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# Egypt*

## The Semiconductor Industry in Egypt

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### I. Introduction

Egypt, officially the Arab Republic of Egypt, is a transcontinental country spanning the northeast corner of Africa and southwest corner of Asia via a land bridge formed by the Sinai Peninsula. Egypt is one of the most populous countries in Africa and the Middle East, and the 15th most populated in the world. The great majority of its over 92 million people] live near the banks of the Nile River. About half of Egypt's residents live in urban areas, with most spread across the densely populated centers of greater Cairo, Alexandria and other major cities in the Nile Delta.

Egypt has one of the longest histories of any modern state, having been continuously inhabited since the 10th millennium BC. Its monuments, such as the Giza pyramid complex and its Great Sphinx, were constructed by its ancient civilization, which was one of the most advanced of its time. Its ancient ruins, such as those of Memphis, Thebes, Karnak, and the Valley of the Kings outside Luxor, are a significant focus of archaeological study and popular interest. Egypt's rich cultural legacy, as well as the attraction of its Red Sea Riviera, has made tourism a vital part of the economy, employing about 12% of the country's workforce.

Historically, science and technology are well respected and promoted in Egypt. Egypt has generated many well-known creative inventors, scientists and Nobel laureates in the past few centuries contributing to various fields all over the world.

Egypt has the largest overall education system in the Middle East and North Africa (MENA) and it has grown rapidly since the early 1990s. Egypt has more than 50 universities and higher education institutes. Egypt's annual graduating pool of 426,000 students is one of the largest among low cost offshoring destinations such as Philippines and Malaysia. It is the second biggest talent pool amongst offshoring destinations in EMEA region and the largest one amongst Arabic speaking countries. Students graduate annually with multilingual capabilities in 16 different languages.

The economy of Egypt is one of the most diversified in the Middle East, with sectors such as tourism, agriculture, industry and services at almost equal production levels. Egypt is considered to be a middle power with significant cultural, political, and military influence in the Mediterranean, the Middle East and the Muslim world.

### II. Chip Design and EDA presence

The first semiconductor company was established in Egypt in the early 1990s, and in the past decade these companies have grown to reach more than 30 companies with customers all over the world [1]. These fabless companies are very well diversified covering most aspects of the semiconductor industry, such as system level design, analog-mixed-signal design, digital ASIC design, MEMS design, IC Physical design & Verification, PCB Design and IC Testing. Egyptian semiconductor companies can be classified as 1) companies designing their own products, and 2) companies that provide design and support services to other local and international customers.

There are many multinational semiconductor companies that operate on Egyptian soil such as Intel, Mentor Graphics, Alterra, Newport Media, Hittite and SoftMems. Most of these multinationals opened branches in Egypt to capitalize on Egyptian semiconductor design talents. Semiconductor EDA companies such as Mentor Graphics and Soft MEMS operate strongly from Egypt. Each of them has its second biggest foreign branch in Cairo.

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|---|---|
| **Capital** | Cairo |
| **Largest city** | Cairo |
| **Language** | Arabic |
| **Area** Total | 1,002,000 km² |
| **Population** (2012 estimate) | 92,000,000 |
| **Currency** | Egyptian Pounds (EGP) |
| **Time zone** | **(UTC +2)** |
| **Internet TLD** | .eg |

## III. ACADEMIA

Egypt has the largest academic system focused on technology in the MENA region with 50+ higher educational institutes and 10+ research centers. Focusing on ICT and semiconductor technologies has intensified since the early 1990s. Several government-led capacity building programs focusing on the semiconductor and nanotechnology sectors were developed in the last two decades. Most of the leading electronics university and government programs have created a common network to support each other in the dissemination of the state-of-the-art technologies and design methodologies, equipping themselves with up-to-date EDA and CAD tools and attracting experts to use these tools. This has all led to a strong generation of graduates that have pushed the local semiconductor industry to where it stands right now.

The existence of strong semiconductor university programs, well equipped research centers, governmental research funds and strong links with the industry has led to a strong and diverse semiconductor R&D community in Egypt. This active R&D community has fueled innovative ideas, concepts and partnerships with major companies and research institutes all over the world. The results of these research projects have generated hundreds of patents and research papers in leading IEEE conferences and journals.

## IV. GOVERNMENT AND SUPPORT PROGRAMS

Since the early 2000s, the Egyptian government has recognized the ICT and Semiconductor industries as strategic pillars, and has pumped hundreds of millions of dollars to support them. There are currently many government support and funding programs such as ITAC [2] , TIEC [3] , STDF [4], and RDI [5]. The strategic goal of these funds is to stimulate the development of break-through projects and technologies, and discover the companies capable of driving them into the global market. In addition to the funds, these companies are supported by industrial mentorship, incubation services, and tax benefits. Funding programs are divided into 1) Advanced Research funds promoting innovative creation of prototypes and 2) Larger funds aimed at productizing these prototypes into industry level products.

Egypt has also invested in developing world class infrastructure to support the growing and flourishing technology industry. It has developed several technology parks such as Smart Village and Maadi Park. In addition, Egypt's location allows easy access and connectivity to several international submarine cables as the primary internet backbone between South East Asia, India, Middle East, and Europe passing through Egypt.

The government is also funding an ambitious Innovation Science Park for Advanced Nanosystems (I-SPAN). This project aims to boost innovative R&D, facilitate technology partnerships, and strengthen bridges between academia and industry, and attract more VLSI multinationals.

In the last decade several NGOs supporting the technology industries such as EITESAL [6] and VLSI-Egypt [7] have emerged. These NGOs have concentrated in promoting the Egyptian ICT and semiconductor industries, assisting in capacity building, and lowering barriers to establish more technology companies in Egypt. These NGOs are mainly funded by the government and powered by local volunteers.

## REFERENCES

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