

THE LED SHOW™

**Light is Life but choose your
power supply carefully !**

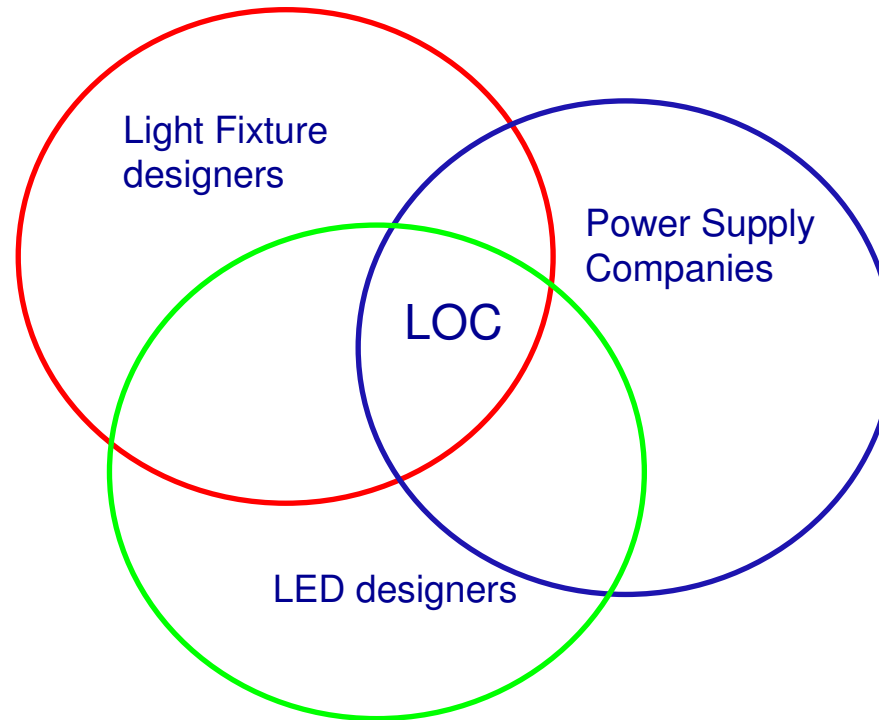
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Excelsys Technologies*

Overview of discussion

- Challenges in ensuring that the choice of driver & partner ensures an optimization of controlling your LEDs.
- Future trends in power supplies
- Two examples where we helped our customer achieve the optimum solution

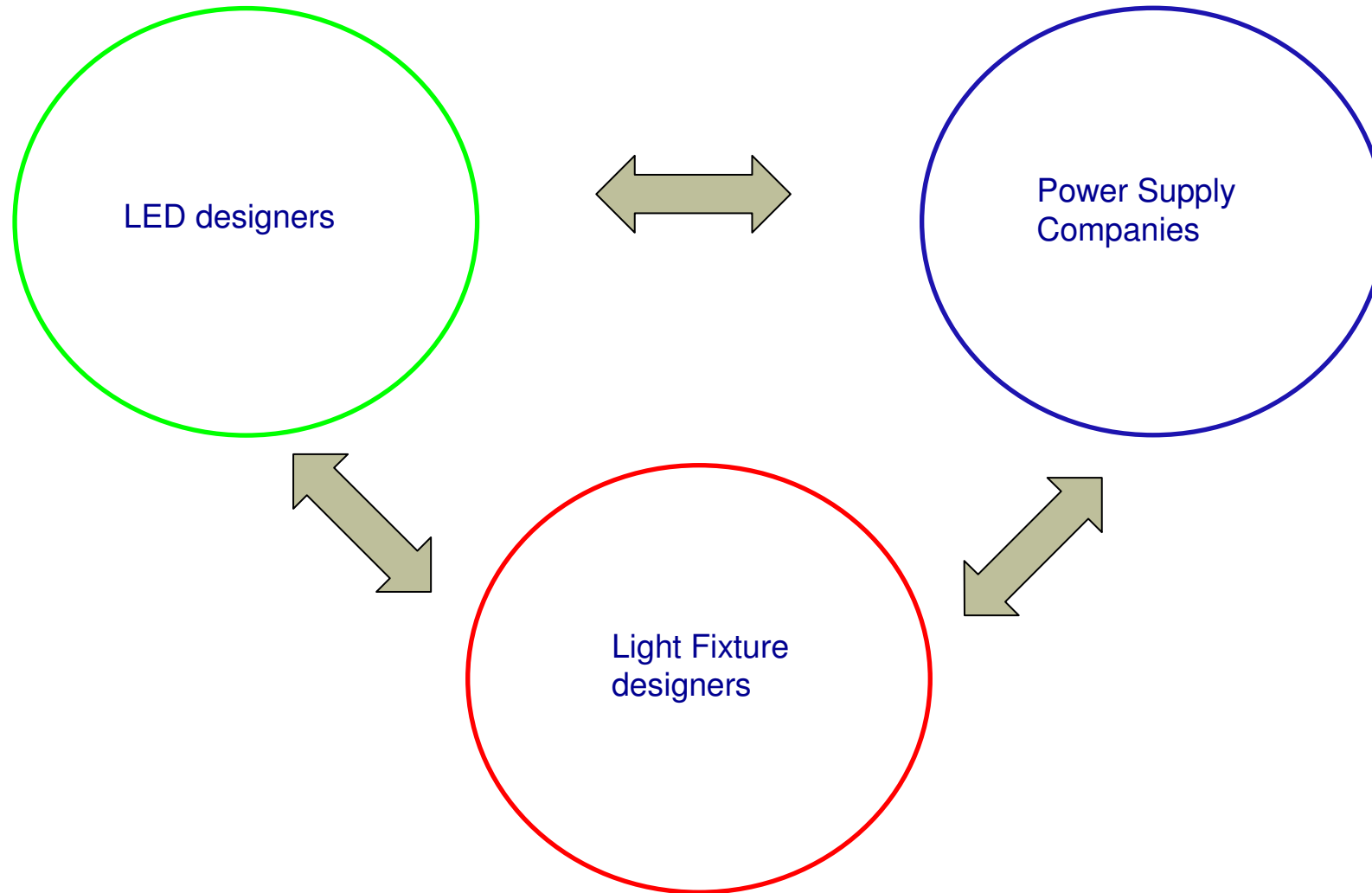
Why is selection of vendor so critical ?

R + G + B = White Light



LOC = Lots of Confusion !!

Why is this confusion arising... ?



Where is the linkiest link in this chain ?

LEDs 100k+ hrs

LED Drivers ?? k
hours

What do power supply companies need to do to ensure reliability of their product ?



What do power supply companies need to do to ensure lifetime of their design?

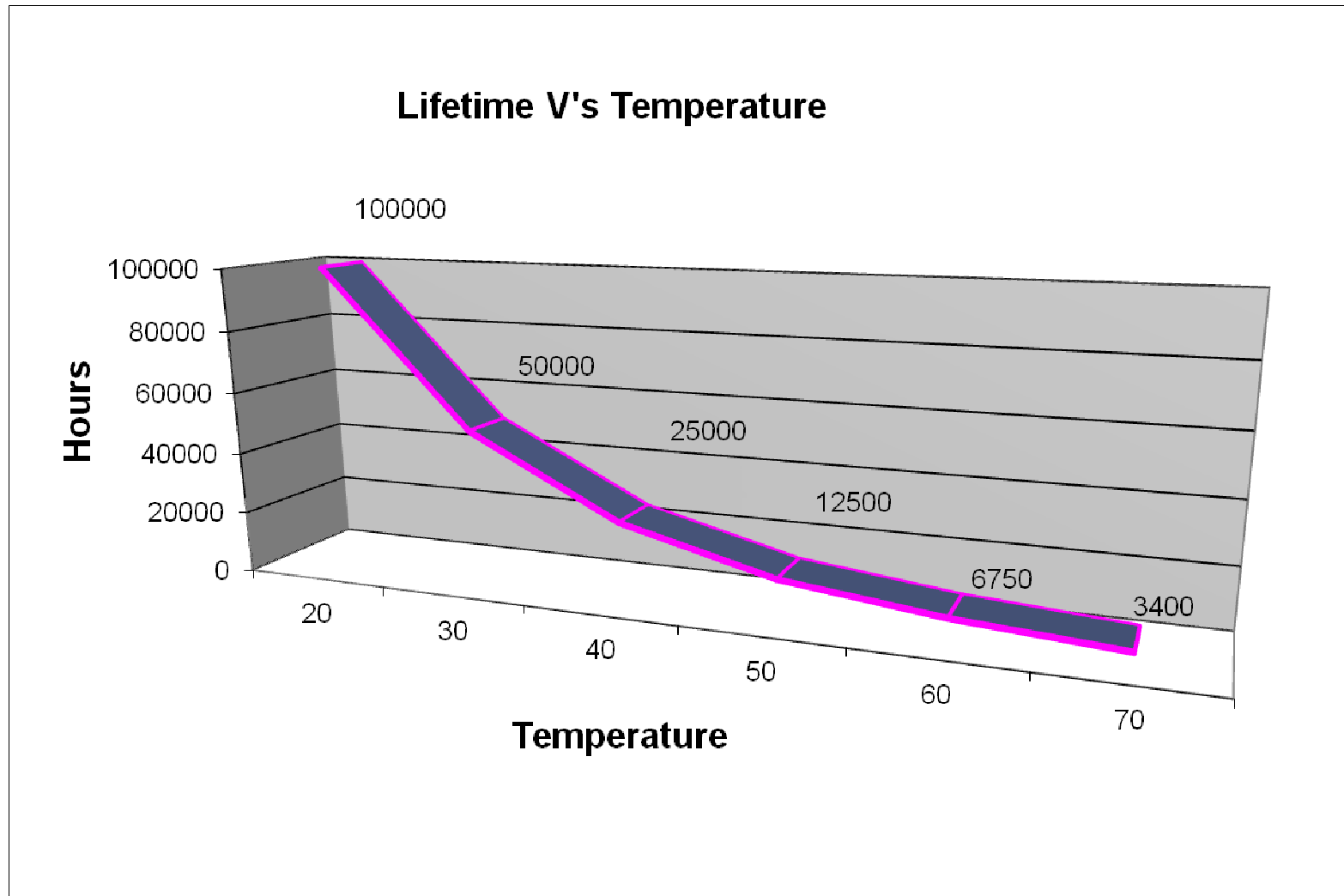
- The answer is simple Keep it Cool !
- Reduce the amount of heat you generate
- Thermally manage the heat that you do generate

How do you reduce the amount of heat ?



- Loss in efficiency means heat is built up internally
- More heat means less reliability
- 50% reduction for 10 degree rise in temperature
- If you want to reduce size, must increase efficiency

How does temperature impact on reliability?

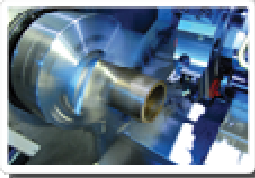


How to select the right partner.

- Do they have design platforms that suit your needs
- If not, can they be partnered with to provide custom designs?
- Establish your vendor's pedigree
- Can they support your entire product lifecycle?
- Does their technology align with your requirements ?

Establish your vendor's pedigree

Industrial (30%)



Industrial Lasers
Water fabrication
Optical Inspection
Printing

Medical (38%)



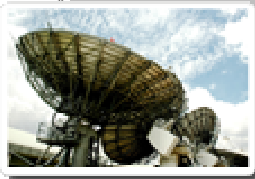
Clinical Diagnostics
Medical Lasers
Imaging Equipment
Dialysis Equipment

Lighting (17%)



Street Lighting
Architectural Lighting
Signage
Display & Commercial

Communications (9%)



Base Stations
Data Communications
Wireless Telephony
Bulk Power Systems

High Rel (6%)



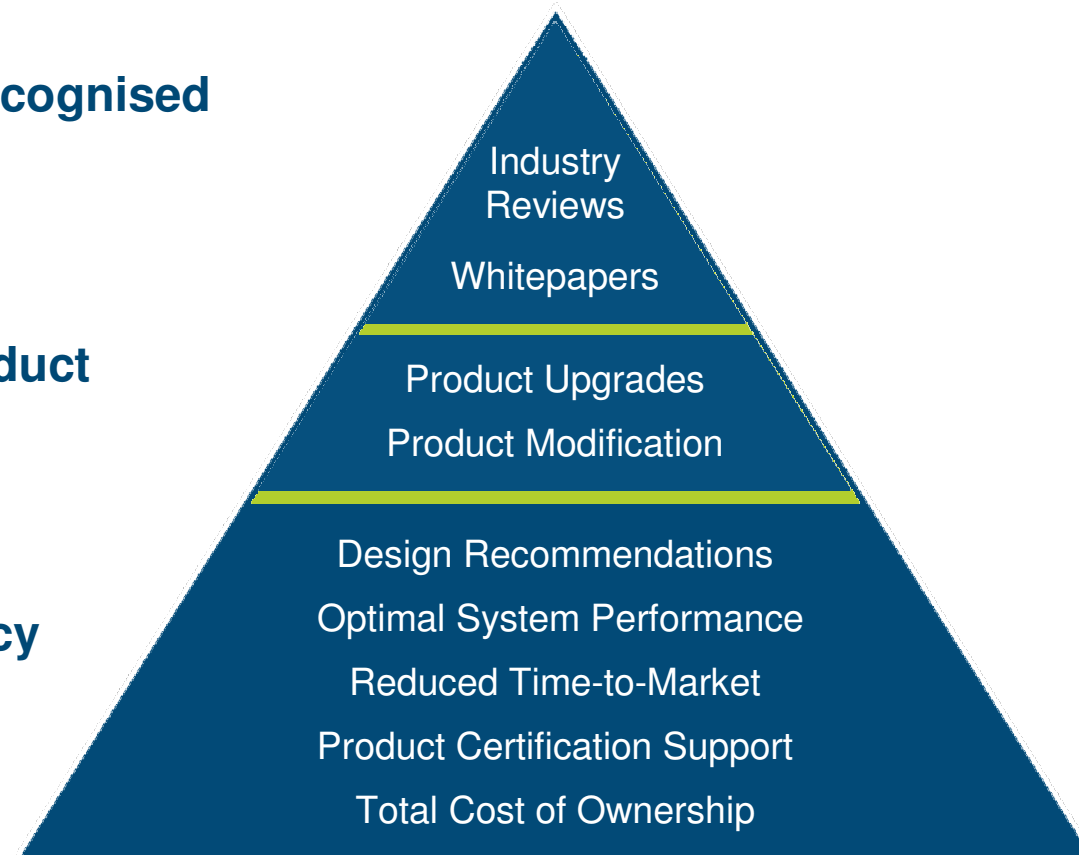
Radar Systems
Test & Measurement
Data Communications
Mobile Systems

Can they support your entire product lifecycle?

**Industry recognised
Technical
expertise**

**In-Life Product
Support**

**Design
Consultancy**



How to specify your LED driver with your partner

- Must be CC or CV depending on your requirements.
- Currents must match your LED requirements
- Voltage range must be within clamping range of LED configuration
- Must deal with PFC and THD issues (***)
- Market Leading Efficiency & Power Density (***)
- Typically IP67 rated , but not always
- Additional Safety Requirements (UL8750 etc)
- Onboard protection features (OCP, OVP , SCP , OTP)
- EMI performance (***)
- Lifetime & reliability must match your requirements (***)

Future of Power Supplies

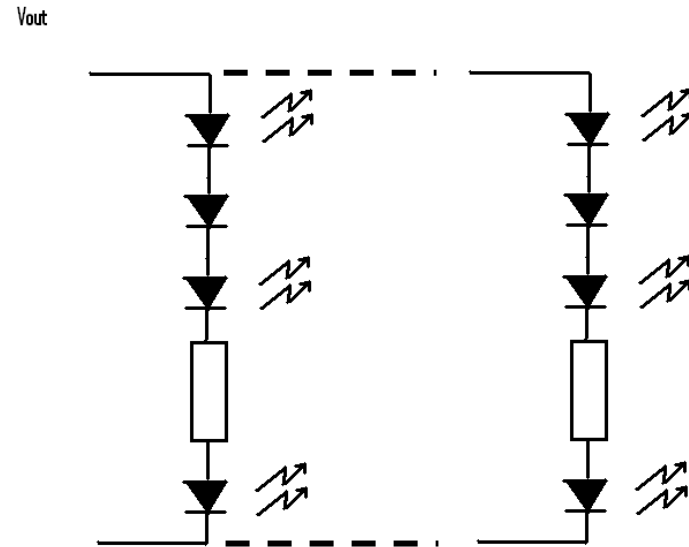
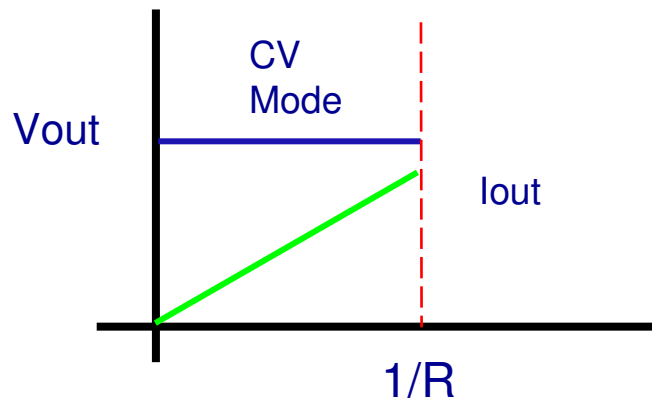
- Will be significantly different to the one we see available on the market now
- Much higher levels of efficiency will become the norm.
- Will integrate much higher levels of complexity in terms of power monitoring and performance.
- More integration of Systems on Chips (SOC's)
- Will continue to reduce in size, whilst maintaining reliability.
- No single element will cause a rollercoaster effect, but will be incremental & continuous improvements.

Case Studies, how we have helped our customers



Example 1: Constant Voltage

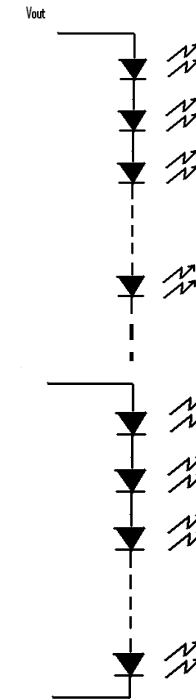
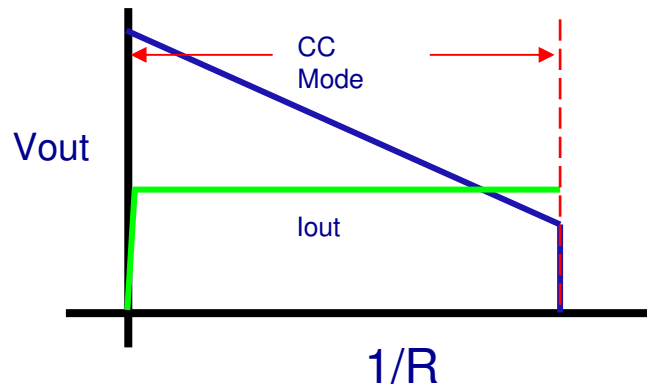
- Application: Advertising Signage
- Three diodes in series per strip, with reverse bias protection diode and current limit resistor.
- Each strip consume approx 300mA
- Customer required fixed 12V output
- Challenge was to produce the most cost effective solution for controlling parallel strings
- Solution provided with LVD100 series nad exteranal resistor to control each string



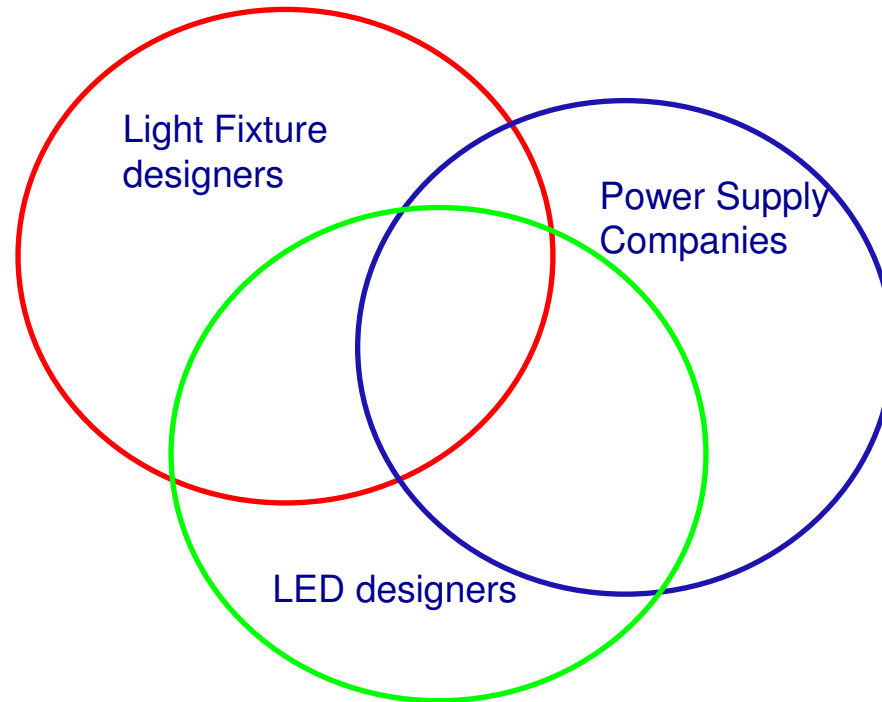
Example 2: Constant Current

Application : 4x4 Lighting Panel

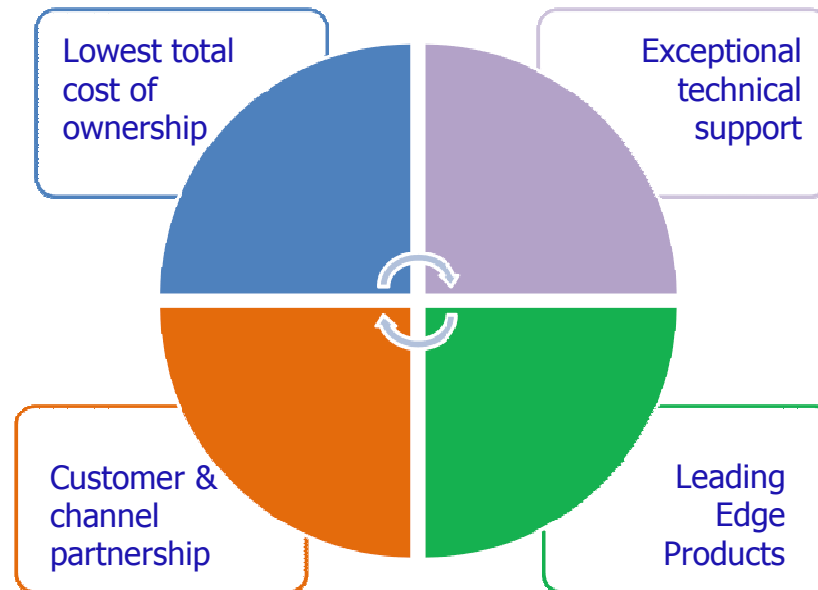
- LED configuration of 9 LEDs in series.
- V_f of each LED will vary from 8V to 10V.
- Voltage range of 72 to 90 Volts.
- Challenge was to drive overall system with the max efficiency while maintaining low temperature of FETs
- Solution provided by LXC75 700mA part.



How do we eliminate this confusion ?



Partnerships are key to achieving our common goals



- ❑ Further information on our products can also be found at www.excelsys.com
- ❑ Feel Free to contact me at shanecallanan@excelsys.com