



AUTOMATIC IC TESTING

C0227 | GROUP 12

Meet Our Team



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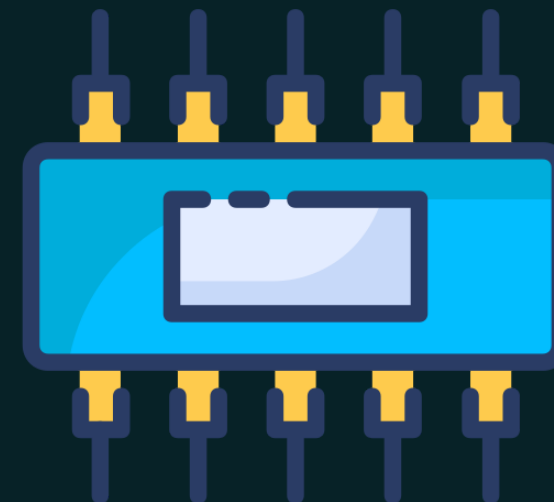
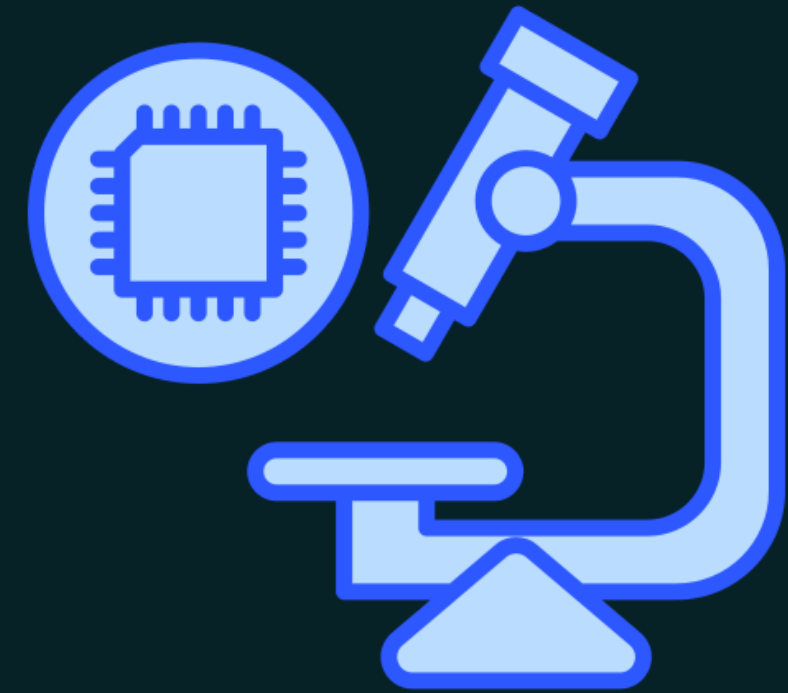


Electronic Circuits

Problem Overview

Why IC testing?

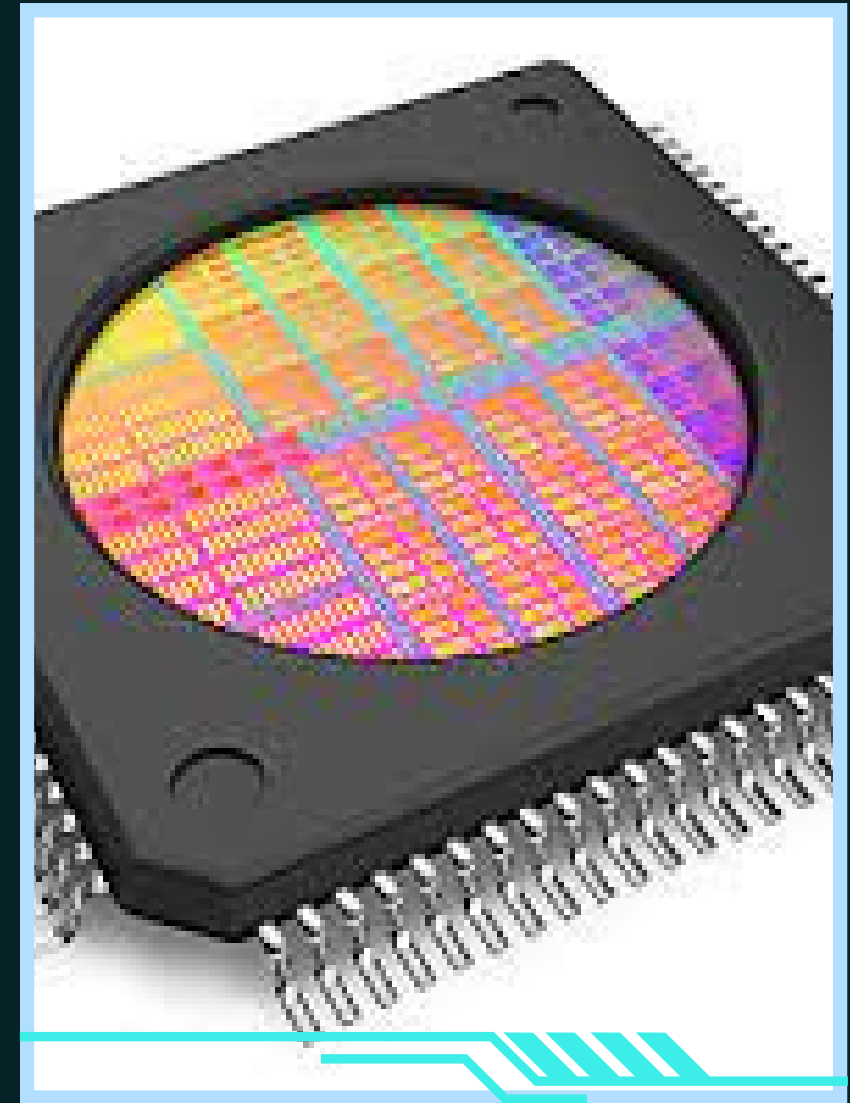
- Ensuring Functionality
- Quality Control
- Reliability Enhancement
- Cost Management



Problem Overview

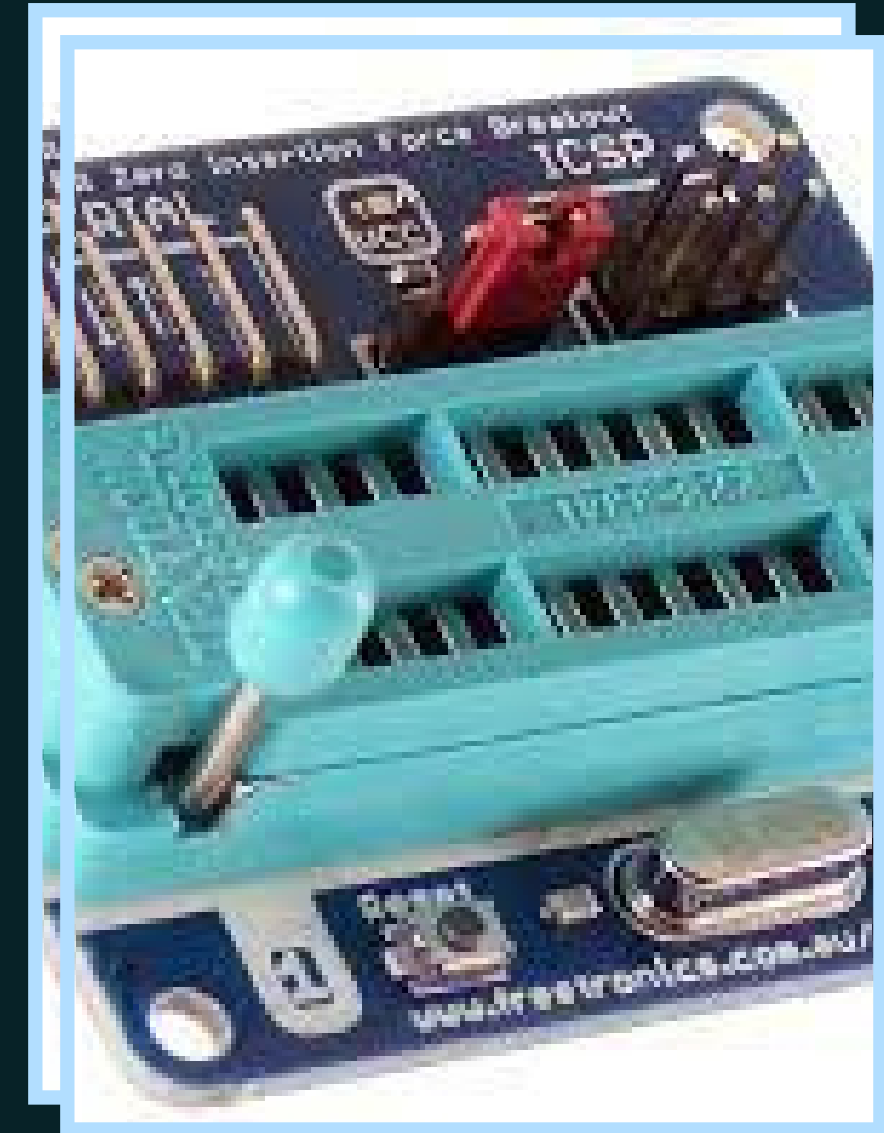
Problems of Manual Testing

- **Labor Intensity**
- **Human Error**
- **Scalability**
- **Complexity**
- **Cost and Efficiency**



Solution Architecture

1. There is a Zero Insertion Force (ZIF) Socket to configure the IC.
2. Set up a User Interface on computer that takes IC number as the User Input.
3. Then, fetch the related data using external library belongs to that particular IC. That data includes testing pattern, pin configuration and all required other data.

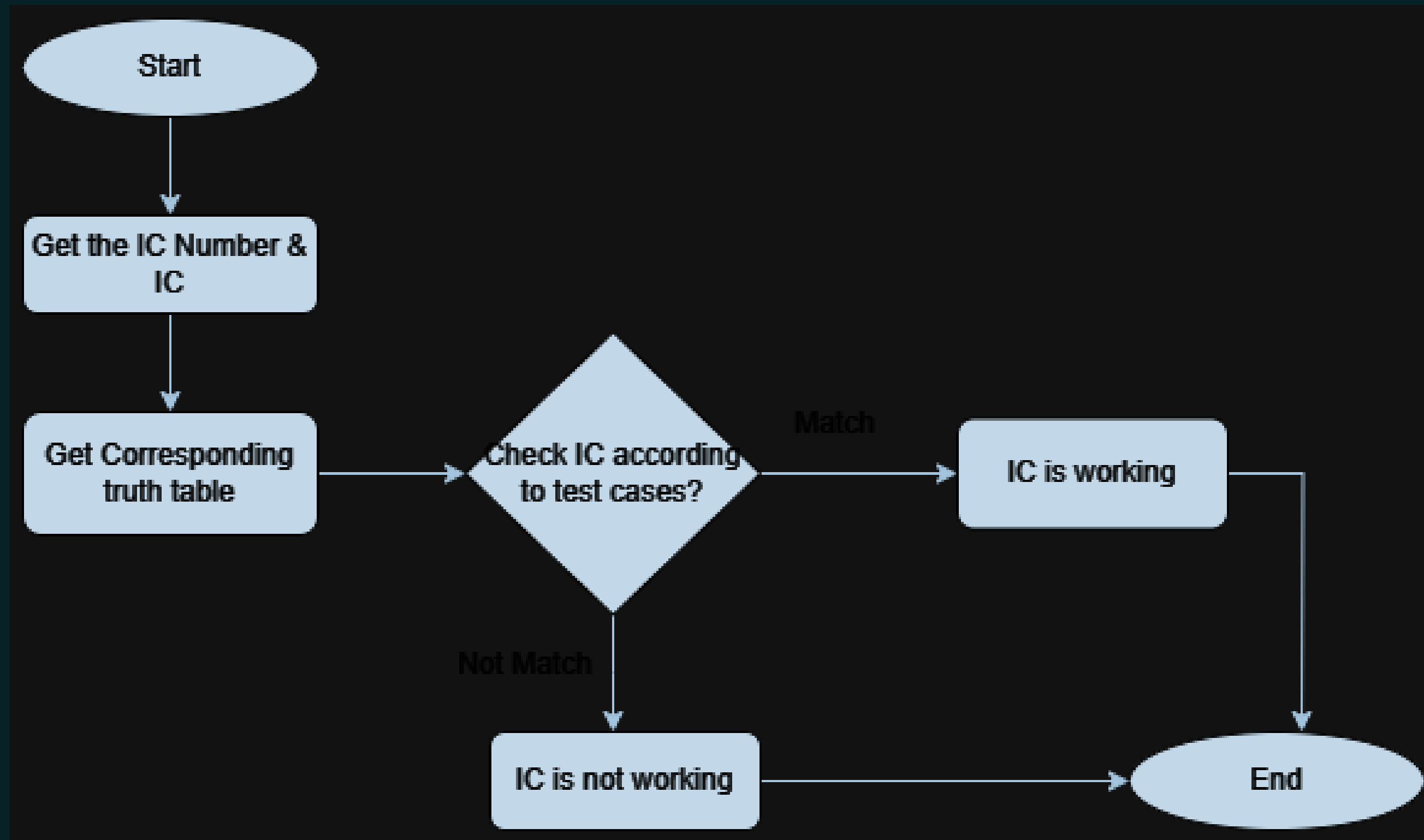


Solution Architecturre

4. Data pass to the FPGA using USB cable.
5. Test the IC with the testing pattern and compare expected output.
6. Finally, display the result and if there is an error indicate the gate that has error.



Control Flow



Technology Stack

What Technologies we are going to use ?

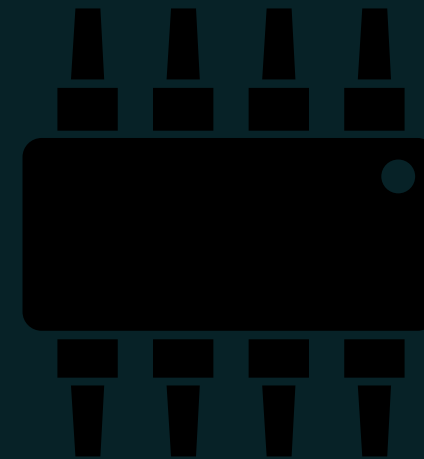
FPGA Platform

- Selection of FPGA Platform : Xilinx
- Development Environments : Vivado



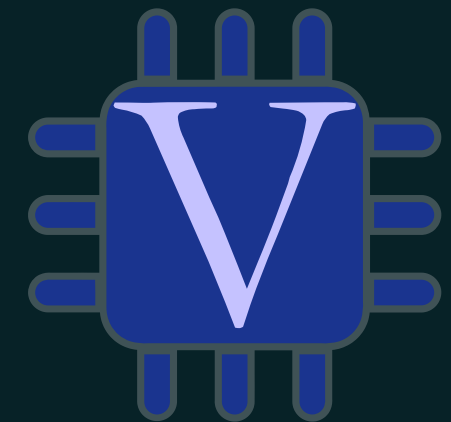
HDL (Hardware Description Language):

- Verilog



Design Entry and Simulation:

- Vivado



Testing and Verification:

- Vivado

Technology Stack

What Technologies we are going to use ?

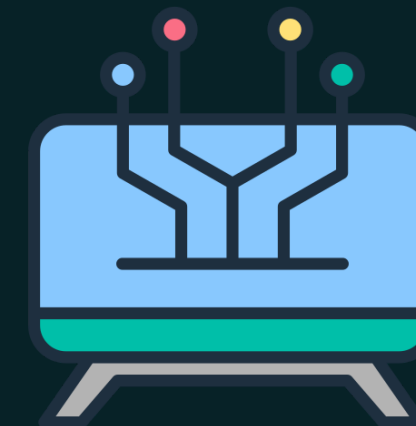
Hardware Interfacing

- Communication Protocols like SPI, I2C, UART, GPIO



Version Control

- Git

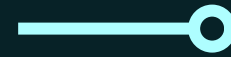


Components

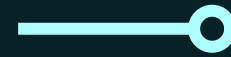
FPGA Development Board



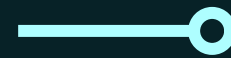
Testing ICs



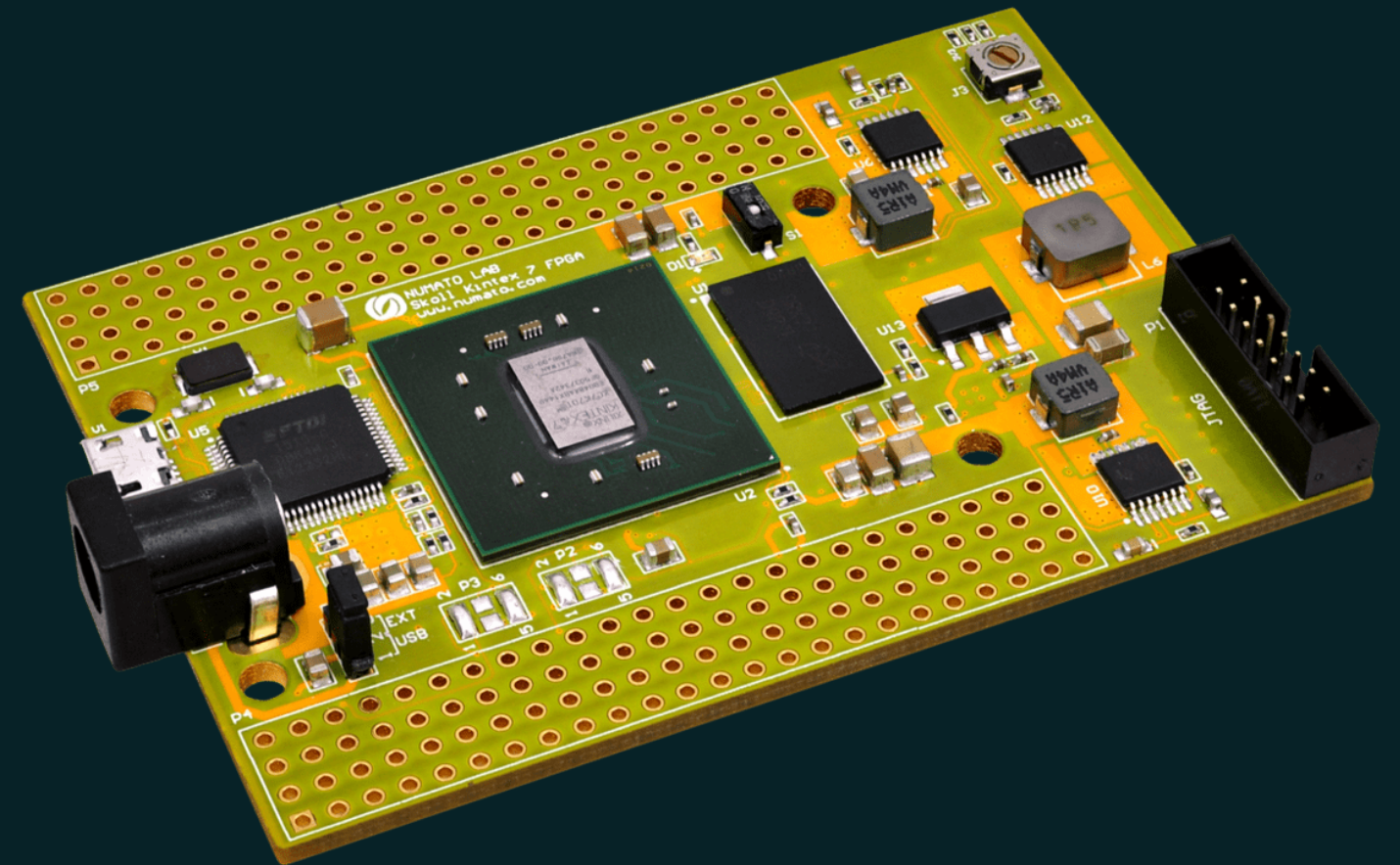
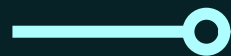
ZIF Socket



USB Interface

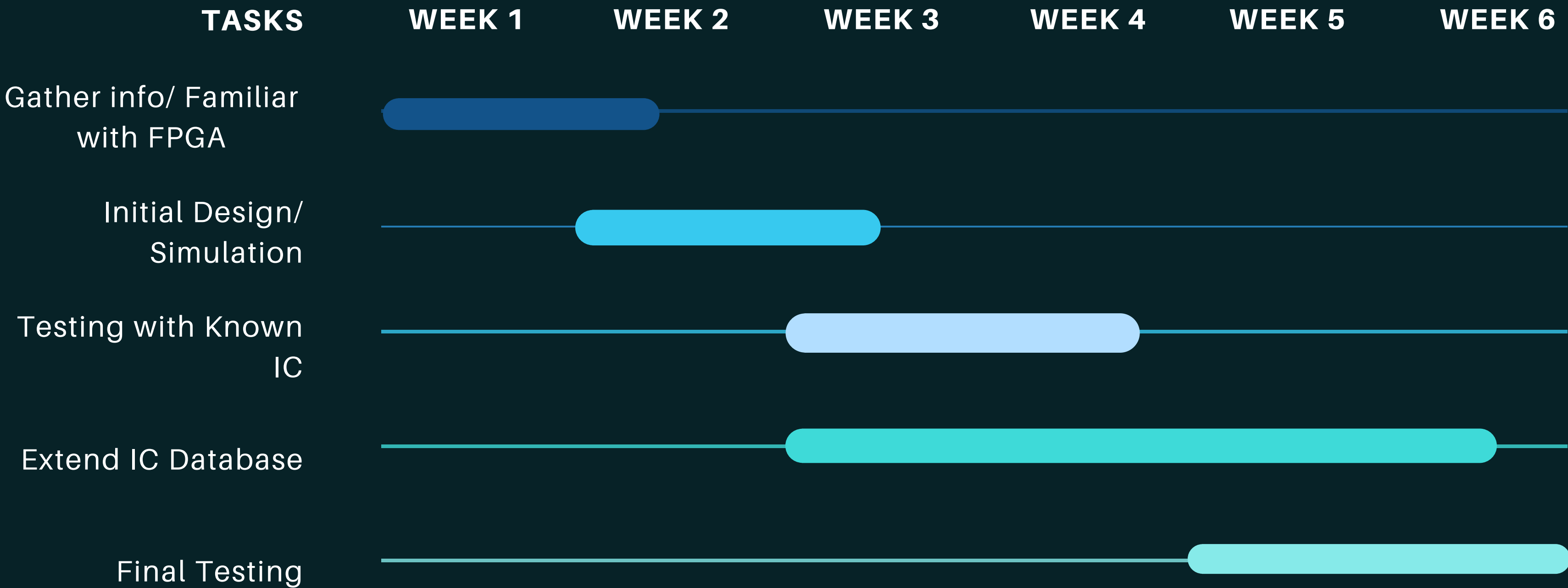


Power Supply



Project Timeline

Target: 08, October 2023



Extendibility & Scalability

Automatic IC Identifying

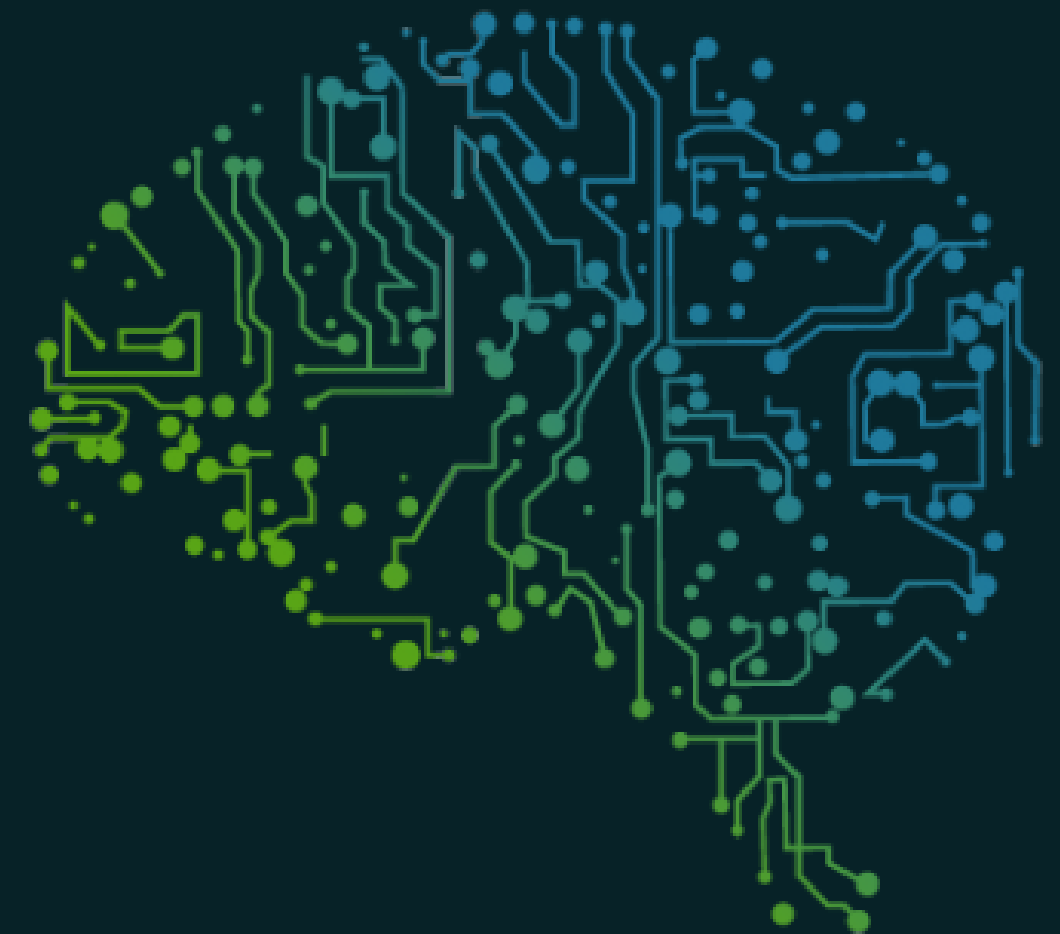
- Extend to identify unknown IC modules


Display the Working accuracy of the IC

- Reduce Execution Time, Voltages etc

Cloud Intergration

- Integrate new IC types easily



A dark blue header with white circuit-like lines and dots.

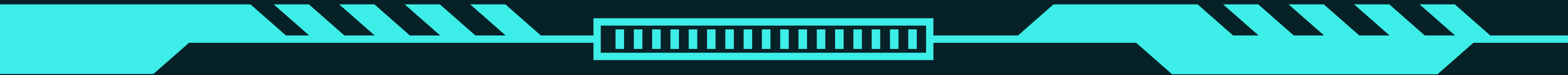
GitHub repo

<https://github.com/cepdnack/e19-co227-Automatic-IC-Testing>



The image features a dark blue background with a futuristic, technological aesthetic. At the top, there is a horizontal bar with a cyan-colored, segmented, and slanted design. In the center, the text "Q & A ?" is displayed in a large, bold, cyan font. The bottom of the image is decorated with intricate, glowing cyan circuit-like patterns that resemble a network or data flow, with lines and nodes extending from the left and right edges towards the center.

Q & A ?



THANK YOU!

