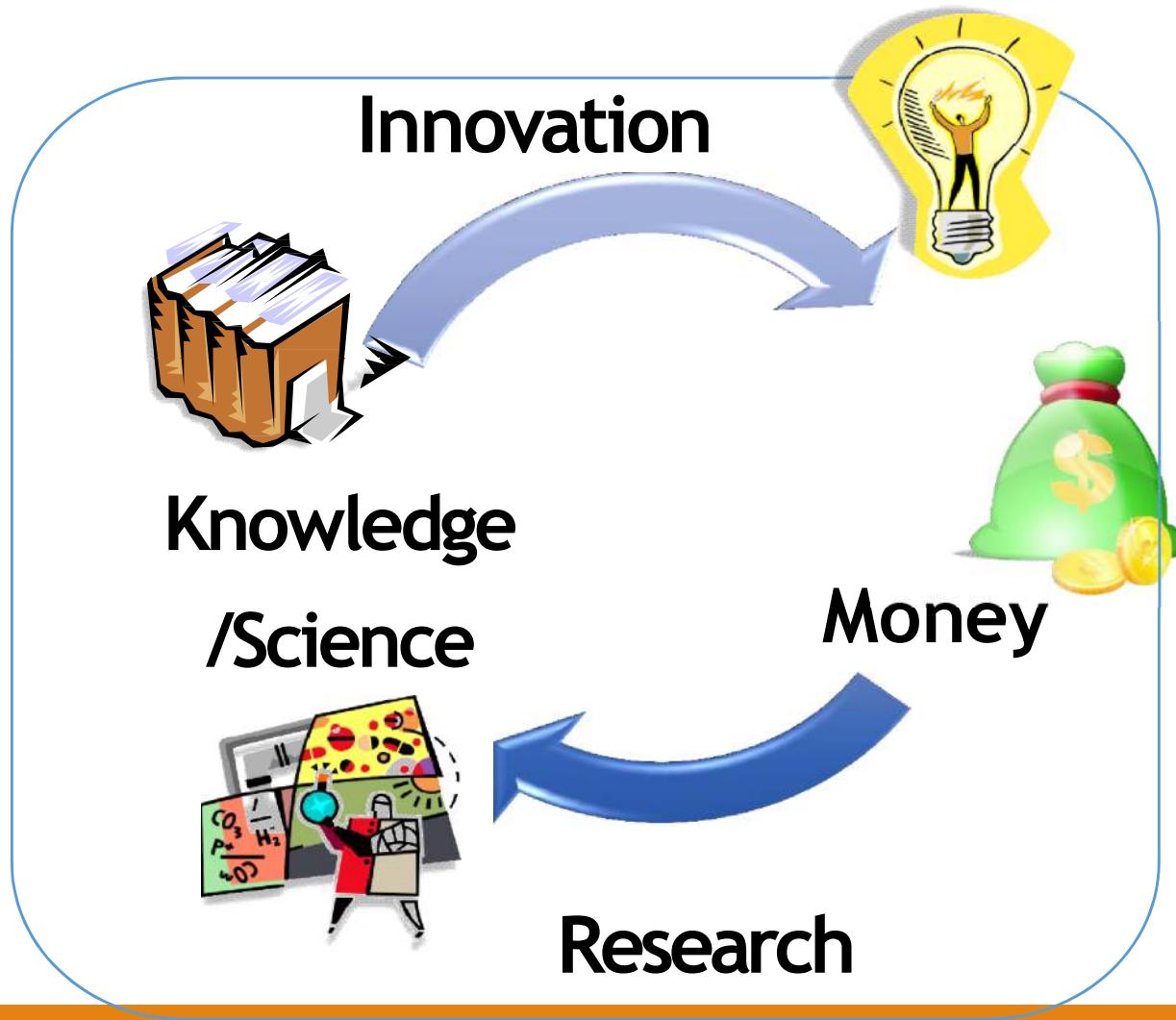


ENGINEERING DESIGN AND INNOVATION (EDI)

**Dr. Ganesh Dongre
Dean (R and D)**

Research or Innovation ?

Research & Innovation

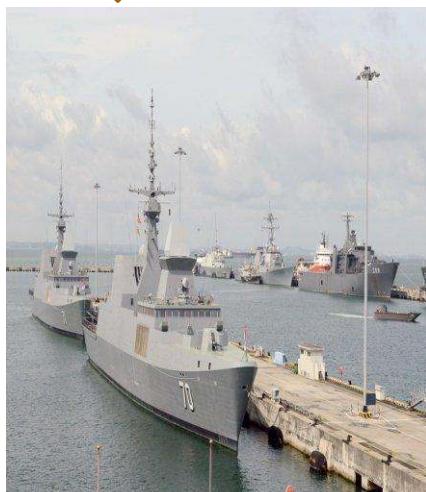
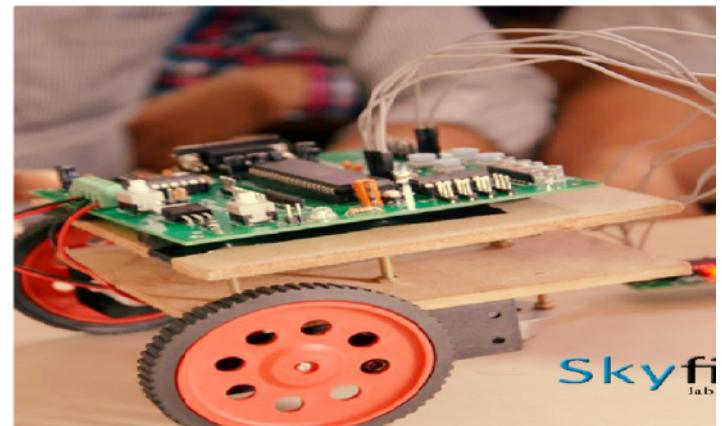


Engineering Design and Development (EDD)

EDD

- Project Based Learning
- Project Centric Learning
- Hands on experience

Focus on Societal and Industrial Issues



EDI Concept



Socially relevant problems solved
using multiple technologies



Project centric teaching inputs
given to students



Projects based on Industry needs

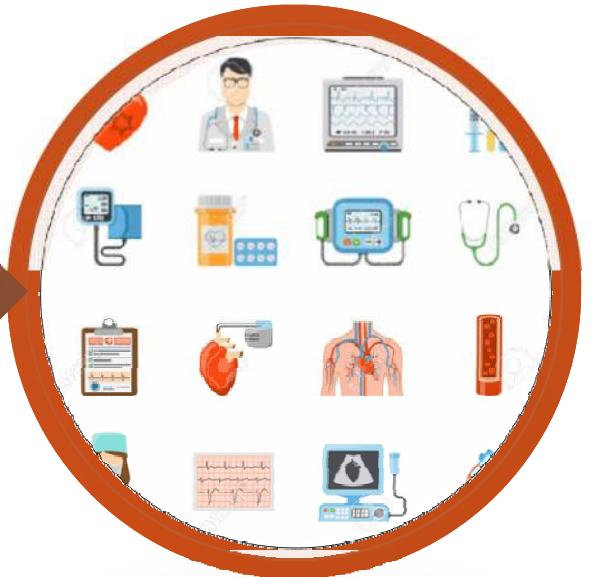
EDI Concept



- Domain



- Technology

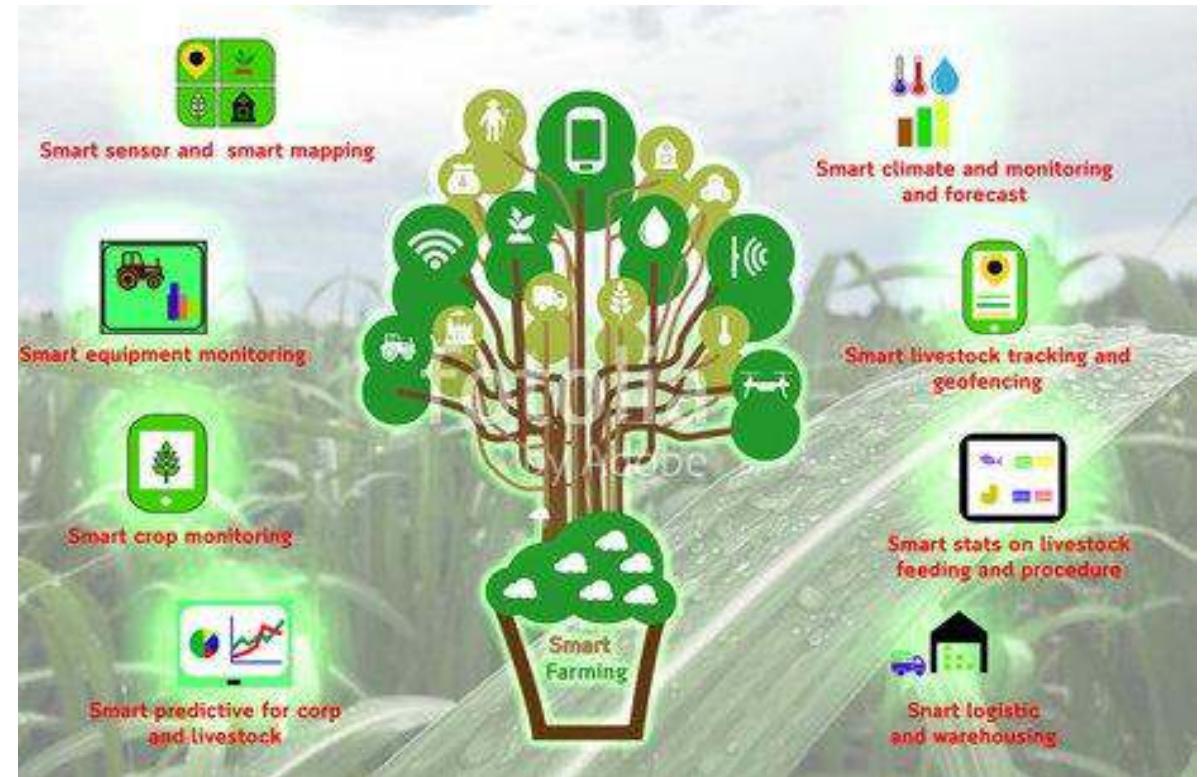


- Tools

EDI Concept

Ex. Smart Agriculture

- Image processing
- Robotics
- IoT



Traditional Unit With Culminating Project:



Project-Based Learning Unit:

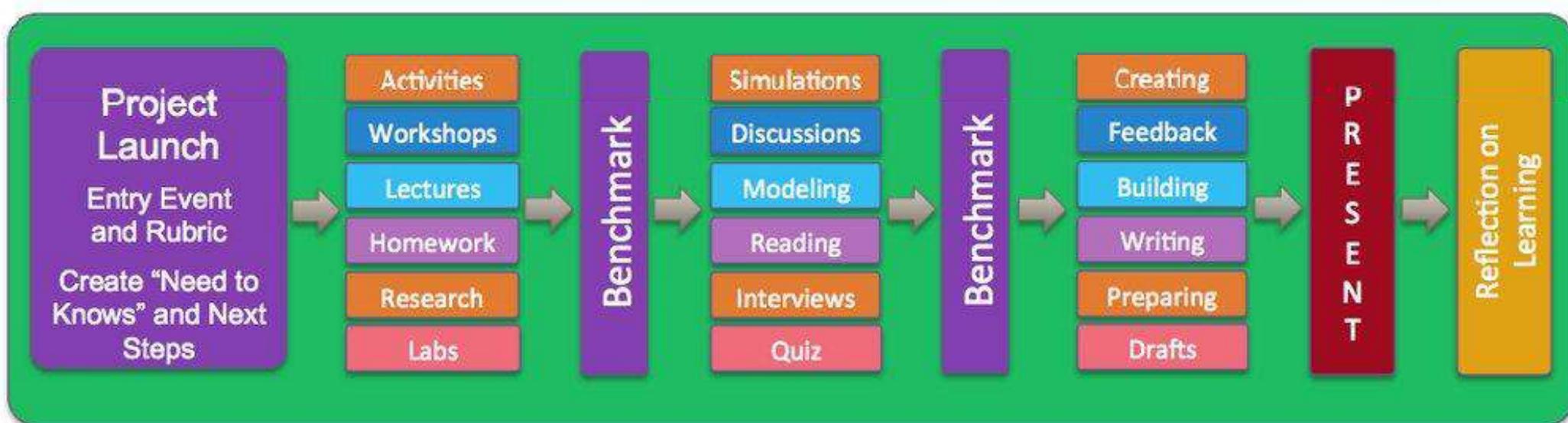


Image via Paul Curtis (@paulscurtis)



DOMAINS

Domains

Agriculture



Defense



Domains

Healthcare



Smart City



Domains

Smart Energy



Automobiles





TOOLS

EDI Tools

Programming

- C
- C++
- Java
- Python



EDI Tools



**Design and
Modelling**

- MATLAB
- SCILAB
- LabVIEW
- Simulink



TECHNOLOGY

TECHNOLOGY



Data Analytics



Robotics



Machine Learning

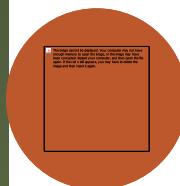


Artificial Intelligence (AI)

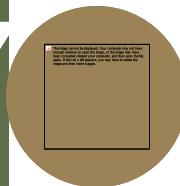


Cloud Computing

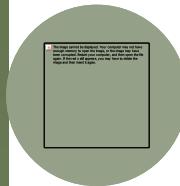
TECHNOLOGY



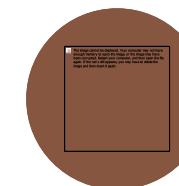
Automotive
Electronics



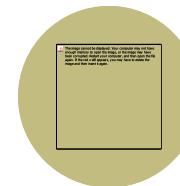
GPS
Technology



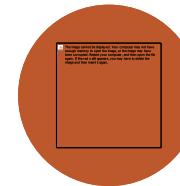
Industrial
Automation



MEMS



ZigBee
Technology

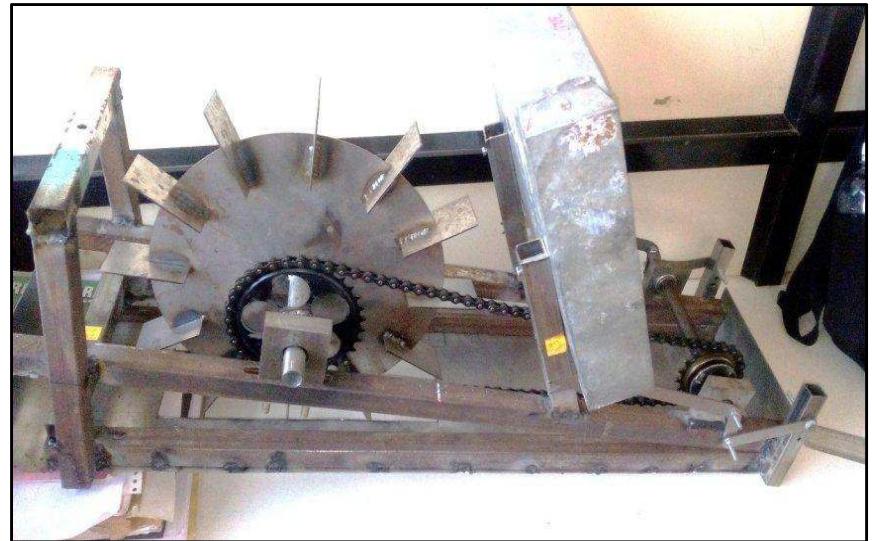


Fiber Optics
Communication

Socially Relevant Innovation



WINNERS ALL (Left to right) Ankit Sinha, Suraj Pipariya, Akshay Gupta, Sagar Jaiswal, Sarabjit Sarkar, Prof Deepak Pawar, VIT Director Dr Rajesh Jhaekar and Mohan Patil.



VIT, Pune Students Help FRO Track Passport Applications

Manually Operated Rice Transplanter

Socially Relevant Innovation



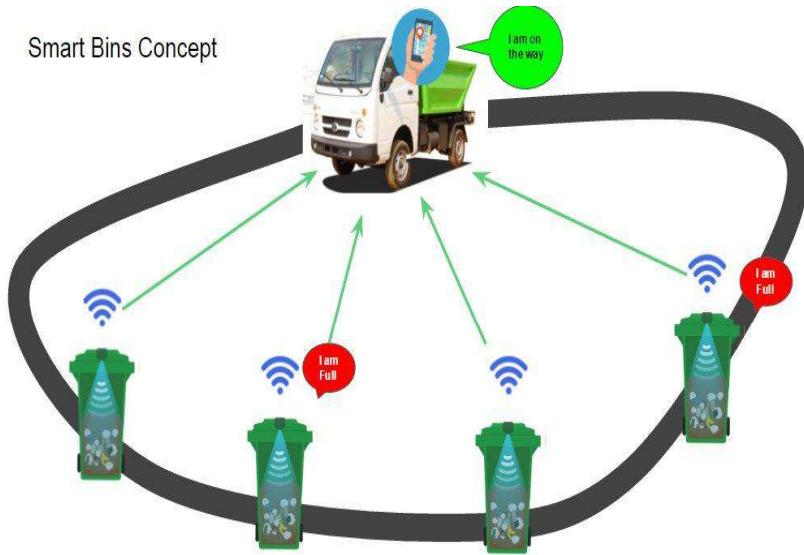
**Water suitability analysis
for drinking**

**An Android App for
Mother of Preterm
Infant**

Socially Relevant Innovation



Smart Bins Concept



Smart Dust Bin

Expected

135
Litres/capita/day

Total
Consumption
540 MLD

Actual

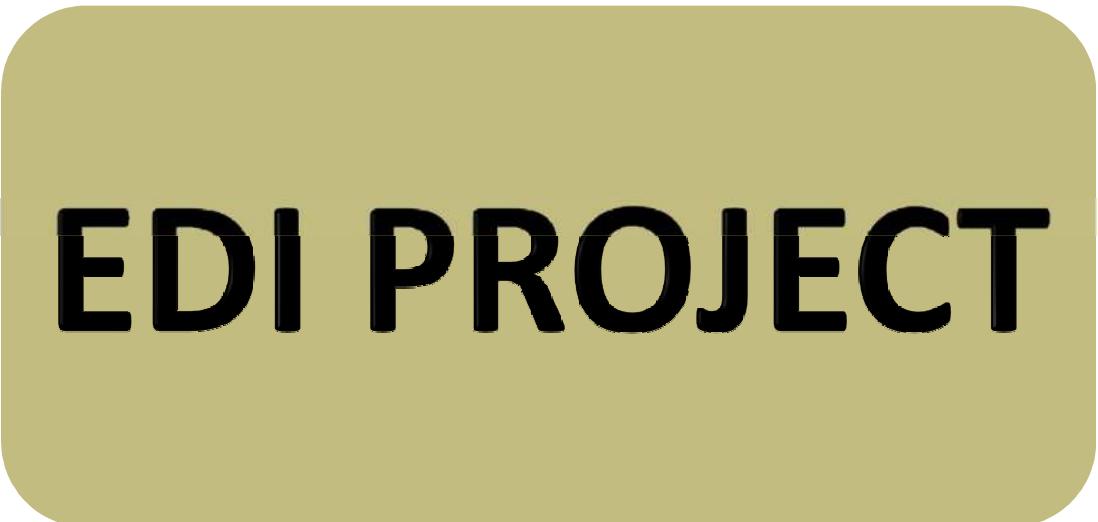
190
Litres/capita/day

Total
Consumption
776 MLD

Difference
236 MLD

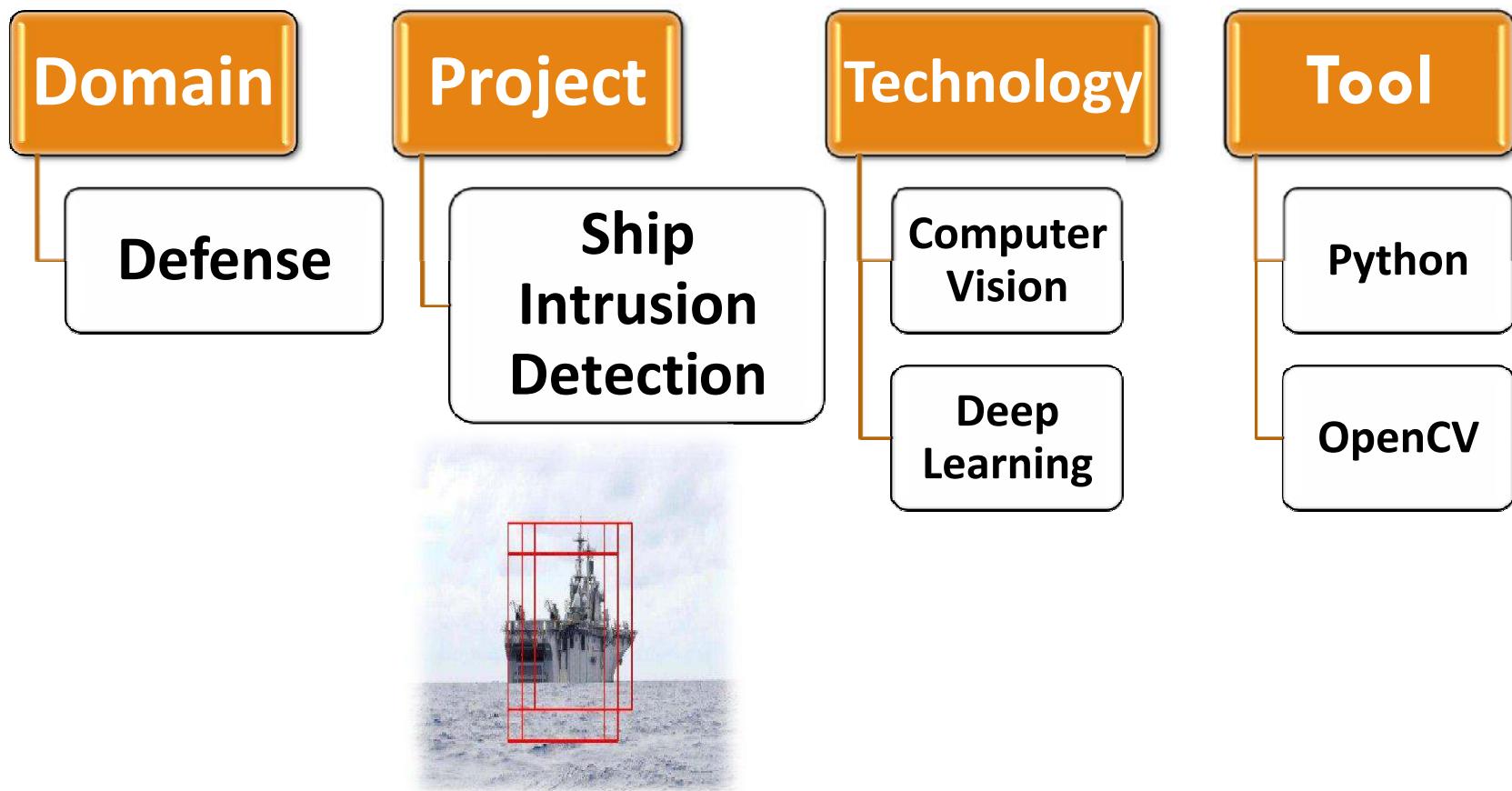
The difference obtained is the total water overused which can be supplied to approximately 170 villages.

Development of cost effective and integrated water distribution system for residential establishment

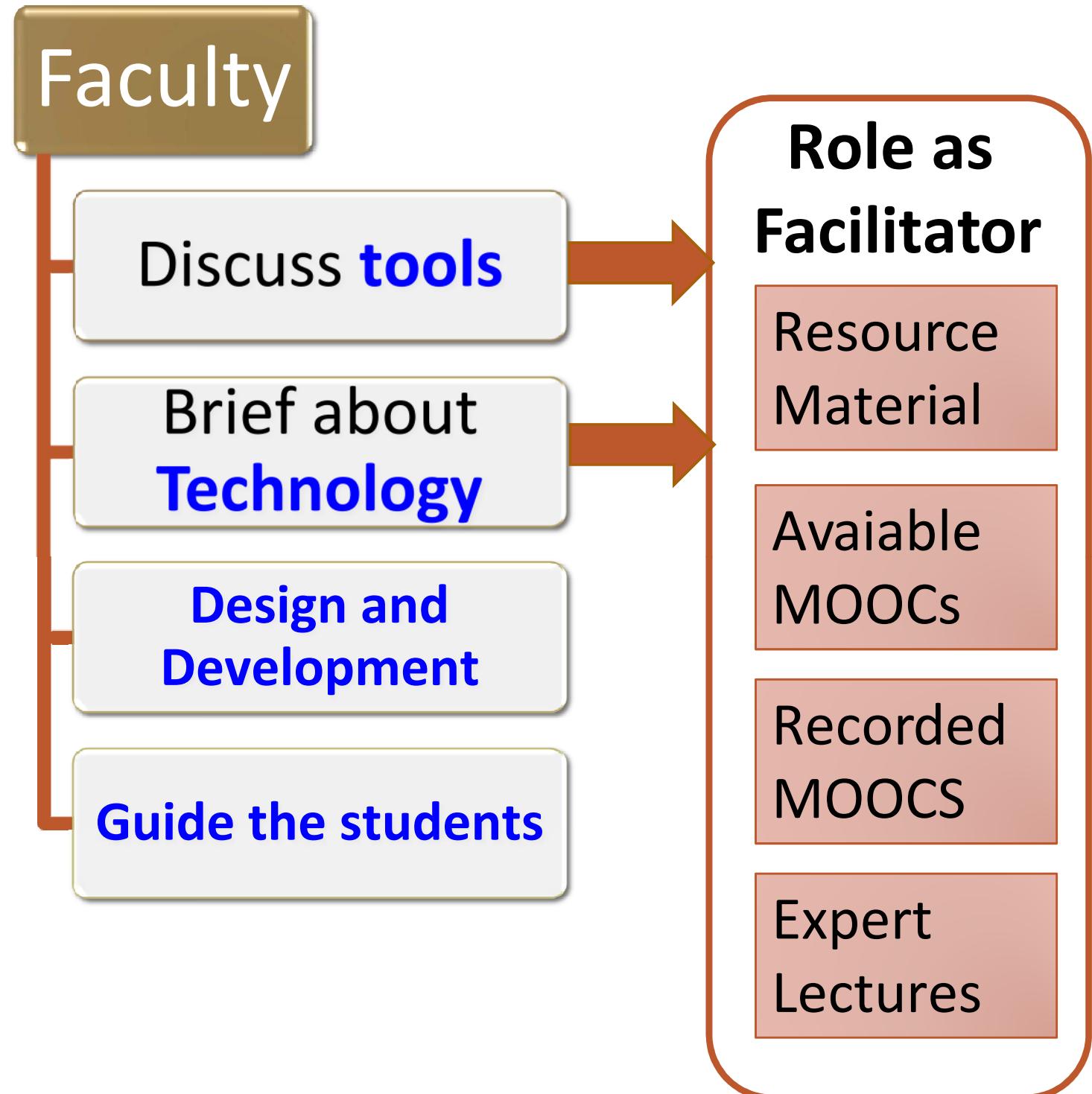


EDI PROJECT

EDD PROJECT EXAMPLE



**PROJECT
EXAMPLE ::
Ship intrusion
detection
security
system**



PROJECT EXAMPLE :: **Ship intrusion detection security system**

- Students**
 - Form the groups**
 - Finalize the Problem Statement**
 - Understand and practice the tools**
 - Learn the technology & Design the System**
 - Develop hardware and software system**
 - Validation and Testing**
 - Final Prototype / Product**

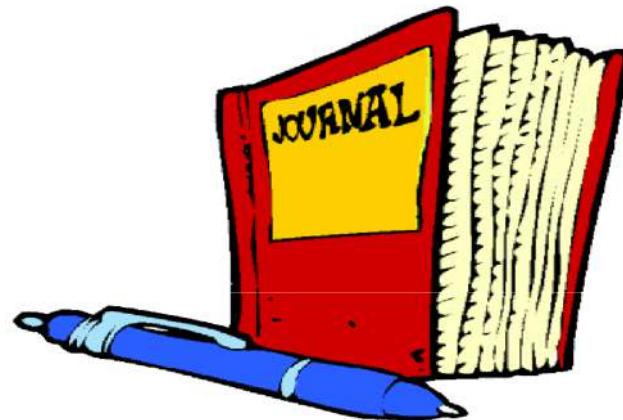


EDI _ Course Outcomes

- Identify projects relevant to societal needs
- Map the technologies learned with the project needs
- Apply the technological knowledge to design various feasible solutions
- Select best possible solution to solve problem
- Develop/Fabricate a working model of proposed solution
- Testing and validate product performance

EDI _ Outputs

Publication-Research papers



Intellectual Property(IP)-Patent



Product Development



Student learning

- ❑ Team Work
- ❑ Communication skills
- ❑ Connecting people
- ❑ Self confidence
- ❑ Design and Programming Skills



Thank
you

The image features a hand-drawn style "Thank you" message in black ink. The "T" in "Thank" and the "y" in "you" are particularly large and stylized. The "a" in "Thank" has a small flourish extending to the right. The "u" in "you" has a small flourish extending downwards and to the left. The "o" in "you" has a small flourish extending upwards and to the right. To the left of the "T", there is a small illustration of a red rose with green leaves. To the right of the "u", there are two more roses, one pink and one red, with green leaves and stems. The background is plain white.