Elicited Information Summary - Traffic Light Monitoring System

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Project Description

- Traffic Light Monitoring System (TLMS)
  - Software that will be used to control traffic lights system at a simple intersection
- Client:
  - Alberta Traffic Supply Ltd.
    7798 16th Street
    Edmonton, Alberta, T6P 1L9
- Stakeholders: Alberta Traffic Supply Ltd., pedestrians, drivers, HireMe Software Ltd.

Purpose and Scope

- This is a very busy intersection in Edmonton and the current lighting system is not efficient or intelligent.
- Purpose is to increase efficiency and decrease congestion.
- Trying to handle all the conditions that we may encounter during traffic and daylight
- Build an intelligent system based on multiple inputs and conditions.

Functionality Requirements

- System should be contained in a box at the traffic light location.
- There is to be a day and night mode with different light sequences depending on the active mode. Night time is from 10pm-6am

State	Inputs											
	T1	T2	1	2	3	G1	G3	P1	P2	P3	M	Clock
Default	**ON**	OFF	G	R	R	R	R	R	G	R	OFF	D
Green-G1	OFF	**ON**	R	R	R	G	R	G	R	R	OFF	D
Green-3	OFF	**ON**	R	R	G	R	G	R	R	R	OFF	D
Green-2&3	OFF	**ON**	R	G	G	R	R	R	R	R	OFF	D
Green-P3	OFF	**ON**	G	R	R	R	R	R	G	G	OFF	D
Night	OFF	OFF	BG	BR	BR	OFF	OFF	OFF	OFF	OFF	OFF	N
Emergency	OFF	OFF	BG	BR	BR	OFF	OFF	OFF	OFF	OFF	**ON**	D/N

Table 1. Traffic Light States and the corresponding status of inputs and lights.
(**Legend:** G = Green | R = Red | BG = Blinking Green | BR = Blinking Red | D = Day | N = Night)

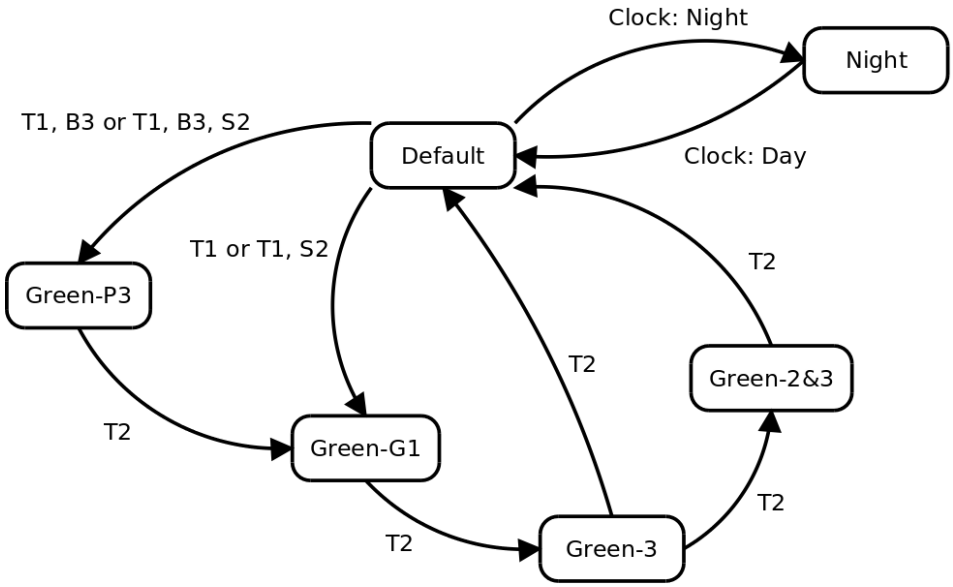

Figure 1. State Diagram for Traffic Light Control System

Technical Requirements

- Software should be no larger than 450kb.
- Software will run on a computer/server with an arbitrary operating system.

Reliability Requirements

- Working during the day without any interruptions.
- Must be able to change to day/night without any issues
- The change to emergency state is quick and happens without issues.
- Instantly changes to emergency mode in the case of out of sequence lights which cause a dangerous situation.
- We are to maintain/support the software through its lifetime

Security Requirements

- System in physical box, whoever has the key is allowed to have access to it.

Policy Requirements

- System should follow Canadian Transport Ministry Regulations.

Usability Requirements

- There should be a manual reset button that can be pressed to reset the system back to its default state.
- In the event of any malfunction, the system should automatically go to emergency mode. A malfunction is classified as a hardware issue detected by the software.
- Upon initialization, the software should start in emergency mode and then go to default mode.

Documentation

- A documentation manual and user's guide will be provided for maintenance.