



**Yitzhak Apeloig**

**Technion –**

**Israel Institute of Technology**

**Haifa, ISRAEL**



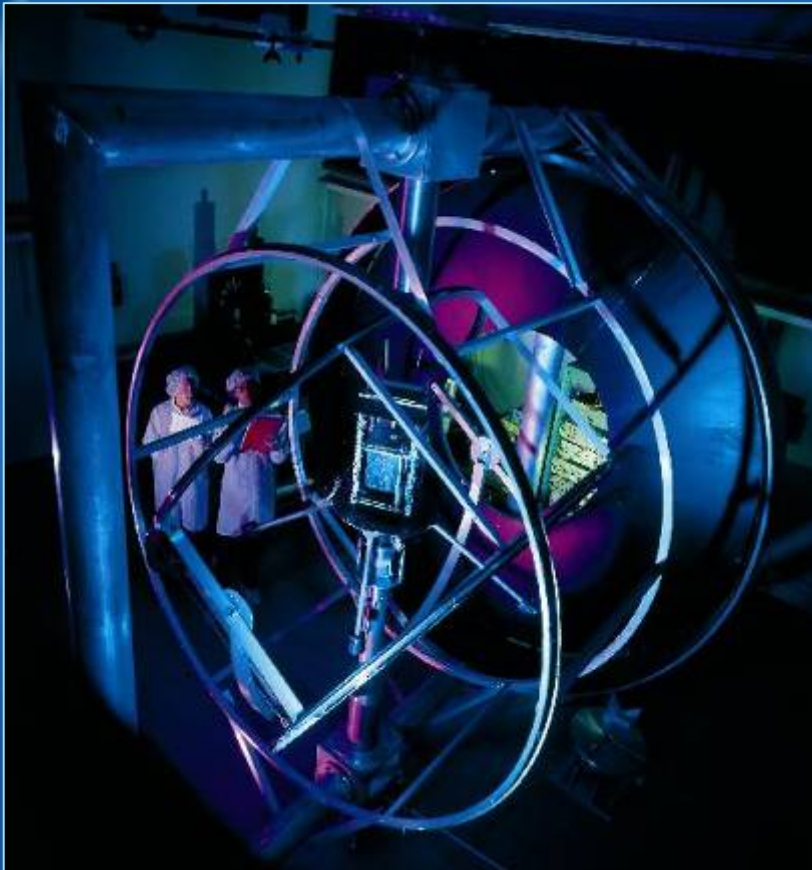
***“Higher Education and Innovation –  
the Good, the Bad and the Unknown”***

***IAU, Utrecht, 15-18 July, 2008***



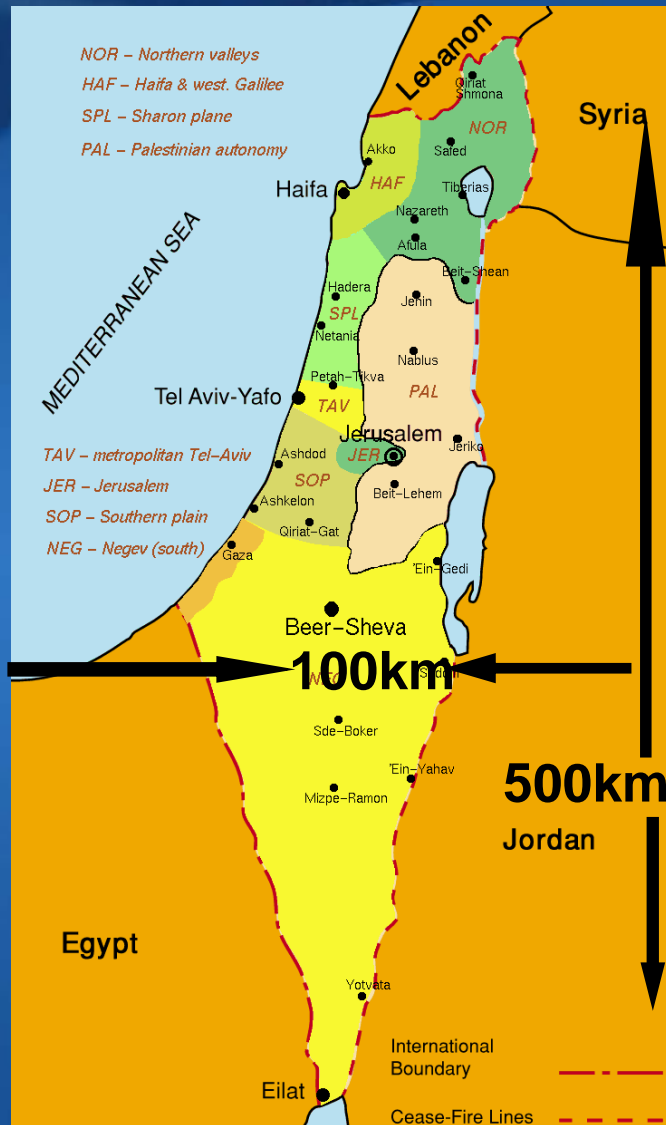


# Innovation in Research and Education at the Technion – the Powerhouse behind Israel's Economy





# Israel's Economy



**Area: 22,145 km<sup>2</sup>**  
**Population : 7.2 million**

<b>GDP</b>	<b>\$124B</b>
<b>GDP/Capita -</b>	<b>\$21,000</b>
<b>Growth in GDP-</b>	<b>5.0%</b>
<b>Export -</b>	<b>\$46 B</b>
<b>(High-Tech -</b>	<b>\$17 B)</b>
<b>Foreign Investment -</b>	<b>\$20 B</b>
<b>In High-Tech</b>	<b>\$11 B</b>

# ISRAEL SILICON VALLEY

2008.



## Israel's High-Tech

### An International Success Story

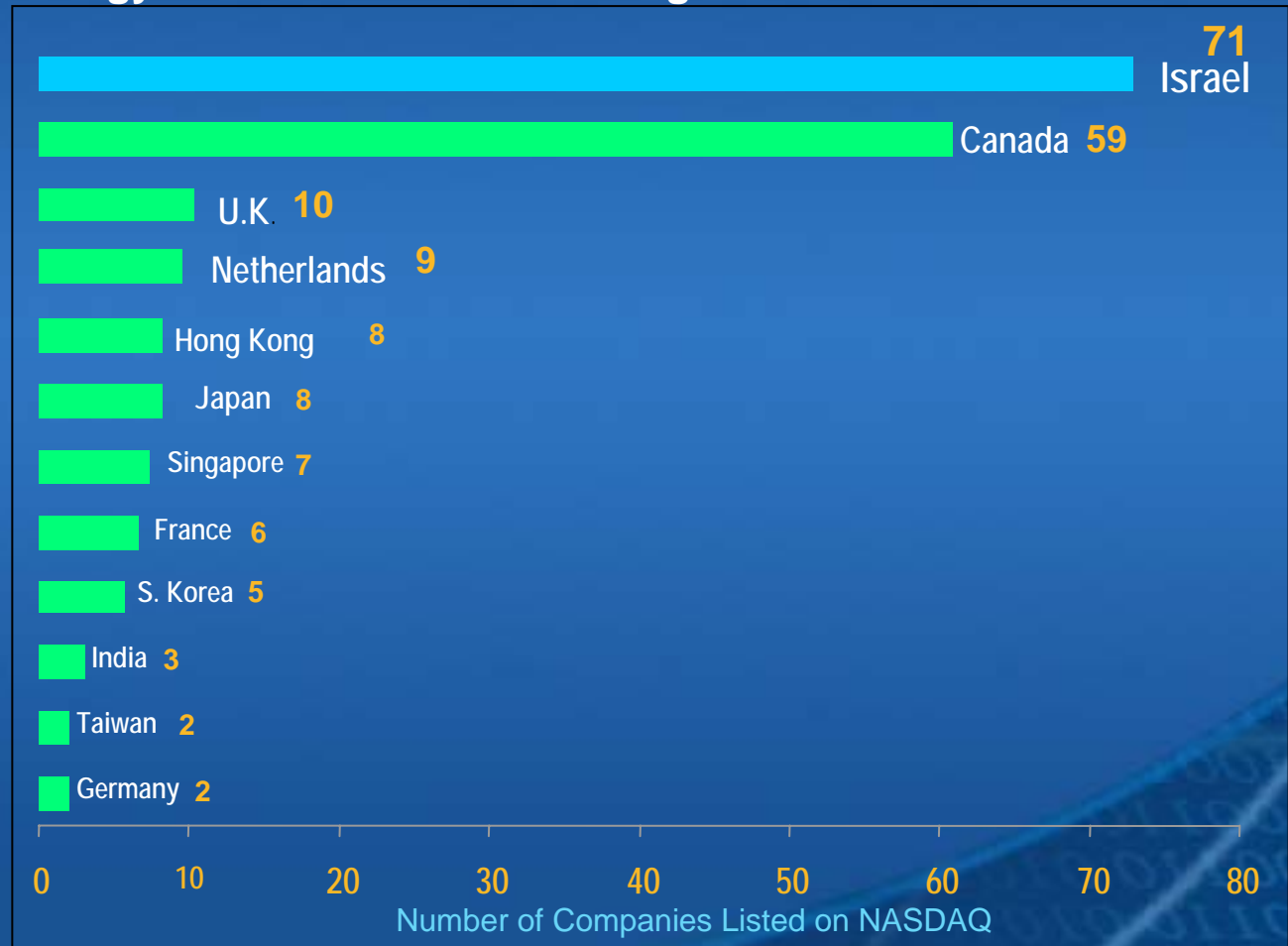
- More than 3,000 high-tech companies and 1,500 start-ups
- Impressive sales growth
- About 70 Israeli companies listed on NASDAQ
- High-tech sector provides employment and boosts exports and foreign investment
- High-tech export- \$17 billion (2007)



# Israel Is The Leader Among Non US Countries Listed on NASDAQ

- Israel maintains the largest number of companies on NASDAQ
- Among these countries, Israeli companies accounted for 40% of IPOs on NASDAQ in 2006.
- Technology remains the dominant segment

## Recent Israeli NASDAQ IPOs





# Bill Gates, Microsoft CEO, made his first trip to Israel in 2007



**“Considering the density of Israeli start-ups and local successes, Israel is like a bit of Silicon Valley”**



# Some of Israel's Noticeable Companies





# Global Competitiveness Ranking

**ISRAEL – overall ranking 15**

- **Availability of scientists & engineers** 1
- **Scientific papers per capita** 3
- **Technological Readiness** 4
- **Quality of academic institutions** 4
- **Patents** 5
- **Innovation** 8
- **Infrastructure** 23
- **Basic requirements** 29
- **Banks stability** 26
- **Employment market** 35



# Major Multinational Companies with a Design Center in Israel





**Aerospace & Defence**



**Computer Hardware**



**Communications**



**Medical**



**Consumer**



**Industrial**



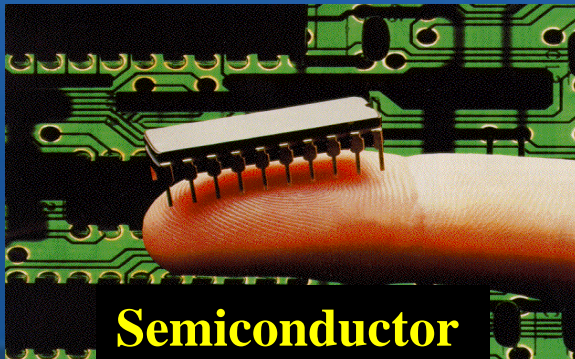
**Aftercare**



**Outsource**



**Security Applications**



**Semiconductor**



**Transport**

Te

ology



# What is the Key to this Success?

**Education,  
in particular in Science,  
Engineering and Technology,  
is the key to economic growth in  
the modern global economy**



# Technion is the Powerhouse behind Israel's economic success

- **Opened in 1924 – Israel's first university**
- **Until the late 1970's, Technion was the only university in Israel teaching and researching in engineering**
- **More than 70,000 graduates**
- **70% of Israeli-educated engineers**
- **Created Israel's industrial infrastructure**
- **Pioneered and established Israel's technology-based industries**



# Impact on Israel's Economy

**Technion graduates have transformed Israel's economy from an agriculturally-based economy to a modern technology-based economy.**

- **Israel has the highest number of companies traded on the NASDAQ after the USA**
- **80% of Israeli NASDAQ companies have Technion graduates as founders, CEO or CTO**



# Technion's Educational Programs to Encourage Innovation

- **Students' Projects**
- **Bronica Entrepreneurship & Innovation Center**
- **Various Innovative Student Competitions**
- **Programs Involving Alumni**
- **Technology Transfer**



# Student Projects in Electrical & Computer Engineering

- Complex engineering projects – many suggested by industry
- Projects are at the forefront of technology, rarely repeated.
  - 20 companies - support \$240K
  - Industrial escorting and guidance
  - Students recruited by funding company

**Total: 750 Students (375 Semester-long Projects)**



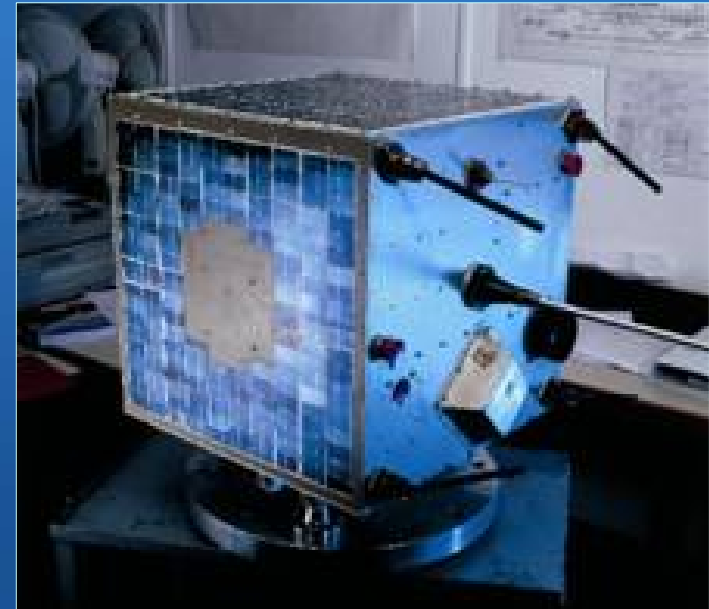
# Technion Students Win the “Texas Instruments Digital Signal Processing & Analogue Challenge”™ Competition





# TechSat

- **Technion research mini-satellite (50 kg) – launched in 1998.**
- **Designed and built by faculty and students**
- **Completed all its planned experiments**
- **Still operating!**





# Bronica Entrepreneurship & Innovation Center

- 3 elective courses in entrepreneurship and intellectual property management
- **MBA program** is focused on technology management and entrepreneurship
  - MBA courses allow teams develop business plans for Technion patents with coaching by Israeli VC managers
- Workshops for faculty and graduate students  
**“From Research to a New Venture”**



# Bronica Entrepreneurship & Innovation Center

- **An Entrepreneurship Club** – about 400 members, meeting twice a month with guest lectures and social networking
  - Participants established 4 invested companies, of which one (Foxytunes) recently made an exit
- **An Innovation Lab** – coaches students with innovative ideas, provides professional services and a \$5,000 grant to validate the market and write provisional patent.



# Techno-Brain – a Student Competition of Innovative Engineering

## Some examples:

- “Egg-Copter” – drop an egg from a height of 50 meters (in the shortest time) leaving the egg unhurt !
- “Candle-Mobil” – design a vehicle which will travel 50 meters based on the energy of 2 burning candles !
- “Flag-Lander” – design a vehicle that can climb a straight 50 meters high wall and set a flag at the top !





# BizTech Student Competition

- Annual business plan competition amongst students
- More than 100-150 new venture concepts yearly
- Competition runs 7 workshops during the year, emphasizing the educational aspect of the competition.
- Semi-final teams (about 20) get an experienced coach and the 3 winners receive prize money to start their company.





# “Technion For Life” Program

- **Young Technion alumni (or students) who wish to commercialize their ideas are assisted, including “hands-on coaching” by established and successful Technion alumni mentors (Technion’s “100 Club”).**
- **In return, the assisted alumni (or students) teach and assist needy high-school and Technion students.**



# “Technion For Life” Program

**EZLegacy**



EZ Legacy is a leading software product company and a solution provider for Application Portfolio Management, Legacy Understanding, Transformation, Business Rules Discovery and SOA Enablement

**Snapentric**



Providing transaction anomaly detection software, offering a real-time server side solution for Phishing, Pharming and other on-line transaction fraud and misuse detection

**Virtual Locality**



Providing networking technology solutions for the optimization and simplification of the IT networking in distributed organizations

**Ziggurat**



Offering a unique solution capable of providing a complete integration, coordination & control process over the entire building life cycle

**MND Diagnostics**



Creating a novel proprietary platform for fast detection of viruses

**AISEEK**



AiSeek develops an Acceleration chip accelerating common CPU intensive AI tasks

**PNMSOFT**



PNMsoft develops and markets BPM software platforms and solutions, specializing in dynamic web-based applications that serve as logistic nerve centers



# Developing Technion's Innovations and Intellectual Property (IP)

## Office of Technology Transfer

- About 100 patents/year
- Example of a major success –  
**Azilect (Rasageline)** –  
an anti-Parkinson disease drug licensed to  
Teva Pharmaceuticals - sells about \$ 300 million/ year
- Annual competitions to encourage faculty to consider  
commercialization of their research
  - Grants (from donations) totaling \$ 2 million/year



# Alfred Mann Institute (AMIT)

*"The goal of AMIT is to bridge the gap between academic research and its applications for fostering the development of biomedical research into medical products for the benefit of mankind."*

**A \$100 million endowment**

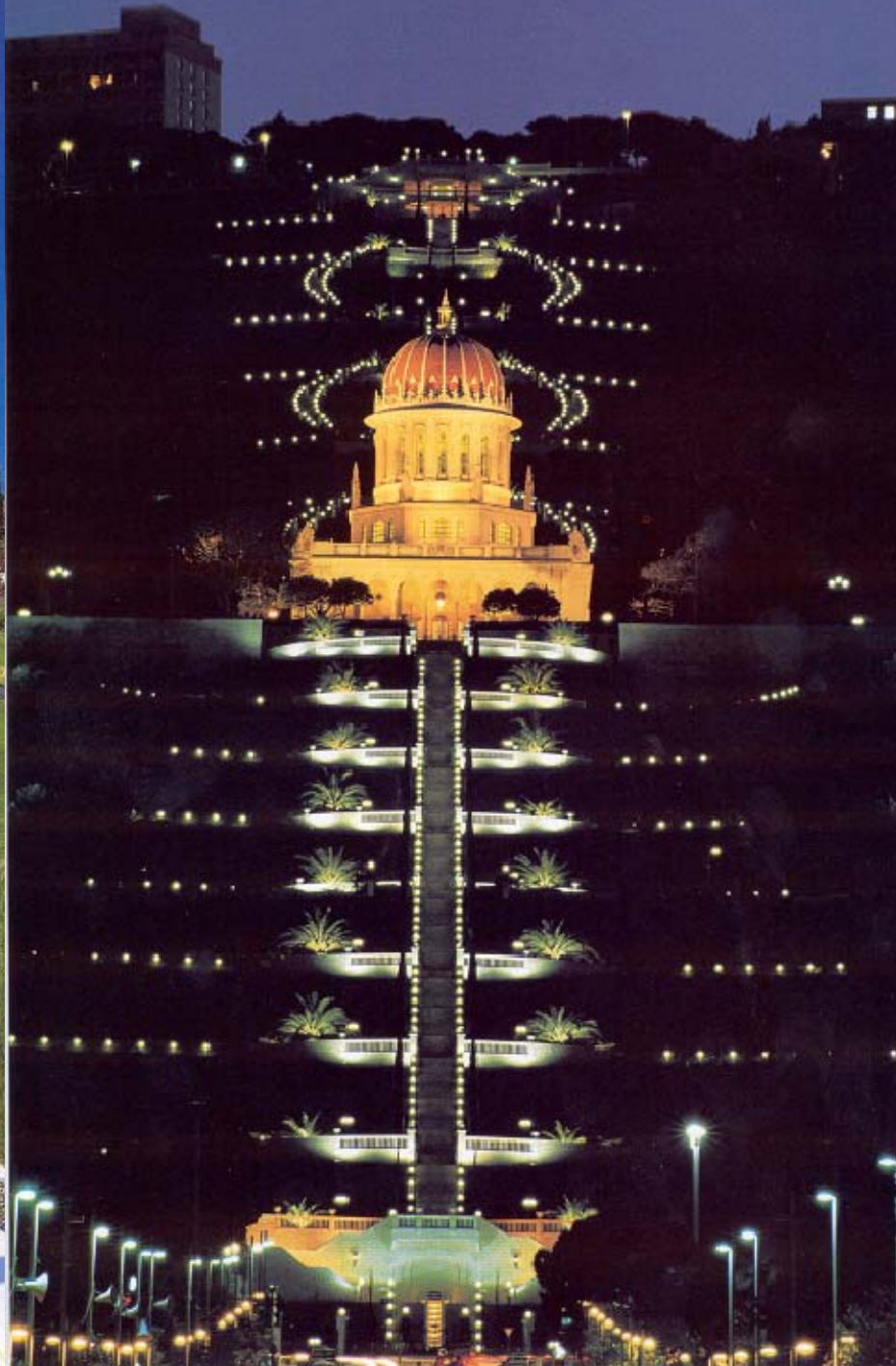
## Main current projects within the Institute:

- As of January 2007
  - Self-propelled catheter for gastrointestinal imaging
- As of June 2007
  - A biomimetic surgical tissue adhesive
- Recently approved
  - An anti-cancer drug project
  - A cancer diagnosis system based on a breath sample

# TECHNION, HAIFA, ISRAEL



**HAIFA,  
ISRAEL**



**Thank You and  
Come to Visit!**





# RESERVE