Taiwan - Israel

R&D Cooperation Program

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ITRI
Industrial Technology Research Institute

Israel-Asia Chamber of Commerce
לשכת המסחר ישראל-אסיה

רשות החדשנות
Israel Innovation Authority

htc

acer ASUS SONY

Microsoft

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A few words about my background…

In the last **10 years I have been working with Israeli and Taiwanese** companies on joint R&D programs. It started in 2011, when we developed the technology for touch screen and digital pen. Among our customers were Taiwanese companies like hTC, Asus, Acer and also international companies like Sony, and Microsoft.

In Taipei, we had a team of about 30 to 40 people. It is a relatively big office outside of Israel…

Why did we have such a big office?

The reason is that Taiwan is **a critical R&D hub** for the both for the Taiwanese brands and western brands. HP and Dell for example, relay on the local partners to provide the next-generation solutions. We worked closely with their engineers to integrate our solution and support the production lines.

In **2015 Microsoft acquired the company** [N-trig].

wistron

Quanta Computer

JORJIN TECHNOLOGIES

COMPAL

Alibaba

Before we had Chinese customers we worked with Taiwanese ODMs.

Maybe some of you are familiar with these names, but most people are not familiar with the Original Design Manufacturers, ODMs, brands.

Wistron, Quanta, Compal are world's leader Taiwanese ODMs with multi-billion dollar revenues, and tens of thousand employees each.

They develop and manufacture the iPad for Apple, devices for Microsoft, servers for Amazon and Facebook

- **Jorjin** is a medium-size, ODM that is an expert in smartglasses. Among Jorjin's customer are Epson and Lenovo.

Why these big ODMs chose to do a joint R&D program with a small Israeli startup?

The reason is that they realized that via **innovation** they can **keep their leadership position.** Moreover, get **higher margins** in future products!

In 2019, InfinityAR was **acquired by Alibaba**.

Since then, I'm working with **Israeli and Taiwanese hi-tech companies** on **business collaboration**.

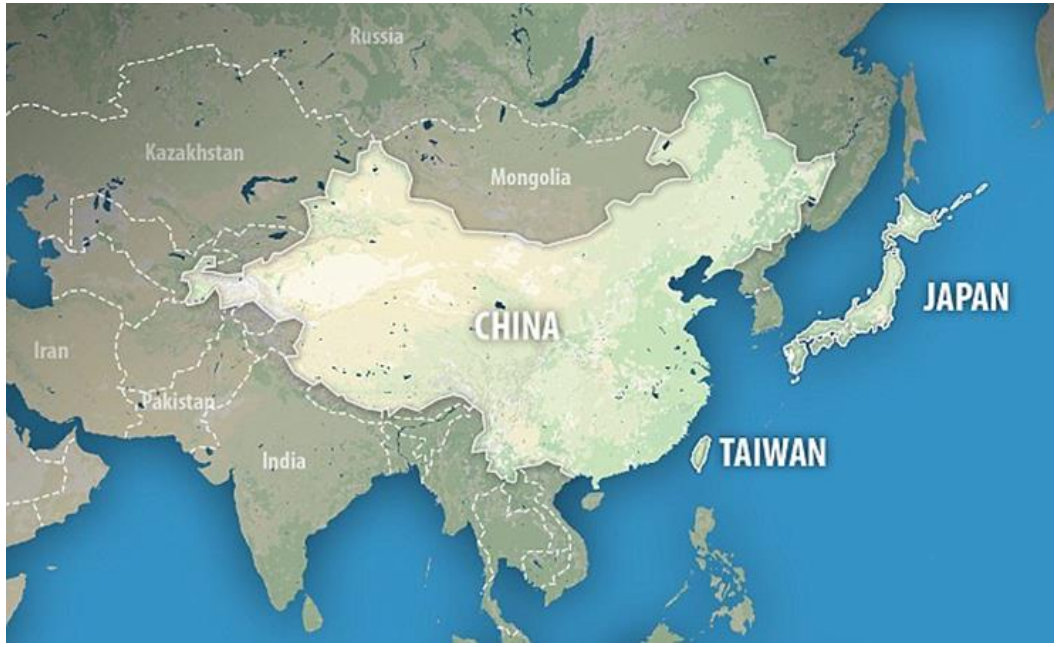
Agenda

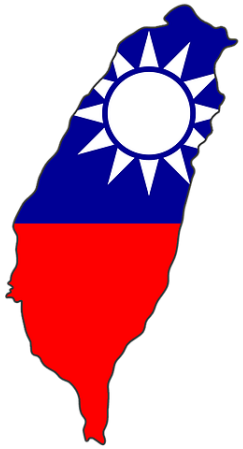
- Taiwan in 5 min
- Why R&D cooperation Taiwan-Israel
- Focused Industries
- Examples

Taiwan is the 6th largest Asian economy

- Land Area: 36K km² (Israel 22K km²)
- Population: 24M (Israel 9M)
- Main Language: Mandarin Chinese

- A well-established Democracy, free society
- One of the safest countries in the world





Taiwan’s Successful Coronavirus Response

בעולם | TheMarker

איך עוצרים קורונה? המקרה המיוחד של טייוואן - ומה אפשר ללמוד ממנו

BREAKING | 72,621 views | Oct 29, 2020, 01:00pm EDT

Taiwan Counts 200th Day Of No New Local Coronavirus Infections

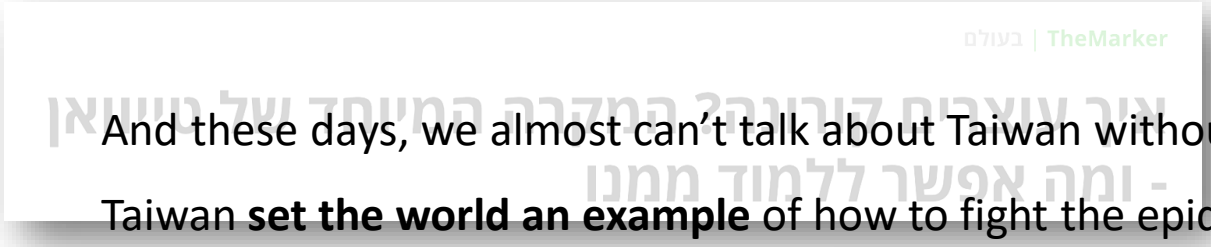
הכובס

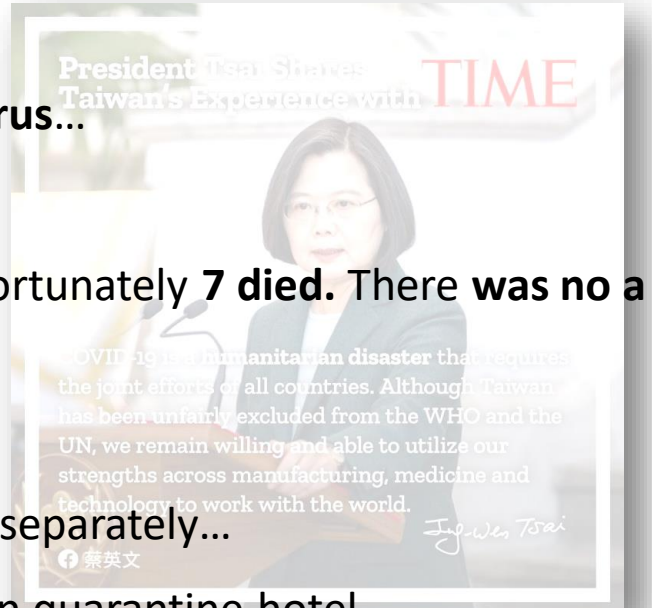
עמוד הבית › גלובלי ושוקי עולם

נגיף הקורונה | ניתוח

ביג דאטה, נחישות, זריזות והתגייסות פוליטית: כך מנצחת טיוואן את הקורונה

Taiwan’s Successful Coronavirus Response

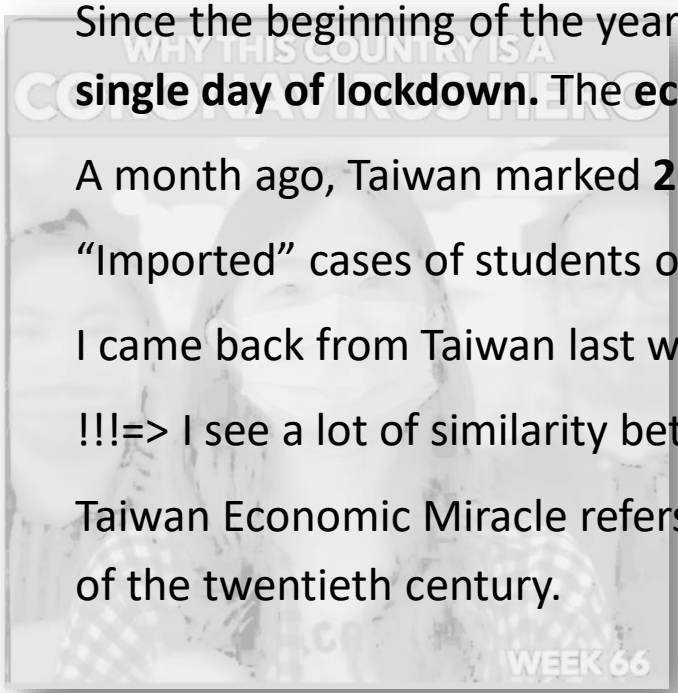


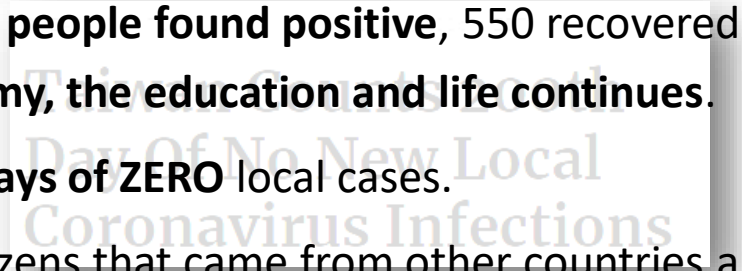


And these days, we almost can’t talk about Taiwan without talking about **Coronavirus**…

Taiwan **set the world an example** of how to fight the epidemic.

Since the beginning of the year **650 people found positive**, 550 recovered and unfortunately **7 died.** There **was no a single day of lockdown.** The **economy, the education and life continues**.





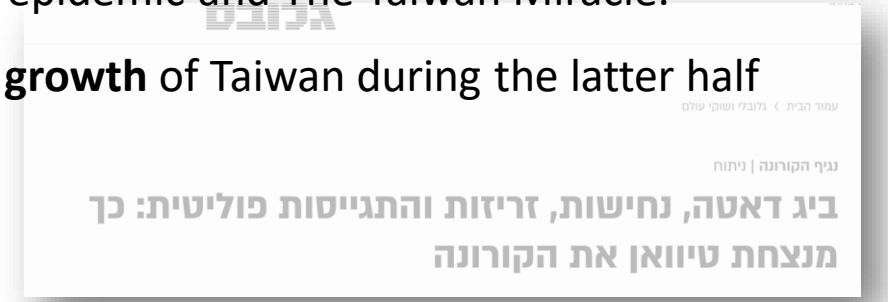
A month ago, Taiwan marked **200 days of ZERO** local cases.

“Imported” cases of students or citizens that came from other countries are count separately…

I came back from Taiwan last week after 5 weeks business trip. The first two were in quarantine hotel…

!!!=> I see a lot of similarity between the success of Taiwan with fighting the epidemic and The Taiwan Miracle.

Taiwan Economic Miracle refers to **the rapid industrialization and economic growth** of Taiwan during the latter half of the twentieth century.



It’s about **leadership and discipline**.

Taiwan Vs. Israel economy – Macro Analysis

1. Electrical machinery, equipment: US$147.4 billion (44.7% of total exports)
2. Machinery including computers: $42.7 billion (13%)
3. Plastics, plastic articles: $19.9 billion (6%)
4. Optical, technical, medical apparatus: $15.8 billion (4.8%)
5. Mineral fuels including oil: $12.9 billion (3.9%)
6. Vehicles: $10.3 billion (3.1%)
7. Organic chemicals: $9 billion (2.7%)
8. Iron, steel: $8.8 billion (2.7%)
9. Articles of iron or steel: $7.8 billion (2.4%)
10. Copper: $4.4 billion (1.3%)

Total $329 billion in 2019 Exports

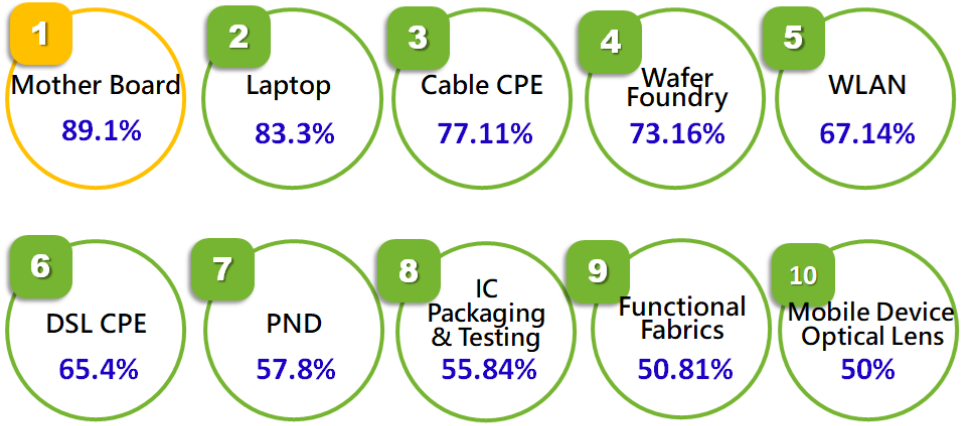
1. Electrical machinery, equipment: $8 billion (13.7%)
2. Optical, technical, medical apparatus: $5.5 billion (9.4%)
3. Machinery including computers: $5 billion (8.6%)
4. Organic chemicals: $4.3 billion (7.4%)
5. Pharmaceuticals: $3.3 billion (5.7%)
6. Other chemical goods: $3 billion (5.1%)
7. Plastics, plastic articles: $2.8 billion (4.7%)
8. Aircraft, spacecraft: $2.5 billion (4.2%)
9. Mineral fuels including oil: $1.4 billion (2.5%)

Total $58 billion in 2019 Exports

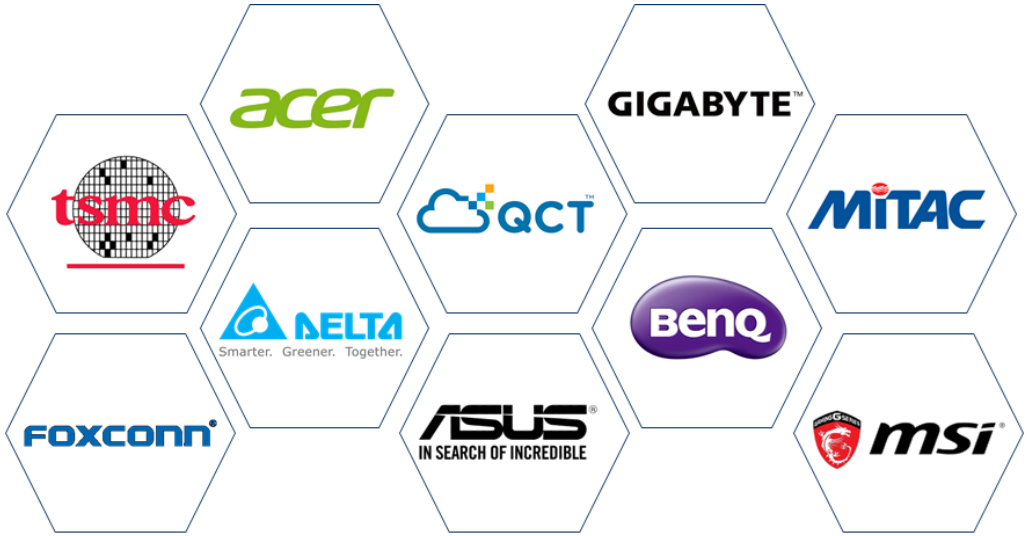
Taiwan: A Key Player in the Global ICT Market

- Taiwanese companies control more than **80% of the notebook** PC and **motherboards** markets.
- Original Design Manufacturer (ODM) – the heroes behind the brands
- **Foxconn**, **Quanta, Wistron, Pegatron** are all Taiwan-based companies responsible for the **iPad, iPhone, Dell, HP, Microsoft** and other western companies' electronic products

(Products/Production value in global market share)



Year: 2017
Source: ITIS



TAITRA

Why joint R&D Taiwan – Israel?

- **Complementary core competence**
- **Leverage eco-systems**
- **Open international markets**
  - For Israelis: APAC/World
  - For Taiwanese: USA/EU

Focused Industries

- Israel and Taiwan cooperate in multiple industries, including:
  - Defense & Cybersecurity
  - Health & Medical
  - Water, wastewater, renewable energy and Agriculture
  - Smart Cities and Auto-Tech
  - Industry4.0 & smart manufacturing
  - Semiconductors
  - IoT/ICT

“5+2 Innovative Industries” (5+N)

“5+2 Innovative Industries” (5+N)

This is why we need to know the “5+2 Innovative Industries” policy…

*The government is making a **heavy commitment** of resources to promoting **specific sectors** of the economy as the key to transforming Taiwan’s industry. When we talk about commitment, we are speaking on government investment of **billions of dollars** to drive these sectors forwards.*

*The objective of the program is to **stimulate economics growth, increase innovation** and to **create well-paid job opportunities**.* The administration aims to shift Taiwan’s industrial base away from its traditional concentration on **contract manufacturing** and gear it towards **high-value-added, service- and solutions-oriented business models.**

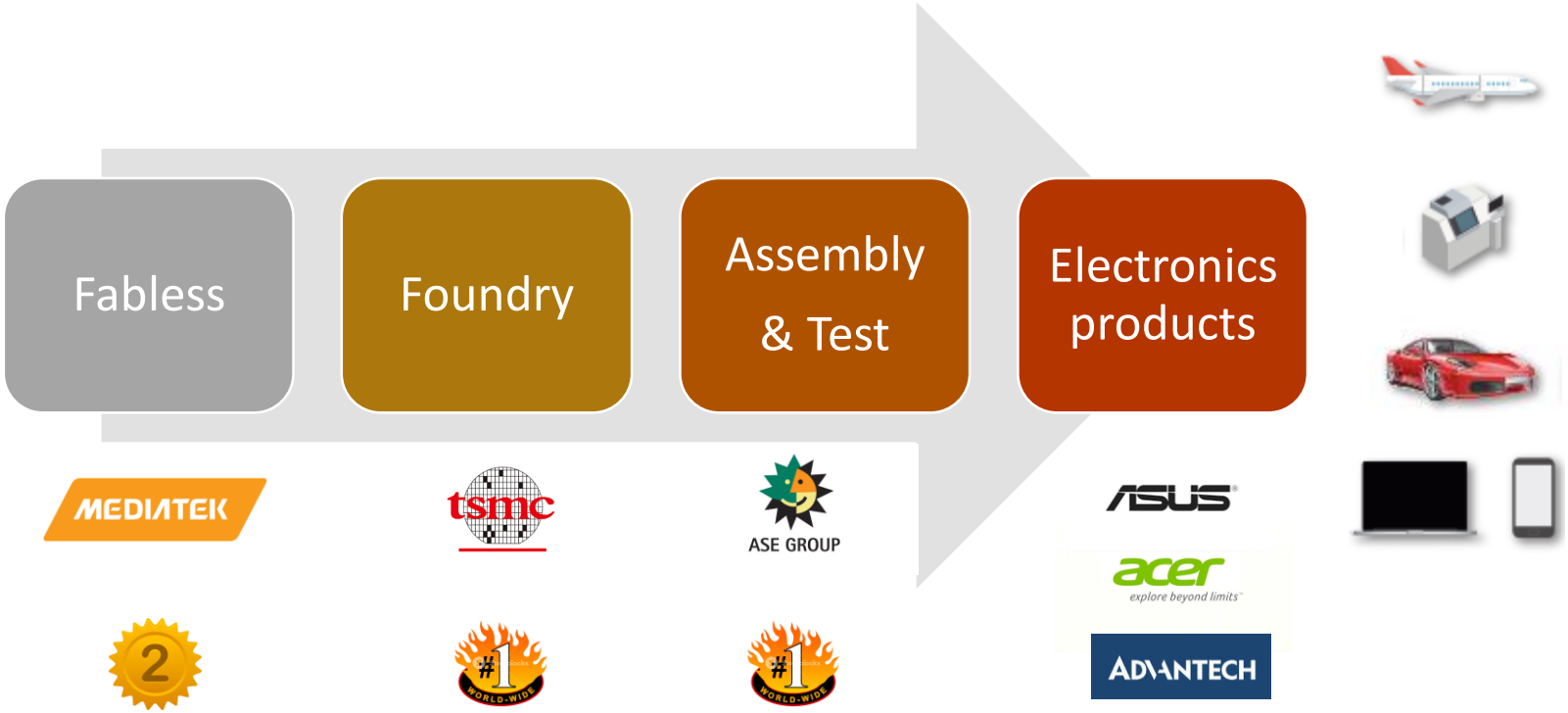
What started out as the “5 Pillar Industries” during Tsai’s presidential campaign – the **Internet of Things Biomedical**, **Green Energy, Smart Machinery,** and **Defense.** Later was expanded to include more sectors for example **Semiconductors and IC Design, Next-Generation Vehicles** and more. Although there are more than **seven sectors**, the name of the policy remains **“5+2”** and sometimes is referred as “5+N” or **“5+N** Innovative Industries” development program.

The idea is to leverage the **strengths of domestic businesses**, **Taiwan’s government**, and entering **international markets**.

!!! => I think that this policy demonstrates one of Taiwan’s strengths – create a **policy** and with **strong determination** and persistence implement it. When considering a joint R&D program with Taiwan, you probably get much more support when your program is within the 5+2 sectors.

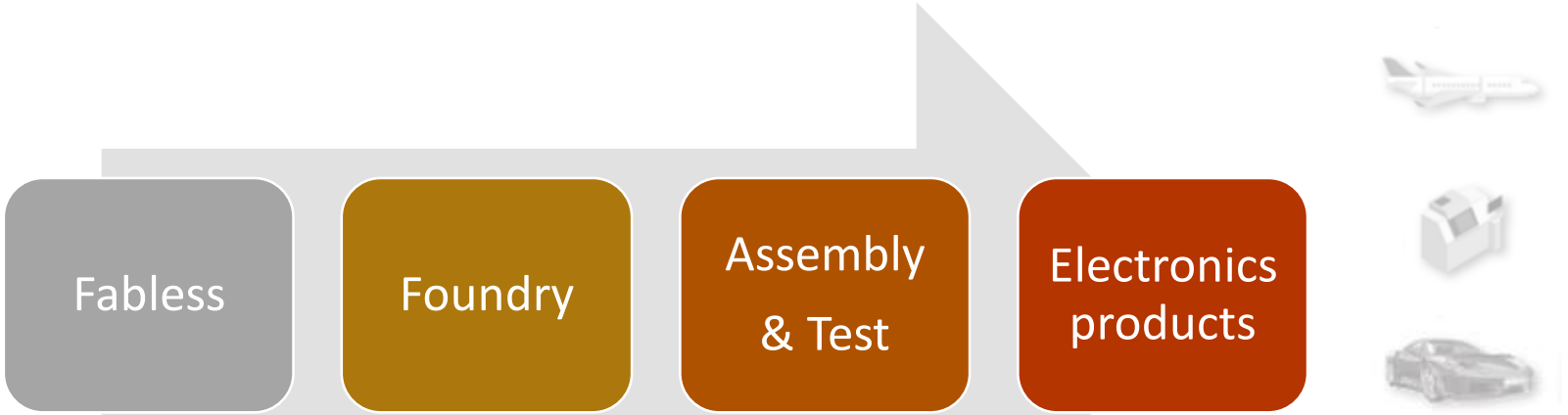
Lucky us**, we have many technology companies** in these areas and this is **why Taiwan–Israel R&D cooperation should be natural**.

Semiconductor Industry



- Over 100 Israeli semiconductor startups in 2020

Semiconductor Industry



Taiwan has well-developed semiconductor clusters.

It is one of the **few regions in the world** with a **depth and breadth** of semiconductor clusters packed into a **small geographical area**.

The value chain of the IC industry is composed of **three segments, namely IC design, manufacturing, and packaging and testing**. When speaking about semiconductor industry, we are typically familiar with the **fabless** companies like **Qualcomm**, or **Mobileye.** But between the fabless companies and an end product that will be in a smartphone or tablet, there are two additional important functions – **Foundry**, where the ICs are manufactured out the silicon wafers and **Assembly and Testing** house that turns the silicon in to an end-product.

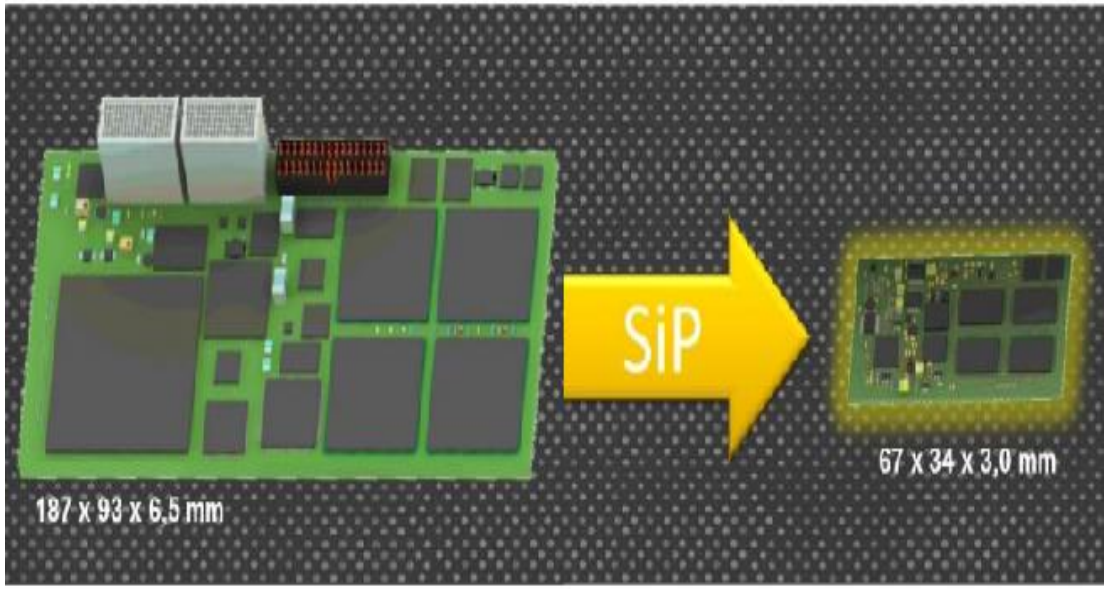
Taiwan is **very strong and competitive in chip manufacturing and IC design**.
Taiwan is world's 2nd largest Fabless IC market share in IC production. Mediatek, in the top five along with Qualcom, Nvidia, Broadcom and AMD.

- **TSMC** is **the world's biggest foundry and most advanced semiconductor manufacturing process technology**

- **ASE** is the world's largest **Semiconductor Assembly and Testing provider**

- Over 100 Israeli semiconductor startups in 2020

Why Semiconductor?



System in Package (SiP). > 7X area reduction

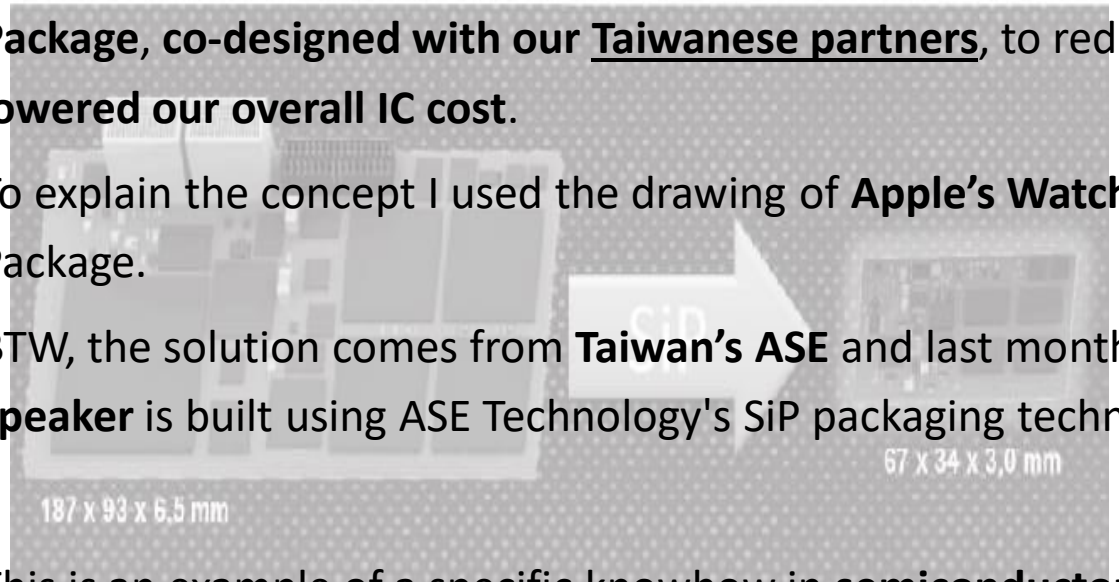
ASE provides SiP packaging for Apple-designed UWB chip *DIGITIMES* *Thursday 15 October 2020*

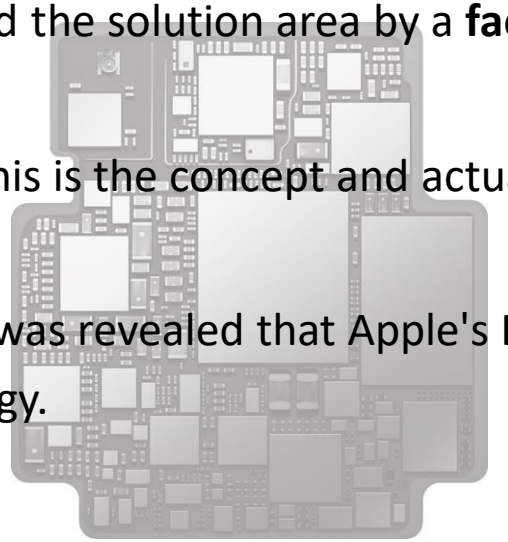
Why Semiconductor?

At **the company that was sold to Microsoft**, we designed the ICs that were responsible for **touch screen**. We always had the challenge to make our solution **smaller** and at **lower cost**… By moving from a **discrete** solution to **System in a Package**, **co-designed with our <u>Taiwanese partners</u>**, to reduced the solution area by a **factor of 10** and significantly **lowered our overall IC cost**.

To explain the concept I used the drawing of **Apple's Watch**. This is the concept and actual design of the System in a Package.

BTW, the solution comes from **Taiwan's ASE** and last month it was revealed that Apple's **HomePod mini smart speaker** is built using ASE Technology's SiP packaging technology.





This is an example of a specific knowhow in **semiconductor assembly** which creates much more competitive products.

System in Package (SiP). > 7X area reduction

ASE provides SiP packaging for Apple-designed UWB chip

15 October 2020

This is a good example for an opportunity of a **win-win between, Israeli R&D and Taiwanese R&D**. **Both parties brought <u>innovation.</u>** Each side contributed within its **own core competence**, bringing its **own IP.** The end result was a **disruptive** solution, that later was part of **Microsoft Surface Pro**.

I see many opportunities for **semiconductor R&D collaboration** between Israeli and Taiwanese companies

Jorjin Technologies announcing new AR glasses, J-Reality

5G AR Industrial Inepection Application, 3D AR Culture Innovation Show Application

Taipei Shih / Taipei Hsien, Oct 29, 2020 (Issuewire.com) - JORJIN

- **Complementary core competence**
- **Leverage eco-systems**
- **Open international markets**
  - For Israelis: APAC/World
  - For Taiwanese: USA/EU

Other areas that very interesting to explore joint R&D collaboration are in the **5G, Cybersecurity, and IoT.** Taiwan has invested a lot in these areas **in R&D** and Taiwanese technology companies have launched **solutions.** From **Mediatek's 5G** chipsets to **Advantech's 5G Edge & Computing servers**.

The three leading Telecoms have deployed **5G base** stations and have **full coverage in major cities and transportation lines**. Nationwide coverage is planned by end-2021. There are many applications that anticipates the 5G revolution including **Autonomous vehicles** and **industrial automation**. The low latency of **5G will make AR and VR** applications both immersive and far more interactive.

Last month**,** after two-years pilot with the local telecom, **Jorjin Technologies**, a Taiwanese ODM announced its **5G AR glasses**.

This is an example of Taiwanese innovations that "calls" for R&D collaboration to **leverage the eco-systems**. Israeli companies in **IoT/wearable cybersecurity**, **AR application** like industrial remote assistance or in the health sector, IoT and **G5 telecom deployment** and **performance monitoring** solutions may team up and create together an innovative, best-in-class solution.

Moreover, it is an opportunity for Israeli companies to penetrate APAC and **global market** via the Taiwanese partners and also the other way around, for Taiwanese partners to leverage Israeli western-word business relationships and increase its export reach.

- Complementary core competence
- Leverage eco-systems
- Open international markets
- For Israelis: APAC/World
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Summary – When considering joint R&D program Israel & Taiwan,

(1) Keep in mind the **"5+2 Innovation program"**. Better to align with one of the pillars

(2) Look for **complementary core competence** and

(3) **Leverage the eco-system** to do more…

Thank You!

TIP Ventures

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Our partners are trusted friends, who make the impossible possible