

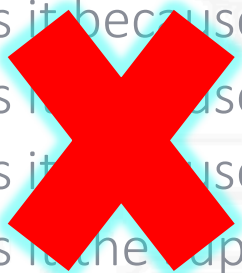


Emerging Semiconductor Ecosystem

Farhat Jahangir
CEO & Founder, GSME

Semiconductor Ecosystem Disruption

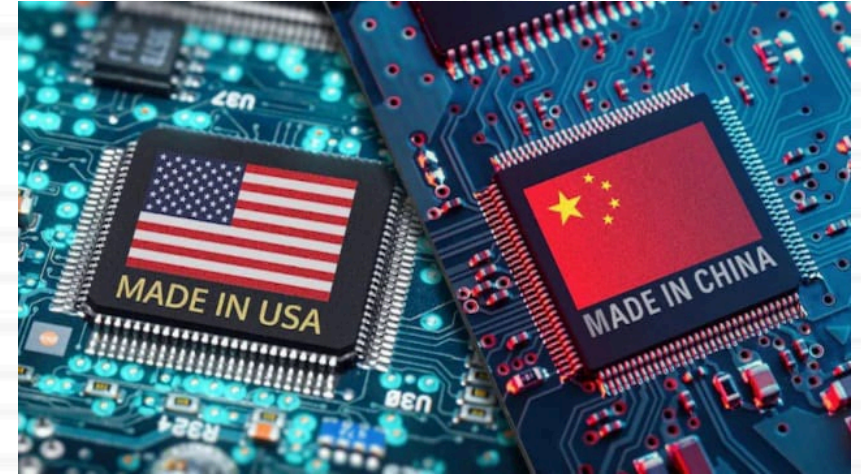
- Is it because of the Covid-19 Pandemic?
- Is it because of the increase in demand of electric & autonomous automobiles?
- Is it because of the AI & ML boom?
- Is it because of supply chain constraints?



The Real Challenges Industry is Facing – Control Of Industry

- Ecosystem disruption due to US-China trade war also known as the “CHIP-WAR”

- US-China trade war started a few years ago with the US correcting the trade deficit by implementing 15% tariff on imports from China and announced to increase additional tariff
- US is in full force of onshoring and reshoring semiconductor manufacturing
- China is moving to bring processing equipment, design, critical IP, advanced processes technology, and advanced packaging in China at any cost before 2030.
- This disruption in the Semiconductor ecosystem is making 3rd party manufacturing access, product development & IP availability across the regions difficult.
- Control of the semiconductor ecosystem is causing a shortage of skilled workforce and putting pressure of the design and manufacturing ecosystem.



Onshoring, reshoring, nearshoring, friend-shoring, and still some offshoring*

Semi-World is moving in Getting the mix right

* Deloitte 2023 Industry Outlook

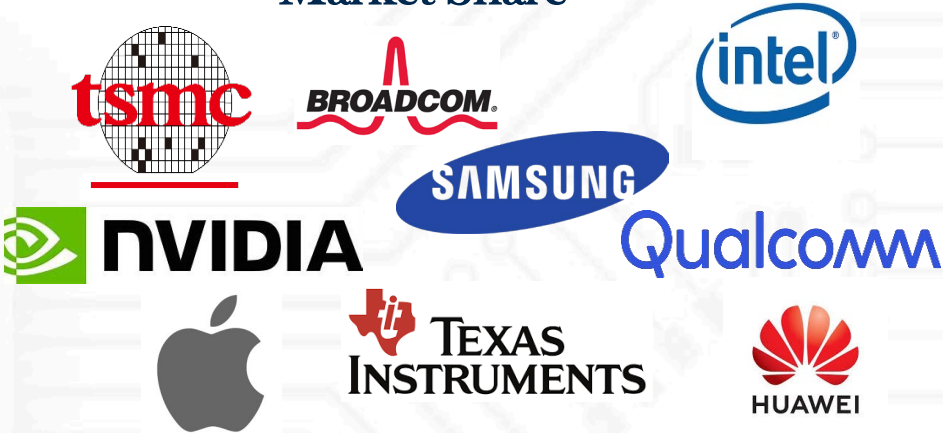
Semiconductor Regional Control and Market Growth vs. Shortage of Skilled Manpower

- The Semiconductor Market size is estimated to reach over \$1-Trillion by 2030, growing at a CAGR of 7.1% during the forecast period 2023-2030.
- Semiconductor Skilled Manpower shortage will be over 1,000,000*¹ by 2030.
- The semiconductor industry currently faces an average monthly shortfall of around 27,000 workers, representing a 44% increase from the previous year. To meet the workforce needs of new fab facilities, only US needs to add 100,000 workers*² by 2025.

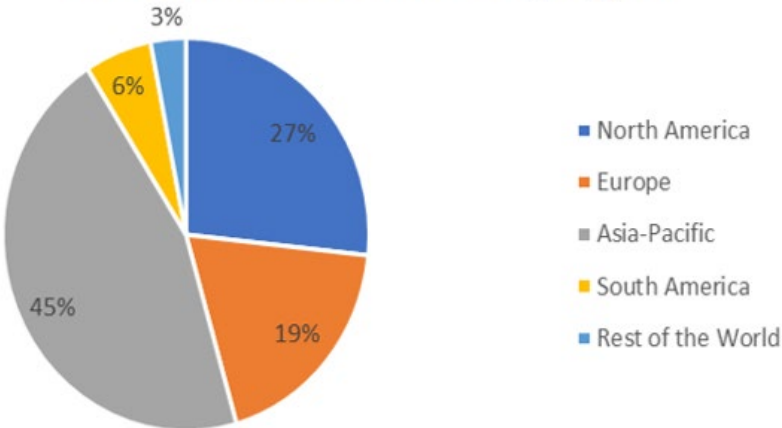
*1- Global Semiconductor Talent Shortage | Deloitte US

*2- Eightfold.ai's whitepaper.

Key Companies Dominating Market Share



Semiconductor Market Share by Region



Opportunities in this Changing Semiconductor Landscape

North American
Reshoring

European
Desire

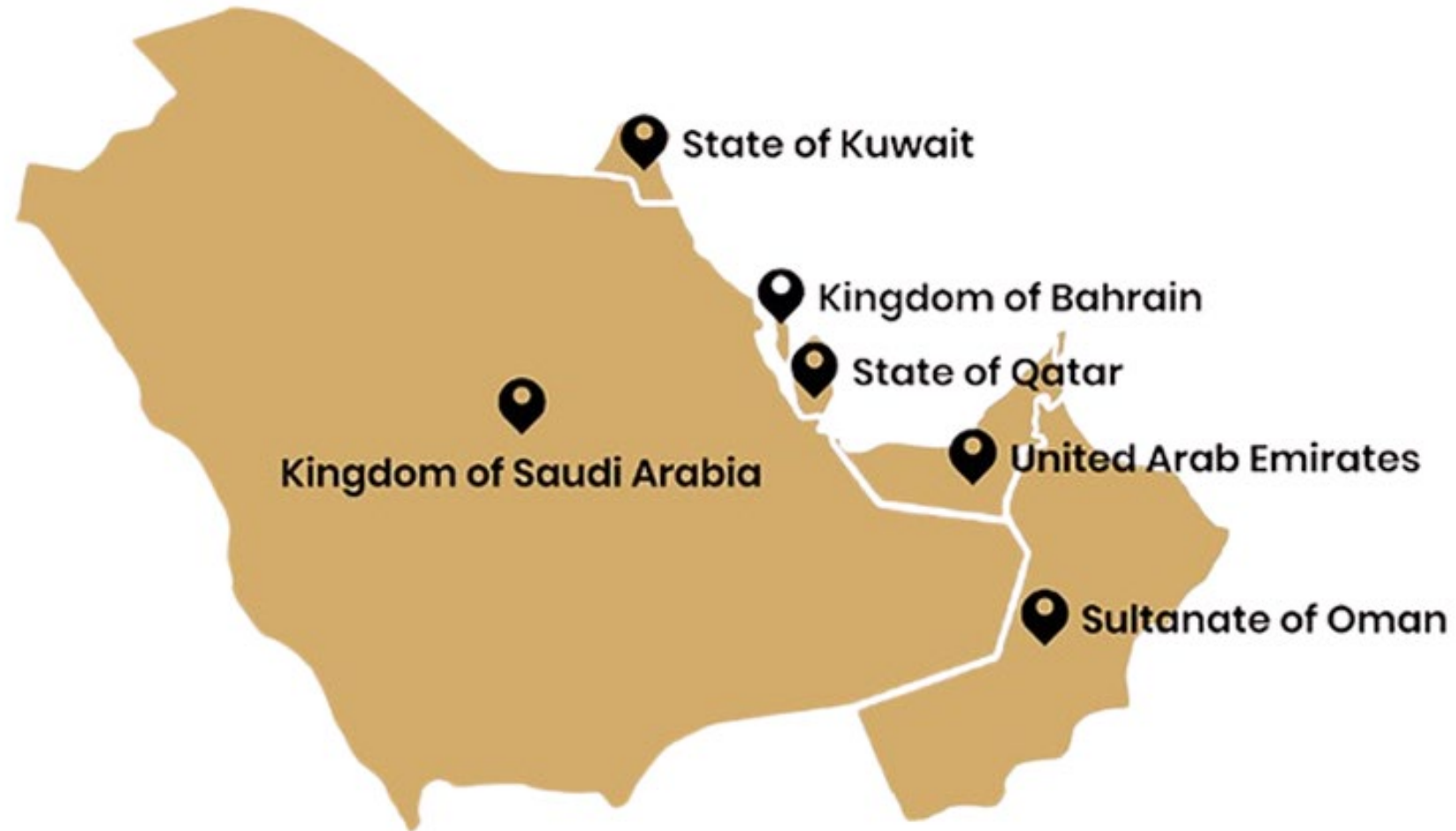
Israel as friend-shoring for
US & India

Asian Dominance

Industry is
supporting India as
substitute of China

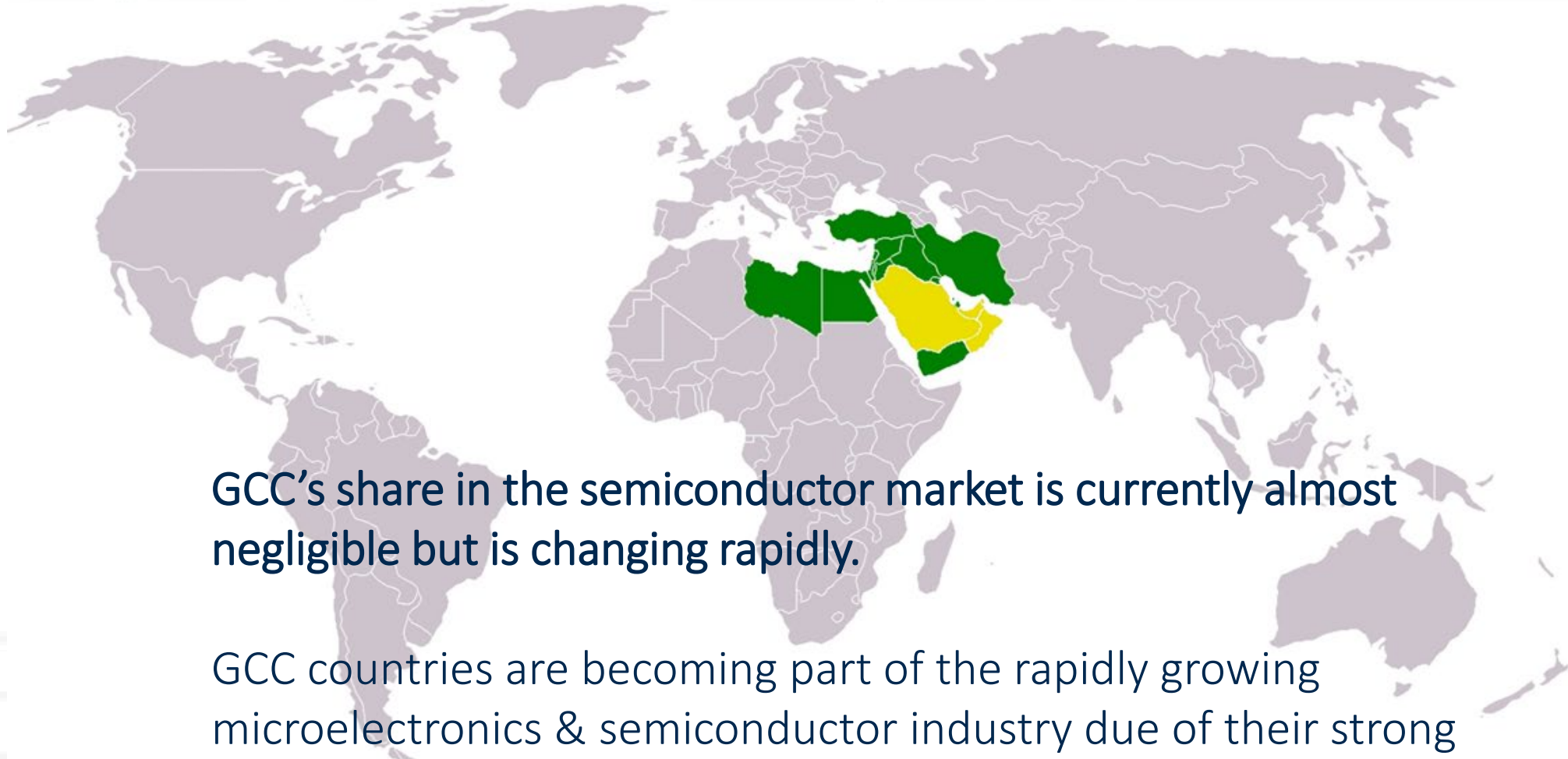
- What next?
- Which region can play a neutral role with deeper pockets to invest?
- Can it be GCC region?

What is GCC - Gulf Cooperation Council



Global Semiconductor Industry Landscape

Gulf Cooperation Council (GCC) countries as an ideal location

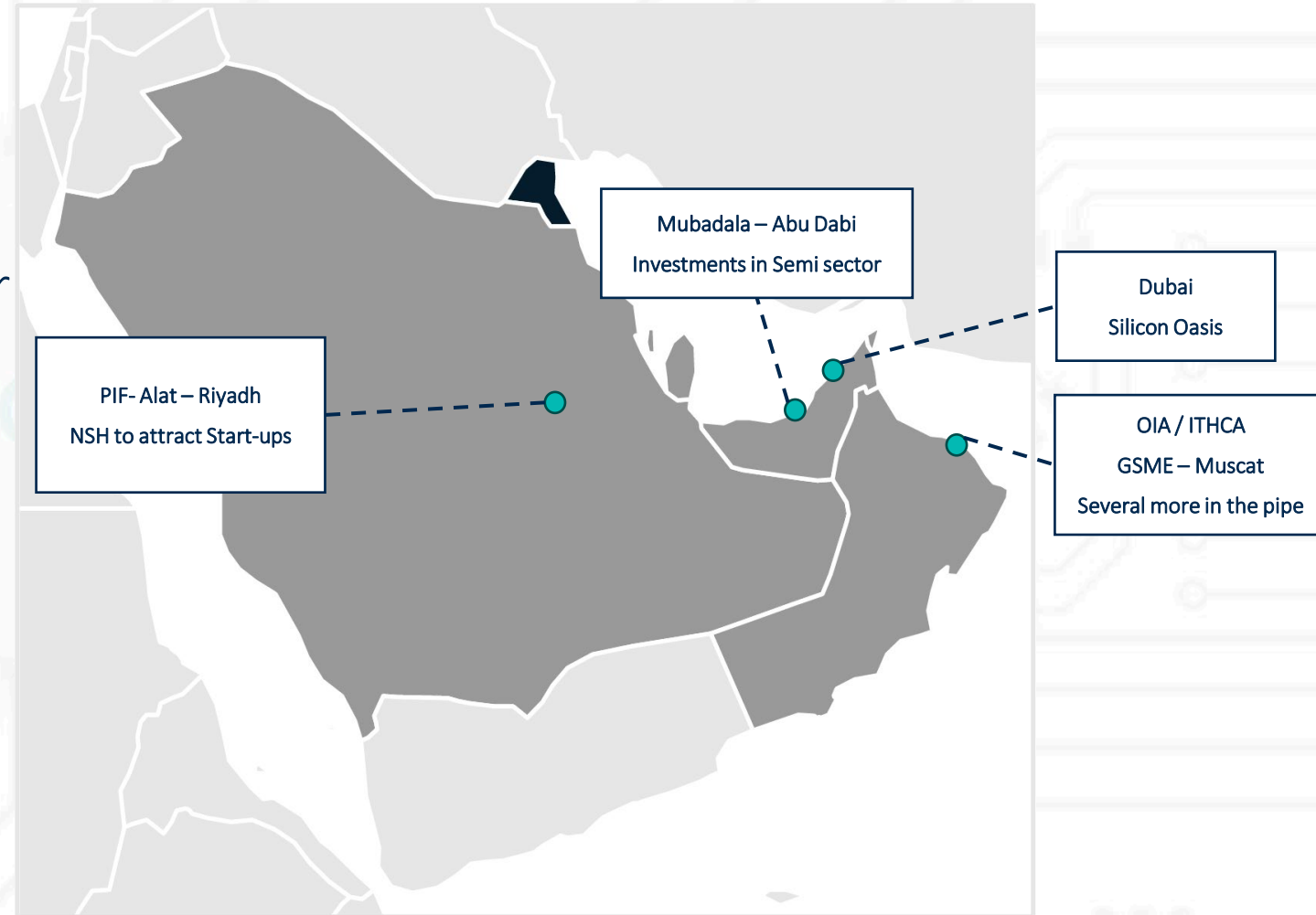


GCC's share in the semiconductor market is currently almost negligible but is changing rapidly.

GCC countries are becoming part of the rapidly growing microelectronics & semiconductor industry due of their strong investment capabilities & access to multinational talent & labor.

Why GCC Countries?

- Strong Investment Opportunities
 - GCC's significant investments, already announced hundreds of billions \$\$\$
 - Preparing infrastructure, and vision for a sustainable semiconductor ecosystem to create mutual growth opportunities.
- Emerging Industry Mindset
 - Driven by a strong commitment to diversify economies away from oil-based to technology-based, invest in high-tech industries, and develop a resilient technology talent & infrastructure



GCC Digital Economy Vision

Drift from an Oil-Based Economy to Digital & Industrial

- Saudi Arabis vision 2030
- Qatar vision 2030
- Bahrain vision 2030
- UAE vision 2031
- Kuwait vision 2035
- Oman vision 2040



نحو قمم جديدة





Milestones in the GCC Semiconductor Journey

Mubadala and GlobalFoundries: Abu Dhabi's Mubadala Investment Company became a pioneer by acquiring GlobalFoundries, marking the GCC's significant entry into the semiconductor market. Spending over \$22.4B.

[Mubadala and GlobalFoundries Overview](#)

Milestones in the GCC Semiconductor Journey

Dubai Silicon Oasis

- An integrated free zone technology park aimed at fostering semiconductor and electronics innovation
- Initially, the project was not successful, but now waking up again after seeing growth opportunities in the region



Milestones in the GCC Semiconductor Journey

- KSA Recent Initiatives
 - Saudi Arabia's Public Investment Fund (PIF) and its strategic investments in Alat; aim to further solidify the GCC's electronics & semiconductor ecosystem
 - Ministry IT initiating “National Semiconductor Hub” (NSH) to attract start-ups around the world with investments
 - Initiating Oman/GSME style training program to develop local talent

MONEY

PIF's Alat to Inject USD100B, Partners with Four Companies to Propel Saudi Tech Industry

by WAYA Staff - Feb 22, 2024

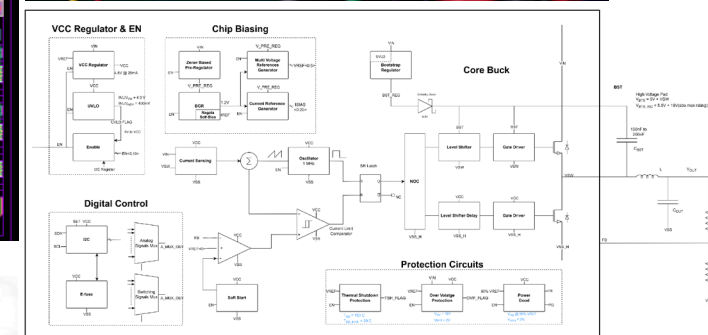
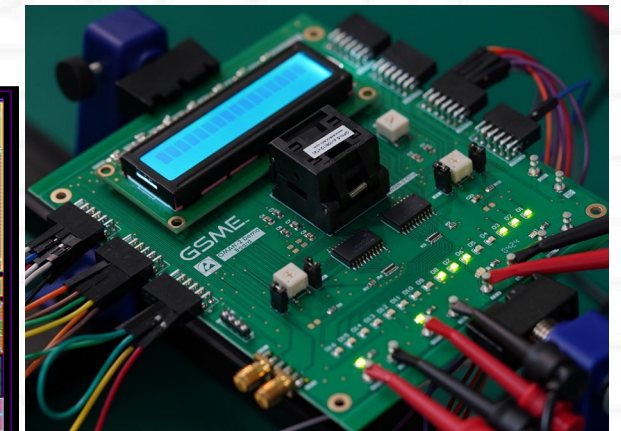
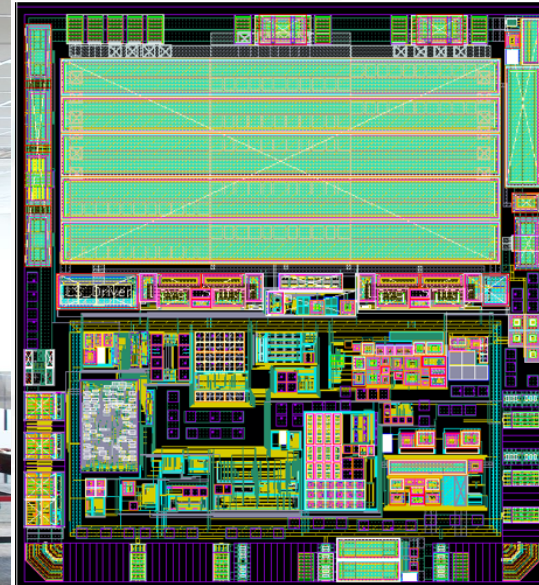


Public Investment Fund (PIF) and Alat

Milestones in the GCC Semiconductor Journey

Oman Investing in Semiconductors

- Since 2022, Oman has been focusing on developing its local workforce and capabilities to offer end-to-end semiconductor solutions from design, to services, to IP, and to full product offerings as phase-1. Oman is focusing on bringing advanced OSAT manufacturing in phase-2.

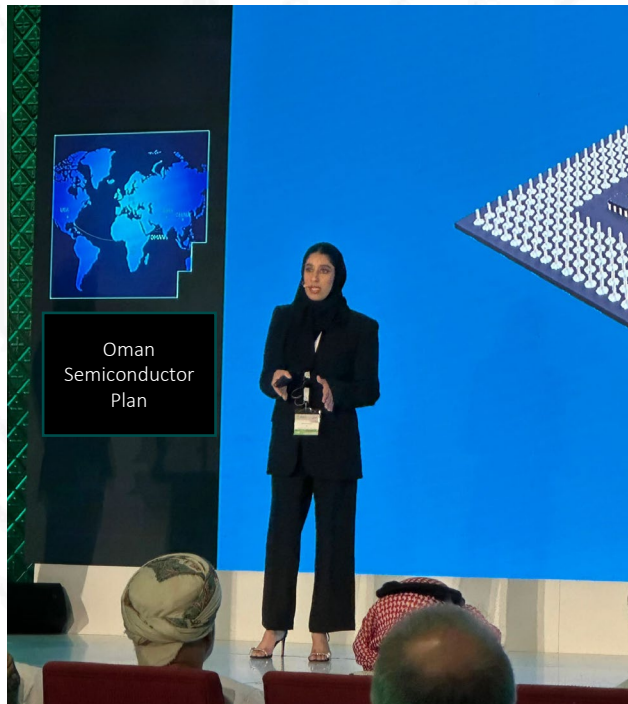


Oman's OIA Group investment in Semiconductors



Oman within GCC

Oman's strategic location, neutral political stance, young and educated workforce, and strong government support is making it an ideal central hub for semiconductor design and R&D within the GCC region



Oman's Unique Position as a Semiconductor Hub

- **Geostrategic Location**
 - Emphasize Oman's strategic location with access to key global markets.
- **Educated Workforce**
 - Highlight Oman's young, educated population and its growing talent pool in technology and engineering.
- **Incentives and Opportunities**
 - Oman's favorable business environment, including government incentives for technology companies.
 - Zero Income Tax
 - Business Tax exemptions for the industry
 - Trainings fully covered by the ministries
 - Salary support for the local workforce
 - Utilities cost support
 - Local partnerships
 - Land cost covered for local manufacturing





GSME Milestones and Achievements

GSME opened its main technology center in Oman in 2022.

GSME is a global design & manufacturing solutions company and the first in GCC to open its chip-design center. GSME has its R&D locations in San Jose-Silicon Valley, Hsinchu-Taiwan, Muscat-Oman, and a presence in Shanghai through OpenSemi as partners

- Over 100 local Omani engineers have been trained in chip design, verification, and manufacturing since 2022.
- Engineers are using cutting-edge EDA tools in designing for world-class foundries in their top process nodes.



Market Growth and Projections for the GCC

- Per **GSME** estimations, the GCC semiconductor market is projected to grow at a CAGR of 30% over the next 3-5 years, driven by local desire to bring advanced technologies to the region.
- **GSME** is predicting by 2030, the GCC semiconductor market is expected to reach a valuation of over \$20 billion, fueled by heavy investments in digital infrastructure and technology adoption.





What Next?

GCC has a lot to offer due to its solid measures to invest heavily in advanced technology and in innovation

They are focusing on building and molding their local workforce and talent towards technology entrepreneurship

Now the question is,

Can semiconductor design & manufacturing industry take advantage of this evolving region and help them in building a strong ecosystem to make it a win-win for all?

Thank You!

Reference

- [Mubadala-backed GlobalFoundries Acquires Semiconductor Tech](#)
- [GlobalFoundries IPO and Mubadala](#)
- [Mubadala and GlobalFoundries Overview](#)
- [Public Investment Fund \(PIF\) and Alat](#)
- [Alat: Building a World-Class Manufacturing Hub in Saudi Arabia](#)
- [The Semiconductor Decade: A Trillion-Dollar Industry](#)