Seasonal School on Advanced Analog and Mixed-Signal (AMS) IC Design 2025

Powered by POEMS - Microelectronics Academy

June 12 - July 31

7 weeks
9h30 – 17h30

Technical Sponsors:

Semiconductor Entrepreneurship

Purpose

The purpose of this semiconductor entrepreneurship course is to equip students with the knowledge and skills to identify, develop, and commercialize innovative technologies in the semiconductor industry, while fostering the creation of semiconductor startups.

1997

3 people

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2000+ people

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The world will notice it!

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This is our Purpose!

This is our Movement!!

This is our Community!!!

The Startup Journey in the Semiconductor Industry

From Problem Discovery to Fundraising in B2B Startups

José E Franca

Start2Scale | IST

remember your 6-week project

NewCo Idea

this is the a-to-z startup journey

1. what is the problem/need you are solving
2. who might be interested in the problem
3. how do you propose to solve it
4. who else has a solution for the problem
5. how competitive is your solution
6. can you sustain your solution
7. how do you make money
8. what do you need to make that money
9. what could be your 5-year financial projections (accounts management viewpoint)
10. with who are you going to do all that (existing, hiring, advising)

this is what we have covered

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this is what we will cover today

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Agenda

- How to make money in a Semiconductor B2B Startup
- Market Sizing for Semiconductor B2B Startups
- About Management Accounts
- Management Accounts Templates
- Organization & Governance
- Fundraising Journey - Seed to Series A/B

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How to make money in a Semi B2B Startup

Revenue Models Overview

- Component Sales (Chips / ASICs)
- IP Licensing (Intellectual Property)
- Custom Design Services
- Software-Enabled Hardware
- Platform-as-a-Service / Subscriptions

Each of these has specific characteristics and suits different business types.

How to make money in a Semi B2B Startup

Component Sales (Chips, ASICs, Modules)

- Per-unit pricing
- Long-term supply contracts
- Volume-based discounts

This is the most traditional model—
selling physical chips to OEMs or Tier-1 suppliers.
It often involves complex logistics and thin early margins but scales with volume.

How to make money in a Semi B2B Startup

IP Licensing (Intellectual Property)

- Upfront license fees
- Royalties per chip sold
- NRE payments for customization

Licensing IP blocks to larger semiconductor firms or SoC vendors offers high margins and recurring revenue.
This model made companies like ARM and Chipidea successful.

How to make money in a Semi B2B Startup

Design Services / Custom Silicon

- One-off NRE revenues
- May include per-unit margin
- Strong for initial cash flow

Custom silicon services are less scalable but excellent for generating early revenue, building credibility, and engaging strategic customers.

How to make money in a Semi B2B Startup

Software-Enabled Hardware

- Hardware bundled with SDKs or APIs
- Licensing runtime libraries
- Embedded AI/ML or acceleration stacks

Increasingly, semiconductor startups are bundling their hardware with specialized software, which enhances differentiation and allows for hybrid monetization.

How to make money in a Semi B2B Startup

Platform-as-a-Service / Subscriptions

- SaaS tools for design or simulation
- Cloud-native EDA or verification platforms
- Tiered pricing models

This model suits EDA or simulation tool providers and offers predictable revenue.
It’s attractive to investors due to scalability and gross margins.

How to make money in a Semi B2B Startup

Complementary Business Strategies

- Anchor customer contracts
- Government and defense deals
- Licensing to foundries/platforms
- Strategic alliances and JVs

These complementary strategies help accelerate monetization or open new paths to market. Strategic alliances and anchor customers are especially valuable.

How to make money in a Semi B2B Startup

Key Considerations in Monetization

- Time-to-revenue varies by model
- Gross margin: IP > SaaS > Components
- Scalability favors IP and SaaS
- VC preferences lean toward scalable, recurring models

Each model comes with trade-offs in time to revenue, margin profile, and investor appeal. IP and SaaS-based models generally scale better and attract more capital.

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TAM & SAM for Semiconductor B2B Startups

Why TAM & SAM Matter

- **TAM**: The total demand for your category worldwide
- **SAM**: The portion of TAM you can serve with your current offering
- **SOM**: The market share you realistically expect to capture

Investors want to know your long-term upside and near-term focus.
TAM shows ambition | SAM shows feasibility | SOM shows realism

TAM & SAM for Semiconductor B2B Startups

TAM & SAM in the Startup Journey

- **TAM** shows your **strategic ambition**
- **SAM** defines your **go-to-market reality**
- **SOM** sets the **initial traction goal** for Series A/B

A credible TAM/SAM/SOM framework supports your business case, product roadmap, and investor pitch — particularly in capital-intensive sectors like semiconductors.

TAM & SAM for Semiconductor B2B Startups

Understanding Semiconductor Market Structure

- System-level market (e.g., automotive, IoT, telecom)
- Subsystem or application layer (e.g., powertrain, ADAS)
- Chip-level (e.g., PMIC, ADC, RF Front-End)
- IP block or function (e.g., PLL, DSP, RISC-V core)

To define TAM and SAM, semiconductor startups must map their position in the value chain — whether they're selling full chips, IP blocks, or modules for system-level integration.

TAM & SAM for Semiconductor B2B Startups

How to Estimate TAM

- **Top-down**: Use analyst reports (e.g., Gartner, Yole, IDC)
- **Bottom-up**: Multiply target system volume × chip ASP
  - **Examples**:
    - EVs sold per year × chips per vehicle
    - Smartphones × PMIC units × ASP

Use credible sources for top-down estimates and validate them with bottom-up logic. Show both if possible to reinforce your case.

TAM & SAM for Semiconductor B2B Startups

How to Estimate SAM

- Focus on application scope and customer profile
- Exclude segments you can't serve due to:
  - Geography or regulatory barriers
  - Technology mismatch (e.g., no RF capability)
    - Example:
      - TAM = $5B in automotive radar ICs
      - SAM = $800M in low-power, short-range radar

SAM should reflect where your current product and team can compete. It’s the realistic target for your Series A/B phase.

TAM & SAM for Semiconductor B2B Startups

Market Sizing Example: AI Edge Accelerator Startup

- **TAM**: $12B edge AI chip market by 2028 (Source: McKinsey)
- **SAM**: $1.5B in wearable and industrial AI applications (low-power)
- **SOM**: 2–3% market penetration in 5 years (~$45M revenue potential)

This approach helps investors understand both scale and focus.
Include assumptions (unit volume, ASP, growth rate) in a data room if needed.

TAM & SAM for Semiconductor B2B Startups

TAM & SAM: What Not to Do

❌ Using system-level market without translating to chip-level value

❌ Claiming 1% of a $100B market with no logic

❌ Ignoring application-specific constraints (e.g., temperature range, latency)

Overblown or poorly justified TAM claims weaken credibility. Focus on transparency and rational assumptions.

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About Management Accounts

Purpose of Management Accounts

- Provide transparency to investors and to the board
- Support strategic decision-making
- Enable early identification of risks and opportunities
- Strengthen operational discipline

**Management accounts are not just numbers —
they provide a window into startup health and discipline.
For hardware-centric ventures, this is especially important.**

About Management Accounts

Methodology to Create Management Accounts

- Define reporting objectives and frequency (typically monthly)
- Align chart of accounts with startup structure
- Combine financials with key operational KPIs
- Include rolling forecasts and runway analysis

A consistent methodology ensures comparability and builds trust. The goal is to provide insights, not just data.

About Management Accounts

Monthly Management Accounts – High-Level Structure

- Executive Summary
- Financial Overview (P&L, Cash Flow, Balance Sheet)
- Business KPIs
- Cost Center Breakdown
- Cash Runway & Forecast
- Appendices (optional)

The pack should be concise, structured, and relevant to both internal decision-makers and external stakeholders.

About Management Accounts

Executive Summary

- Key highlights and lowlights of the month
- Revenue and cash position
- Strategic developments (e.g., design wins, setbacks)

This 1-page section provides a narrative layer — what's working, what's not, and what to watch.

About Management Accounts

Financial Overview

- Monthly & YTD P&L (vs. budget)
- Cash flow analysis (operating, investing, financing)
- Simplified balance sheet

This section provides clarity on performance vs. plan and highlights where cash is flowing.

About Management Accounts

Business KPIs

- Revenue pipeline (active proposals, expected closes)
- Product performance (volumes, ASPs, yields)
- R&D milestones and tape-out progress
- Key hires and team growth

KPIs vary by startup maturity — the idea is to show traction and alignment with technical and commercial milestones.

About Management Accounts

Cost Center Breakdown

- R&D: engineering headcount, tools, tape-outs
- Sales & Marketing: travel, tools, events
- G&A: admin, rent, legal
- CapEx: labs, equipment

Break down costs to show how capital is being deployed. This helps assess burn efficiency.

About Management Accounts

Runway and Forecast

- Burn rate analysis (actual and forecast)
- Updated 12-month cash forecast
- Base vs. stretch vs. conservative scenarios

This is a crucial investor focus.
Be transparent and update regularly as new data becomes available.

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Management Accounts Templates

5-Year Plan

Management Accounts Templates

P&L (Profit & Loss) Statement

Category	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue					
Cost of Goods Sold					
Gross Profit					
R&D Expenses					
Sales & Marketing					
G&A Expenses					
Operating Profit					

Management Accounts Templates

P&L (Profit & Loss) Statement

R&D Expenses

Sub-Category	Year 1	Year 2	Year 3	Year 4	Year 5
Engineering Salaries					
EDA Tool Licenses					
Tape-Out Costs					
Lab Equipment & Consumables					
Consultants / Contractors					
Other R&D Costs					

Management Accounts Templates

P&L (Profit & Loss) Statement

Sales & Marketing Expenses

Sub-Category	Year 1	Year 2	Year 3	Year 4	Year 5
Sales Team Salaries					
Marketing Campaigns					
Customer Events / Trade Shows					
Travel & Entertainment					
CRM / Sales Tools					
Other S&M Costs					

Management Accounts Templates

P&L (Profit & Loss) Statement

G&A Expenses

Sub-Category	Year 1	Year 2	Year 3	Year 4	Year 5
Admin Salaries					
Legal & Professional Fees					
Office Rent & Utilities					
Insurance					
IT / Subscriptions					
Other G&A Costs					

Management Accounts Templates

Monthly/Yearly Execution

Management Accounts Templates

Executive Summary

Key Metric	Value	Comments
Monthly Revenue		
Monthly Burn Rate		
Cash on Hand		
Runway (Months)		
Design Wins This Month		
New Customer NDAs Signed		

Management Accounts Templates

P&L (Profit & Loss) Statement

Category	Month Actual	Month Budget	Month Variance	YTD Actual	YTD Budget	YTD Variance
Revenue						
Cost of Goods Sold						
Gross Profit						
R&D Expenses						
Sales & Marketing						
G&A Expenses						
Operating Profit						

Management Accounts Templates

P&L (Profit & Loss) Statement

R&D Expenses

Sub-Category	Month Actual	Month Budget	Month Variance	YTD Actual	YTD Budget	YTD Variance
Engineering Salaries						
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Management Accounts Templates

P&L (Profit & Loss) Statement

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Management Accounts Templates

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Admin Salaries						
Legal & Professional Fees						
Office Rent & Utilities						
Insurance						
IT / Subscriptions						
Other G&A Costs						

Management Accounts Templates

Cash Flow

Cash Flow Item	Month Actual	YTD Actual
Net Income		
Change in Working Capital		
CapEx		
Other Investing Activities		
Equity Raised		
Net Cash Flow		

Management Accounts Templates

Business KPIs

KPI	Current Value	Target / Trend	Comments
Open Proposals (Value)			
Expected Closures (Next 3 Mo)			
Tape-Outs Completed			
Yields (%)			
Hiring Progress (%)			

Management Accounts Templates

Cash Forecast

Month	Opening Cash	Cash Inflows	Cash Outflows	Closing Cash
Jul-2025				
Aug-2025				
Sep-2025				
Oct-2025				
Nov-2025				
Dec-2025				

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Organization & Governance

(1) Structuring for **Execution**, **Growth**, and **Investor Confidence**.

(2) Outlining best practices for organizing and governing a B2B semiconductor startup from founding through early-stage growth.

Organization & Governance

Why it Matters

The Importance of Strong Organization & Governance

- Enables clear execution and accountability
- Builds trust with investors and partners
- Supports scalability and resilience
- Essential in high-tech, capital-intensive industries

Semiconductor startups face long cycles and high burn rates — clear structure and governance mitigate risk and align stakeholders.

Organization & Governance

Founding Team Structure

Founding Team Roles

- CEO: Vision, business strategy, investor relations
- CTO: Technology roadmap, R&D leadership
- COO (optional): Operations, supply chain, execution
- Dual-founder setups are common and effective

Early-stage startups thrive on complementary leadership — usually technical and business-oriented co-founders.

Organization & Governance

Evolving Functions over Time

Key Functions Over Time

- R&D / Engineering: From Day 1
- Product Management: Seed to Series A
- Business Development / Sales: Seed to Series A
- Operations & Supply Chain: Series A+
- Finance, Admin, HR: Early support function
- Quality & Reliability: Becomes critical at scale

Functional roles evolve as the startup matures.
Prioritize what matters most at each stage.

Organization & Governance

Governance Framework

Building a Governance Model

- Board of Directors: Start with 2–3 members, expand with investors and independents
- Advisory Board: Domain experts, informal support
- Committees: Audit, Technical Advisory (Series A+)
- Board meetings: Quarterly, with pre-read material

Even early boards should be structured and strategic — not just check-ins. Advisors add credibility and insight.

Organization & Governance

Decision-making Clarity

Level	Typical Decisions	Who Decides
Operational	Hiring, lab spend	CEO / Team
Tactical	Roadmap changes	Leadership Team
Strategic	Fundraising, pivots	Board of Directors

Clear decision layers prevent bottlenecks and misalignment.
Use tools like RACI (Responsible Accountable Consulted Informed) matrices to document accountability.

Organization & Governance

Governance Tools

Essential Tools & Processes

- Cap table management (e.g., Carta, Ledgy)
- ESOP planning (10–15% typical pool)
- Regular investor updates (monthly/quarterly)
- Founders' agreement (roles, vesting, IP)
- Board pre-reads and structured meetings

These tools improve transparency and prevent conflict.
Set them up early — they compound in value.

Organization & Governance

Legal & Compliance

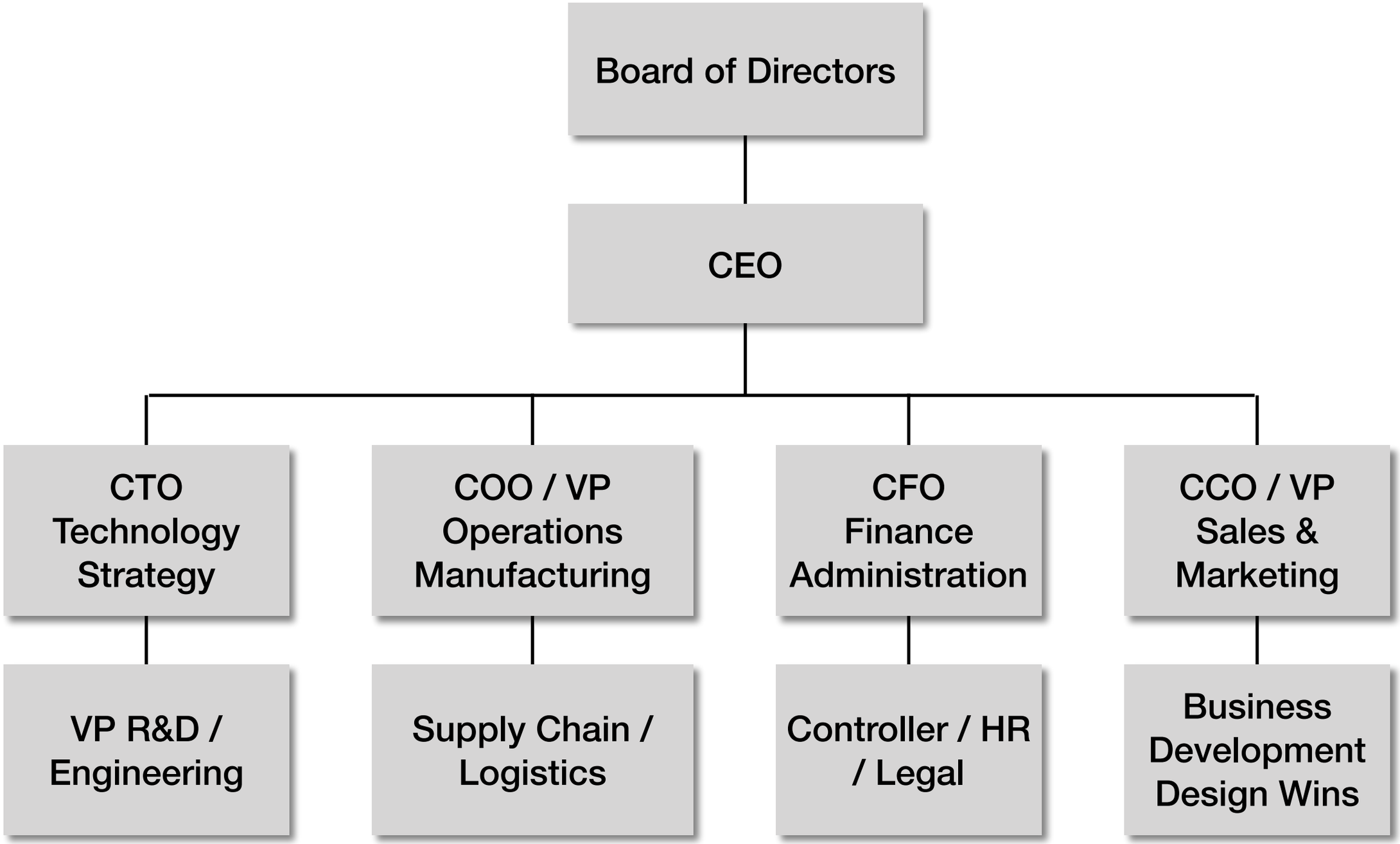
Legal Essentials for Early-Stage Startups

- Incorporation, share register, IP assignment
- Employment contracts + option letters
- NDAs and MOUs with customers and partners
- Grant compliance (EU / national)
- Data protection and insurance (where relevant)

These basics are often overlooked but can save months of friction during funding or acquisition.

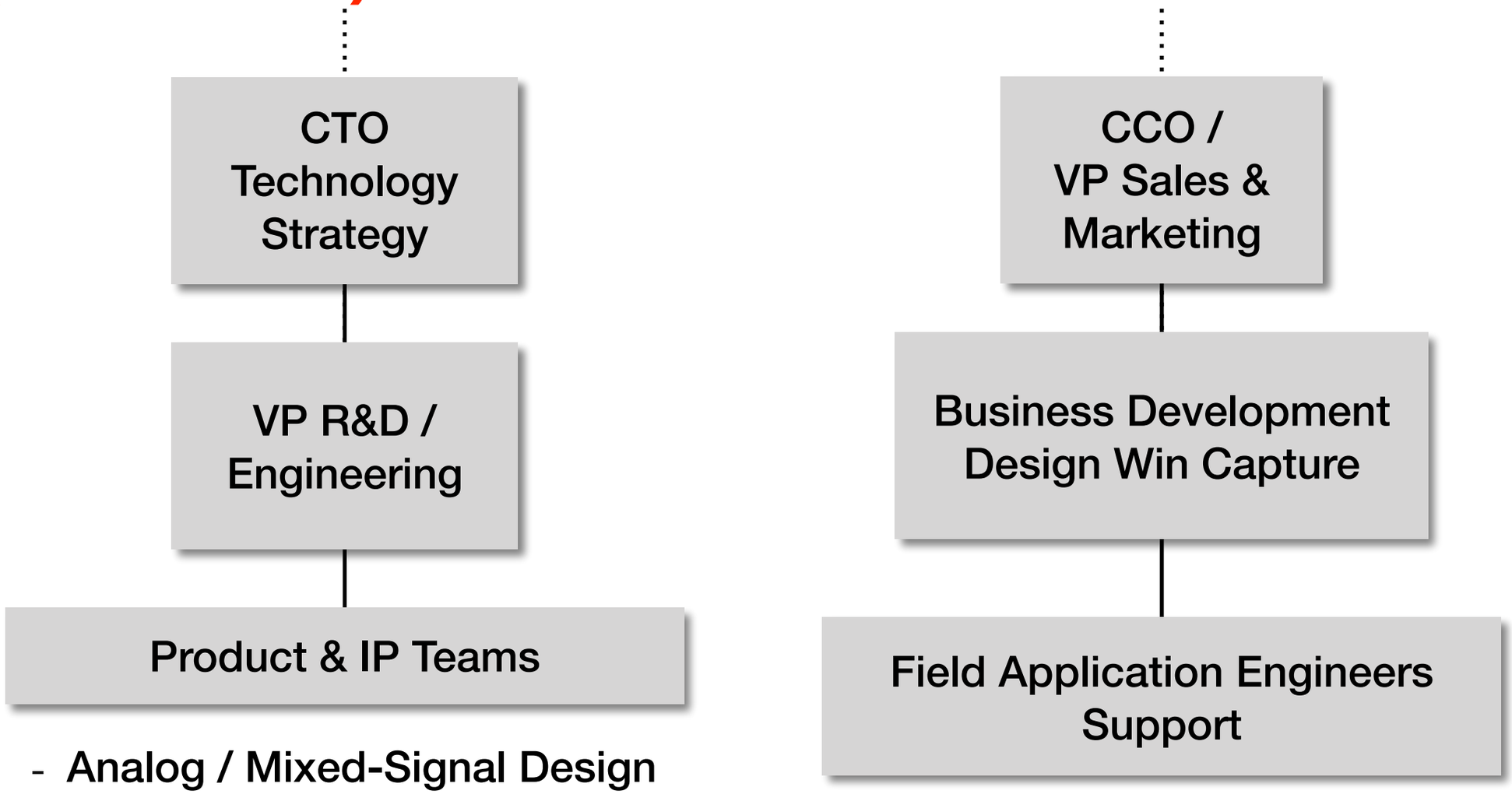
Organization & Governance

Org Chart (illustrative)



Organization & Governance

Org Chart (illustrative)



- Analog / Mixed-Signal Design
- Digital & Verification
- Physical Design / Layout
- Firmware / Embedded SW
- IP Integration

Organization & Governance

Org Chart Titles and Responsibilities

- **CEO** directly reports to the board, aligns strategic direction.
- **CTO** oversees all technical and R&D activities, often a founder.
- **COO** appears around Series A, takes charge of operations, testing, packaging, logistics.
- **CFO** is essential for managing cash burn, grants, financial compliance, and reporting.
- **VP Sales & Marketing** (CCO) leads design win strategy, critical in B2B semiconductor.
- Field Application Engineers (FAEs) bridge the tech-commercial gap with customers.
- Product/IP Teams can grow modularly depending on technology scope (e.g., RF, ML inference, MedTech ASICs).

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Fundraising Journey - Seed to Series A/B

The fundraising journey from seed to Series A/B is a critical part of the startup lifecycle, especially for semiconductor B2B startups where capital needs can be high and timelines are long.

Fundraising Journey - Seed to Series A/B

Funding Stages and Objectives

- **Seed Funding:** Validating problem–solution fit, building MVP, early hires
- **Series A:** Scaling product-market fit, building the go-to-market engine
- **Series B:** Scaling operations, market expansion, growing revenue base

***Key focus*: What investors look for at each stage**

Fundraising Journey - Seed to Series A/B

Investor Types and Expectations

- Angel investors, family offices, seed funds
- Early-stage VCs vs growth-stage VCs
- Strategic vs financial investors
- Corporate VCs (especially relevant in semiconductors)

Fundraising Journey - Seed to Series A/B

Investment Instruments

- Convertible notes vs SAFEs vs Equity rounds
- Cap table implications
- Valuation caps, discounts, dilution

Fundraising Journey - Seed to Series A/B

Fundraising Preparation

- Defining your **funding needs** and **use of funds**
- Creating a compelling **pitch deck**
- Building a **data room** (tech, market, team, traction, financials)
- Crafting the narrative: vision, ambition, and inevitability

Fundraising Journey - Seed to Series A/B

Metrics and Traction Expectations

What VCs expect to see at:

- Seed (e.g., early product validation, team strength)
- Series A (e.g., $500k–$1M ARR, customer references, early CAC/LTV)
- Series B (e.g., $2M–$10M ARR, repeatable GTM motion)

Fundraising Journey - Seed to Series A/B

The Fundraising Process

- Targeting investors and creating a pipeline
- Warm intros and how to get them
- Pitching process: first calls, partner meetings, due diligence
- Negotiating terms and closing the round

Fundraising Journey - Seed to Series A/B

Key Documents

- Pitch deck (core sections)
- One-pager / teaser
- Financial model
- Cap table + equity strategy
- Term sheet basics

Fundraising Journey - Seed to Series A/B

Strategic Considerations

- Fundraising timing (milestones vs runway)
- Avoiding premature scaling
- Founder dilution and equity planning
- Syndicate building and board composition

Fundraising Journey - Seed to Series A/B

Semiconductor-specific Insights

- Longer product development cycles = longer fundraising runway
- Importance of strategic investors (e.g., corporate VCs, OEMs)
- Deep tech readiness vs market-readiness gap
- Hardware vs software valuation multiples

Fundraising

Post-funding Best Practices

- Managing investor relations
- Reporting, governance, and KPIs
- Planning for the next round
- Avoiding “Series A crunch” or burn traps

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