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Detailed Project Report -

Setting up an EMS Unit in India

Zenaca Consulting

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Revision 1

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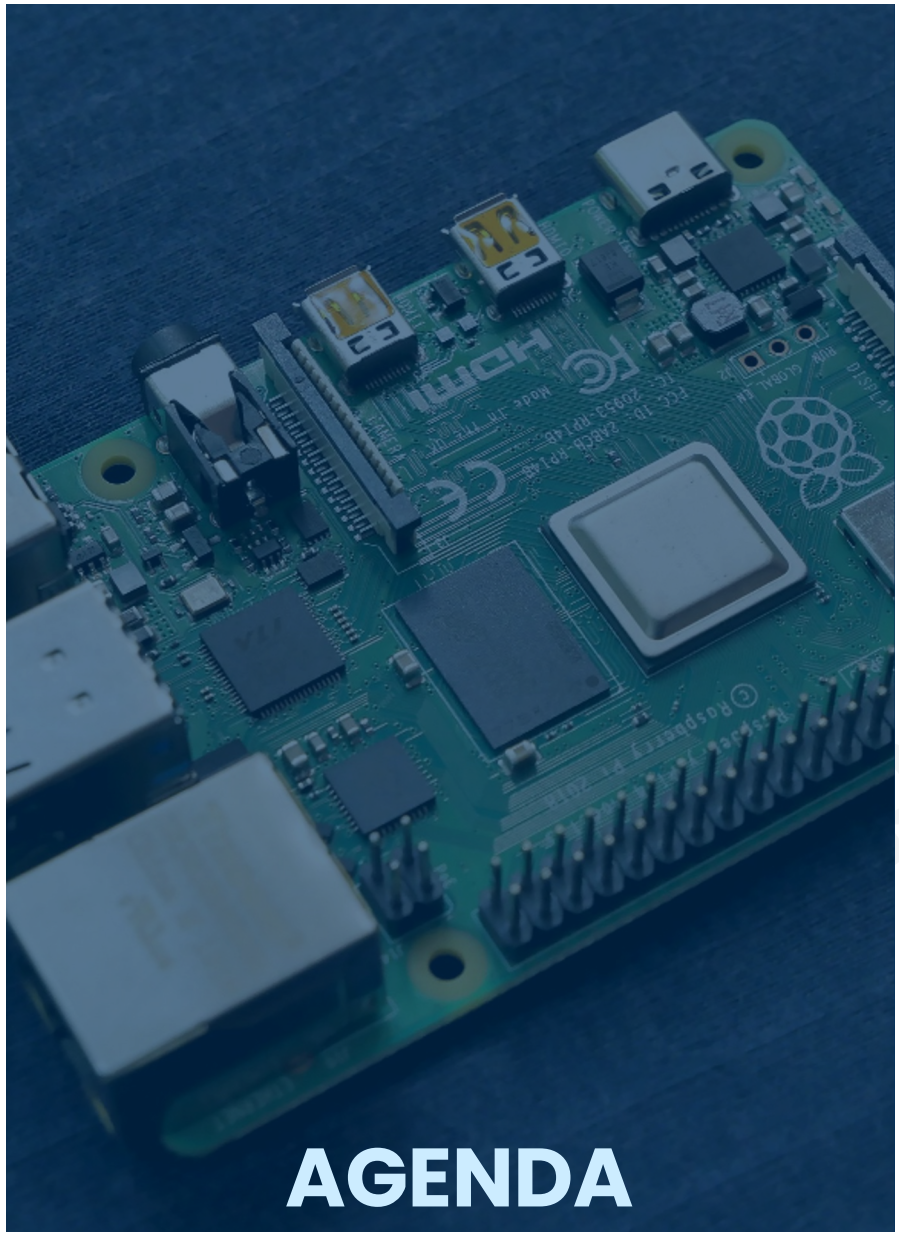
Executive Summary

This project report presents a plan to establish an Electronics Manufacturing Services (EMS) unit in India, aiming to tap into the country's growing electronics demand and leverage government initiatives like "Make in India" and the Production Linked Incentive (PLI) schemes.

The EMS unit will cater to both domestic and global OEMs across sectors like consumer electronics, Industrial, automotive, healthcare, defence and aerospace.

India's EMS market offers growth potential due to rising localization needs, government support, and an available skilled workforce. However, setting up a successful EMS facility requires a strong grasp of industry trends, operational needs, and financial planning.



AGENDA

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01

MARKET ANALYSIS

Overview of the Indian EMS market, growth drivers, and the impact of global trends on local demand.

02

TARGET SEGMENTS

Identification of primary target sectors, including consumer electronics, automotive, healthcare, defense and their specific requirements.

03

FINANCIALS

Detailed estimates of capital expenditure, operating costs, and revenue projections with profitability analysis.

04

OPERATIONAL PLAN

Facility layout, equipment needs, workforce requirements, and production processes to ensure efficiency and compliance with global standards.

05

RISK ANALYSIS

Identification and mitigation strategies for potential risks, including supply chain dependencies, talent acquisition, and operational challenges.

Market Analysis

Indian Electronics Market

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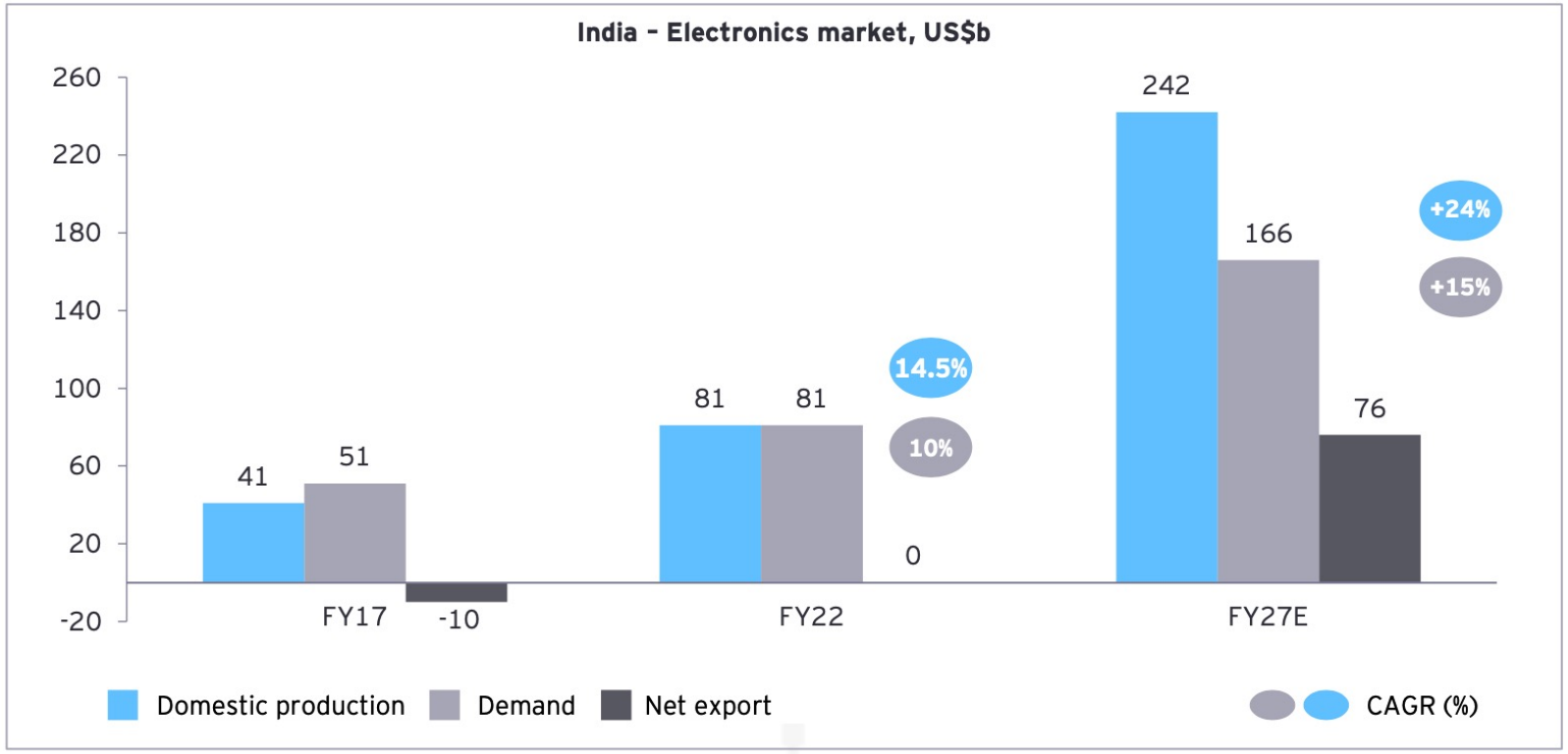


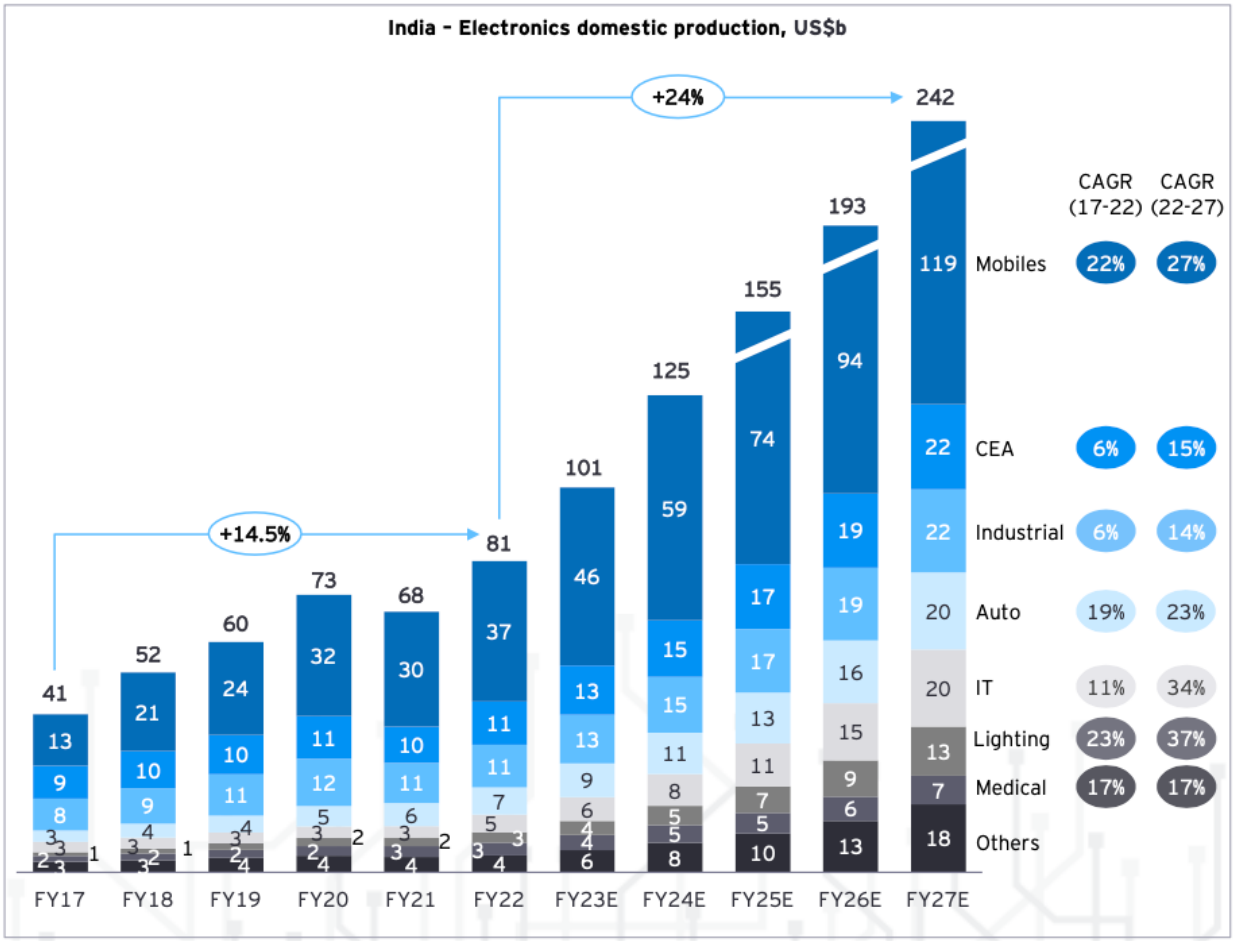
Source: Annual Reports and DRHPs, Ministry of Electronics and Information Technology (MeitY), EY analysis

Notes: (1) All the values are rounded off to next decimal
(2) The Indian electronics market includes the domestic production and demand of finished electronic goods in India. The market excludes electronic components.

- *Higher growth expected in production driven by both domestic and export demand.*

- ✓ India is producing electronics goods worth 81B USD as on FY22.
- ✓ Indian electronics manufacturing sector is estimated to grow at 24% CAGR between FY22-FY27 and will be producing electronics goods worth 242B USD by FY'27.

Market Segments



Source: MeitY, EY analysis

- ✓ Mobile phones expected to be top contributor in the growth followed by consumer electronics and Industrial products.
- ✓ Reducing prices, availability of affordable mobile data and voice plans are driving the adoptability of mobiles in rural India.
- ✓ Lighting is expected to grow at 37% CAGR between FY'22 and FY'27.
- ✓ IT is expected to grow at 34% CAGR between FY'22 and FY'27.

OEM

OEMs are ORIGINAL Equipment or product Manufacturers. They own the product IP and are focused on R&D and market expansion.

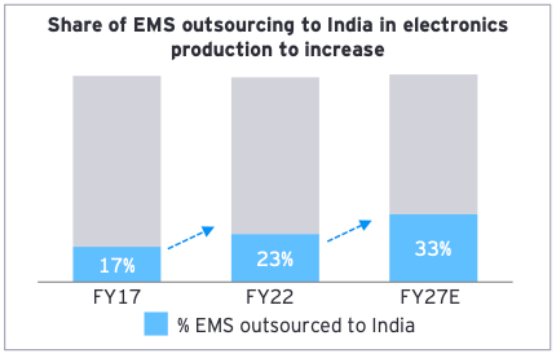
Example - Apple is an OEM, where they own the product designs and focus on product innovation, market strategy and sales.

EMS

EMS are the manufacturing, supply chain and logistics experts, focused on helping OEMs fast track their design process and scale production to conquer new sectors and markets.

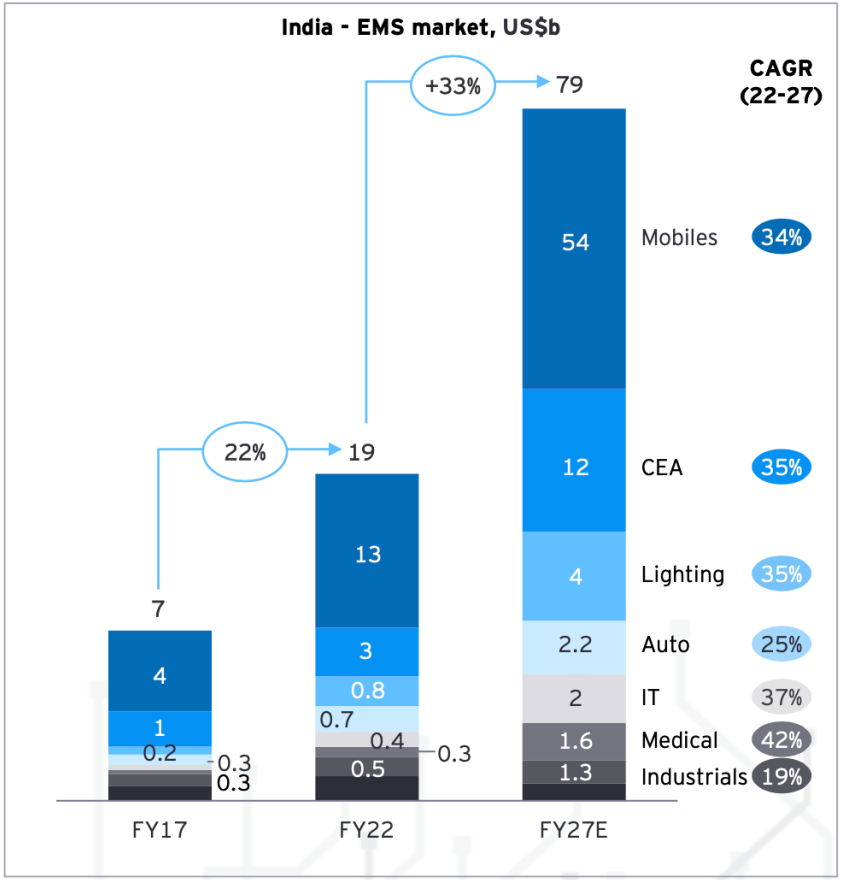
Example - Tata (Previously Wistron) is EMS partner for manufacturing iPhone and other products for apple.

EMS Outsourcing to India



Source : EY Report

- India is estimated to do 33% of global outsourcing of EMS services by FY'27.
- EMS Market is growing faster compared to overall electronics manufacturing as more OEM's are outsourcing their manufacturing to EMS.



Source: Company DRHPs, EY analysis

Growth drivers

1. Domestic ecosystem development

PLI scheme to increase accessibility to components and other services

2. China plus one

Global outsourced EMS to shift towards India as players look to diversify supply chains

3. Increase in share of outsourcing

OEMs to outsource more to domestic EMS players as they have started offering complete design services apart from contract manufacturing

Major EMS Players in India

EMS players	Services offered		Application presence								Player performance		
			← High volume low margin (HVLM) →				← Low volume high margin (LVHM) →						
	PCBA	Box build	Mobile	CEA	Lighting	IT	Auto	Industrial	Medical	Others	Revenue, FY23 (US$ million)	Revenue CAGR (%) FY20-23	Average EBITDA margin (%) FY21-23
BHARAT FIH*	◔	●	■	□	□	□	□	□	□	■	2,269	-19%	3%
DIXON TECH.	○	●	■	■	■	■	□	□	■	■	1,487	40%	4%
AMBER ENT.	○	●	□	■	□	□	■	□	□	■	845	20%	6%
ELIN ELEC.	○	●	□	■	■	□	□	□	■	■	131	11%	7%
SYRMA SGS TECH.	◔	◔	□	■	□	■	■	■	■	■	250	73%	10%
CENTUM ELEC.	◔	◔	□	□	□	□	■	■	■	■	113	1%	10%
CYIENT DLM	◔	◔	□	□	□	□	□	■	■	■	101	22%	10%
AVALON TECH.	◔	◔	□	□	□	□	□	■	■	■	115	14%	11%
KAYNES TECH.	◔	◔	□	■	□	■	■	■	■	■	137	45%	13%

Margins increase as players shift towards LVHM segments

○ NA ◔→● Low to high revenue share □ Absent ■ Present

All figures rounded off to next decimal point
Others include aerospace and defence, clean energy, telecom
INR to US$ conversion factor: 80 for FY22; 82 for FY23
**FY22 revenue for Bharat FIH; revenue CAGR from FY19-FY22; Avg. EBITDA margin of FY20-FY22*
**Bharat FIH offers PCBA to telecoms (base trans receiver and base band), EVs (battery management system) and mobile phones*
**Note: The name was changed to Bharat FIH Limited in 2 November 2021. It's subsidiaries - Rising Stars Hi-Tech Private Limited and Bharat Taiwan Corporation were incorporated on 29 April 2021 and 30 June 2021 respectively and hence its financial data has been consolidated for FY22*
Source: Company annual reports, company financial statements, EY analysis

Source : EY Report

- Consumer electronics segments like mobile phones have bigger revenue numbers.
- Companies working with high volume products (Mobiles, Consumer Electronics, Lighting etc.) generates high revenue numbers.
- Companies working with complex LVHM (Low Volume High Mix) segments like Medical, Auto, Industrial have comparatively higher margins.

Drivers & Challenges

(EMS Growth in India)

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RISING DEMAND

Rising Domestic Demand: Increasing use of consumer electronics, IoT devices, and automotive electronics fuels demand for local EMS services.

GOVERNMENT SUPPORT

Programs like 'Make in India' and Production Linked Incentives (PLI) offer subsidies, tax relief, and regulatory support, enhancing India's appeal for electronics manufacturing.

EXPORT OPPORTUNITIES

As companies diversify away from China, India's cost advantages and skilled workforce are making it an appealing alternative for global electronics manufacturing.

COST ADVANTAGE

Competitive labor and infrastructure costs provide cost advantages, especially for products targeted at price-sensitive markets.

SUPPLY CHAIN DEPENDENCY

Supply Chain Dependency: Heavy reliance on imports for critical components increases costs and lead times, and is vulnerable to global supply disruptions.

SKILL GAPS

A shortage of specialized skills in electronics and automation limits scalability and efficiency in advanced manufacturing operations.

INFRASTRUCTURE LIMITATIONS

Infrastructure quality and regional logistics complexities can cause inefficiencies, impacting delivery timelines and cost control, especially for just-in-time (JIT) production models.

APPROVALS

Government approvals can take longer than expected, posting challenge for organizations to set up operations.

Target Segments

Target Segments

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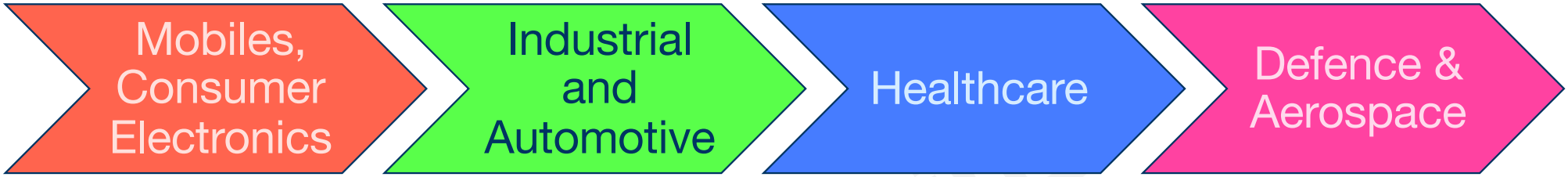
	Products	Remarks
CONSUMER ELECTRONICS	Smartphones, tablets, smartwatches, headphones, wearables, and accessories etc.	India's high demand for consumer electronics and government incentives are driving companies to localize production, reducing costs and growth.
AUTOMOTIVE	ECU's, infotainment systems, battery management systems etc.	The automotive industry is rapidly growing in India, especially in the EV sector. Local EMS providers enables the growth of overall automotive sector.
INDUSTRIAL	Industrial control systems, smart meters, sensors, and IoT devices etc.	The growth of Industry 4.0 and IoT is driving demand for electronics in industrial applications.
HEALTHCARE	Diagnostic equipment, patient monitoring systems, handheld devices etc.	India's need for affordable healthcare solutions, strict compliance and import restrictions creates opportunities for local EMS that meet quality standards
DEFENCE	Communication devices, radars, avionics systems, drones, surveillance equipment etc.	Indian government encourages local manufacturing (Offset is one strong initiative), presenting opportunities for EMS units.
RENEWABLE ENERGY	Inverters, solar panel controllers, battery management systems etc.	India's renewable energy sector is expanding, and there's demand for electronics in solar, wind, and other sustainable energy solutions.

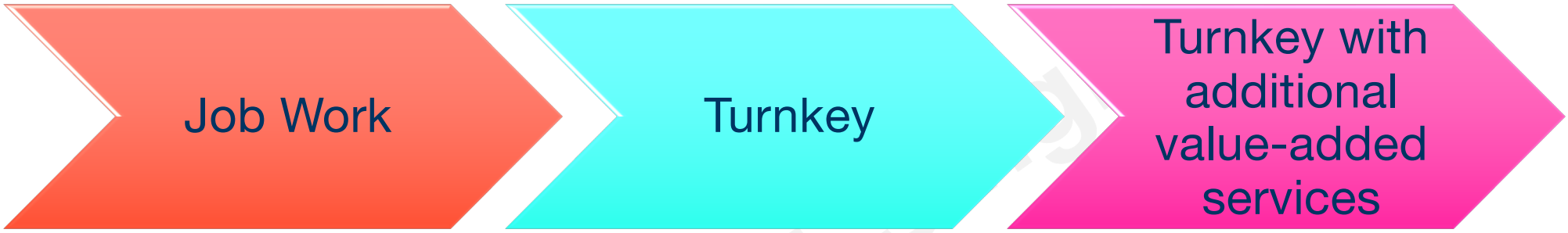
EMS Growth Path - Segment



- While setting up the EMS business, it is recommended to start with customers from consumer segment, where the quality requirements are lower compared to automotive, Healthcare, defence and aerospace products.

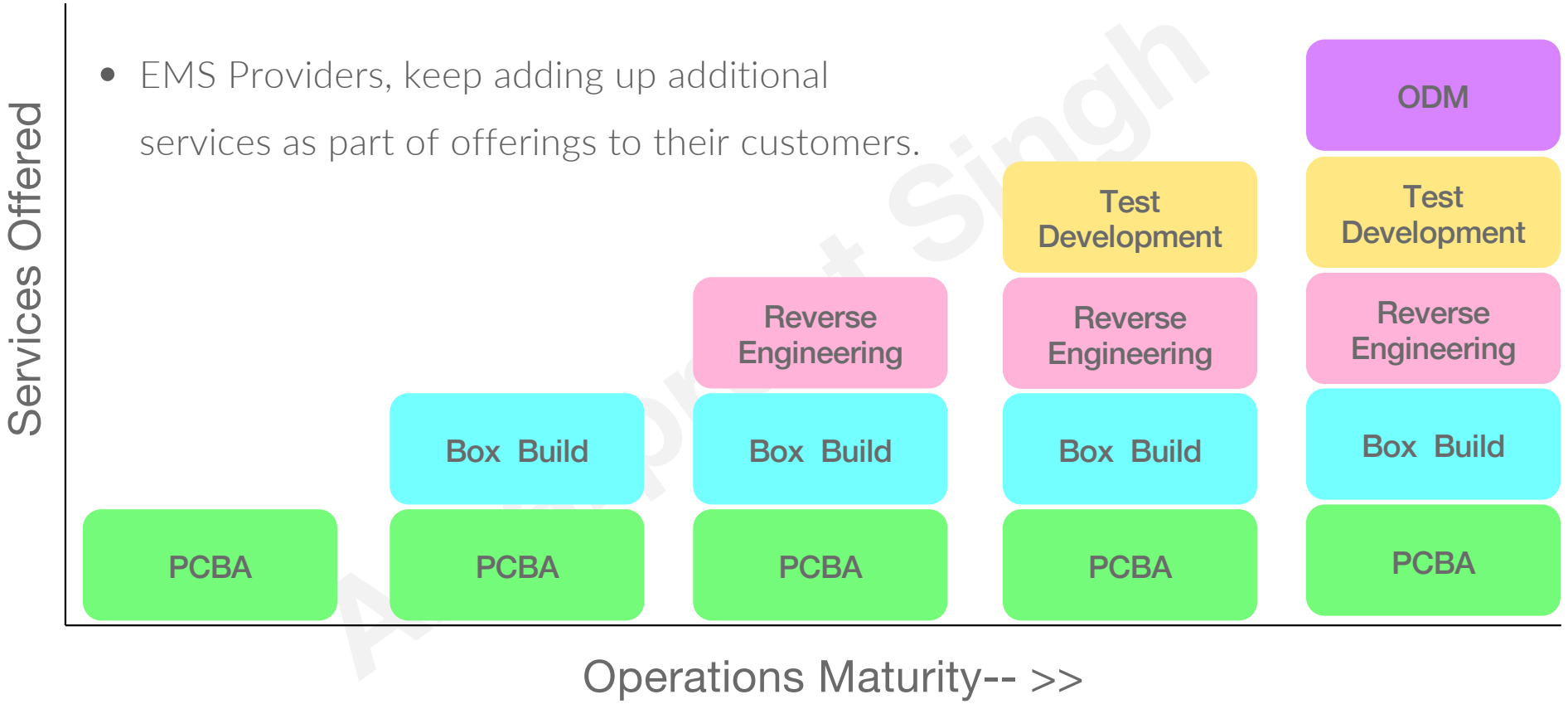
- A healthy combination of all segments is recommended considering business scalability while maintaining healthy margins.

EMS Growth Path – Business Model



- New entrants in the EMS market should start with offering services on job work basis for first six to twelve months. This helps to build operations maturity.
- Once operations are matured , it is recommended to move to turnkey model as turnkey business provides better stability and margins.

Services Offered



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Domestic Customers

- Easy to win
- Faster Response Time
- Cultural Compatibility
- Short / Medium term strategy
- Lower Transportation Costs

- Price is major criteria
- Fixed mindset
- Limited Technology Adoption
- Easy to lose

Global Customers

- Mid to long term strategy
- Growth mindset
- Better margins
- Access to advanced technologies
- Geographical Diversification

- High entry barriers
- High initial investments (Sales and Marketing)
- Cultural alignment
- Global competition

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Job Work

- No cash investment on materials
- No investment on sourcing and procurement resources
- No risk of excess inventory

- Short term business
- No opportunity to increase margins on sourcing of components
- Low contribution to the top line.

Turnkey

- Long term business visibility
- Usually medium to high complex business, difficult to win and difficult to lose it too.
- Opportunity to increase margins using supplier consolidation process across different customers.

- Cash invested in inventory
- High entry barrier considering the investments in inventory.
- Inventory obsolescence risk if contracts are not executed efficiently.

Financials

Background

- The plan is to set up a single SMT line in the first phase of the project.
- As the product visibility is not available, we will be considering one P&P (Pick and place) as that will cover most of the products for the market. This machine will have enough feeder slots and speed required for most of the products in the market. We can always add another mounter, for increasing the speed and slots capacity.
- We can also consider investing into SPI initially and then invest into AOI in second phase, if budgets are constraints. However the best combination is to invest into AOI in Phase 1 only, as this will help to bring the right set of customers onboard.

Background

- For post SMT Operations only single manual insertion line and wave soldering is considered. The rest of the operations needs to be defined as per actual customer products and process flow requirements.
- Job work charges of 60K / Shift is an approx. revenue which machine can generate. The reference is taken from the market, where customers are charged for the shift.
- Benefits available from government PLI schemes are not considered while developing this model.

CAPEX Budget – Phase 1

SMT Equipments	Budget Price
Screen Printer (MPM, DEK, Yamaha, Fuji)	USD 60,000
Solder Paste Inspection (TRI, Kohyoung, Omron)	USD 68,000
Pick n Place - 1 Unit (Fuji AIMEX III)	JPY 3,50,00,000
Reflow Oven (Heller)	USD 47,000
Reflow Profiler (KIC)	USD 4,500
Automatic Optical Inspection (TRI, Koh Young , Omron)	USD 1,20,000
Server PC's, Printers etc.	INR 5,00,000
Total	**INR 4,62,57,500**

Board Handling Unit (BHU)	Budget Price
Magazine Loader (1X)	INR 5,00,000
Magazine Un-Loader (1X)	INR 6,50,000
Link conveyor (1X)	INR 2,50,000
Reject Conveyor (2X)	INR 4,50,000
Inspection Conveyor (1X)	INR 2,50,000
Cooling Conveyor (1X)	INR 2,50,000
Total	**INR 28,00,000**

SMT Support Equipments	Budget Price
UPS Inline	INR 10,00,000
Stencil Cleaning Machine	INR 10,00,000
Solder Paste Mixer	INR 4,00,000
Dry Cabinet (MSD Component Storage)	INR 5,00,000
ESD Bins / Containers	INR 10,00,000
Racks, Magazenes, Trolleys, Miscellaneous	INR 20,00,000
Total	**INR 59,00,000**

Facility Set Up	Budget Price
Air Conditioning (10 Units X 1.5T)	INR 9,00,000
Air Compressor	INR 5,00,000
ESD (Flooring, Testers, Wearables, Aprons etc)	INR 10,00,000
Power Installation	INR 20,00,000
Back up Generator	INR 20,00,000
Aluminium Partitions, Office Set up	INR 10,00,000
Miscellaneous (CCTV, Access Controls etc)	INR 30,00,000
Total	**INR 1,04,00,000**
Total Investment for Single SMT Line	6,53,57,500

Back end Equipments	Budget Price
Wave Soldering Machine (With Fluxer, Conveyors)	USD 45,000
Solder Bar	INR 24,00,000
Manual Insertion conveyor	INR 3,00,000
De-Panelling Machine	USD 40,000
Work Stations, Soldering equipments	INR 10,00,000
Other Consumables	INR 2,00,000
Total	**INR 1,11,25,000**
Phase 1 Investment (Considering One SMT Line and back end)	**INR 7,64,82,500**

7.6 Crore – Approx. investment in plant and machinery for starting EMS operations.

CAPEX Budget – Phase 2

Phase 2 (As per customer Requirements)	
Backend	Budget Price
MDA	USD 40,000
Conformal Cooating Machine	USD 50,000
Digital Microscope	USD 7,000
BGA Rework Station	USD 45,000
X-Ray	USD 2,50,000
Flying Probe Testing	USD 4,20,000
Total (INR)	**INR 6,90,20,000**

- The make, model for these equipment's will be selected based on the actual product complexity and volume requirements.

- The investment for Phase 2 will happen as per actual customer requirement for these equipment's.
- There might be some other equipment's, storage systems, automation systems and budget for those needs to be worked on as per future business scenarios.

Revenue Plan

Assumptions - Job work

Jobwork Revenue Assumptions	
Number of Components on board	150
Number of Solder joints on a PCBA	300
PCBA Quantity which can be produced in a shift	1,600
Number of solder joints produced per shift	4,80,000
Number of Components to be mounted per shift	2,40,000
Actual UPH Per hour	30,000

Year -- >>	Year 1	Year 2	Year 3
	Jobwork Rate per solder joint (INR Paisa)		
Job work revenue per shift	20	35	50
	96,000	1,68,000	2,40,000
Revenue with 70% Achievement	60,000	1,10,000	1,60,000

Assumptions - Turnkey

Turnkey Revenue Assumptions (As per market)	
Turnkey Revenue per year (3 Shifts) - 100 Cr	1,00,00,00,000
Turnkey Revenue per month (3 Shifts)	8,30,00,000
Turnkey Revenue per month (1 Shifts)	2,70,00,000

* This is considering 60K CPH (Rated) from SMT line.

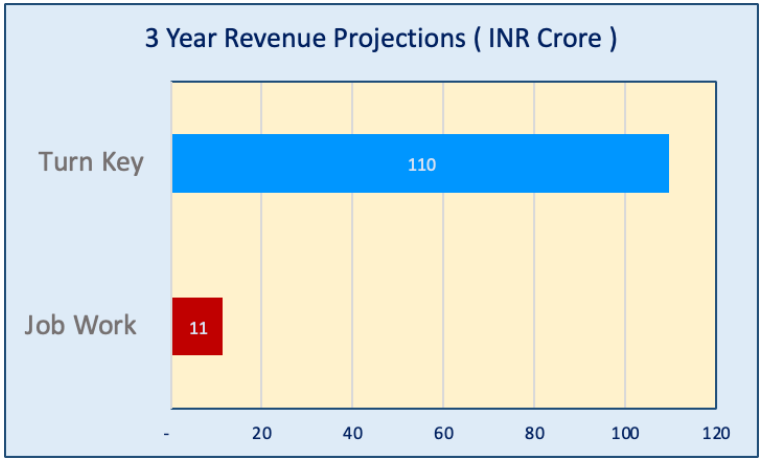
Revenue Details

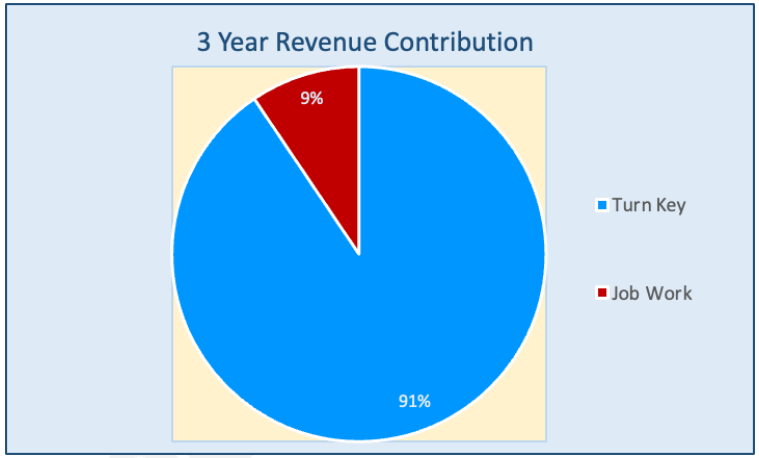
	Year 1	Year 2	Year 3
Number of Shifts Loaded	2	3	3
% Allocation for Turnkey Business	10%	40%	100%
% Allocation for Jobwork Business	90%	60%	0%
Jobwork	**Year 1**	**Year 2**	**Year 3**
Number of Shifts Loaded	1.8	1.8	-
Revenue	180	693	288
Turnkey	**Year 1**	**Year 2**	**Year 3**
Number of Shifts Loaded (Turnkey)	0.20	1.20	3.00
Turn Key revenue	270	2,916	7,776
Value Add @20%	54	583	1,555
Total Monthly Value Add (Jobwork + Turnkey)	234	1276.2	1843.2

* All numbers are in INR Lakh

- Business is expected to move from Job work to turnkey over time.
- It is assumed that 100% business will be turnkey from Month 31 onwards.
- 20% Value add is considered for medium mix, medium volume business..

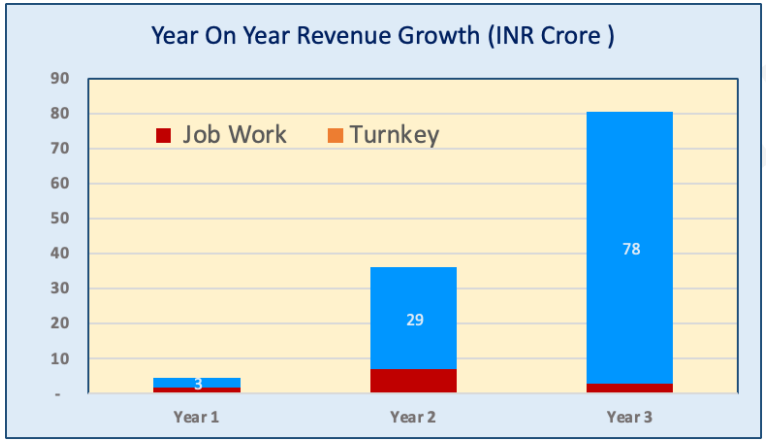
Revenue Details

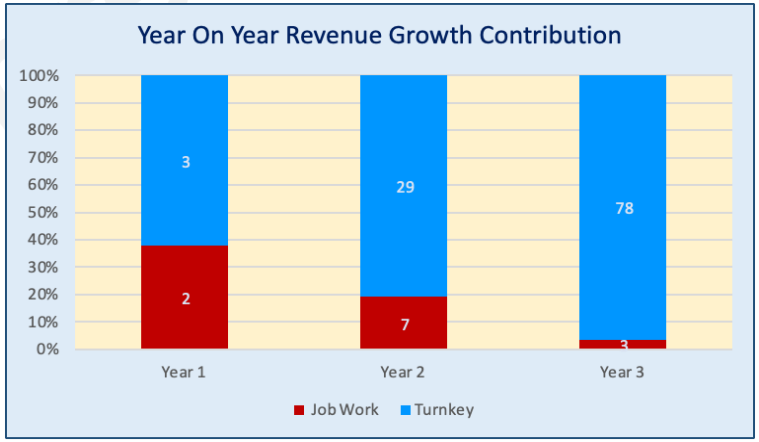




Year	Revenue Projections (INR Crore)		
	Job Work	Turnkey	Total
Year 1	2	3	5
Year 2	7	29	36
Year 3	3	78	81
Total	**12**	**110**	**121**

- We can have an ARR of 80 Crore – 100 Crore (Turnkey revenue) from 3rd year on-wards with single SMT line.





Manpower Budget

Indirect Manpower (Budget)

Operations	Manager	Asst Manager / Sr Engineer	Engineers	Executives	Total
Budget -->>	20,00,000	12,00,000	5,00,000	3,00,000	
Production Manager	1		3		4
Quality Manager	1		2		3
ME Manager		1	2		3
NPI Leader		1	2		3
SCM	1	1	2	2	6
Maintenance			1		1
Total Budget	**60,00,000**	**36,00,000**	**60,00,000**	**6,00,000**	**1,62,00,000**

Sales	Manager	Engineers	Executives	Total
Budget -->>	25,00,000	5,00,000	3,00,000	
Marketing		1	1	2
Business Development	1	2	1	4
Quotations		1		1
Total Budget	**25,00,000**	**20,00,000**	**6,00,000**	**51,00,000**

Support Functions	Manager	Engineers	Executives	Total
Budget -->>	20,00,000	5,00,000	3,00,000	
Finance	1		2	3
HR	1		1	2
Admin			1	1
IT		1		1
Miscellaneous			4	
Total Budget	**40,00,000**	**5,00,000**	**24,00,000**	**69,00,000**

Indirect Manpower (Cost)

INR

Function	Year 1	Year 2	Year 3
Operations	1,43,10,000	1,81,44,000	2,03,21,280
Sales & Marketing	45,05,000	57,12,000	63,97,440
Support Functions	60,95,000	77,28,000	86,55,360
Total Indirect Cost	**2,49,10,000**	**3,15,84,000**	**3,53,74,080**

Direct Manpower (Cost)

INR

Area	Year 1	Year 2	Year 3
SMT	28,38,750	73,38,000	73,38,000
Post SMT + Support	7,20,000	86,05,500	2,20,71,000
Total Direct Cost	**35,58,750**	**1,59,43,500**	**2,94,09,000**

Overall Summary (Cost)

INR

Total	Year 1	Year 2	Year 3
Indirect	2,49,10,000	3,15,84,000	3,53,74,080
Direct	35,58,750	1,59,43,500	2,94,09,000
Total	**2,84,68,750**	**4,75,27,500**	**6,47,83,080**
Total (INR Crore)	**2.85**	**4.75**	**6.48**

Funding Requirements

(INR Lakh)	Project Start	Q1 Year 1	Q2 Year 1	Q3 Year 1	Q4 Year 1	Q1 Year 2	Q2 Year 2	Q3 Year 2	Q4 Year 2	Total
Factory Readiness	163.00									163.00
Equipments		120.37	481.46							601.83
Operational Expenses		91.14	95.16	62.25	72.64	53.94				375.13
Inventory Procurement					259.20		432.00		32.40	723.60
Total	**163**	**212**	**577**	**62**	**332**	**54**	**432**	**-**	**32**	**1,863.55**

- Phase 2 Investments of 6.9 Crore are excluded here. Those will be done as per actual customer and product requirements.
- Inventory investments might get staggered as we can negotiate payment terms with the suppliers.
- GST To be planned extra.

Projected Cash Flow

Projected Value Add -->>	7.50	48.90	56.70	113.40	295.20	295.20	342.90	342.90	435.60	435.60	486.00	486.00	3,345.90
Expenses (INR Lakh)	Q1 - Year 1	Q2 - Year 1	Q3 - Year 1	Q4 - Year 1	Q1 - Year 2	Q2 - Year 2	Q3 - Year 2	Q4 - Year 2	Q1 - Year 3	Q2 - Year 3	Q3 - Year 3	Q4 - Year 3	Total
Equipment Monthly Amortization	36.42	27.32	27.32	27.32	27.32	27.32	27.32	27.32	27.32	27.32	27.32	27.32	336.9
Facility Rent (10000 Sq ft @20Rs/Sq ft	8.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	74.0
Electricity Bill (1.5L/ (Shift) / Month)	4.50	4.50	4.50	9.00	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50	130.5
Facility Maintenance	2.00	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	18.5
Manpower Cost	50.14	69.66	78.15	86.74	112.14	112.14	125.50	125.50	148.33	148.33	175.59	175.59	1,407.8
Miscellaneous Cost (Detailed Below)	26.50	21.00	21.00	26.10	34.20	34.20	34.20	34.20	34.20	34.20	34.20	34.20	368.2
Projected Expenses	127.56	129.98	138.47	156.65	194.66	194.66	208.01	208.01	230.85	230.85	258.10	258.10	2,335.88
Projected Cash Flow	(120.06)	(81.08)	(81.77)	(43.25)	100.54	100.54	134.89	134.89	204.75	204.75	227.90	227.90	1,010.0
Miscellaneous (INR Lakh)													
Logistic charges	2.00	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	18.5
Consumables (Solder paste, wire, etc.)	4.50	4.50	4.50	9.00	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50	130.5
Training & Development Cost	2.00	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	18.5
Admin & Security	0.80	0.60	0.60	1.20	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	17.6
Housekeeping	1.20	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	11.1
Miscellaneous Expenses	8.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	74.0
Equipment AMC	-	-	-	-	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	24.0
Unplanned Expenses	8.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	74.0
Sub Total	**26.50**	**21.00**	**21.00**	**26.10**	**34.20**	**34.20**	**34.20**	**34.20**	**34.20**	**34.20**	**34.20**	**34.20**	368.2

- EMS Can be profitable from Month 13 as per the plan. Organisations needs to invest into world class infrastructure, equipment's, people and processes for achieving this.

- Q1 expenses are considered for 4 months, as there will be activities going on even before we start the operations.

AMAR

Operational Plan

Project Description

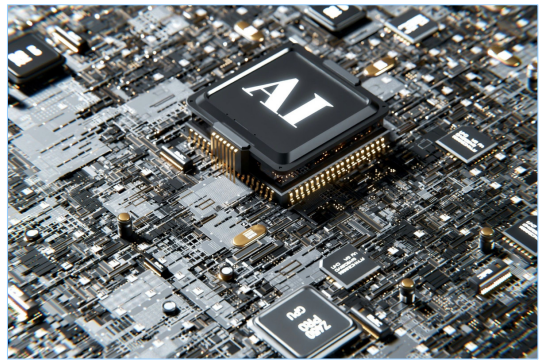
- The proposed EMS unit will serve local, domestic and Global customers for their manufacturing requirements.
- The unit will have a state of the art SMT line (Or Multiple lines later on) and backend assembly operations for carrying out post SMT box build operations.
- The SMT line configuration will be designed for catering customers across various segments.
- The line configuration will be scalable as per customer volumes and complexity requirements.

Capabilities

AMAR

PCB ASSEMBLY and BOX BUILD

EMS providers handle the assembly of printed circuit boards (PCBs), including surface mount technology (SMT) and through-hole assembly. EMS Providers also provides complete box build assembly services. They ensure high-quality manufacturing processes, meeting design specifications and regulatory standards.



DESIGN and ENGINEERING SUPPORT

Many EMS partners offer design assistance, including Design for Manufacturing (DFM) and Design for Testability (DFT). This helps OEMs optimize product designs for cost-effective and efficient production, improving product reliability and reducing time-to-market.

SUPPLY CHAIN and COMPONENT SOURCING

EMS companies manage the procurement and logistics of components, leveraging their networks to secure high-quality parts at competitive prices. This includes inventory management, supplier relationships, and risk mitigation strategies for a stable supply chain.

TESTING and QUALITY ASSURANCE

EMS providers offer comprehensive testing services, including functional testing, in-circuit testing, and environmental stress testing, to ensure that the products meet quality standards and perform reliably. Quality assurance processes help identify and correct defects before product shipment.

Location Recommendations

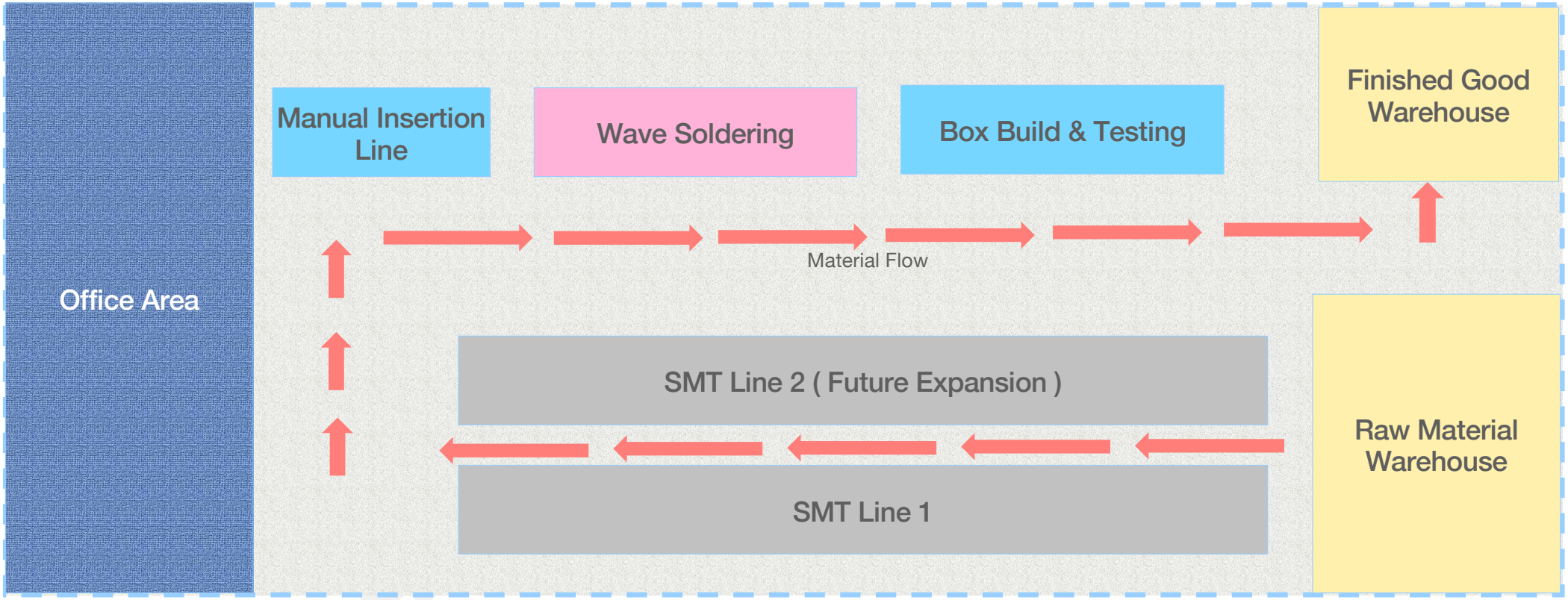
AMAR

01 An EMS factory should be as close as possible to the end customer. In this business, customers always feel comfortable visiting the EMS shop floor occasionally or during the qualification runs.

02 Preferably, the factory should be in an area, where the similar electronics Industry is available. This helps in sourcing the right talent pool, at a competitive cost and availability.

03 Cities those are connected by road or other means of transport as recommended considering the potential customer visits and supplier availability considering machine servicing etc.

Shop Floor Layout



- Approximately 10K Square foot is required to set up an basic EMS facility.
- Draft Layout, not as per dimensions.

SMT Line Details

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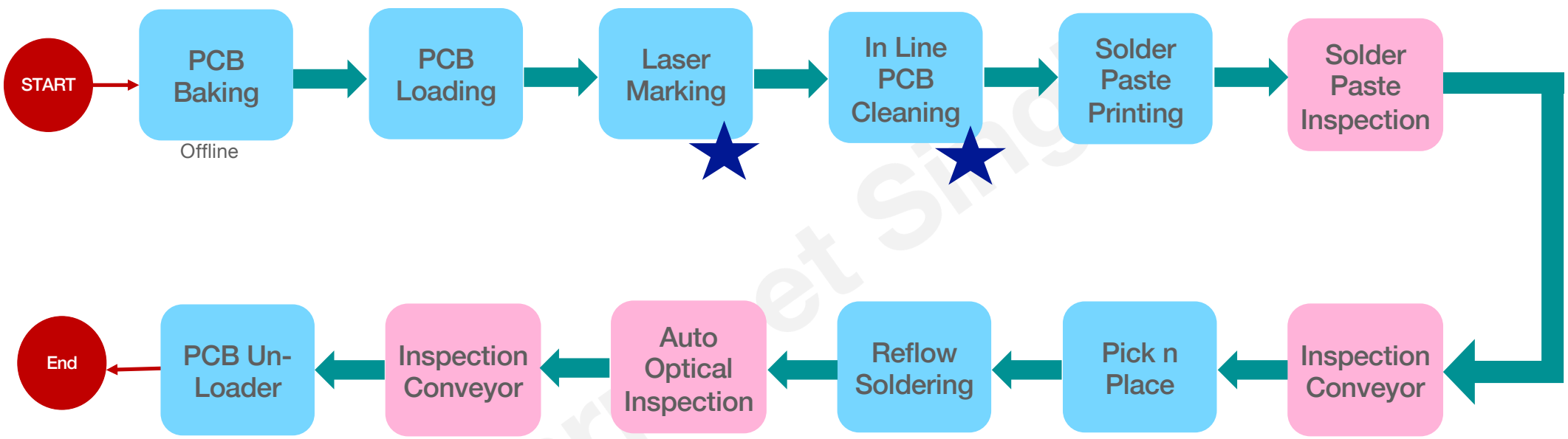
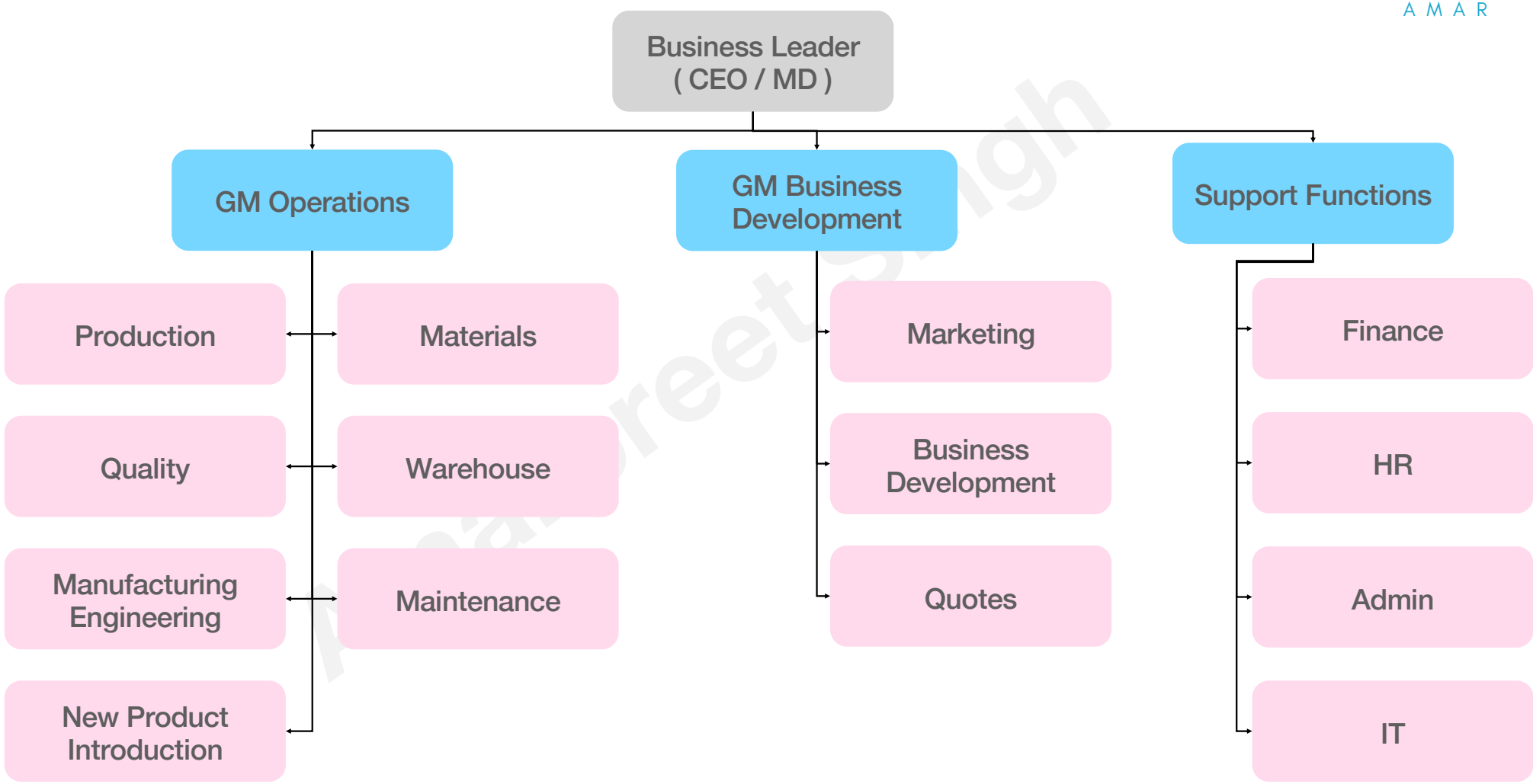


A complete SMT line configuration for producing PCBA used across all the segments covering consumer, Industrial, automotive, defence, medical and aerospace segments.

★ These machines can be planned in phase 2.

Organization Chart



Services Required

- ESD Safe area (ESD Floor, Aprons, Shoes, Wrist bands and other items required for maintaining an ESD safe area).
- Environment controlled, clean room.
- As per J-STD-001, it is recommended to control shop floor temperature between 18C – 30C and relative humidity between 30RH to 70 RH.
- Electric power single and three phase (As per equipment requirements)
- Online UPS (For critical machines)
- Compressed air for machine operations
- Nitrogen for reflow oven (For high end application products)
- Exhausts (Reflow, Wave Soldering, Conformal Coating)
- Lighting on the shop floor. 800+ Lux at working stations. 400 Lux+ in the walkways and other areas.

Project Timeline

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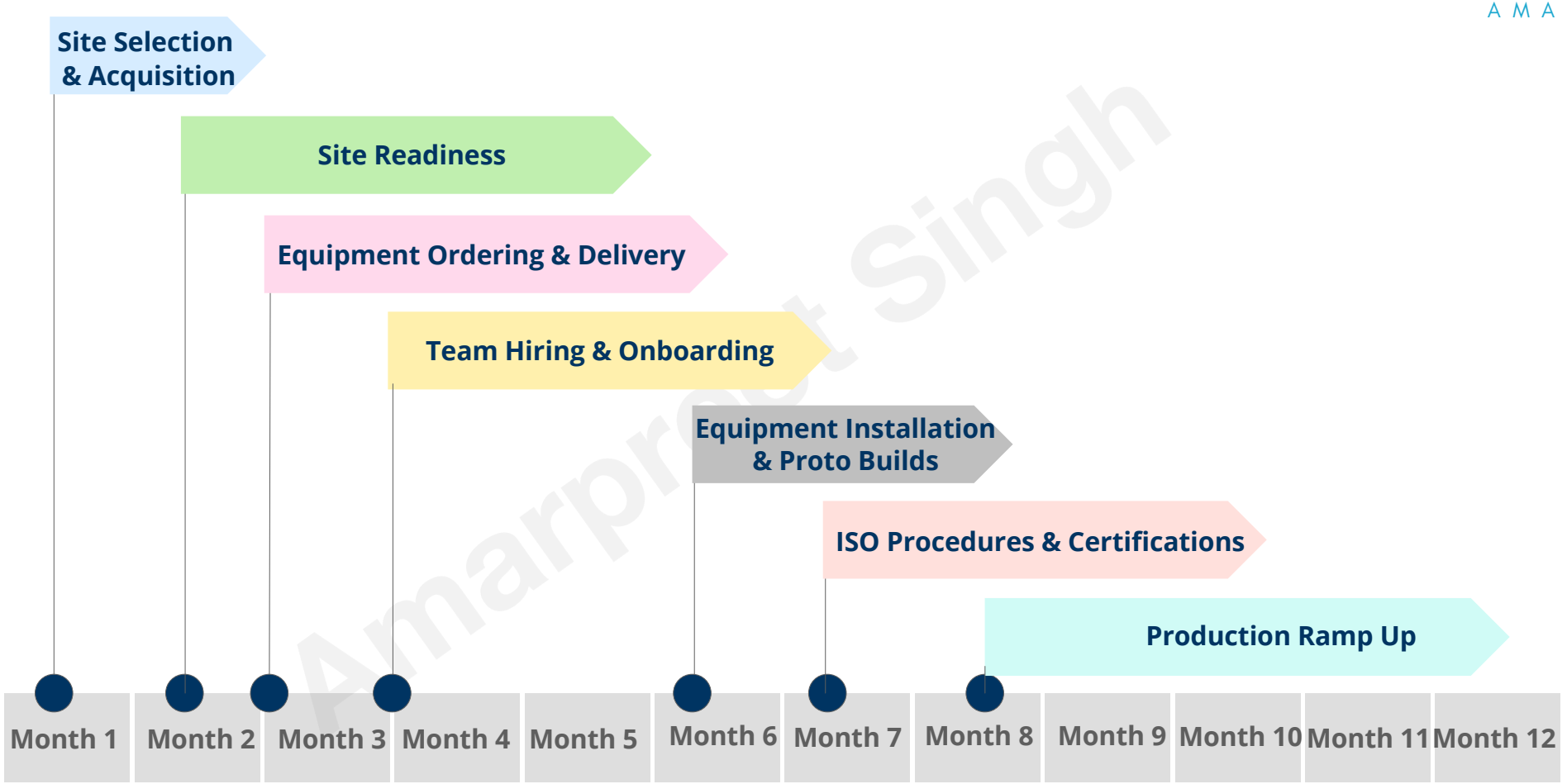

Industry Standards

The EMS unit will comply with industry standards such as:

- ISO 9001: 2015 Quality Management Systems
- ISO 14001: Environmental Management Systems
- ISO 45001: Occupational Health and Safety Management
- Other certifications for specific segments to be considered with the business growth (Automotive, Medical, Defence, Aerospace etc.)

License and Permits

Necessary licenses and permits might include :

- Factory License
- Pollution Control Board Clearance
- Fire Safety Clearance
- Electrical Safety Certificate
- Other licenses are per local state requirements

Risk Management Framework

Risk Mitigation Plan

	1. High Initial Capital Investment
Risk	Setting up an EMS unit requires significant investment in infrastructure, equipment (e.g., SMT lines, wave soldering machine), inventory and hiring professionals. For new entrants, this could strain financial resources.
Mitigation Plan	• Conduct detailed feasibility studies and detailed ROI analysis before starting an EMS business. • Leverage government incentives and subsidies under schemes like PLI wherever possible. • Explore joint ventures or partnerships to share investment risks.

	2. Skilled Workforce Availability
Risk	The EMS industry demands skilled engineers and professionals for manufacturing, testing, and quality assurance of the products manufactured. A shortage of trained manpower can can impact business operations.
Mitigation Plan	• Offer competitive salaries and growth opportunities to hire and retain talent, specially for Indirect roles. • Partner with local vocational institutes to hire smart candidates for junior roles. • Implement in-house training initiatives for continuous skill development to grow inhouse talent into next levels.

Risk Mitigation Plan

	3. Supply Chain Volatility
Risk	Dependence on global suppliers for components increases vulnerability to geopolitical issues, trade restrictions etc. Any disruption to Chinese supply chain eco system can impact operations anywhere in the world
Mitigation Plan	• Diversify suppliers across regions, if possible, to reduce dependency. • Localize components, if possible, even if it involves efforts and investments for mitigating global risks. • Invest into an ERP and maintain safety stock to cover up regular business.

	2. Market Competition
Risk	Established players and new entrants create intense competition, pressuring margins and customer acquisition.
Mitigation Plan	• Invest in developing technical capabilities and focus on niche markets or specialized services (e.g., medical electronics, automotive electronics). • Develop a strong value proposition, emphasizing quality, cost-effectiveness, and customization for customers. • Invest in developing global customers, those who value relationship, service levels and quality over cost.

Risk Mitigation Plan

	5. Customer Acquisition and Retention
Risk	Establishing credibility and acquiring large contracts may be difficult for new entrants.
Mitigation Plan	• Invest into strong operations team. EMS customers prefer matured operations leadership teams and make decisions based on their interactions with operation teams.. • Have Industry experts on board as consultants or mentors, engage them with customers to build customer confidence. Participate in industry expos and forums for networking.

	6. Demand Variations
Risk	Fluctuating demand due to economic cycles, competition, or shifting consumer preferences can impact revenue stability.
Mitigation Plan	• Diversify the customer base across multiple industries and geography. • Have detailed contracts in place with customers covering your liabilities around excess or obsolete inventory if any. • Develop flexible production capabilities to scale operations based on demand. • Invest only once you have good visibility of stable customers, who are difficult to win and so difficult to lose.

Q & A

Q&A

Q1: What is Electronics Manufacturing Services (EMS)?

A1: EMS stands for Electronics Manufacturing Services. EMS Companies offers Manufacturing, Testing, Distribution and return and repair services of electronic assemblies for OEM's.

Q2: Why should someone consider investing in an EMS unit?

A2: Investing in an EMS unit can be profitable because it allows to offer specialized manufacturing services to companies that they may not have the expertise or resources to produce electronics in-house. High CAPEX Requirements, restrict entry of new entrants into the market very easily.

Q3: What are the key steps to set up an EMS unit?

A3: The key steps involve market research, securing funding, acquiring necessary equipment, hiring skilled staff, and establishing relationships with suppliers and clients.

Q&A

Q4: How much investment is typically required to start an EMS unit?

A4: The investment can vary, but it generally depends on the scale and scope of the operations. A minimum set up with single SMT line can be set done in INR 7Cr (Approx.). The overall cash flow required will be approx. 18 Cr for managing first 3 years of business.

Q5: What equipment is essential for an EMS unit?

A5: Essential equipment includes SMT assembly line, Wave soldering, Warehouse Storage, ESD Floor, Environment controlled shop floor and other specialized equipment depending on the type of electronics being manufactured.

Q6: How do I find reliable suppliers for electronic components?

A6: Research and build relationships with reputable suppliers. Attend industry events, join professional networks, and consider working with distributors known for quality components. It is always advisable to engage with a consultant for setting up an EMS factory

Q&A

Q7: What are the common challenges in the EMS industry?

A7: Common challenges include staying updated with technology, managing supply chain disruptions, maintaining quality standards, and dealing with rapid changes in market demand.

Q8: How can I ensure the quality of the electronics produced by my EMS unit?

A8: Implement rigorous quality control processes, invest in skilled personnel, and adhere to industry standards. Regular audits and continuous improvement efforts are also crucial.

Q9: How do I market my EMS services to attract clients?

A9: Develop a strong online presence, attend industry trade shows, network with potential clients, and showcase your expertise through case studies and testimonials.

Do you have more questions on topic ?

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Thank You