

Project Part 2: Concept Proposal

Introduction to Agricultural Informatics

Goal: Identify a procedure that will identify an approach to solve the problem which you previously discussed.

Required: Write a Concept Proposal describing your approach to solving the problem. This assignment focuses on “mapping” the solution space. It is critical to understand the approach that you will use to solve the problem and the possible solutions before you jump into creating that solution.

There are two parts: **Ideation** and your **Solution Selection**.

Ideation: Come up with 5 different solutions to solve the problem. Each “idea” will be almost a page in length. These can be different solutions entirely, or different variations on a theme (However, trivial iterations on a basic idea will not score well for originality). For each solution:

- Write a short 1-2 sentence general description.
- Write a short description of how it would potentially work.
- Identify 1-3 issues/threats that could prevent implementation of this approach.
- A mockup or sketch of how this idea will work

Solution Selection: How do you pick the “best” idea from the ones that you came up with. In 1-2 pages, describe your chosen approach to making this selection. Think about what you need to do to pick the best solution and what it would take at a broad level to implement the solution.

Make sure you cover the following questions:

- Describe the approach to identifying the best solution:
- What steps will enable you to identify and select the best solution?

An important differentiating factor between solutions is how they manage data. So, it will be important to consider the following points as you develop your evaluation plan:

- How will data be collected/acquired?
- How will you process and analyze it?
- How will the data be used and/or shared?
- How will you handle documentation, data management, and quality control?

You may also need to collect data to make the decision on the best approach. In that case, you should answer the data management questions above with regards to the data collection for the selection process.

Check the rubric to see what you should provide in your paper!

What this assignment is not: In this assignment, you should not elaborate on the problem itself (that was part 1). Also, you should not be specific on the details or steps you need to carry out to produce any single solution. It is important to acknowledge implementation challenges for the various solution options, but this is not an assignment where you list every single step you need to carry out when you do the final programming. In part 3 (end of semester), you will describe a specific solution that you

would like to propose for this problem. You can envision the final deliverable as a prompt for hack-a-thon or as a product idea around which to build a business plan.

Note: I expect about 6-7 pages of written text (5 idea pages and 1-2 solution selection pages); however, the page limit is not a hard limit. It is a suggestion to show how much description you will need to get full credit if you write clearly.

Comments on Originality: Your paper cannot just be a rewrite of an article you found online. You cannot just rehash a discussion point that people have been writing about in the exact same way for years.

Example: There are a million discussions on “smart” irrigation systems and why using IoT sensors in the field is the way to attack the problem and deliver many economic, social and environmental benefits. Picking this as your problem and a simple Arduino-based capacitive moisture sensor as a potential solution will result in a low originality grade as it has already been done. That said, many problems in agriculture and strategies to solve them are actually centuries old. You do not need to come up with an entirely new set of solutions, but the approach should be yours and not immediately identifiable as already widely discussed.

Grading Rubric (45 total points):

Criteria	Exemplary	Good	Weak	Unacceptable
Addresses: is What steps will enable you to identify and select the best solution?	5 points A clear set of step-by-step procedures are provided that can be expected to identify the best solution to pursue.	4 points Procedures for identifying the best solution are provided but some details are missing.	2 point The procedures for identifying the best solution are vague and general.	0 points There is no description of procedures to determine the best solution.
Addresses: How will data be collected, acquired, processed, and analyzed?	5 points Specific data to inform the solution selection are provided or for each idea the specific data required when implementing the approach are specifically identified. The paper describes how it collected, acquired, processed and analyzed.	4 points Data to be collected are not precisely defined and could potentially be interpreted differently. Similar interpretation differences may exist in collection, acquisition, processing, or analysis. The potential for differing interpretation is only minor, or if	2 points Data to be collected are not precisely defined and could potentially be interpreted differently. Similar interpretation differences may exist in collection, acquisition, processing, or analysis. The potential for differing interpretation exists for multiple steps in a significant manner.	0 points The collection, acquisition, processing or analysis of the data is not described.

		major, limited to one step.		
Addresses: How will data management be handled: including data usage, sharing, quality control, and metadata recording?	5 points Data management plan shows clear understanding of the data to be collected and its potential impact. Any negative issues with the data procedures have been properly addressed.	4 points Data management plan shows some understanding of the data to be collected and its potential impact. Some negative issues may not be fully explored.	2 points Data management plan is present, but significant issues exist with data procedures as described.	0 points Data management is not considered or it is potentially harmful without any recognition of this fact.
Ideate: Format	5 points 5 ideas are provided. General description, operation and issues and threats are provided	4 points 5 ideas are provided but either the description, operation or issues/threats section is missing, or these sections are incomplete	2 points Less than 5 ideas are provided or two of the idea sections are missing information: the description, operation, or issues/threats section.	0 points Less than 4 ideas are provided, or ideas are described with only a few words or very short description.
Ideate: Reasonableness of Solutions	5 points All solutions are reasonable solutions to the problem. They may be off-the-wall, expensive, or impractical, but they do not violate physical laws.	4 points Solutions are mostly feasible, or at least one is completely infeasible.	2 points Some solutions are completely infeasible, or most solutions have issues.	0 points Solutions do not make sense as solutions to the problem.
Ideate: Unique, Varied Solutions	5 points Different mechanisms are used in the solutions. Solutions are unique and thought-provoking.	4 points At least one idea is only a minor deviation from another.	2 points Most ideas are just minor iterations of the same basic solution	0 points All ideas are iterations of the same basic solution.
Format	5 points	4 points	2 points	0 points

	No grammatical errors. Paper is appropriately organized.	Only a few minor grammatical errors. Paper is appropriately organized.	Many grammatical errors or the paper is mostly unorganized.	Grammatical errors or lack of paper organization impede the understanding of the points of the paper
Style	5 points Language is clear and concise. Solutions are well-described and understandable to the reader.	4 points The paper describes the solutions in a way that is understandable to the reader, but may be wordy.	2 points Some arguments in the paper are either superficial, redundant, or contradictory. Most of the points are understandable.	0 points The reader will not understand the problem. Language and descriptions are not clear and make reading this paper challenging.
Originality	5 points The problem is completely novel and/or the discussion is completely different than prior arguments about the problem (but still correct)	4 points The problem is either only briefly discussed in media or the discussion of the problem is novel and insightful beyond that discussion.	2 points The problem has been discussed in the press, but this paper adds a slightly original component.	0 points The problem has shown up in many news articles and discussed in the exact same manner.