

DEPARTMENT OF RESEARCH PUBLICATIONS AND POSTGRADUATE STUDIES

The following are information regarding key DIT innovation projects:

1. PROJECT 1. Traffic Light System

Project Concept

This is one of the projects that were earmarked to provide solution to traffic management problems at the junctions in the country. The survey conducted came up with the following facts:-

- Most traffic control systems are imported
- They have different operational standards. This is caused by the fact that most of the traffic lights that have been installed in Tanzania are or have been manufactured in different countries with different management control standards.
- They are very expensive since they imported from other countries
- Repair difficulties when a faulty occurs due to the lack of experts or spares parts.
- The timing is fixed and does not meet the needs of the junctions
- There is no communication between junctions
- Operational costs are high since traditional incandescent lamps are consuming a lot of power.



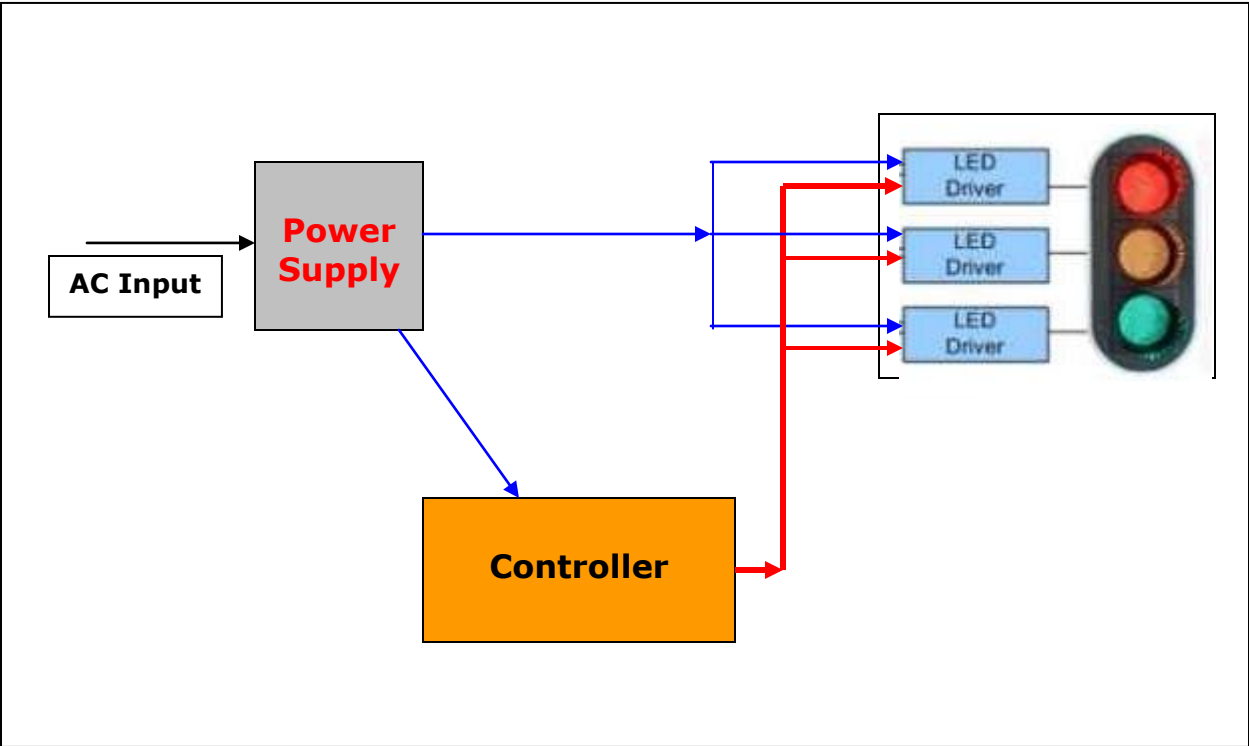
From Survey: These are some of the Traffic management problems in Dar es Salaam City that need solution

Objectives

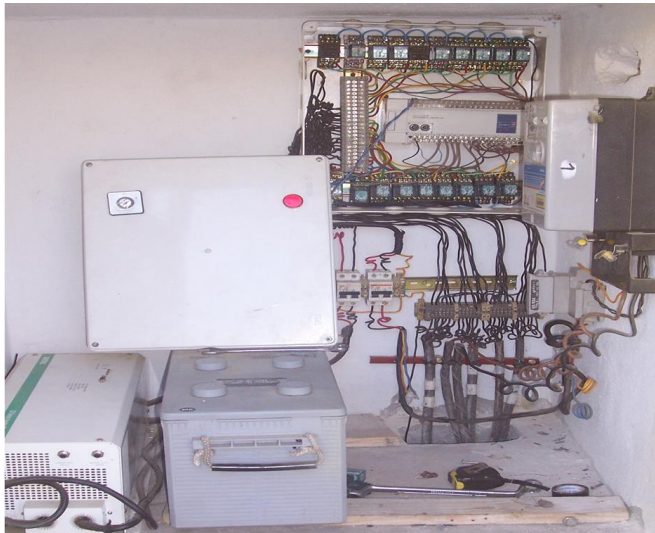
The main objective of this project was to design a traffic light system that address the traffic pattern of Tanzania and the power consumptions that fit in the 21st century.

Block Diagram Design of Traffic Light Control system

The Traffic Light control system design involves two major activities; **Hardware design** and **programming**.



Design stages



Design and Testing starts from the workshop

Demonstration



The President of the United Republic of Tanzania; His Excellency Jakaya M. Kikwete admiring a Control System while the DIT staff is explaining on how the control work. Looking attentively (middle) is the Principal of the Dar e salaam Institute of Technology (DIT), Prof J.W. Kondoro

Implementation

Co-Cabs Junction



Palm Beach Junction



Sealander Bridge



Ali Hassan / Kinondoni Road



Oysterbay Primary School Zebra



Students and Pupils using the Control system to crossing

Benefits of the Traffic Light Control System

There are numerous advantages of the developed traffic controller system:

- It saves time of ordering the controllers and parts abroad.
- Repair time will be short in case it fails working.
- The common standard can be set because these controllers will be manufactured locally.
- Power consumption costs will be reduced by **92%** by using Light Emitting Diode (LED) from **150 Watts** per one junction per day to **12 Watts**.
- The traffic light controllers timing will be made to suit the junction requirements instead of fixed timing. The designed controllers are flexible to timing changes.
- More Traffic controllers will be installed in the junctions because the cost of DIT Traffic light controller is less by **75%** of the imported ones.
- DIT control systems can be modified to incorporate any future change of the road use
- Can send information in case of problems (e.g power failure or not working).

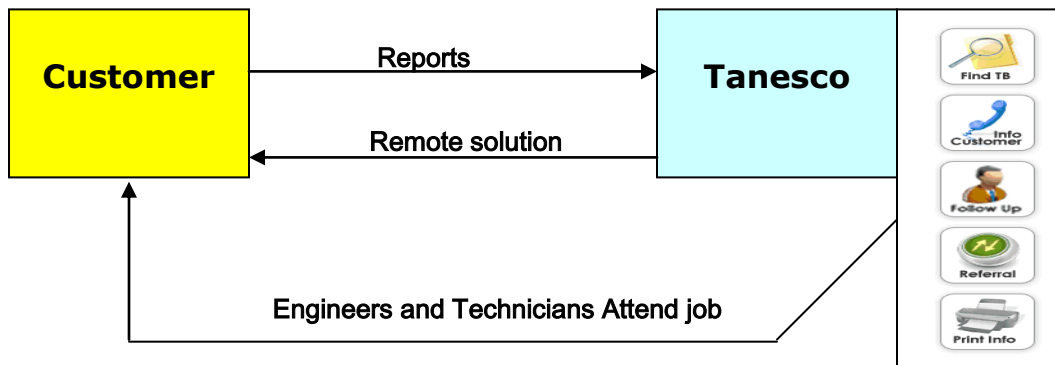
PROJECT 2: Call Center System

Background History:

Call Centre is a tool that is used to solve customer challenges and handle request in the shortest and most professional way possible. This facility will help TANESCO to meet its customer expectations by providing desired service in customer care such as: -

- *Answering customer calls efficiently.*
- *Quick response and solving queries.*
- *Increase in transparency in working environment.*
- *Effective interface to sales and marketing on customer needs.*

Call Center Systems Performance in Block Diagram



System Model and Architecture Design

- Operator
- Foreman

Each will have to login to the system to gain access for other respective operations/tasks.

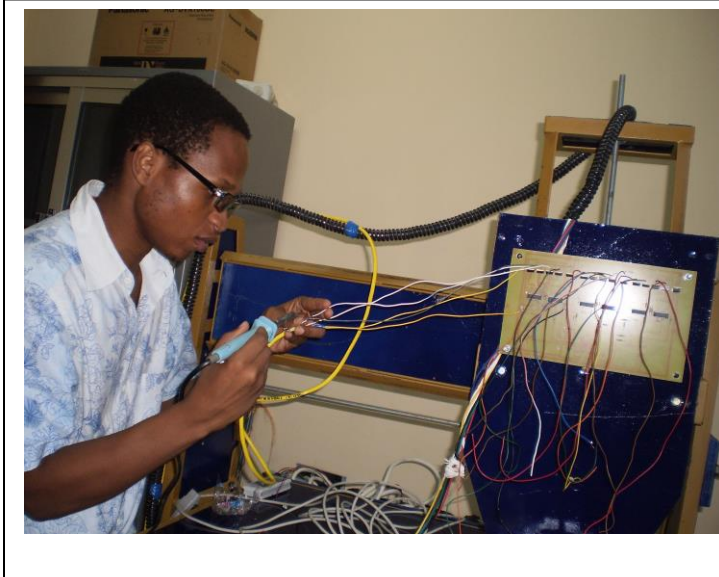
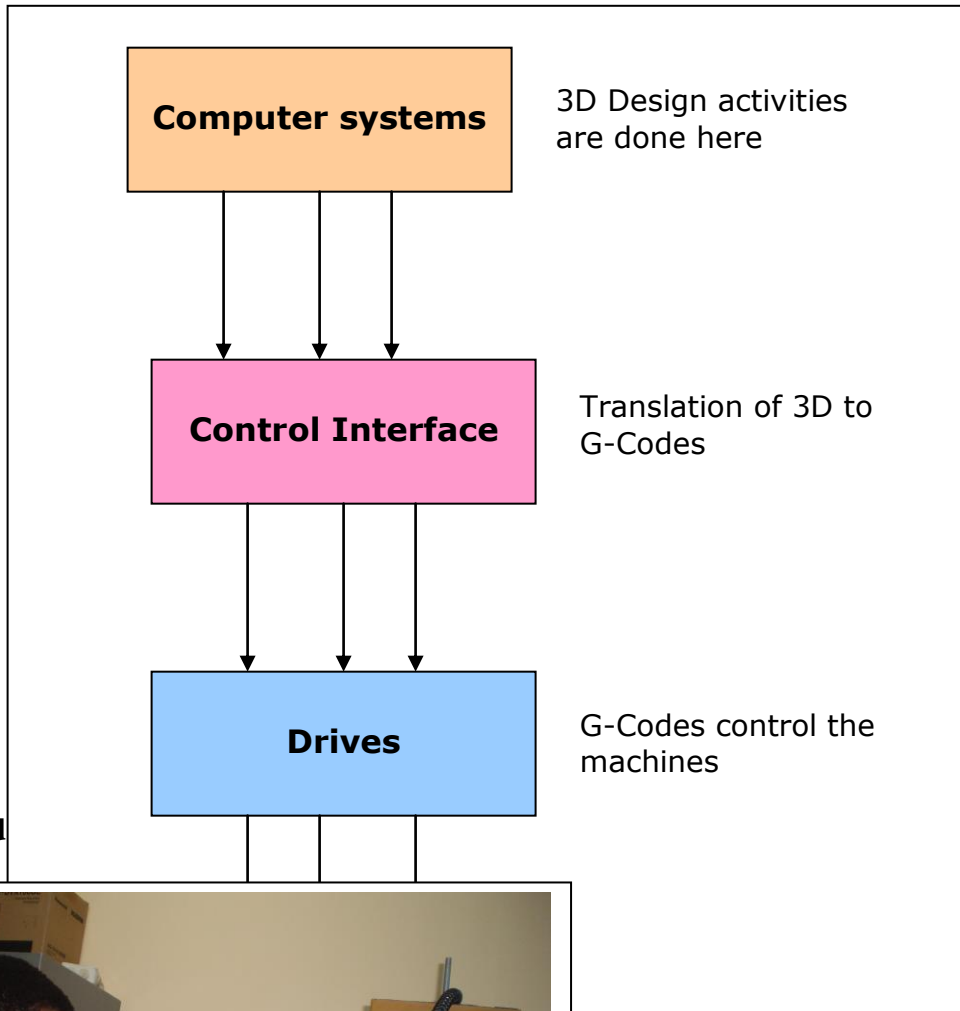
PROJECT 3: 3D TECHNOLOGY AND NUMERIC CONTROL SYSTEM

Concept origin

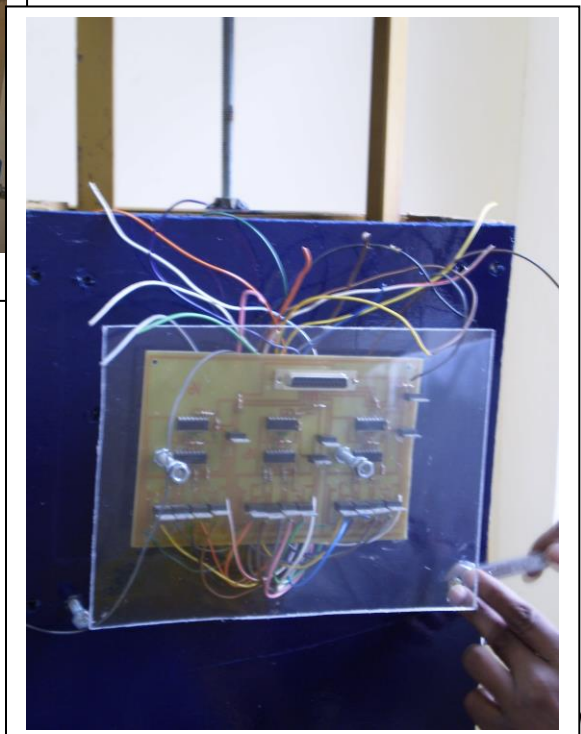
The concept of the Project originated from two lines:

- Academic demand as a teaching aid for different courses (modules) basically Computer Numeric Control, Embedded Design and Automation. In this case the idea was to introduce low level basic knowledge to students. The importation of such equipment would be expensive.
- To solve small scale wood works activities demand. Most of small scale wood works designing are done manually. This makes most of the produced items to vary in precision, smooth finishing and even time consuming.

Basic design features in block diagram



Technician implementing the electronic design into the Printed Circuit Board (PCB)



Advantages of the Technology

- It assist to develop knowledge and competencies to our students as a teaching aid in automation, embedded systems as well as programming
- It serves creating capacity to small scale wood works owners in terms of purchasing powers since it is cheaper as compared to imported ones.
- Maintenance of such systems is possible and easy made locally.