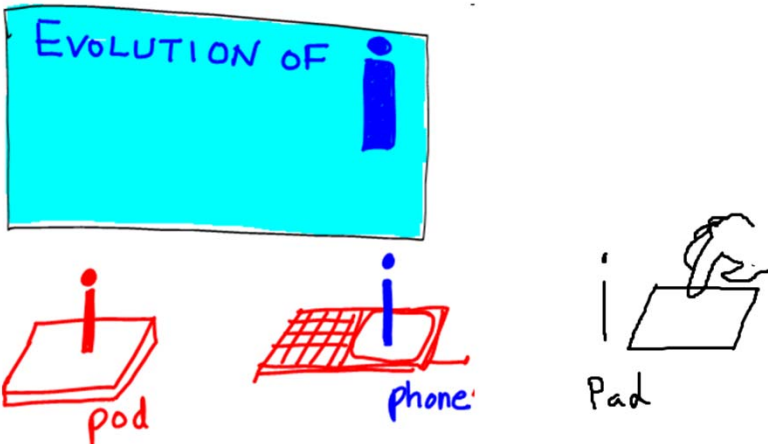



## Next step after Design Requirement



A hand-drawn diagram titled "EVOLUTION OF i" on a blue rectangular background. Below the title, three stages of the 'i' logo are shown: 1. A red 'i' on a red rectangular base labeled "pod". 2. A blue 'i' on a red grid-patterned base labeled "phone". 3. A blue 'i' on a white rectangular base with a hand icon touching it, labeled "Pad".

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## Proposal



A hand-drawn illustration of a green stick figure holding a glowing ring. Below the figure is the word "Propose" written in green.

- What is Proposal?
- Proposal Format (.doc)
- Proposal Presentation Format (.ppt)
- Proposal Review Panel
- Proposal Approval

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## Project Proposal

- **Proposal**
  - A bid for a job, services, cash award, or research money.
  - Or for marriage!
- **Design Project Proposal**
  - Remember that design project exists because there is problem or need.
  - “a clear description of the initial ideas developed for solving the problem”
    - Background
    - Problems and Needs Refined Problem Definition and Problem Formulation
      - ROOT CAUSE
    - Current Status of Art
    - Design Requirements and Standards, Regulations, Restrictions, and Constraints
    - Initial Solution Ideas and Approaches
    - Project Management with timelines and milestone
    - Resources and Cost
    - Qualification: knowledge content, course works, etc



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## Proposal Format

- 0. Proposal Cover
  - Title
  - Team and Members
  - Space for Approval Signature

Cover  
 Introduction  
 Problem Definition  
 Current Status of Art  
 Engineering Approaches  
 Tasks and Deliverables  
 Project Management  
 Conclusions

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## Proposal Contents - Introduction

### • 1. Introduction

- Objective of the project
- Goals and scopes of the project
- Background of the project
- Main problems
- Customer needs
- What the Proposal intends to do

Cover  
 Introduction  
 Problem Definition  
 Current Status of Art  
 Engineering Approaches  
 Tasks and Deliverables  
 Project Management  
 Conclusions

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## Proposal Content – Problem Definition

### • 2. Problem Definition

- Refined Problem definition →  
Root Cause
- Problem Formulation around  
the root cause
- Design Requirements &  
Performance Measures.
- Required compliance –  
Specific situation, regulation,  
standard, rules, codes, etc

Cover  
 Introduction  
 Problem Definition  
 Current Status of Art  
 Engineering Approaches  
 Tasks and Deliverables  
 Project Management  
 Conclusions

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## Proposal Contents – Current Status of Art

- **3. Current Status of Art**
  - Similar Product in the market?
  - Problem Already Solved?
  - Available Technology?
  - Weakness of the Current Status of Art
  - More time here saves the time

Cover  
 Introduction  
 Problem Definition  
 Current Status of Art  
 Engineering Approaches  
 Tasks and Deliverables  
 Project Management  
 Conclusions

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## Proposal Contents – Solution Generation

- **4. Engineering Approach for Solution Generation**
  - Initial Solution Idea
  - Provide general or system level structures with schematics
  - Possible alternative solution approaches
  - Systematic Process/Approach to reach at the desired solution
  - What knowledge and course works are to be used in the solution
  - What knowledge to be learned for the solution

Cover  
 Introduction  
 Problem Definition  
 Current Status of Art  
 Engineering Approaches  
 Tasks and Deliverables  
 Project Management  
 Conclusions

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## Proposal Contents - Tasks

- **5. Tasks and Deliverables**
  - Tasks to be done to (i) achieve the engineering solutions and (ii) verify the solution meets the design requirements
  - Tasks assigned to the team members
  - Deliverables
    - Final solution product
    - Demonstration System of the final solution for ECE Day presentation/Demo

Cover
Introduction
Problem Definition
Current Status of Art
Engineering Approaches
Tasks and Deliverables
Project Management
Conclusions

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## Proposal Contents – Project Management

- **6. Project Management**
  - Timelines and milestones
  - Resources and Budget
  - Safety Issues
  - Engineering ethics issues



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Cover
Introduction
Problem Definition
Current Status of Art
Engineering Approaches
Tasks and Deliverables
Project Management
Conclusions

## Proposal Contents - Conclusions

- **7. Conclusions**

- Rephrase problems, needs, and benefits
- Rephrase objectives
- Summary of the engineering solution approach
- Summary of timeline and milestones

- **8. References**

- Must be cited in the main body with [number]

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## Example Proposals



PDMS\_Proposal\_FINAL.doc

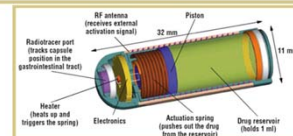
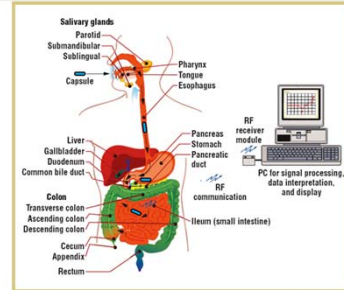


LDWS\_-\_Proposal\_(v2)[1].doc

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## Project Candidates

- Intel Cup: Atom Processor board application
  - 2 teams across the campus
- NASA Lunabotics: Mining robot
- NASA Satellite control of Grover robot
- Swallow-able Capsule Technology
- Northrop Grumman: General purpose interface between a high speed fiber and a gigabyte Ethernet: ??
- Southern Co: Solar microgrid, self-healing network (analysis of faulted circuit for restoration): 12OCT11



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## Project Teams

- Intel Cup 1: Nathaniel, Chris U., Joshua
- Intel Cup 2: Shamir, Chidi, Ameer
- NASA Lunabotics: Bryant, Jonathan, Chris C.
- Fiber2Ethernet: Damola, Jasmine, Montaque
- Micro-grid: Kelvin, Kevin, Andrew, Lauren
- Capsule 1: Gilbert, Michelle, Ashley
- Capsule 2: Kurubel, Brima, Bathiya

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## Proposal Writing (Practice) - 1

- Form a ( **temporary**) team for a project or problem
  - If you do not have a project, pick this - Wireless Guitar Amplifier
- Write a proposal
  - Introduction
  - Problem definition
  - Current Status of Art
  - Engineering approach for solution
  - Tasks and deliverables
  - Project management (timelines and milestones)
  - Conclusions
  - References
- NOTE: If your project is in a competition, and if there are specific items to be added, then add the items

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## Proposal Writing Practice - 2

- 2 stage work
  - 1<sup>st</sup> week: contents of 1, 2, and 3 only
  - 2<sup>nd</sup> week: Complete proposal with the rest of the proposal contents
- Format:
  - Letter size
  - Times New Roman 12pt
  - Left justified, single space, 1" margin all sides
  - Page numbers at the bottom center

0	Cover
1	Introduction
2	Problem Definition
3	Current Status of Art
4	Engineering Approaches
5	Tasks and Deliverables
6	Project Management
7	Conclusions
8	Reference

Handwritten annotations: A circled '2' is connected by a bracket to items 1, 2, and 3. A circled '1' is connected by a bracket to item 1. Item 8 'Reference' is written in red.

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### Proposal Writing Practice - 3

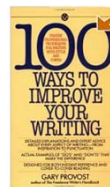
- **Submission Due:**
  - Contents of 1, 2, and 3 only
    - Paper submission: W 05OCT2011 4:30pm
    - Electronic (MS Word DOC file) Submission: W 05OCT2011 6:00pm
  - Complete Proposal
    - Paper submission: W 12OCT2011 4:30pm
    - Electronic (MS Word DOC file) Submission: W 12OCT2011 6:00pm



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### Technical Writing Tips

- Write like a newspaper staff writer
- Outline, a long outline, and sections
  - Divide into members
  - Every topic must be covered
  - Single topic must not be covered multiple times
- Tips
  - Know your audience/reader
  - Rule 17 of “Elements of Style” – Omit unnecessary words.
    - Avoid wordy phrases and sentences
    - Avoid information and conversational words and phrases
  - Why, What, When, & How
  - Correct Grammar and Spelling
  - Third Person, Active Voice, Same Tense
  - Direct and to the point
  - Paragraph Construction: Topic Sentence – Support - Description
- Finish Draft
  - Integrate the sections completed by members
- Spend More Time on Revising
  - Consistency
  - Terminology
  - Flow
  - Check Format



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## Proposal Presentation Event

- Class Presentation:
  - TBD
- Formal Presentation: Public
  - TBD

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## Proposal Presentation Format

- **Cover (1 slide)**
  - Title and Members
- **Background (1 slide)**
  - Background of the project (industry, technology, customer, ...)
  - Needs and demands in customer's point of view
- **Problem Formulation (2 slides)**
  - Refined Problem Definition in Engineering point of view (1 slide)
  - Design Requirements (1 slide): emphasis on alternative solutions, knowledge contents, and constraints
- **Current Status of Art (1 Slide)**
  - Prior art and available technology, weakness, etc
- **Solution Approaches (3 slides)**
  - Overall introduction of the technology field (with system level schematics) and summary of the alternative solution ideas (1 slide)
  - Explanation of the first and major solution approach (why this may work)(1 slide)
  - Systematic Approaches that will be applied through the project period(1 slide)
- **Tasks and Project Management (1 slide)**
  - Assigned tasks for finding solutions and solution implementation
  - Timelines and milestones
- **Costs and Resources (1 slide)**
  - Rough budget
  - Resources available and resources needed
- **Conclusion (1 slide)**
  - Crisp and clear summary of the proposal



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