

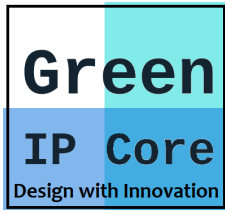
Lets Make World Better

Rajesh Gupta

Director and CTO

GreenIPCore, PlusQO Corp. Pvt. Ltd

www.greenipcore.com

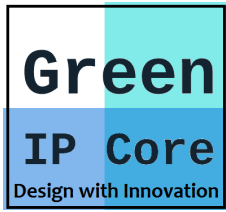


About PlusQO

PlusQO Corp. Pvt. Ltd is founded to develop State-of-Art Best Quality Products in the Different Established and New Emerging technological fields.

It has following Subsidiary focused and specialized on Silicon IP specific domains -

1. **GreenIPCore** – It is Focused on developing next generation Digital IPs which can empower Next Generation High Reliable and High Bandwidth Products.



Need for improvements in Silicon Devices-

Reliability is a term to earn. New Age Electronics need to ride on this to improve the products.

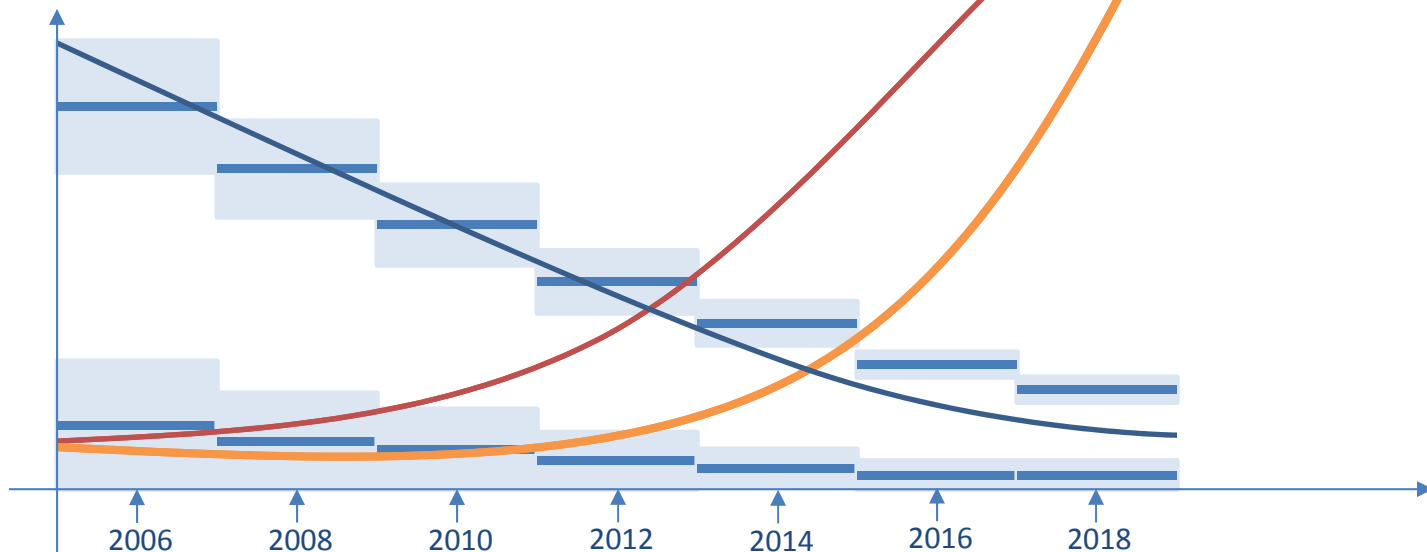
*Needs, Challenges and Innovations in
Silicon Chips*

to make them

Electromagnetic Noise and Hazards Resistant

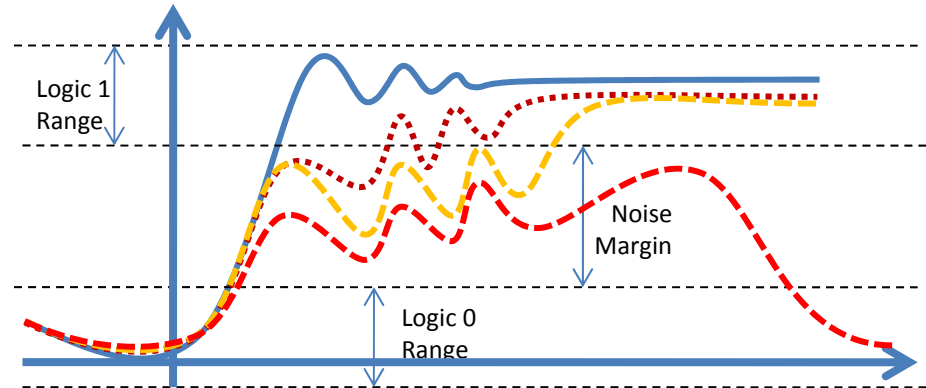
Decreasing Noise Immunity of Electronic System

- Integration Size
- New Field Exposure
- Operating Voltages inside Chips
- Technology Node



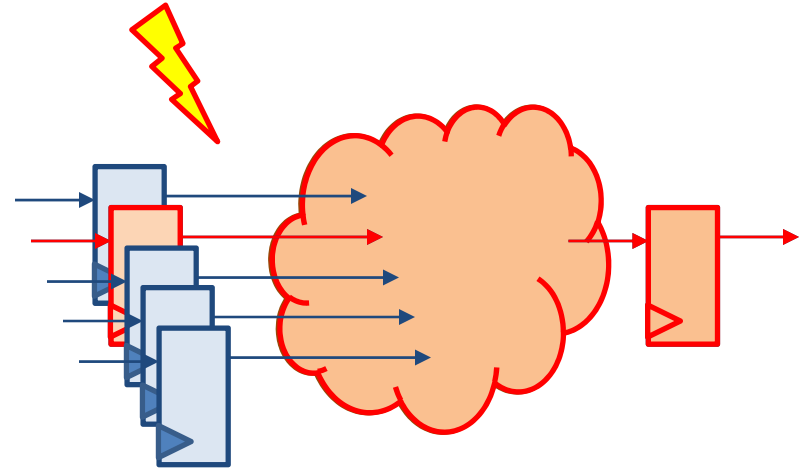
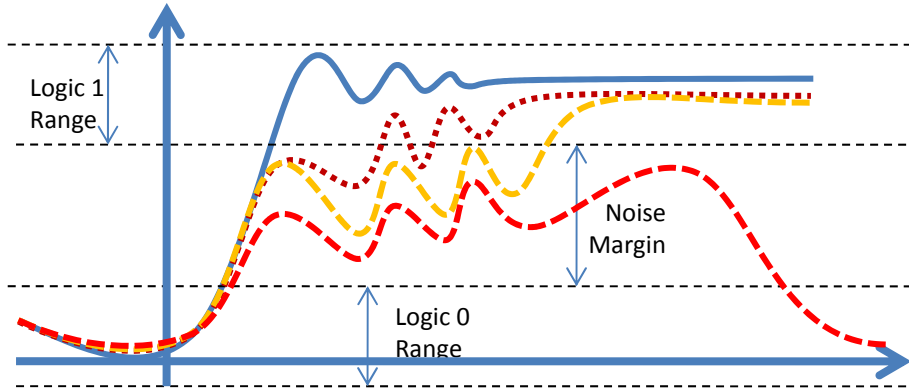
Decreasing Noise Immunity of Electronic System

- Noise remained same.
- Or even increased to as electronics start exposed to different fields.
- With increasing technology, effect of noise actually increased on electronic devices.



Impact of a Electromagnetic Noise/ Environmental Hazards On a Silicon Chip

- In a event of sever noise, there is fair amount of chance that logic/ data get corrupted and registered on a flip flop and start flowing in system on control or data path.



Demonstration of Noise Impacting Silicon Chips



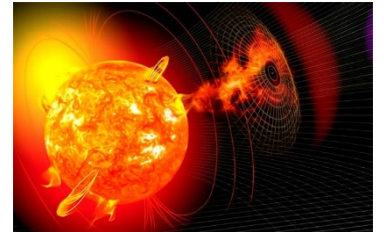
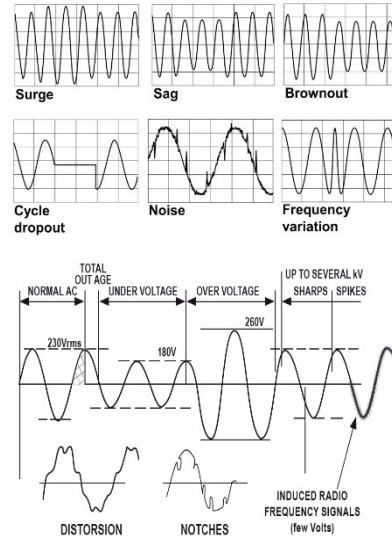
<https://www.youtube.com/watch?v=aoYdZBwsK2o&t=4s>

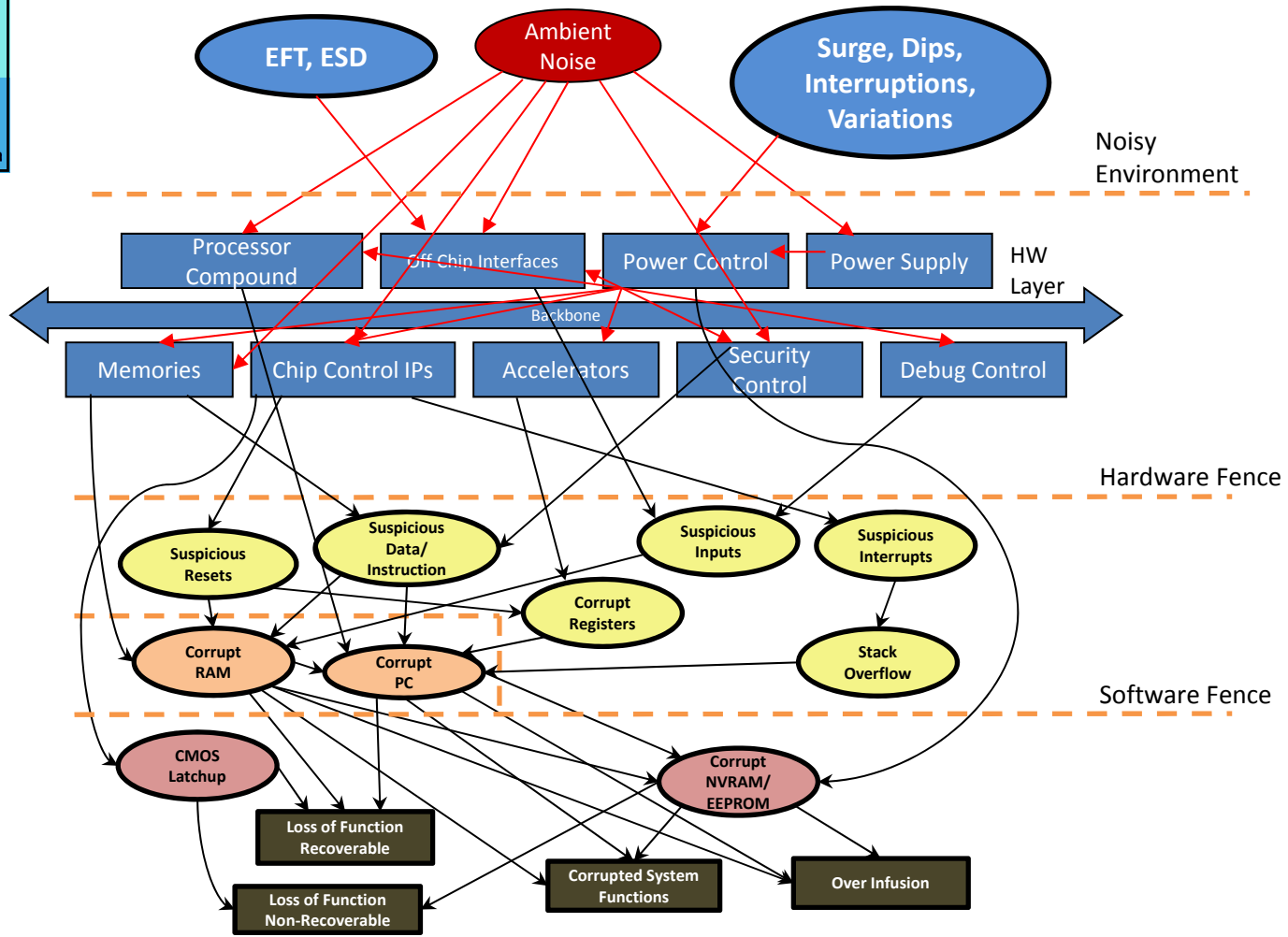
Different Kind of Environmental Noise /Interference-

With the increasing use of Electronics and Electrical Equipments everywhere, the current environment is much noisier. Following are the Noise Current Electronic Infrastructure is Impacted from -

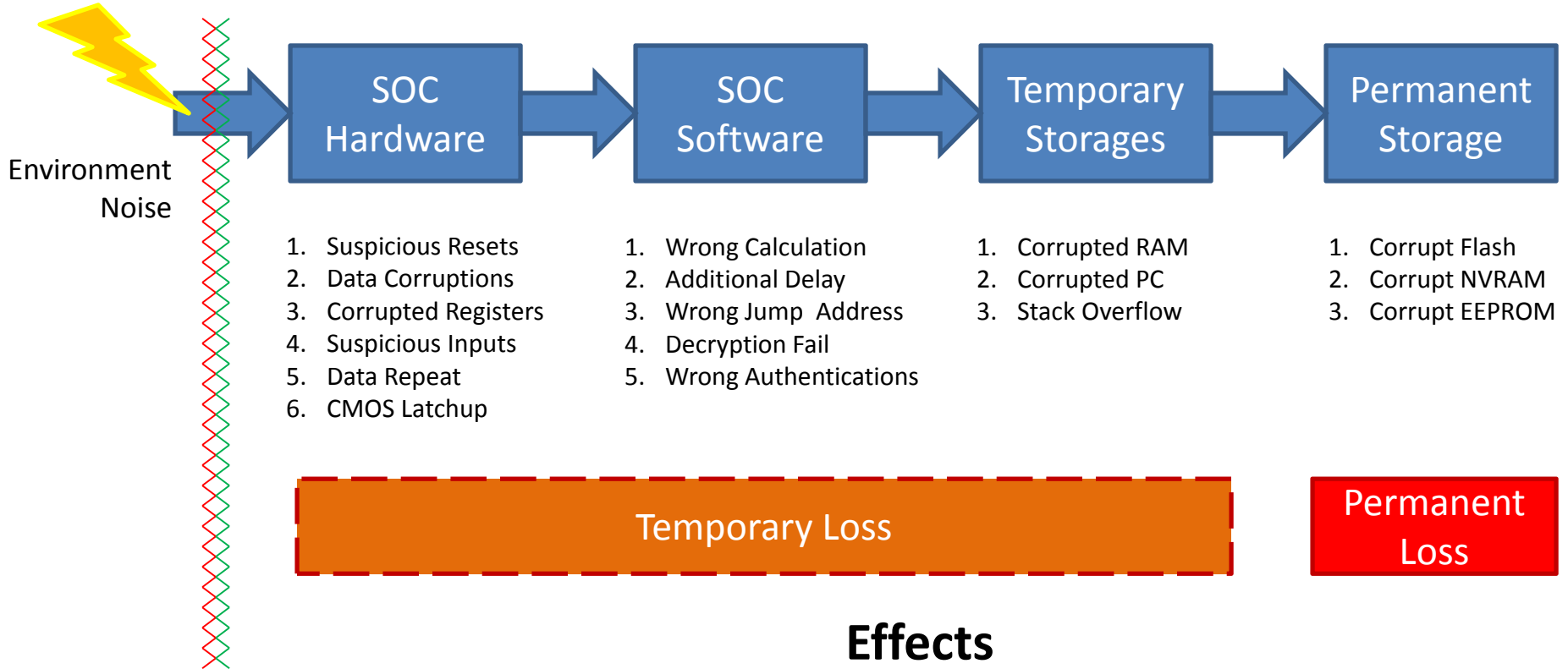
- Circuit to Circuit Noise
- Ambient Noise
- Equipment Generated Noise
- Power Quality degradation Noise
- Railroad and Mass Transit Noise
- High Powered Electromagnetic Pulses

Examples of some AC power line disturbances





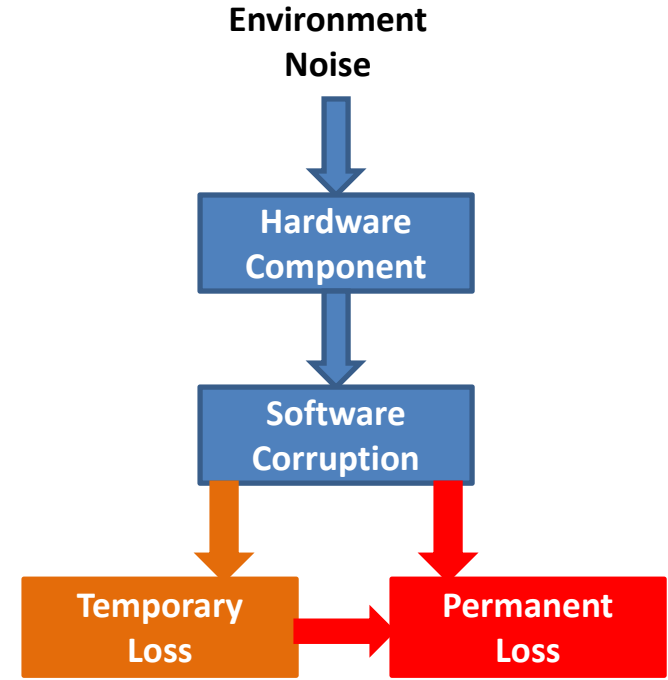
Effect of Noise on a System -

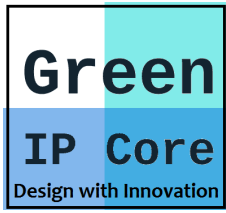


Effect of Noise On System On Chip

The Figure shows that -

- The noise first affects hardware components.
- Then the error flows through non-Noise Immune paths to a temporary faulty states/ Data or to a more impacting components and start affecting Software layer.
- These Software errors then move to either temporary loss of function or to a more impacting stage like getting into permanent storage and permanent loss of a function.

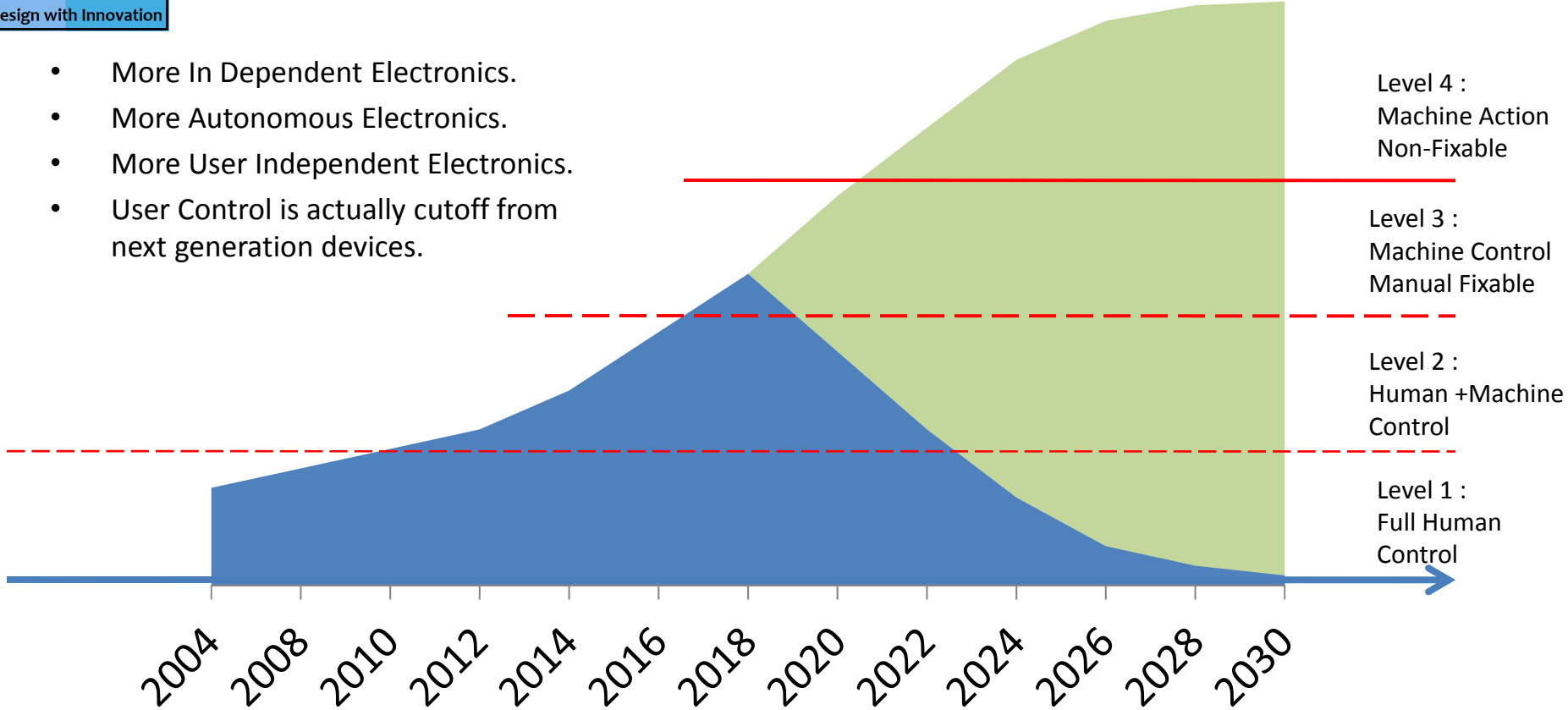


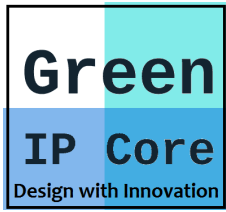


Electronics Devices Roadmap

■ Independent Electronics
■ Dependent Electronics

- More In Dependent Electronics.
- More Autonomous Electronics.
- More User Independent Electronics.
- User Control is actually cutoff from next generation devices.



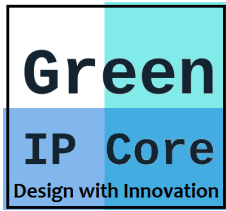


Electronic Devices Expansion

The Electronics applied in below application areas does not have any space to malfunction.

- Artificial Intelligence/ Machine Learning.
- Automotive Autonomous Driving.
- Robotics
- Aerospace.
- Banking and Security.
- Storage and Backup.
- Communication and IOT

Even a single error in its entire functional life period can make major impact.



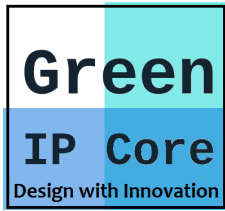
Noise Rejection, Understanding the “Magnitude Of Challenge”

- Noise is a Random event.
- Even a fully synchronous silicon IP would have to deal with noise event.
- It can change behavior of even totally Synchronous IPs.
- Identifying all such random states in-between can be a much tricky and time consuming activity.
- A full random simulation would take years to prove that most of such conditions and precautions are taken care inside a design.
- Breaking the design into manageable small pieces and then making them noise resistant is the way to go.

Demonstration of Noise Resistant Technology

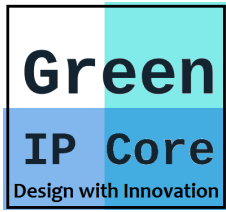


https://www.youtube.com/watch?v=7_x785A54Rw&t=2s



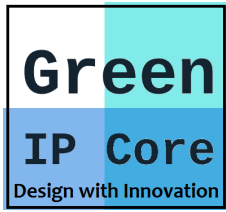
The Challenge – “Give Space In Application Improvement/ Innovations” or to “Take Back Control”

- New Era of technology starts building product of next level where It start sitting into the front row and cut-off all the user intervention on the application response/ decision.
- These application take out all the control from user and give it to these high end devices.
- The applications like –
 - **Automotive** → Autonomous Driving, ADAS.
 - **Artificial Intelligence (AI)** → Machine Learning, Handheld devices, Mobile applications, Big Data Processing.
 - **Medical Equipments** → Pacemakers, Automated Operations, High Precision Surgery, Electronic controlled Human Parts and Prosthetics. Human helping Exo-Skeletons and much more.
 - **Security** → Fully Automated Security like - Home Security, banking security, wireless pay, etc.
 - **Storage** → Storage into Chips based Solid State Devices(SSDs). Large Storages inside Mobile phones.
 - **Banking** → Single click payment, Fully automated banking system, Safety from Algo based hacking, Fault tolerant, Reverse Engineering Proof.
 - **IoT** → Much More Reliable Applications.



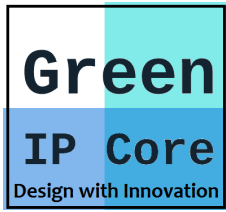
Space for innovation/ Improvements

- Need New Technologies to improve electronics stability across different field.
- New methods need to be explored to improve Electronics.
- As of today, we can make following improvements in products with silicon chips –
 - Add up a Noise rejection layer at
 - Metal Shielding the Electronic Devices
 - SW Layer
 - Silicon IP Level
 - Silicon Reusable Component Level.
 - Silicon library Component Level.
 - Each of these methods have there pros and cons.



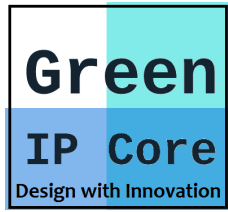
Way to go, What is world looking for

- With the new exposure of electronics, electronics start expanding into all fields and user start exploring possibilities to apply this autonomous electronic devices into their respective fields.
- Electronics is exposed into all kind of working environment making is more exposed towards Different kind of Noise and hazards.
- The Electronics should facilitate New Era application to ride Reliable platform.
- New platforms should ensure User Safety and Security at all times.
- New platforms should ensure application reliability at all times.

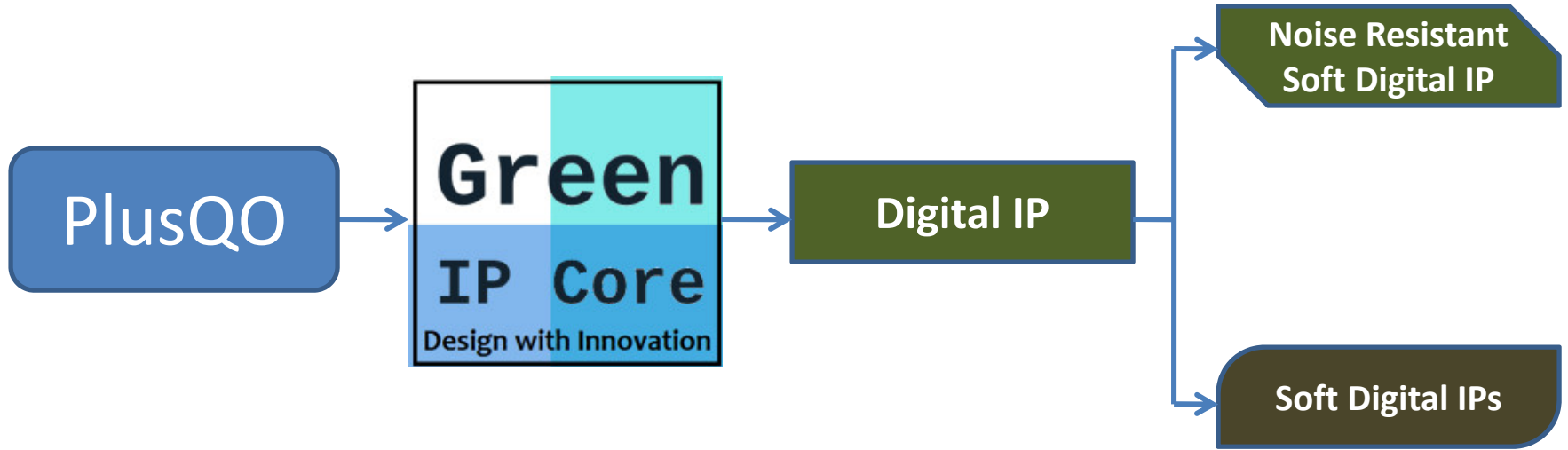


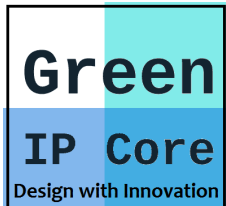
About GreenIPCore, PlusQO Corporation Private Limited

- GreenIPCore build Technological advance soft digital IPs and Component with following feature –
 - Noise Resistant.
 - High Stable.
 - Technology node Independent.
- GreenIPCore Also build Technological advance soft digital IPs and Component with following feature –
 - High bandwidth.
 - High Stable.
 - Technology node Independent.



Products

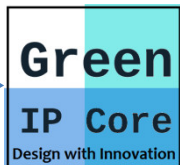




Products and Benefits – Noise Resistant Digital IPs

Noise Resistant Soft Digital IP

PlusQO



Noise Resistant Soft Digital IP

Soft Digital IPs

Noise Resistant

High Stable IPs

Fully Safety Compliant

Equivalent gate Count

Good Operating Freq

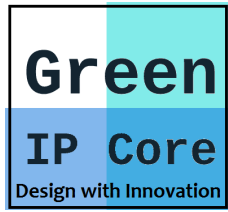
Fully Protocol Compliant

Fail Safe Recovery

Key Feature

Added Advantage

WOW Feature



Target Domains – Noise Resistant Digital IPs

Noise Resistant
Soft Digital IP

PlusQO



Noise Resistant
Soft Digital IP

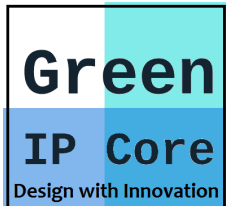
Soft Digital IPs

- Artificial Intelligence
- Machine Learning
- Automotive
- Security
- Robotics
- Medical
- IOT
- Storage
- Banking
- Aerospace
- Industrial Automation
- Communication

Highly Recommended for Stability

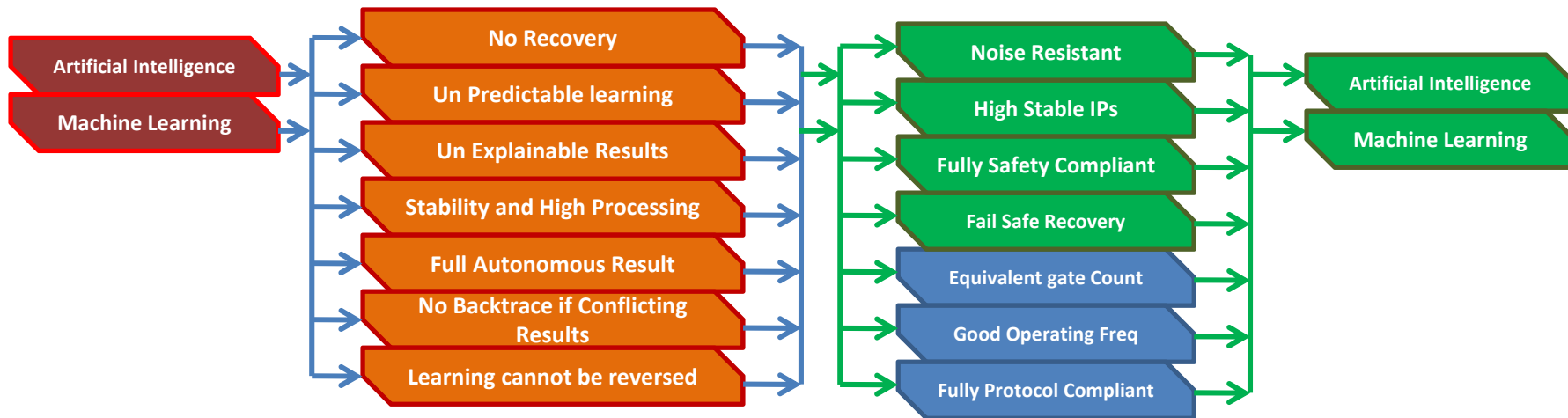
Needed for New Tech Markets

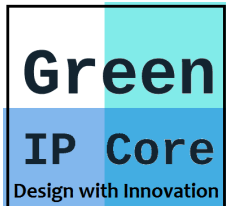
Needed for Stable Operations



Noise Resistant Digital IPs – Benefits in AI/ML

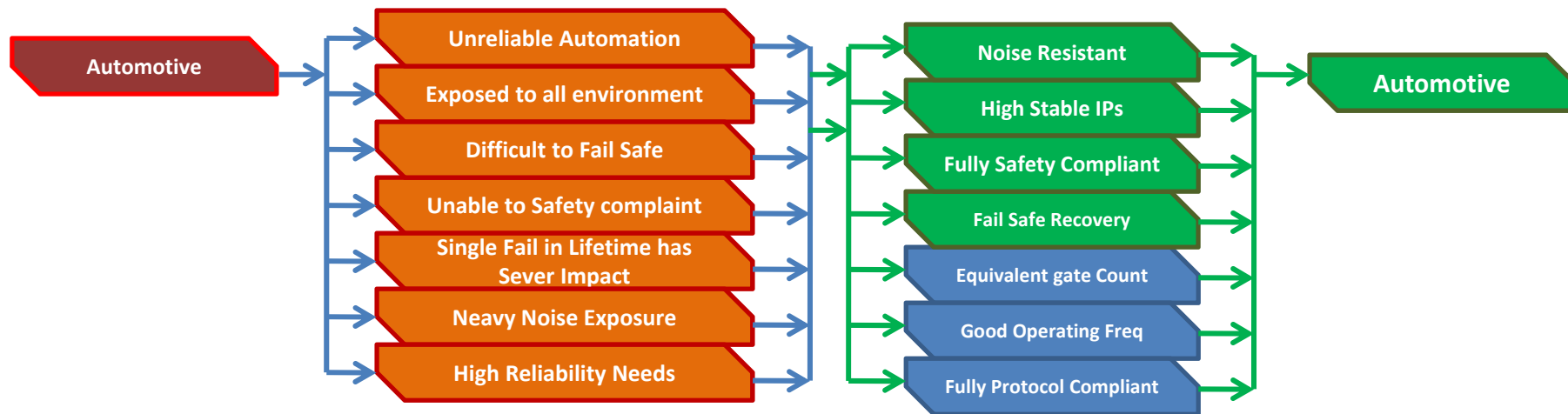
Noise Resistant Soft Digital IP

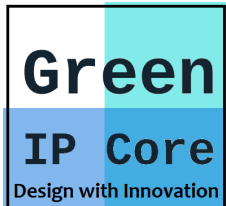




Noise Resistant Digital IPs – Benefits in Automotive

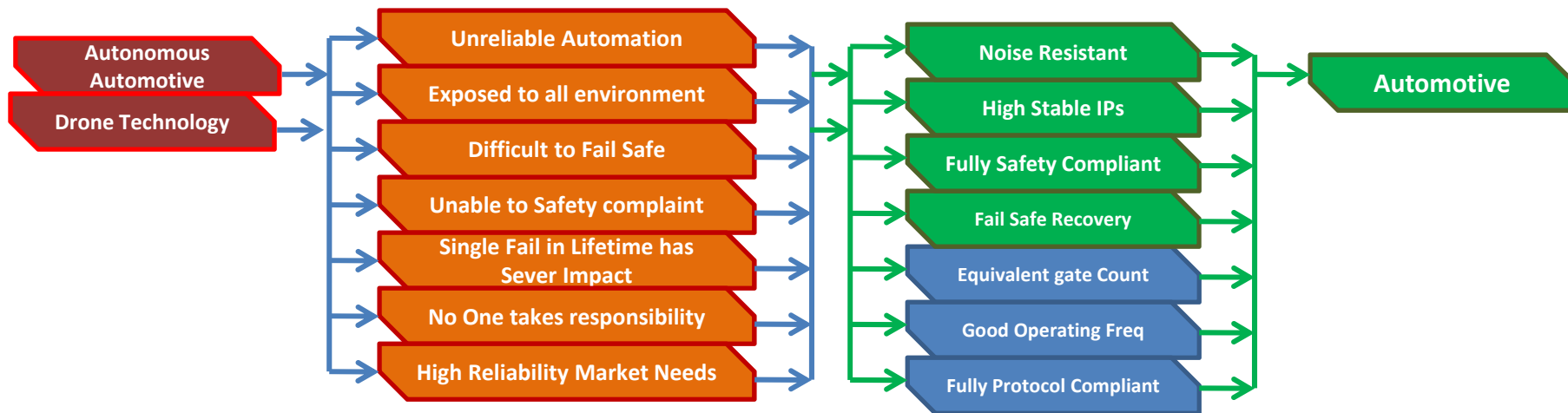
Noise Resistant
Soft Digital IP





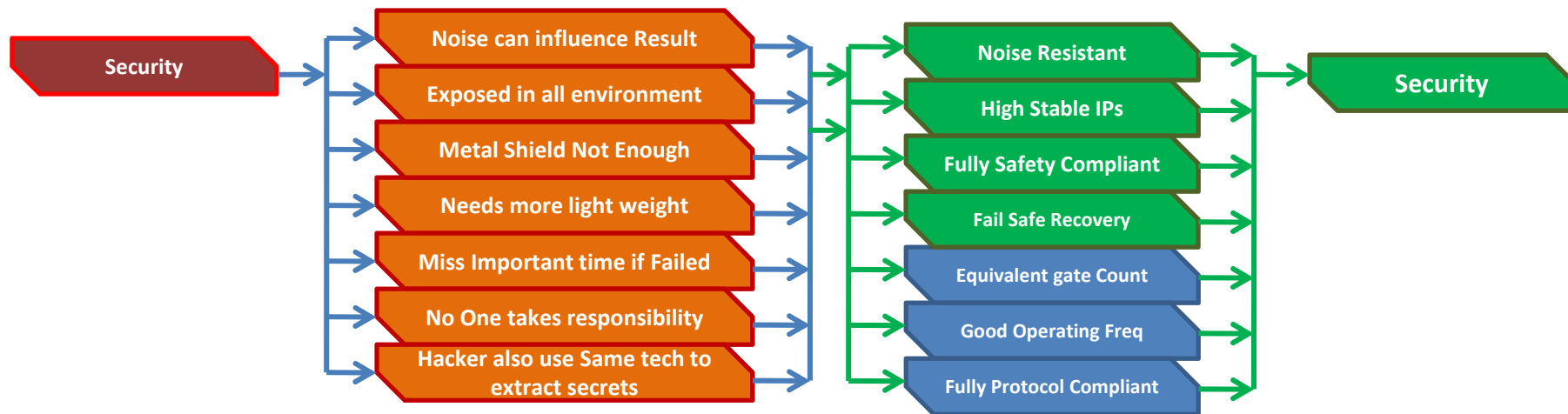
Noise Resistant Digital IPs – Benefits in Autonomous Automotive and Drone technology

Noise Resistant Soft Digital IP



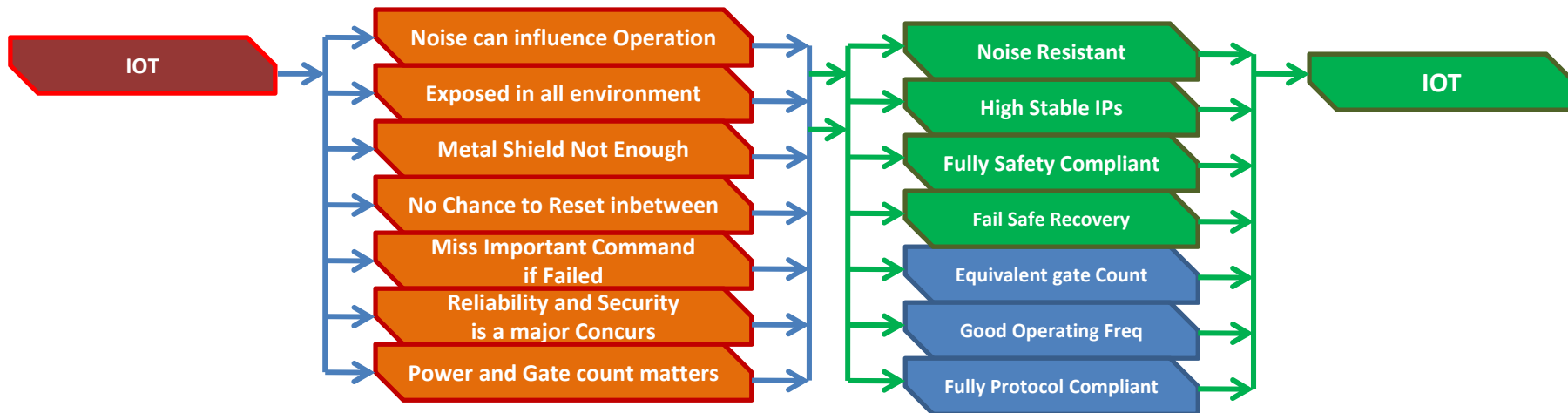
Noise Resistant Digital IPs – Benefits in Security

Noise Resistant Soft Digital IP



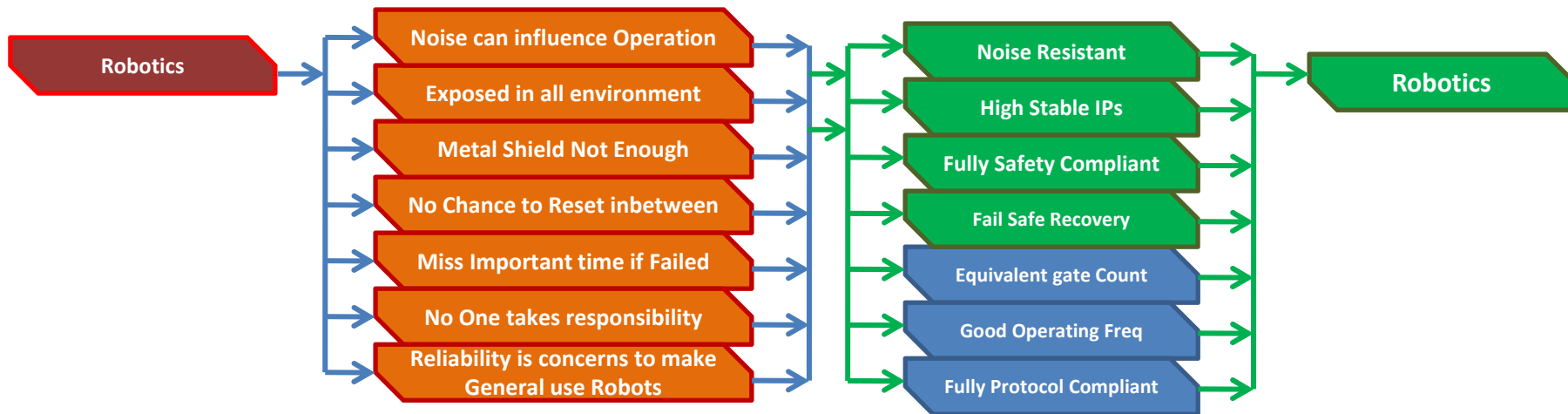
Noise Resistant Digital IPs – Benefits in IOT

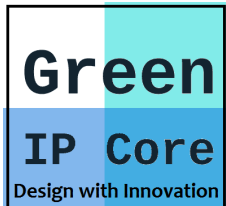
Noise Resistant Soft Digital IP



Noise Resistant Digital IPs – Benefits in Robotics

Noise Resistant Soft Digital IP

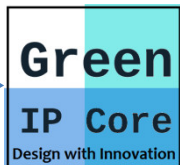




Products – Noise Resistant Digital IPs

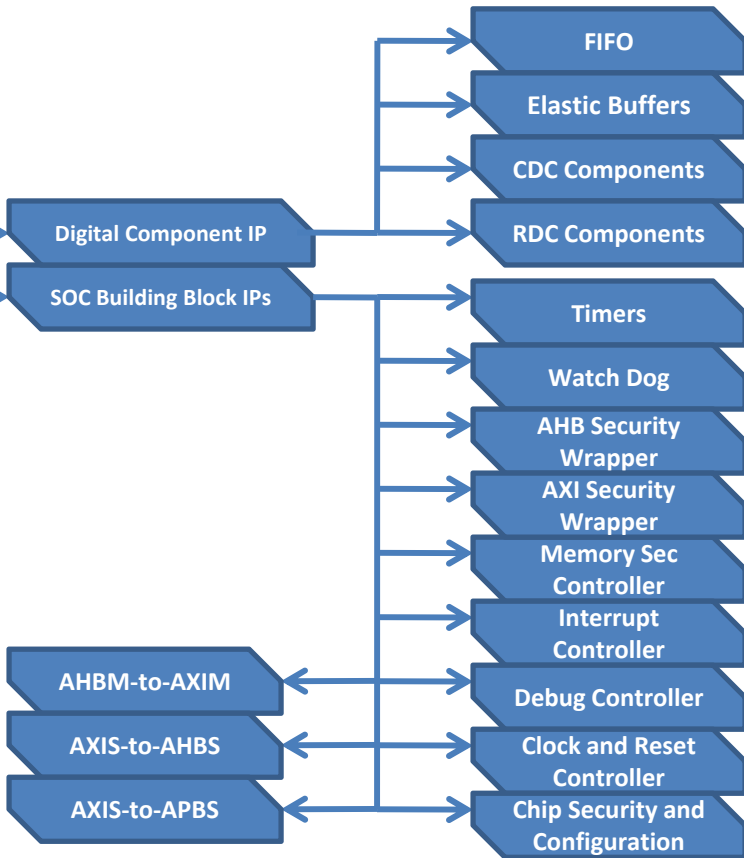
Noise Resistant Soft Digital IP

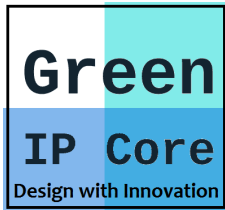
PlusQO



Noise Resistant Soft Digital IP

Soft Digital IPs



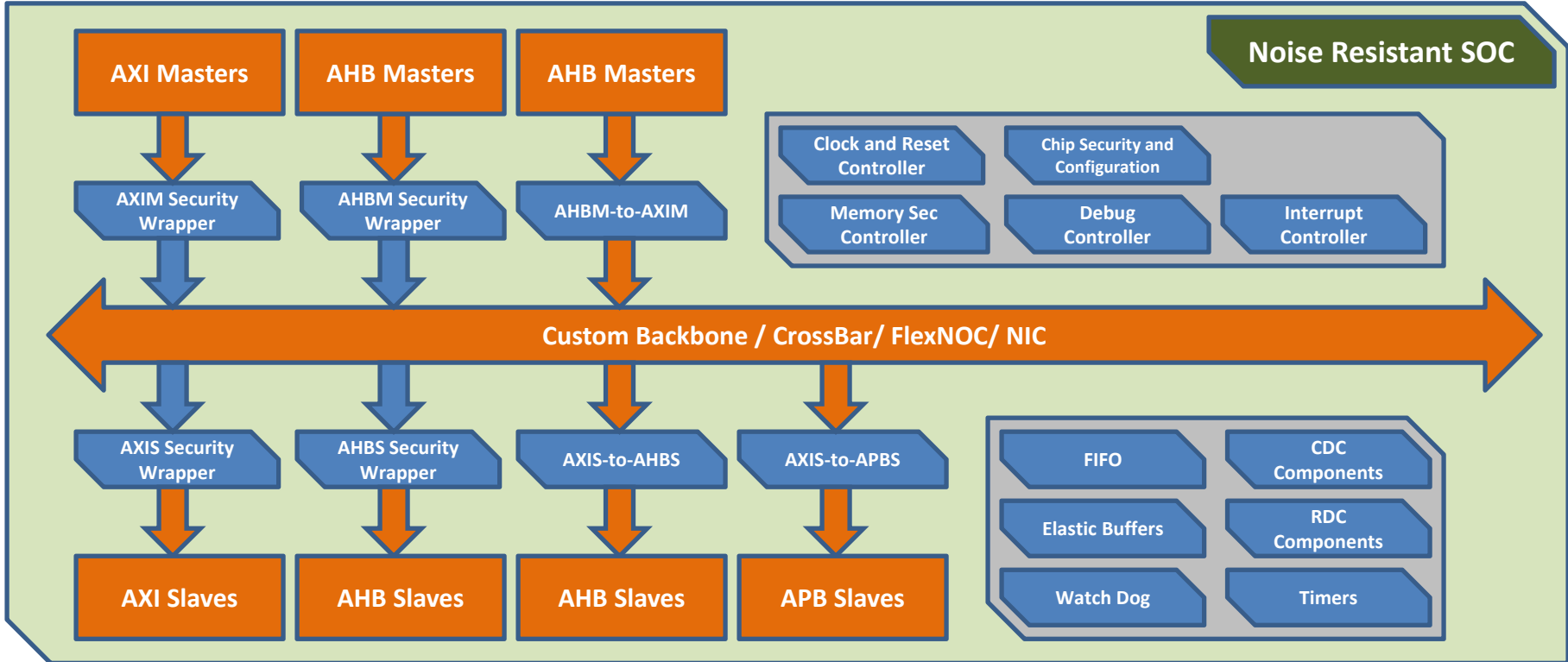


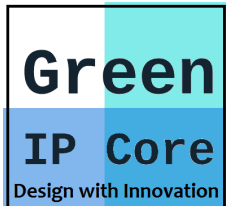
Product – Noise Resistant SOC

3rd Party IP



Noise Resistant Soft Digital IP

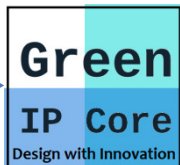




Products and Benefits – Soft Digital IPs

Soft Digital IPs

PlusQO



Noise Resistant
Soft Digital IP

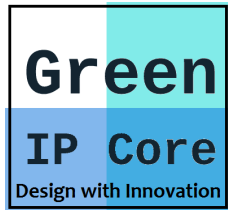
Soft Digital IPs

- Lowest gate Count
- Very High Processing Elements
- Safety Compliant
- Very High bandwidth
- High Stable IPs
- Wide Protocol Support
- Highest Operating Freq

Key Feature

Added Advantage

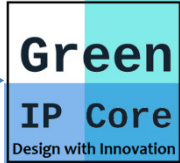
WOW Feature



Target Domains – Soft Digital IPs

Soft Digital IPs

PlusQO



Noise Resistant
Soft Digital IP

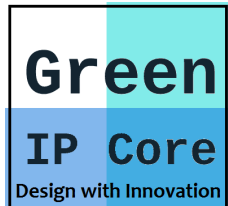
Soft Digital IPs

- Artificial Intelligence
- Automotive
- Communication
- Cryptography
- Storage
- Machine Learning
- IOT
- Security
- Robotics
- Banking
- Aerospace
- Medical
- Industrial Automation

Highly Recommended

Good for SW Stability

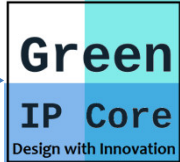
Good to Have



Products – Soft Digital IPs

Soft Digital IPs

PlusQO



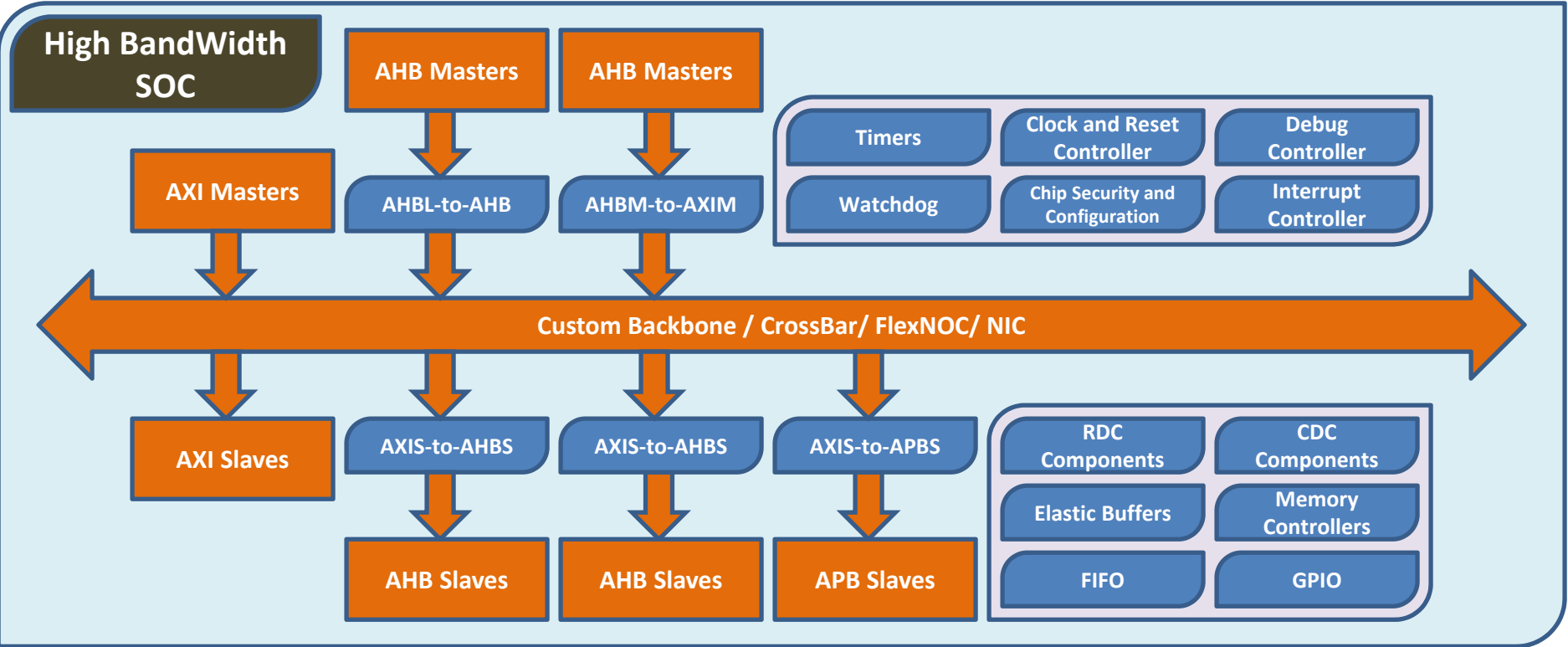
Noise Resistant Soft Digital IP

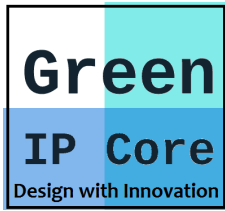
Soft Digital IPs

Digital Components IP
SOC Building Block IPs

AHBL-to-AHB
AHBM-to-AXIM
AXIS-to-AHBS
AXIS-to-APBS

- FIFO
- Elastic Buffers
- CDC Components
- RDC Components
- GPIO
- Timers
- Watchdog
- Interrupt Controller
- Debug Controller
- Memory Controllers
- Clock and Reset Controller
- Chip Security and Configuration

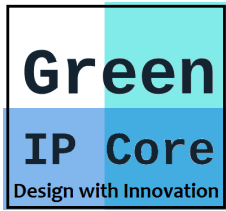




Learn More – Published Online Media

For more details on our work and improvements we offer, please look into the Video Presentations published -

- Introduction to Company -
<https://www.linkedin.com/company/greenipcore>
- Demonstration Videos -
<https://www.youtube.com/channel/UClN59oopLYS7glvoQ3s4XVg>
- Introduction to Noise resistant Technological Improvements –
<https://www.linkedin.com/feed/update/urn:li:activity:6430909202918670336>
- New Noise Resistant technology –
<https://www.linkedin.com/feed/update/urn:li:activity:6437734963155693568>



Learn More – Published Online Media

QR Links

Linkedin



Noise Resistant Tech
Improvements

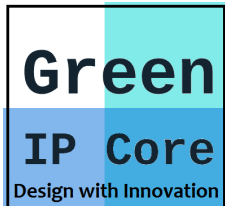


Youtube
Demonstration Videos



New Noise Resistant
Technology





Thank you for your time

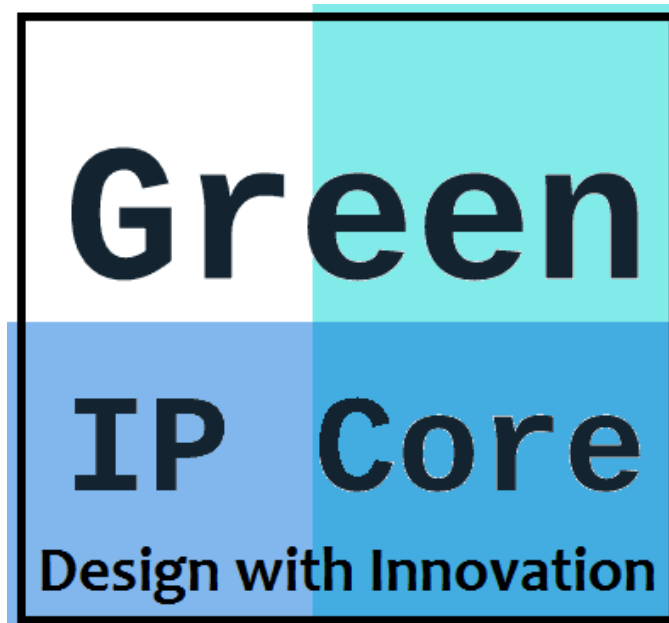
Questions Answers

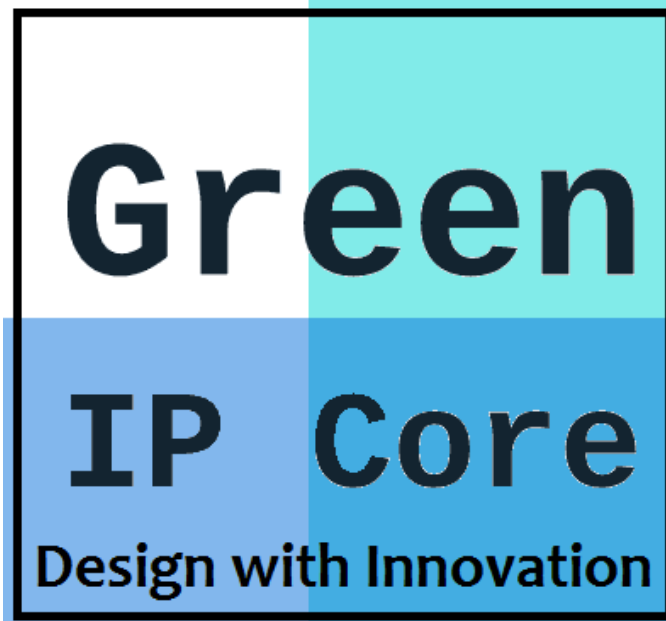
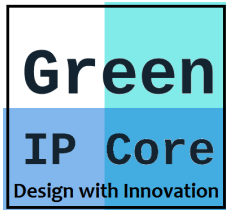
- For Further Communication/ Query,
 - Write us at start@greenipcore.com
 - call us at
 - +91-9821330671
- Please visit us at www.greenipcore.com

Address:

GreenIPCore, PlusQO Corporation Private Limited.

805, OM-Towers, Alpha Commercial Belt, Grater Noida, U.P., India.





www.greenipcore.com