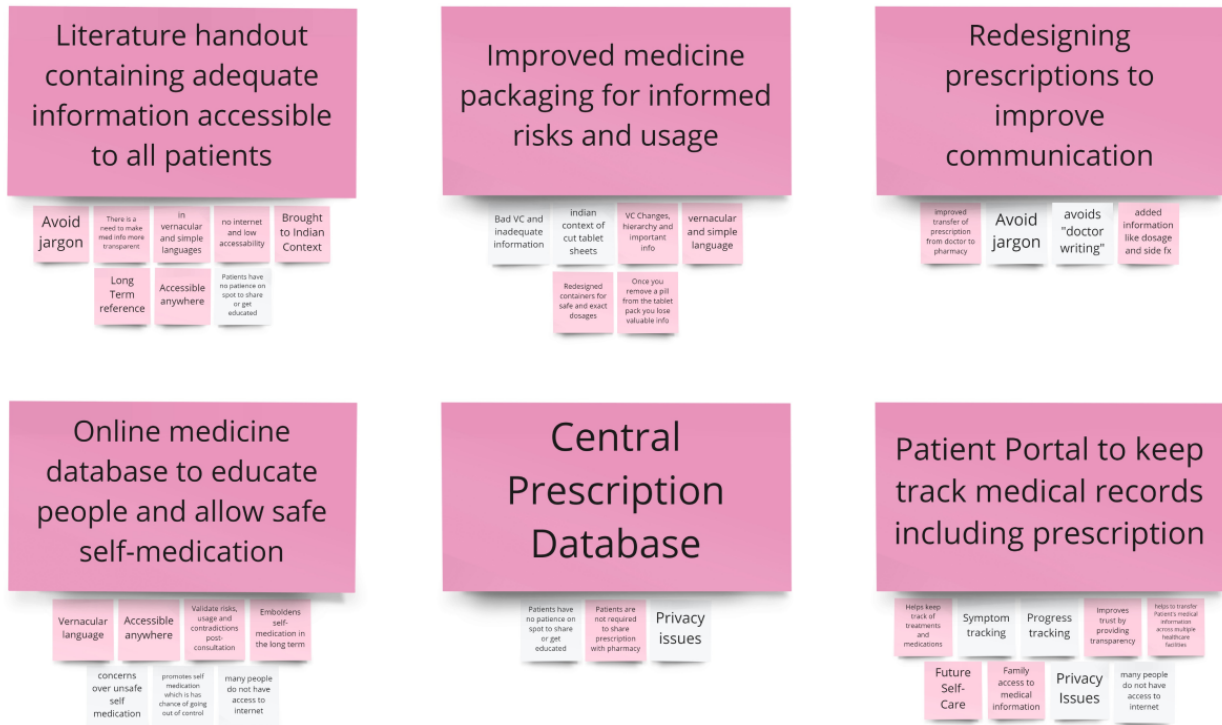
1. **Literature**: Literature is an important aspect of patient education, this includes all the various handouts and brochures patients receive. The issue is that much of this literature is unavailable for Indian contexts, and the ones that are, are not accessible enough, using a lot of medical jargon and are rarely available in local languages. This literature is especially important for chronic illnesses where patients need to be constantly reminded and reinforced. This also allows doctors to impart large amounts of information without spending a large amount of time with the patient, as we have observed doctors in India have very little time per patient.

2. **Packaging**: The existing packaging is poorly designed with regards to information relevant to the patient. The existing designs prioritize the branding of the manufacturer over useful instructions and warnings. They

often also contain medical jargon which might be unfamiliar to the patients and cause further confusion. The existing form factor of pill sheets should be addressed especially when it comes to important data on the back of the pills being lost when the pills are popped out of the packaging, or when pharmacists cut the strips to suit the prescribed dosage.

3. **Prescriptions**: Prescriptions are important records not only during medicine procurement but also for reference throughout the course of the treatment and it's important for patients to be able to come back to them and understand usage, dosage and side effect information in order to avoid fatal medication errors and also to alleviate undue stress.

4. **Database of relevant information regarding treatment**: A lack of trustworthy data when it comes to treatments and medicines causes many patients to be wary of doing any research about their condition. This can be addressed by creating an accessible and personalised database which presents the patients with all the relevant information about their treatments including side effects and contraindications as well as warning signs to look out for. This also emboldens safe self medication in the case of long term chronic treatments.

5. **Central Prescription Database**: A centralized prescription database helps sort out many of the issues regarding people accessing high risk medicines over the counter with little to no oversight or education about potential risks. Only being able to access the medicines if you have the required prescription on the database ensures that Pharmacies can validate and track that prescription.

6. **Patient Portal**: Allowing patients to access all the information relevant to their condition like their medical files in non academic and easy to understand language will alleviate stress and increase transparency.

Future Steps

Based on our progress so far, we have charted a plan for the coming two weeks:

- **Week 4:**

    - Finalise on one idea
    - Detail the proposal further
    - Map its connections to the larger system
    - Design all the assets required

- **Week 5:**

    - Evaluate proposal
    - Detail out the connections with the system
    - Identify potential ripples or consequences
    - Address or accommodate the consequences

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