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**ENGG2800** – Team Project 1

ENGG2800 Lecture Notes

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# Team Management

## Teams evolve or develop over time

- Forming
  - Who is who?
  - Define goals
  - Work plans
  - Group behaviour and standards
- Storming
  - Who is the boss?
  - Doubting success
  - Polarisation of members
  - Low group morale
- Norming
  - Friendships form
  - Max harmony, avoid conflict
  - Group boundaries
  - High morale
  - Moderate work gets done
- Performing
  - Sorting through problems
  - Resolving conflict – quickly
  - Identify closely
  - High morale
  - Great deal of work gets done
- Mourning
  - Elated at success
  - Disappointed at failure
  - Relief
  - Celebrate
  - Congratulate

## Task Roles and Functional Roles

- Tasks
  - Technical knowledge
  - Design and creativity
  - Building, writing
- Functional
  - Coordinator
  - Progress monitor
  - Planner
  - Troubleshooter
  - Documenting

# Sustainability Aspects of Electronic and Software Design

## European Directives and Regulations

- **RoHS** Directive
  - Restriction on use of certain Hazardous Substances

- **ErP** Directive
  - Energy-related Products (was EUP – Energy Using Products directive)
- **WEEE** Directive
  - Waste Electrical and Electronic Equipment
- **REACH** Regulation
  - Registration, Evaluation, Authorization and Restriction of Chemicals

## RoHS

- Restriction on the use of certain Hazardous Substances in Electrical and Electronic Equipment
  - Lead
  - Mercury
  - Cadmium
  - Hexavalent chromium
  - Polybrominated biphenyls
  - Polybrominated diphenyl ether
- Various exemptions(e.g. does not apply to batteries)

## EPEAT

- Electronic Product Environmental Assessment Tool
  - Global rating system
    - Mandatory criteria (23) → Bronze rating
    - Optional criteria (28) → Silver or gold rating
  - Designed for purchasers
  - Applies to PCs and displays, TVs, Imaging equipment
  - Managed by Green Electronics Council
- Criteria address
  - Material selection
  - Design for end of life
  - Product longevity
  - Energy conservation
  - Packaging

## Life Cycle Analysis (LCA)

- Analyse environmental impact over the complete product life-cycle (cradle to grave)
- Covered in ENGG1100
- Detailed analysis is difficult

## LCA methodology – in brief

1. Purpose and Goal
1. For product life cycle (production, transport, use, recycle, disposal):
- Identify raw materials and energy (source/quantity)
- Identify outputs and waste streams
1. Quantify impacts of each material, energy and waste
1. Aggregate impact into categories for comparison
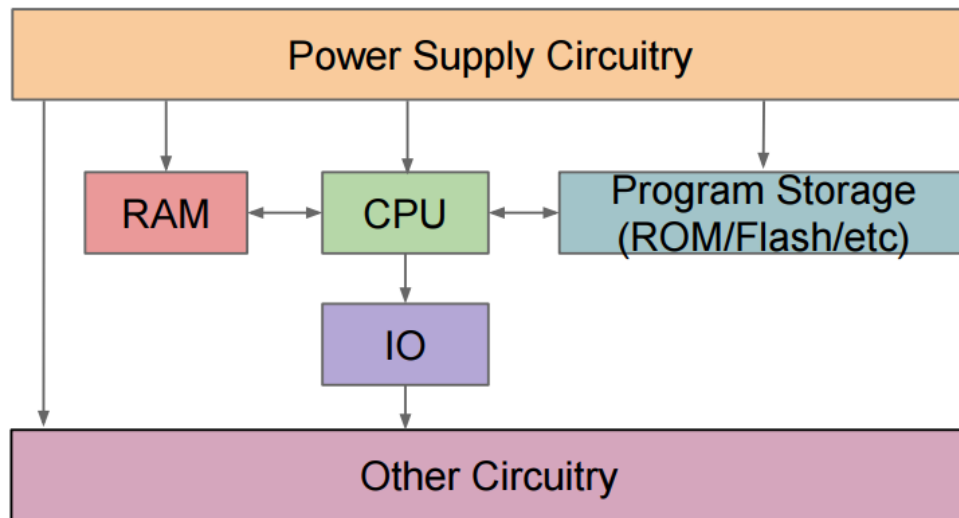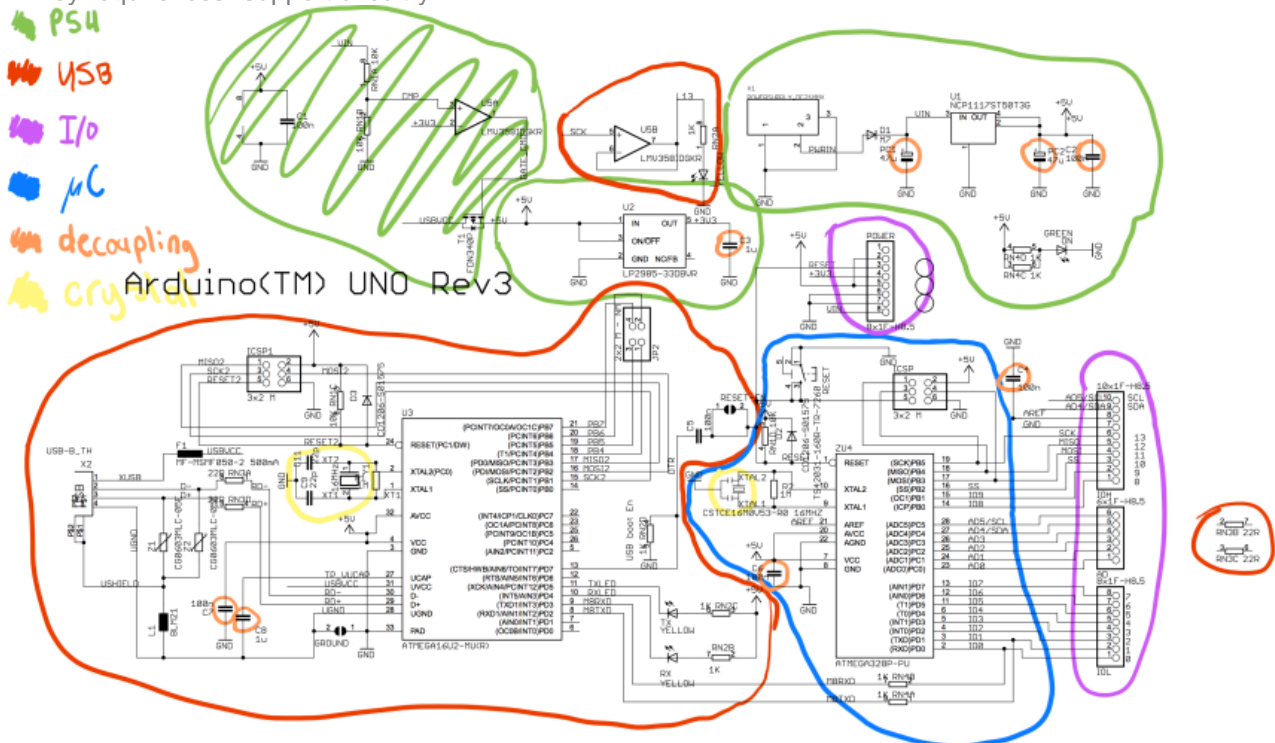1. Interpret results

# Microcontrollers

*Figure 1: Microcontroller Architecture*

Microcontrollers are much easier to use!
They require less "support circuitry"



*Figure 1: Arduino Circuit*

## What should I do now?

1. Think about how you would like your device to work
1. Break your product into a functional block diagram
1. Work out how to implement each block with real electronics/mechanics. (Keep breaking things into smaller blocks until this step is possible)