Annual Handoff flow process at BlackChip Semiconductors

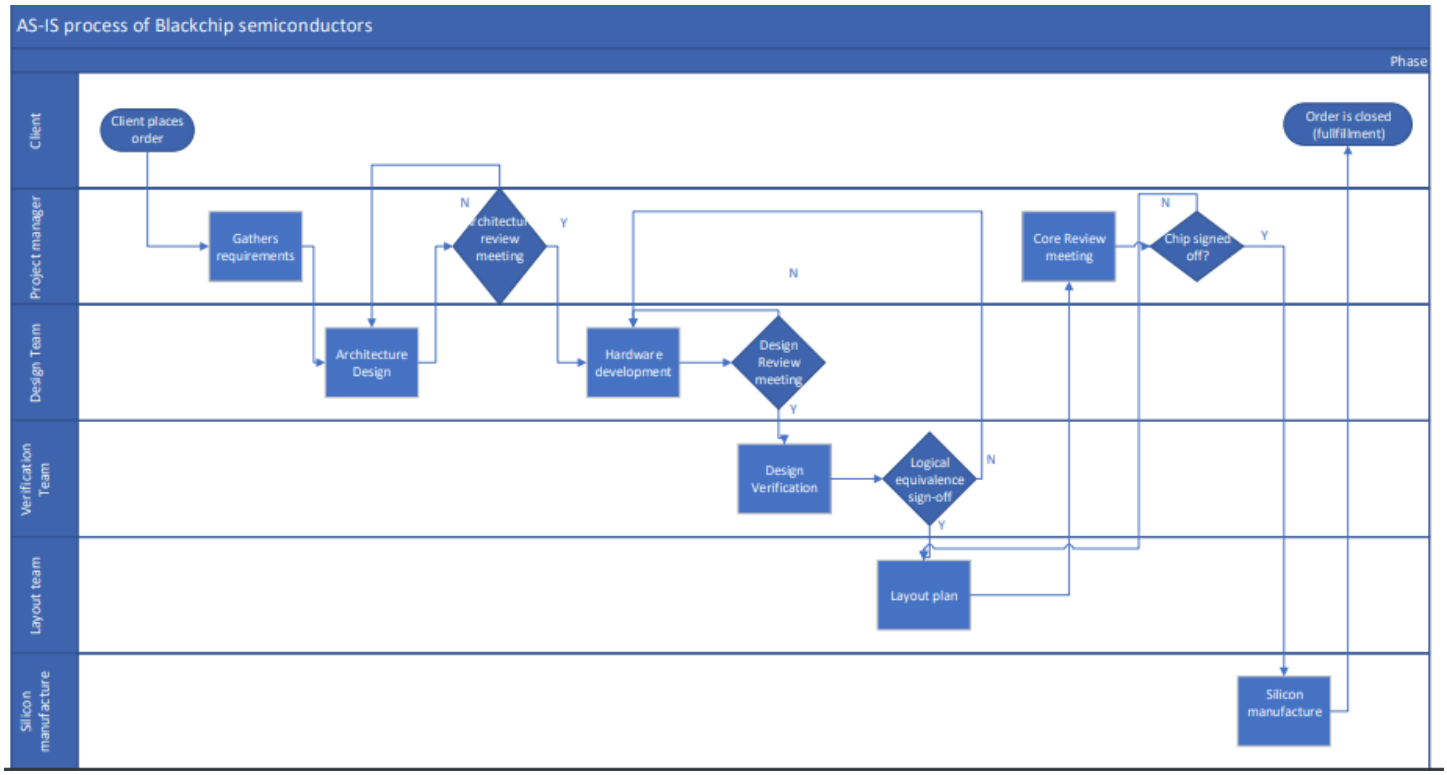
Company Background:

Black chip is an upcoming semiconductor startup specialized in developing low-cost hardware for clients that are involved in Non-Profit activities. A typical project at BlackChip involves multiple hardware development stages

AS-IS Process Description:

Fig:1 shows the existing handoff flow followed by BlackChip company. These steps are critical for successful handoff of deliverables to client.

- Once a ***client* places an order**, *program manager* gathers requirements to communicate to *Design Team*. There are frequent *architecture review meetings* that are held until architecture is finalized. Until then no other process is started.
- Once architecture is finalized, *hardware development* begins, there are frequent *design review meetings* that are needed to confirm whether design constraints are met by the design schema or not.
- Once the design specs are finalized, *verification* steps begin, where we find any critical bugs that break the design. If any breaks are found, then hardware is handoff's to *design team* to fix the issues.
- Once *sign-off* is clean. *Layout engineer* places the entire hardware code on layout (A 3D platform) to simulate the actual chip before manufacturing.
- Once layout process is finished, A *core review* meeting is held to take care of any last-minute hiccups before proceeding to silicon manufacturing.
- Once *silicon manufacturing* completes the order is **fulfilled to customer**.



Problems and Gaps found:

There are some issues that are hampering their deliveries to customers on-time.

- One of the key issues I am noticing here is how **Design and Verification team** are communicating. If verification stage is failed, there is no necessity of frequent design review meetings. For example, if a chip "A" has met all are goals of power, performance and area and signed off by designed team and if the verification team found bugs then entire design resources are wasted. So, it's not ideal for verification team to wait until design review meetings takes place. It's best to have strategy
- Also post layout planning, there is no checks performed internally within the team, this is needed before final core review meeting.

How to fix:

- Combining design and verification team would be ideal to resolve the dependencies among those teams. These teams are inter-related so it's best to put them under same actor.
- Before final core-review meeting, its best to add layout signoff meeting internal to layout team. Even if adds delay, this makes process more streamlined before handing over to client

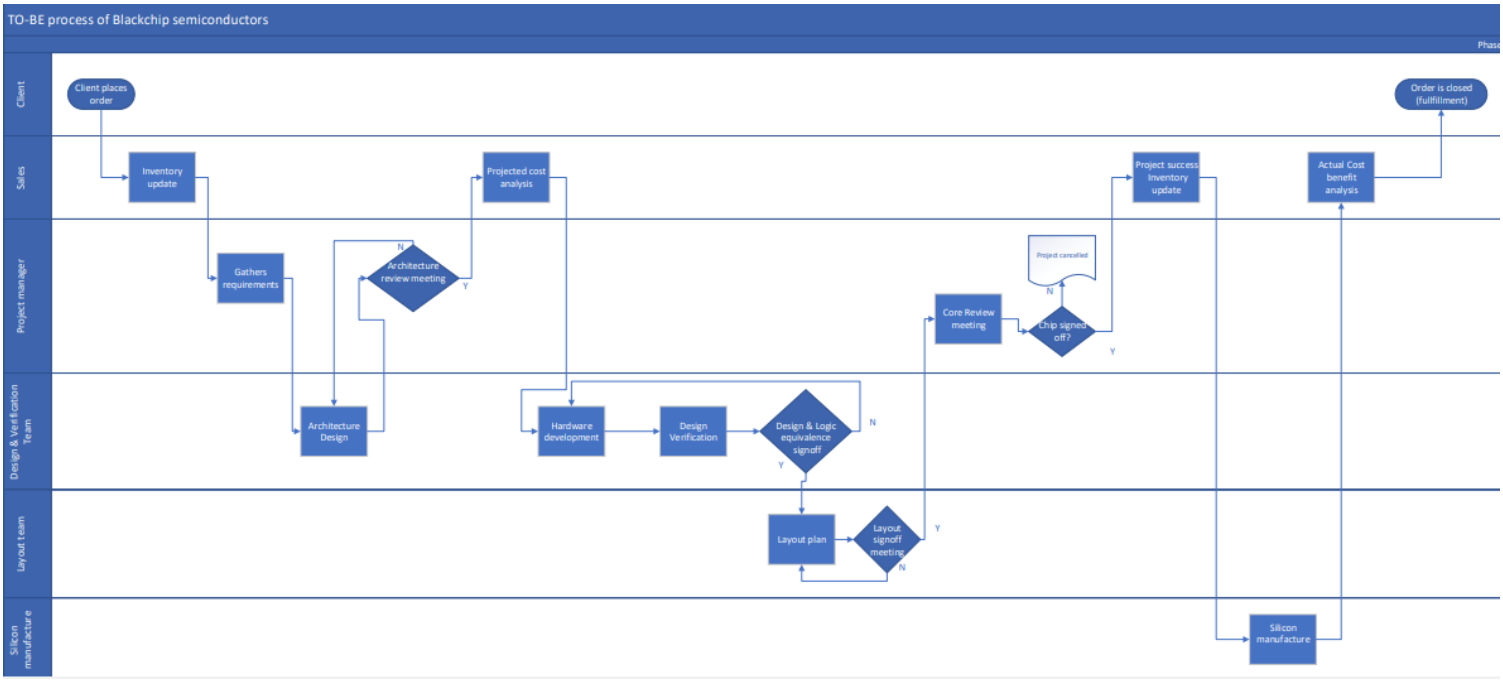
Objectives:

- If I am handling the team, I would be focusing on reducing the turn-around time of delivery of chip. This is done by enabling collaboration between *Design and Verification Team* to avoid resource wastage.
- Also, as the company is focusing on low-cost devices, I would be adding a *sales department* as an additional actor where they account for order details and perform cost benefit analysis at beginning and end of the project. This will enable a stringent control over cost of products that are being produced.

Enablers:

The changes suggested above attribute to modifying **Workflow Design and Information systems**.

- **[Workflow Design]** Added sales as new actor and additional process re-structuring in Layout, Design and Verification for making process more streamlined.
- **[Information systems]** Addition of actor *"Sales"* would create additional data which can be used to cost benefit analysis..


TO-BE process of Blackchip semiconductors
Client
Sales
Project manager
Design & Verification Team
Layout team
Silicon manufacture
Client places order
Inventory update
Gathers requirements
Architecture review meeting
N
Y
Projected cost analysis
Architecture Design
Hardware development
Design Verification
Design & Logic equivalence signoff
N
Y
Layout plan
Layout signoff meeting
Y
N
Core Review meeting
Project cancelled
N
Chip signed off?
Y
Project success Inventory update
Actual Cost benefit analysis
Order is closed (fullfillment)
Silicon manufacture