Entrepreneurship & Tech Transfer In Israel

Professor Boaz Golany

Dean, The Davidson Faculty of Industrial Engineering & Management

The Technion – Israel Institute of Technology

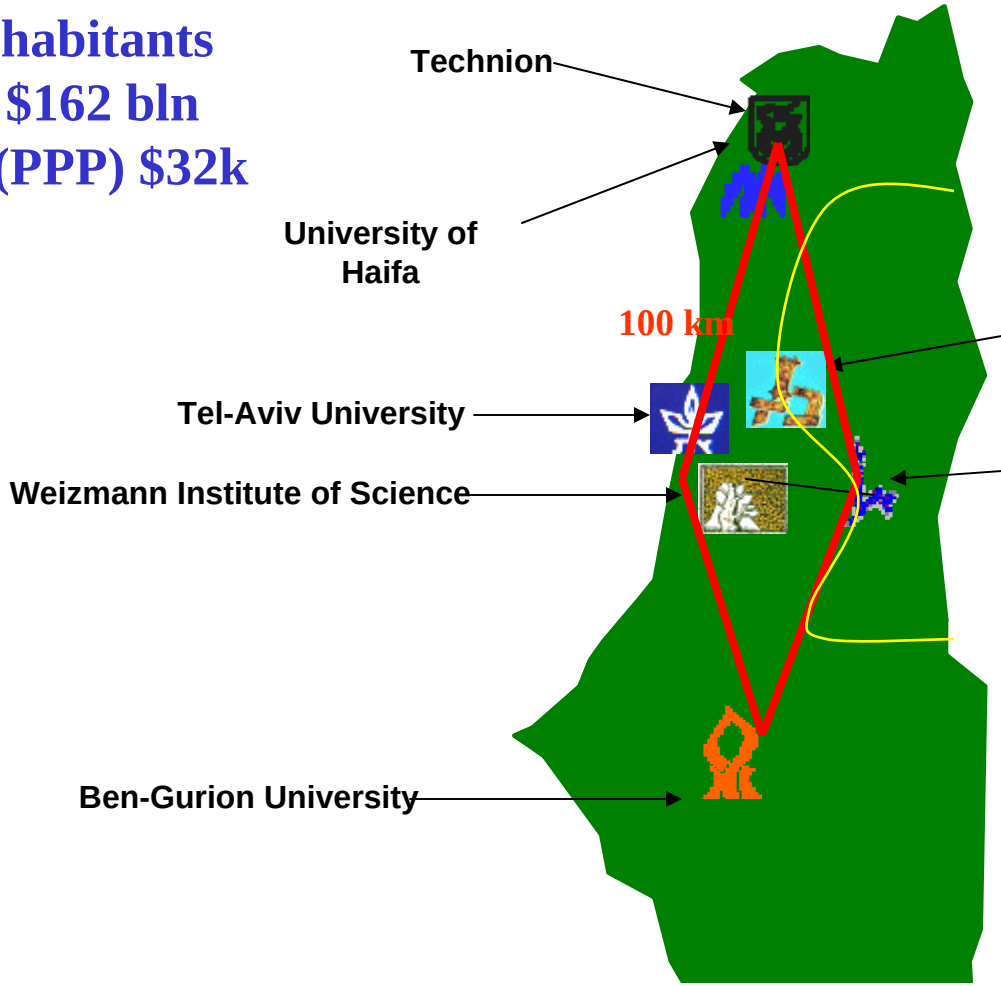
Agenda

- The lay of the land
- History
- Facts
  - The human factor
  - Government support
  - Capital
  - International Comparison
- Summary – Why Israel?
- Entreprenuership & Innovation at the Technion

Israel's High-Tech Diamond

Israel:

- 7M inhabitants
- GDP $162 bln
- GDP (PPP) $32k



- 20+ incubators
- 2500+ start-ups
- 100+ VC/PE's
- 70+ companies on Nasdaq
- Leading multinationals
- Matured Israeli high tech including service providers
- Office of Chief Scientist

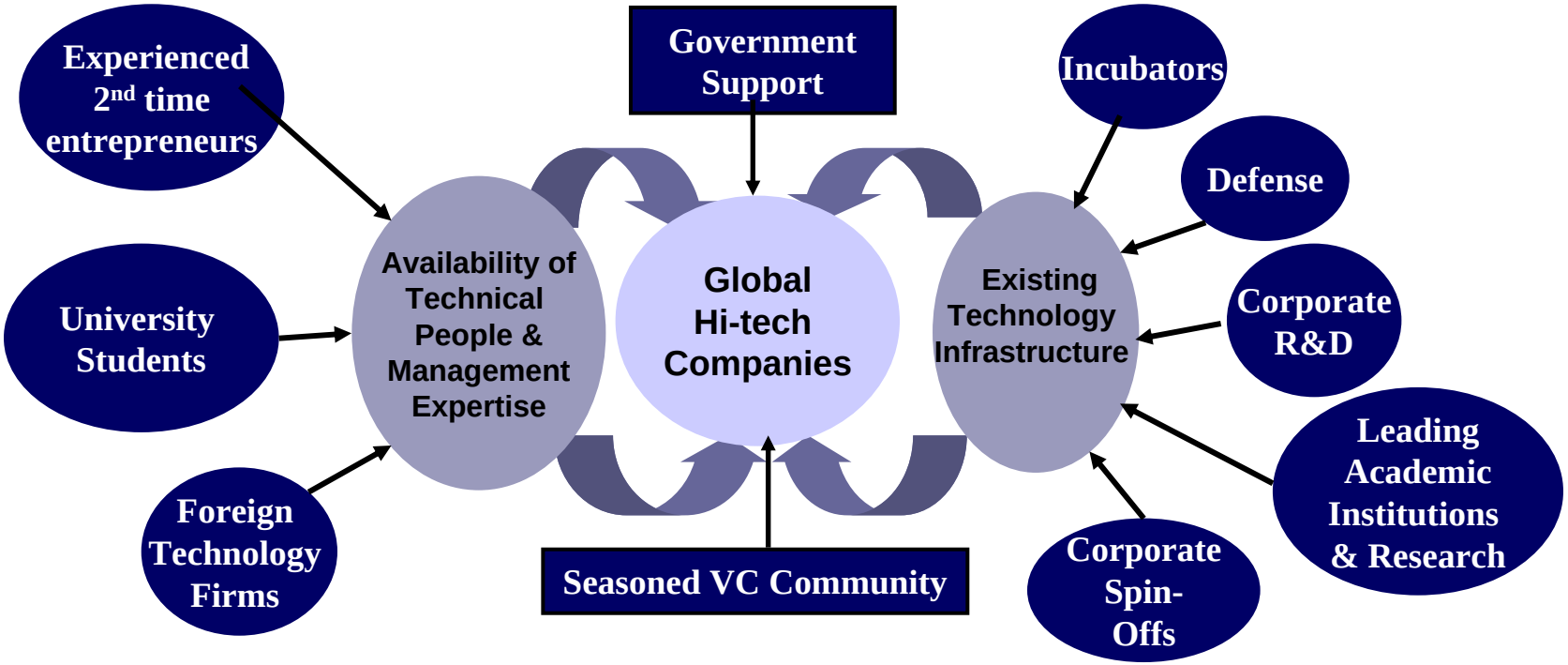
Highlights in Israeli Innovation

Lay of the Land

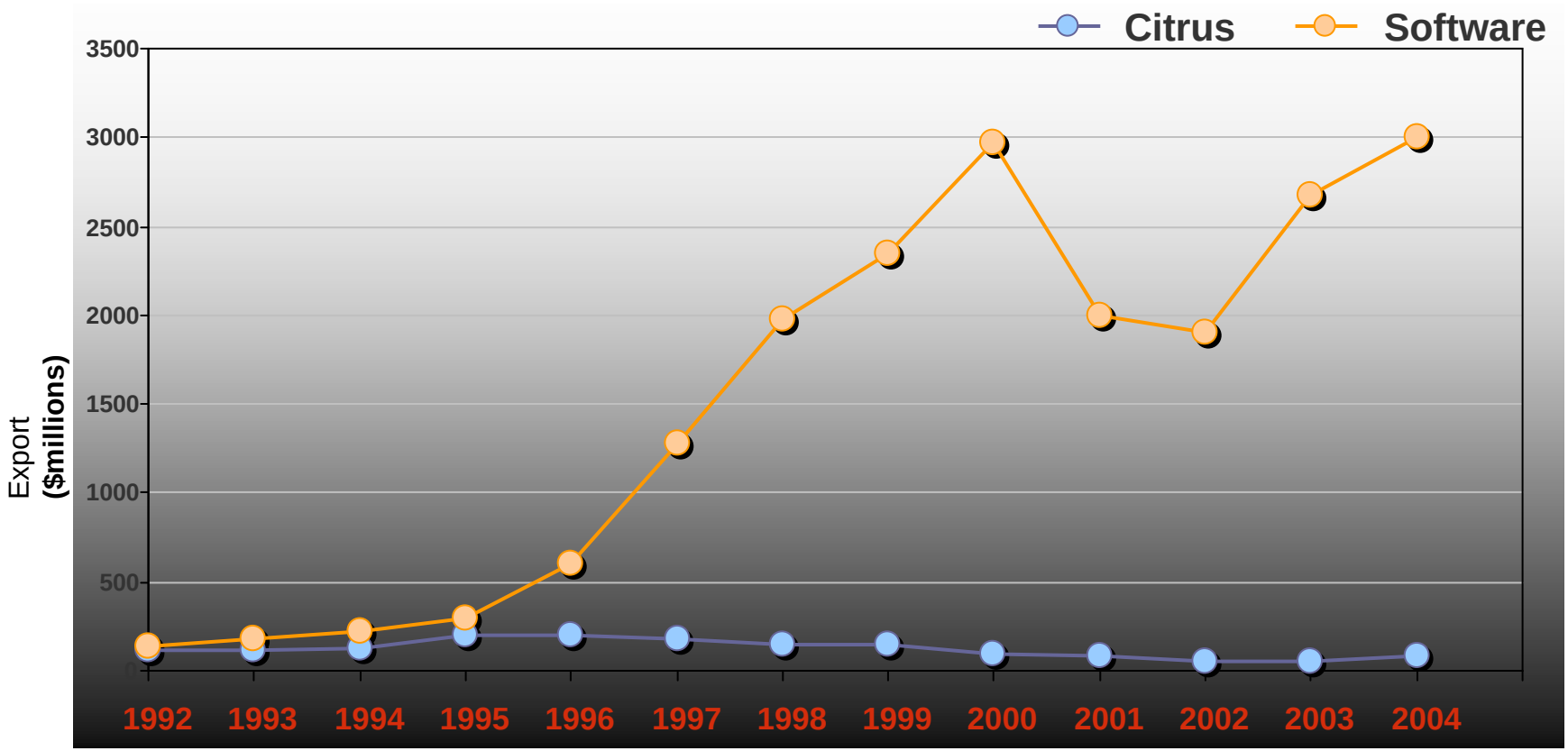
- ✓ Pentium (Intel)
- ✓ Centrino (Intel)
- ✓ Telecom Billing(Amdocs)
- ✓ Call Center Logging (Nice/Verint)
- ✓ Voice Mail (Comverse)
- ✓ Instant Messaging (ICQ, Ubique)
- ✓ PC Board Inspection (Orbotech)
- ✓ VoIP (Vocaltec)
- ✓ Two-bit per cell Flash Memory (Saifun)
- ✓ Disk on Key (M-systems)
- ✓ Generic Drugs (Teva)
- ✓ Irrigation (Netafim)
- ✓ Stents (Medinol)
- ✓ Firewall (Checkpoint)
- ✓ SW Performance (Mercury Interactive)
- ✓ AntiVirus (Alladin, Commtouch…)
- ✓ Regeneration of Spinal Cord cells (Proneuron)
- ✓ Virtual Colonoscopy (Given Imaging)
- ✓ Minimal Invasive FUS (Insightec)
- ✓ 64 slice CT (Philips)

Israel- A Technology Powerhouse

Lay of the Land



Israel Exports ($ millions)



Source: Economic & Planning, Ministry of Industry, Trade and Labor

The Hi-Tech Growth in Israel

	New High-Tech Companies average per year	VC/PE raised in 10^6 dollars average per year
From 1969- 1992	7	7
From 1993-2005	307	1,214

Phases in Israel's economic development 1948-1968

- Export mainly agriculture
- Building the science based capabilities:
  - Technion 1924
  - Hebrew University 1925
  - Weitzman Institute 1934
- Innovations and entrepreneurship in Agriculture (Kibbutz) and the Defense area

Phases in Israel's economic development 1969-1992

- Arms embargo after six day war in 1967
- Building defense-industry-university complex
  - 65% of R&D defense related
  - Defense as % of GDP grew to 25% in 1980
  - Indigenous industry for planes, tanks, electronics warfare
- Spin-offs from defense e.g. Elscint, Scitex, Orbotech
- Multinationals entering Israel (e.g. Intel, Motorola)
- Due to historical labor-socialist tradition deep antagonism toward individual entrepreneurship
- Establishment of Office of Chief Scientist in 1968

Phases in Israel's economic development 1993-2007

- 1993 tipping point for take-off high-tech sector
- High-tech, now already 34% of industry, drives growth
- Tech-entrepreneurs are the new heroes

Factors for Hi-Tech Growth in Israel (since the 90's)

- The Human factor
- Availability of technology in defense sector and universities
- Government support (OCS, Yozma funds)
- Geo-political changes
  - Dramatic reduction of defense expenditure
  - Influx of US VC capital
  - R&D centers by global leading technology companies
- Cultural changes -- "legitimization" of individual entrepreneur as role model and fast adoption of US entrepreneurship culture

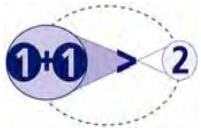
The Human Factor

- Double digit growth in engineering / science graduates
- Influx of Jewish scientists from the former USSR
- Annual inflow of 1,000 experienced engineers from ROTC-like programs of the IDF
- Shift in labor market following reduction in defense expenditures

Increasing Technology Transfer and Industry – Academia Interaction

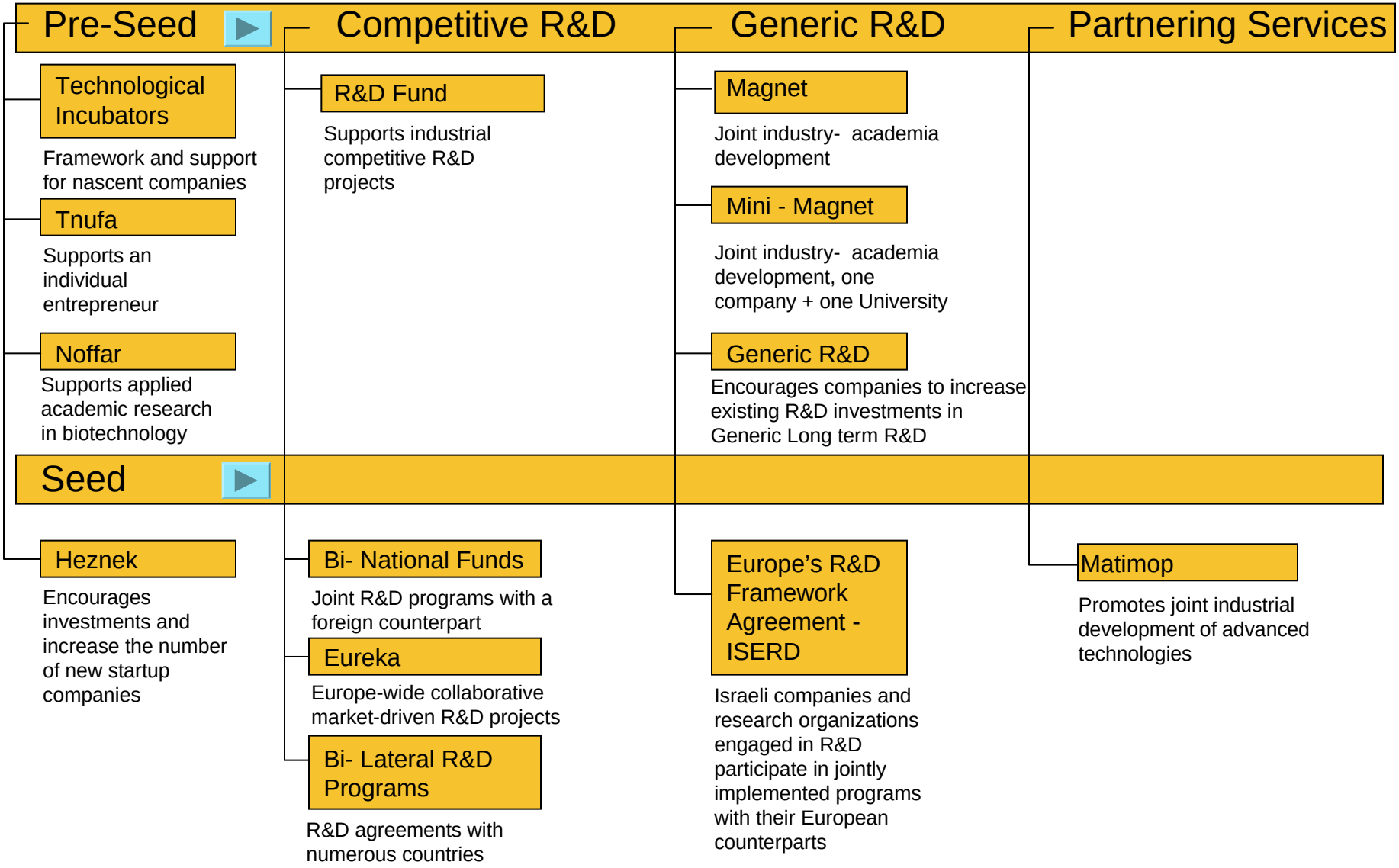
The MAGNET Program
in the Office of the Chief Scientist (OCS)

Goal: Enhance the development of the long term competitive edge of the Israeli Industry through clusters of companies and research institutes in areas which are important in the global markets



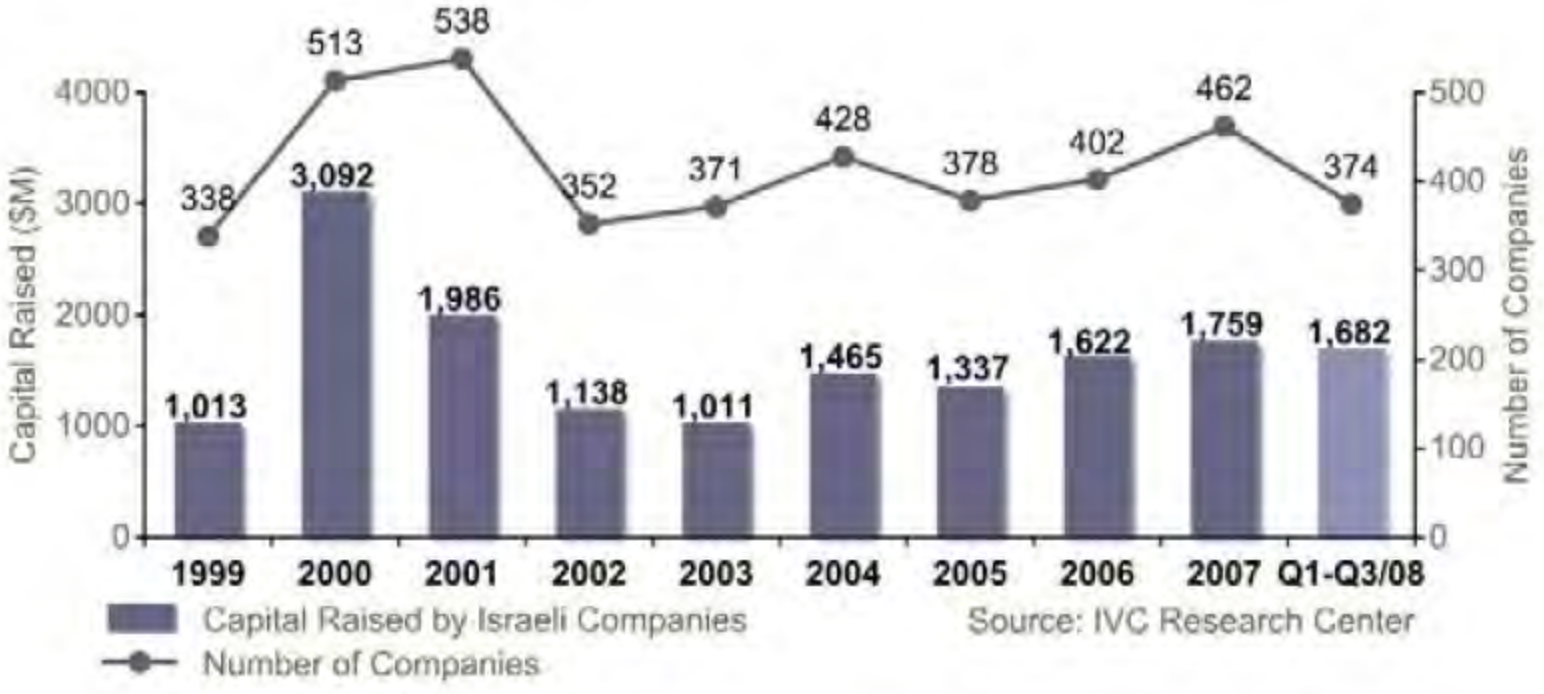
OCS Programs

Facts: Gov't

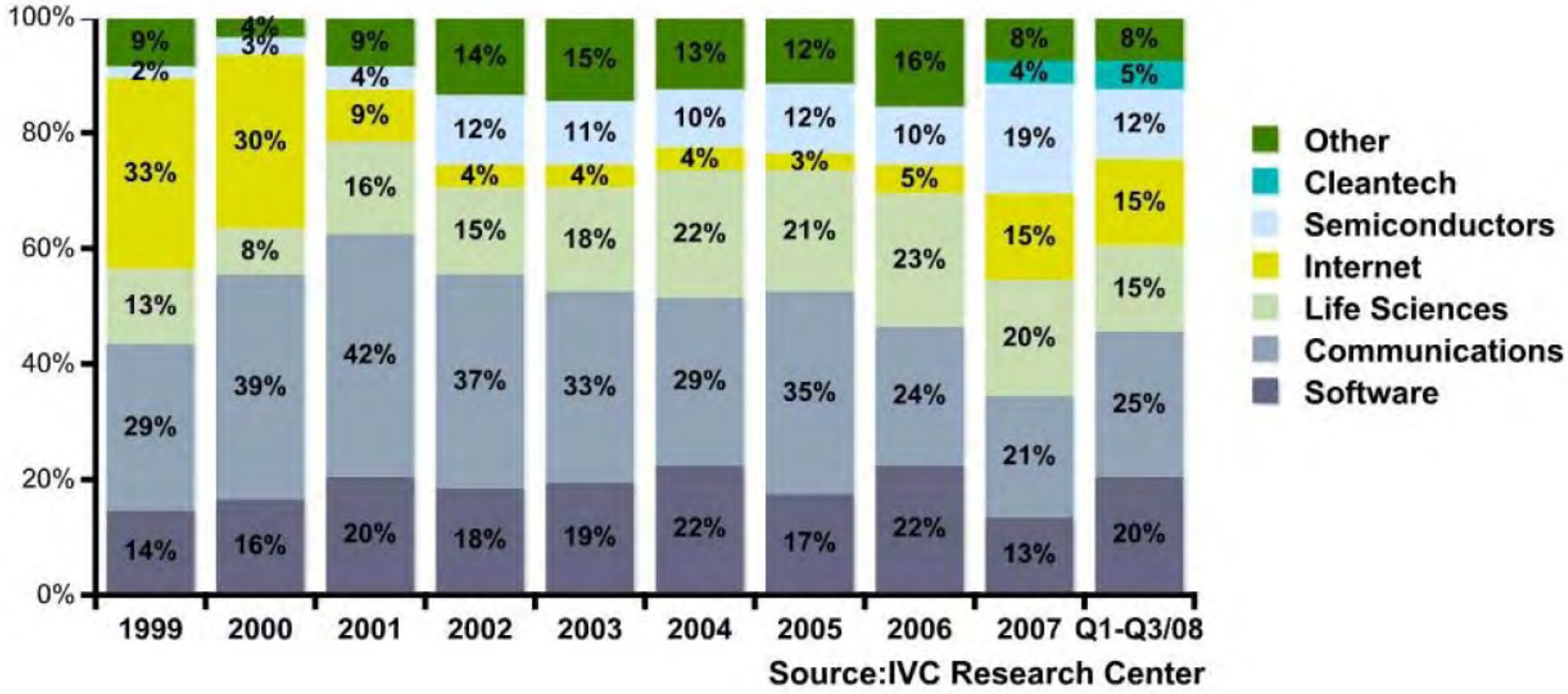


Capital Raised by Israeli Startups

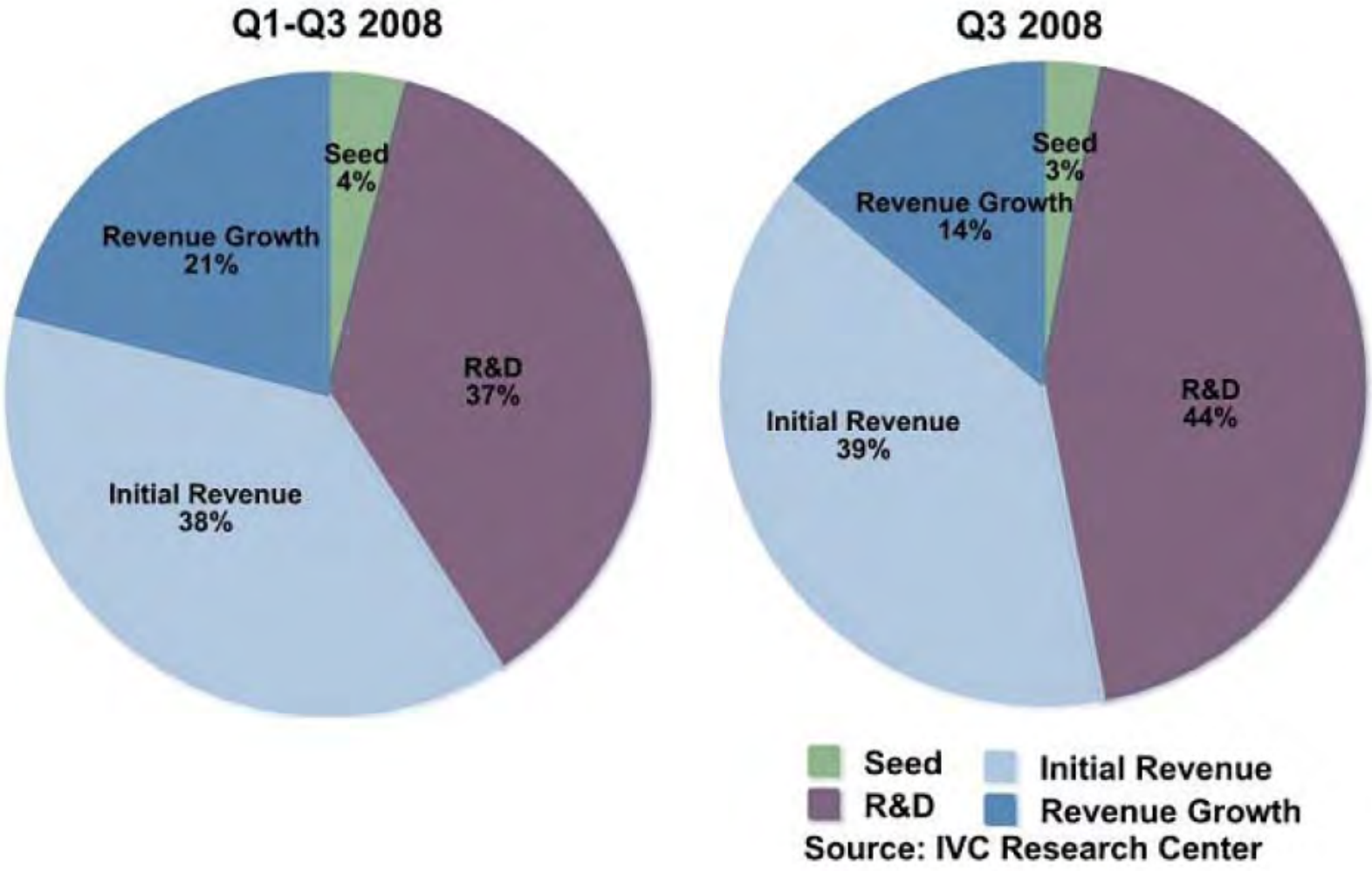
Facts: Capital



Capital Raised by Sector



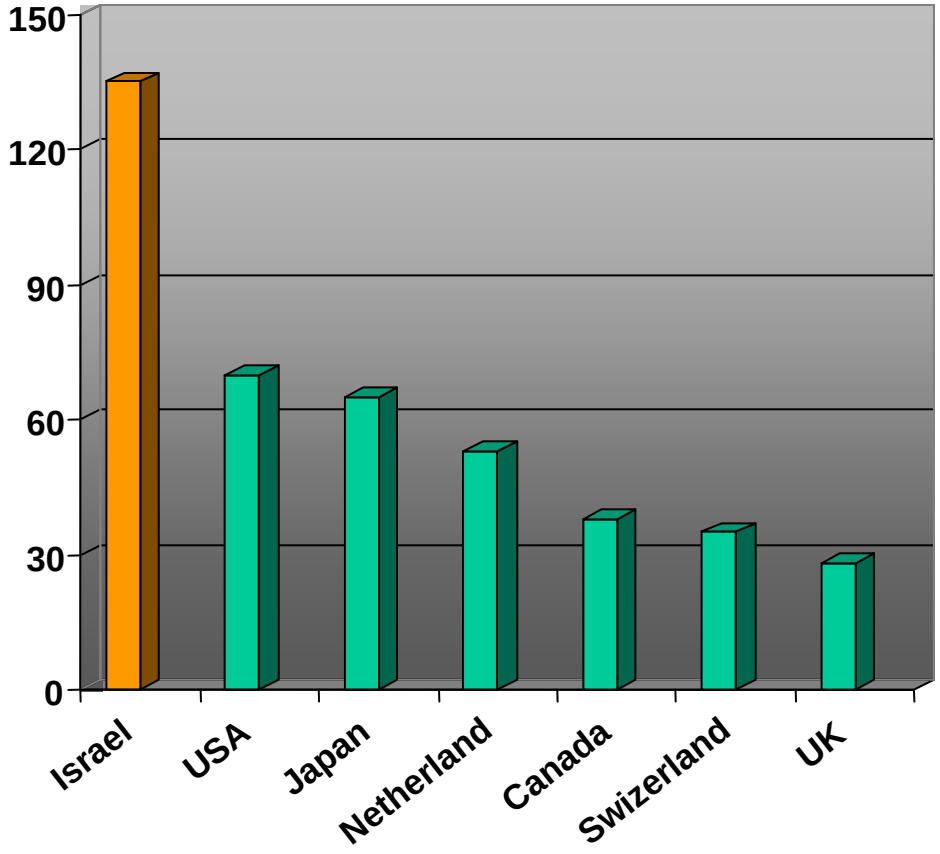
Capital Raised by Stage



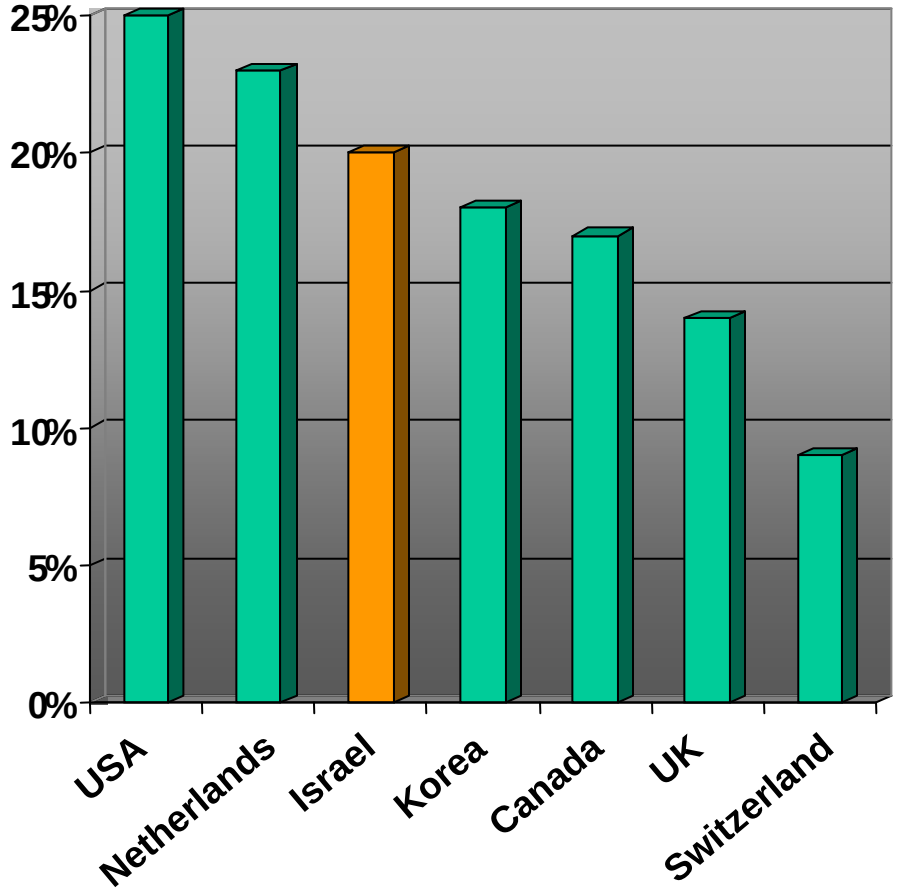
Human Capital: Israel's Biggest Asset

Int. comparison

Scientists/Engineers per 10,000 working population



Percent with academic degrees (ages 25-64)



Source: the ministry of finance

R&D expenditure

	Israel	Holland	USA
R&D as % of GDP (ranking)	4,8% (1)	1,9%	3,0%
R&D in $\$10^6$ (ranking)	4,909 (20)	7,281 (13)	274,759 (1)

Source: IMD Competitiveness Yearbook 2004

Today: The Second Silicon Valley

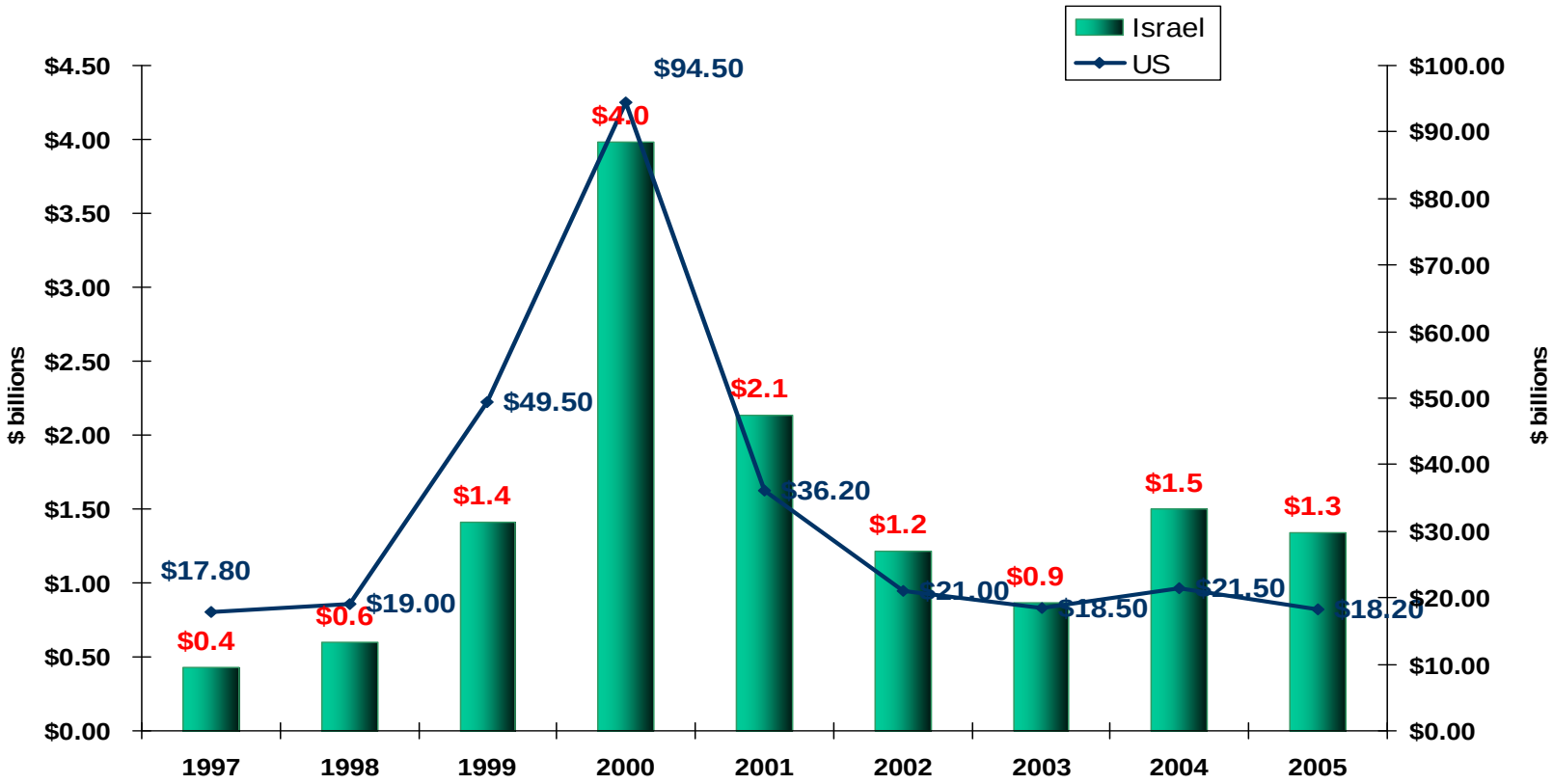
Int. comparison

	No. Of start-ups VC invested (2004)	VC Investments (2006)
Silicon Valley	855	$ 12.4 B
Israel	428	$ 1.4 B
New England	381	$ 2.8 B

Source: PriceWaterhouse Coopers, IVC,E&Y

Israel VC Investment Pace Mimics the US

Int. comparison



Source: E&Y VentureOne

VC Fund Raising in Israel & Europe

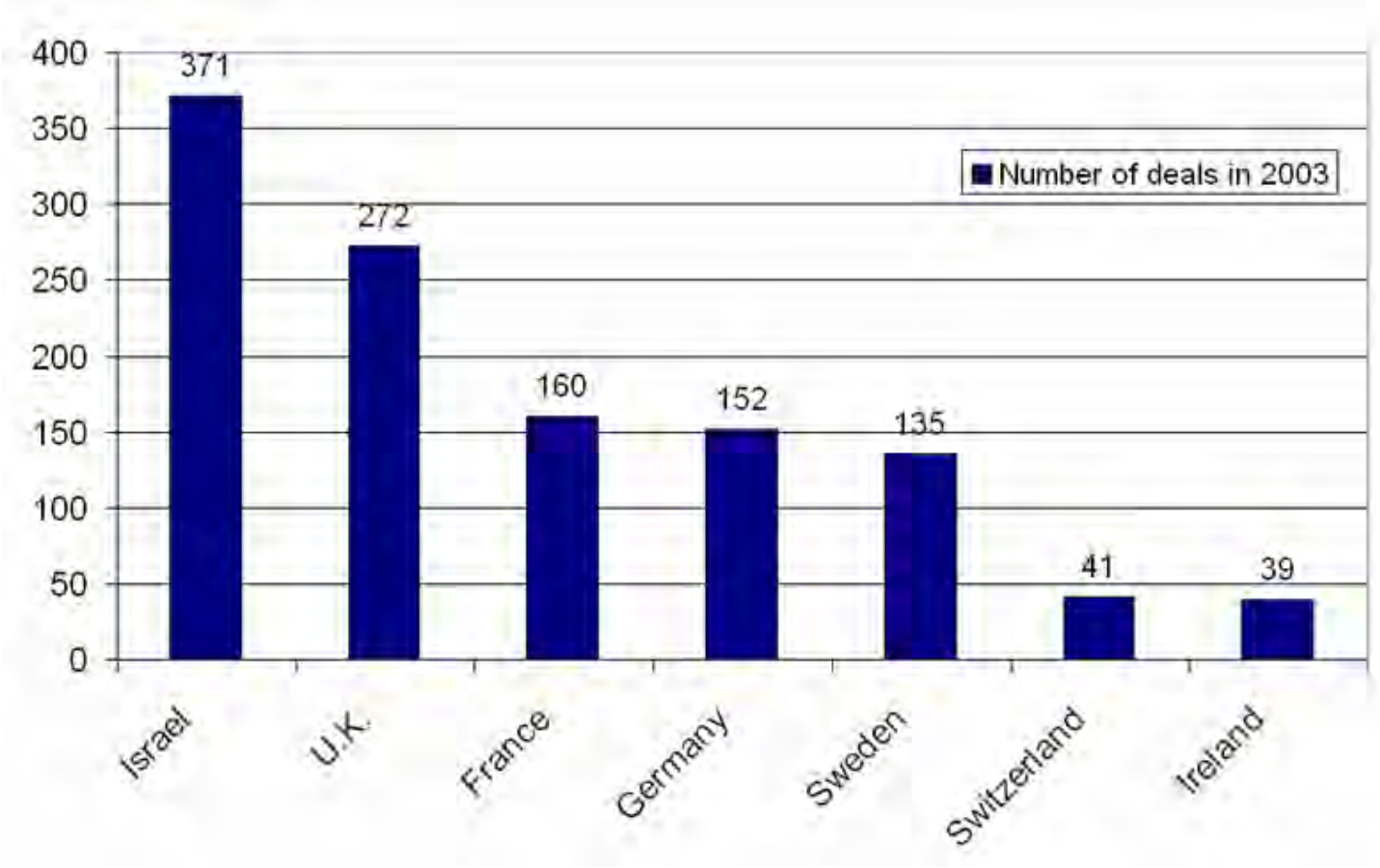
Int. comparison

Per capita VC funds raised (2000)

Israel: $600 per capita

Europe: $30 per capita (20x)

Source: IVC & VentureSource



Why Israel? It's the Culture…

Summary

- Informality
- A community spirit
- Risk taking
- International networks and experience
- Everyone questions authority
- Non-hierarchical society
- Building startups has become the national sport, entrepreneurs - the new cultural heroes

Part II

Entrepreneurship & Innovation at the Technion

Entrepreneurship & Tech Transfer at the Technion

- Rationale
- Agents of entreprenuership at the Technion
  - The Technion **Liaison Office** for Research Cooperation
  - The Technion Technology Transfer Office (**T^3**)
  - The Bronica Entrepreneurship and Innovation Center (**BEIC**)

Entrepreneurship- Why at the Technion?

- The combination of science and engineering education and research

- A multidisciplinary research approach, programmed across faculties e.g. Nano Technology; Life Science and Engineering, Security Science and Technology, Technion Energy Program, Autonomous Systems program

- International research collaborations, e.g. 7 EU FP7 programs, second after University of Cambridge

- **An entrepreneurial approach to the transfer of knowledge and technology**

Pathways of knowledge and technology transfer (TT)

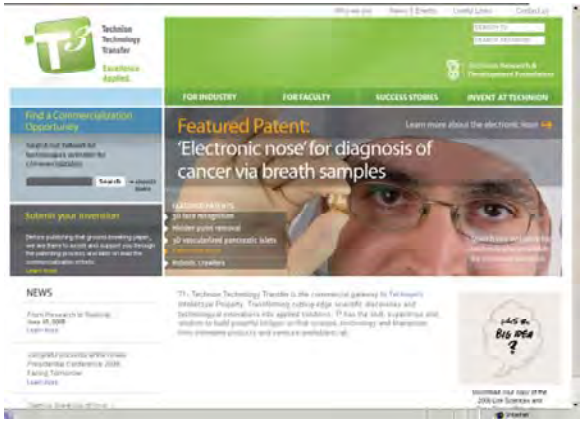
- Teaching of students (more then 80% of TT). Technion graduates have leading positions in 90 of 100 leading companies in Israel
- TT through employment by incumbent companies or start-ups by Technion alumni
- Patenting of technology and transfer through licensing and spin-offs
- Publications of research in public domain
- Joint research, e.g. FP7, Magnets and Magnetons. Joint IP Contract research with TT to research contractor
- Consultancy by Technion faculty

Liaison office - Mission & Objectives

- Promotion of Collaborative International R&D projects
- Enhancing cooperation with industrial and other strategic partners
- Early stage project management
- Crisis management in ongoing projects
- Reciprocal mapping of technological ideas at the campus
- Searching for new fields of activities and services
- Assisting technology transfer (pre-competitive stage of technology transfer)

FROM THE LABORATORY TO THE MARKET-PLACE

Technion Technology Transfer (T^3) Office



t3.technion. ac.il

IP

Patent Disclosure
Patent Registration
Patent Maintenance

Licensing

Spin off Companies

Subsidiary Companies

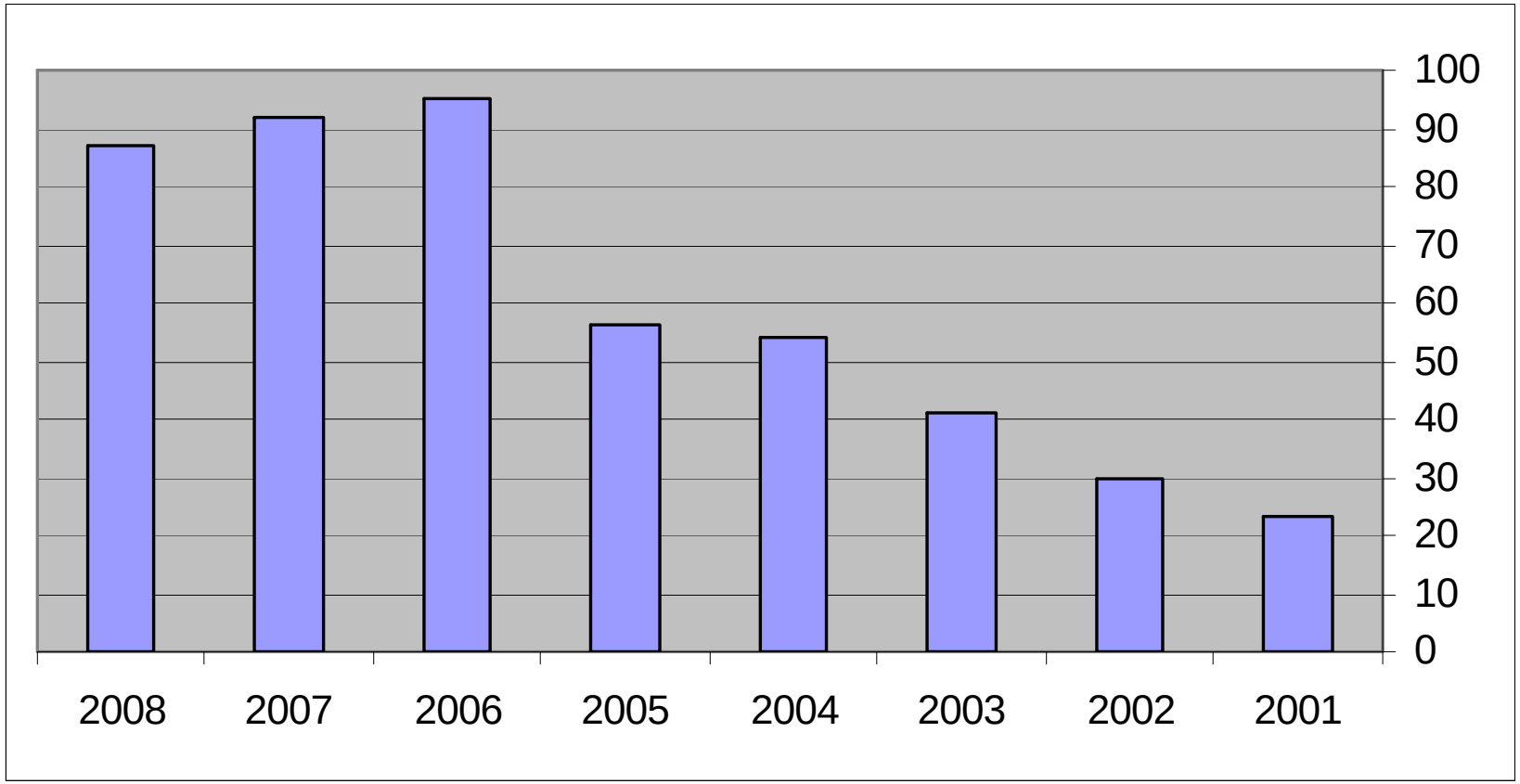
Dimotech Ltd.

Technion Seed

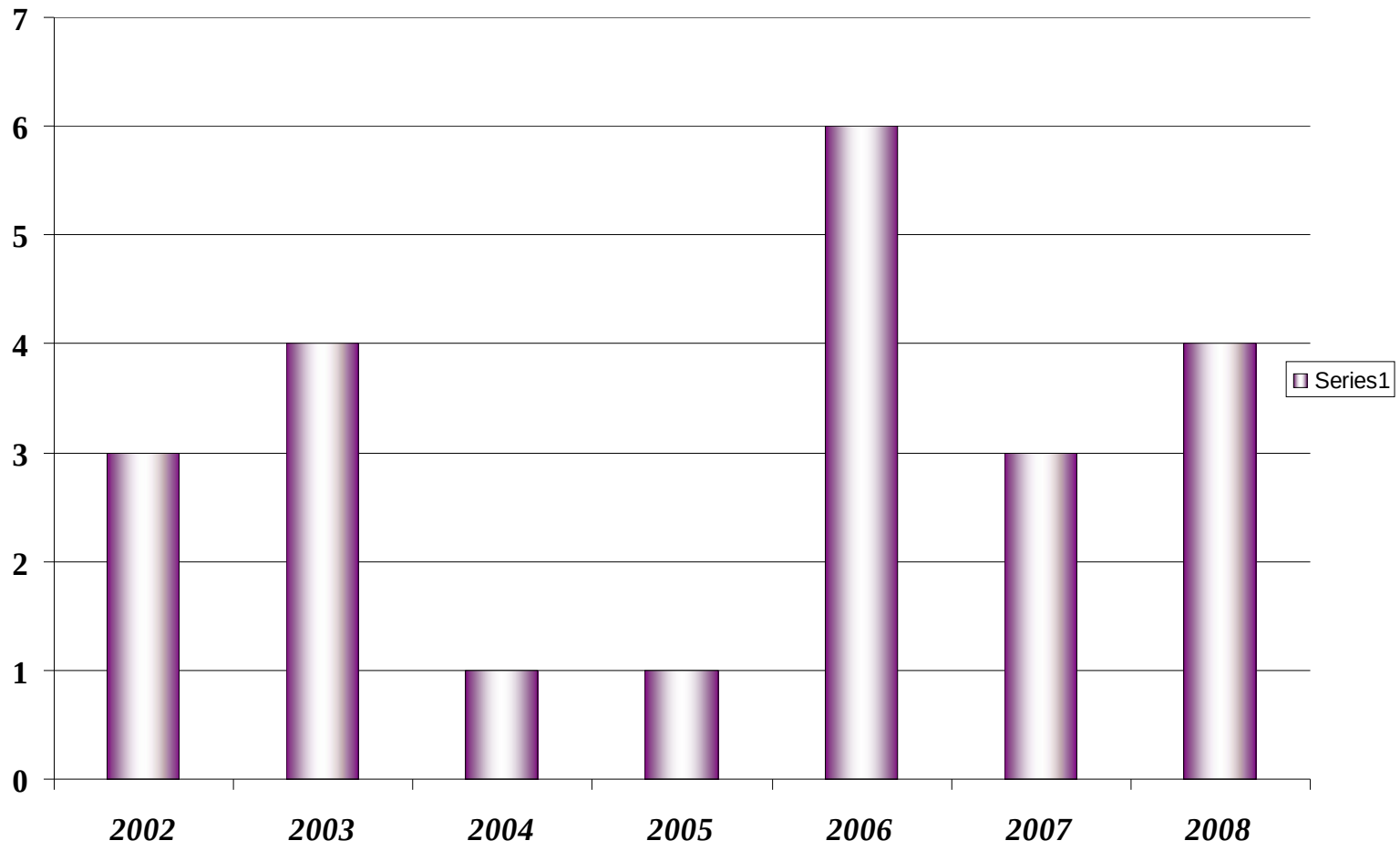
Subsidiary Companies

Subsidiary Companies

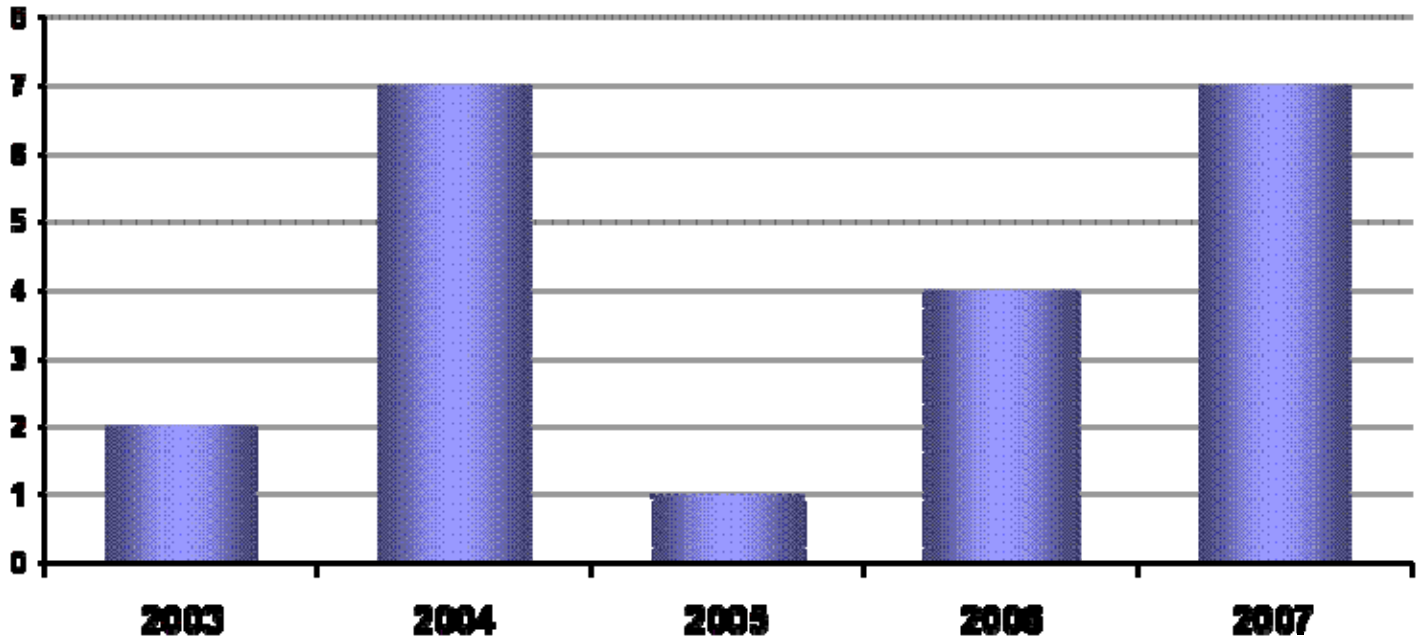
Invention Disclosure Forms 2001-2008



Number of License Agreements 2002-2008



Number of Companies established 2003-2007



** Including: TRDF/DIMOTECH/ TEIC Companies based on Technion IP but excluding equity holdings in companies not established by TRDF*

Bronica Entrepreneurship & Innovation Center (BEIC)

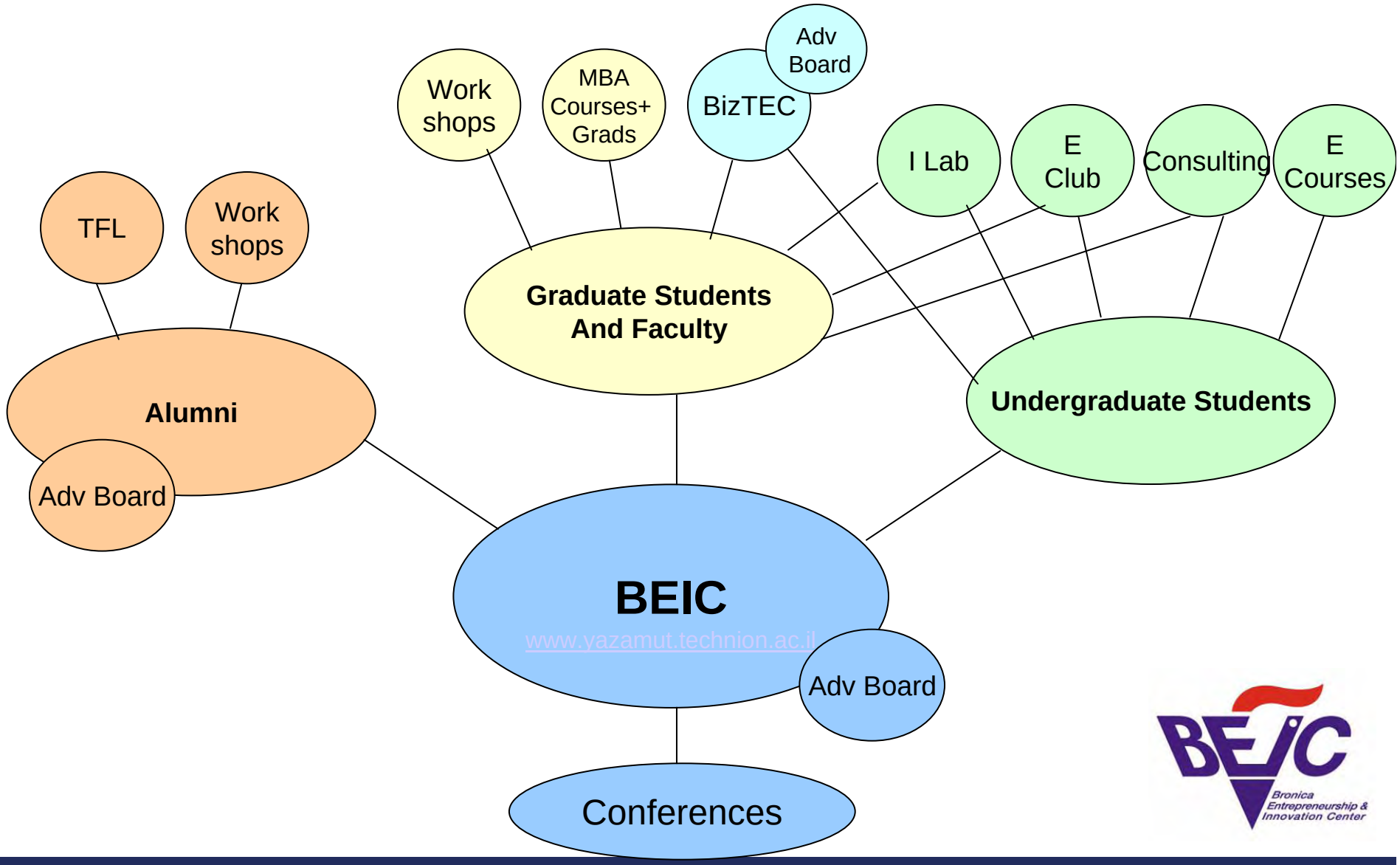
Main goals:

- Become the focal point for the development of campus wide entrepreneurial activities, for students, faculty, staff and alumni
- Work in partnership with the Technion Research & Development Foundation to identify promising technologies and assist in commercialization
- Strengthen university and industry relations through joint research and action learning

BEIC: Three Pronged Mission

- **Outreach:** providing direct consultation for budding entrepreneurs, including ongoing mentoring, connections to external resources, organizing networking events and more
- **Teaching:** support, organize and teach entrepreneurship, using an action learning approach, both inside and outside of the classroom
- **Research:** understanding of innovation and technology entrepreneurship and its contribution to economic growth. Close cooperation with Samuel Neaman Institute

BEIC Network



BEIC Consulting Services

- Budding entrepreneurs are mentored and helped along every step in the process of launching their startup
- In the past semester over 25 startups have received free advisory
- "**Unilims"** (MBA students): "…due to the ongoing assistance we managed to develop the full marketing and business plan... We realized that the hypothetic idea we had been working on for almost six months, had already grown up to a real potential that could seriously become a startup company in a near future…"

The Entrepreneurship Club (E Club)

- A student organization committed to fostering thinking and discussion on entrepreneurship
- The E club meets every two weeks and provides the students a place to meet fellow young entrepreneurs and learn from one another
- The club invites speakers from industry to give educational talks
- The club includes over 400 students from all faculties (both undergraduates and graduates)

Start-Ups generated by E-Club Members

a personalized music aggregator, for convenient listening to music with any media player on any platform. Lately acquired by Yahoo!

Offering a complete solution for content and advertising, with contextual, dynamic adverts, embedded in the mobile content

Record visitors' every action as they browse a website to understand visitor behavior and improve website's usability.

a search engine tool that allow users to search for information created and referenced by their own social graph

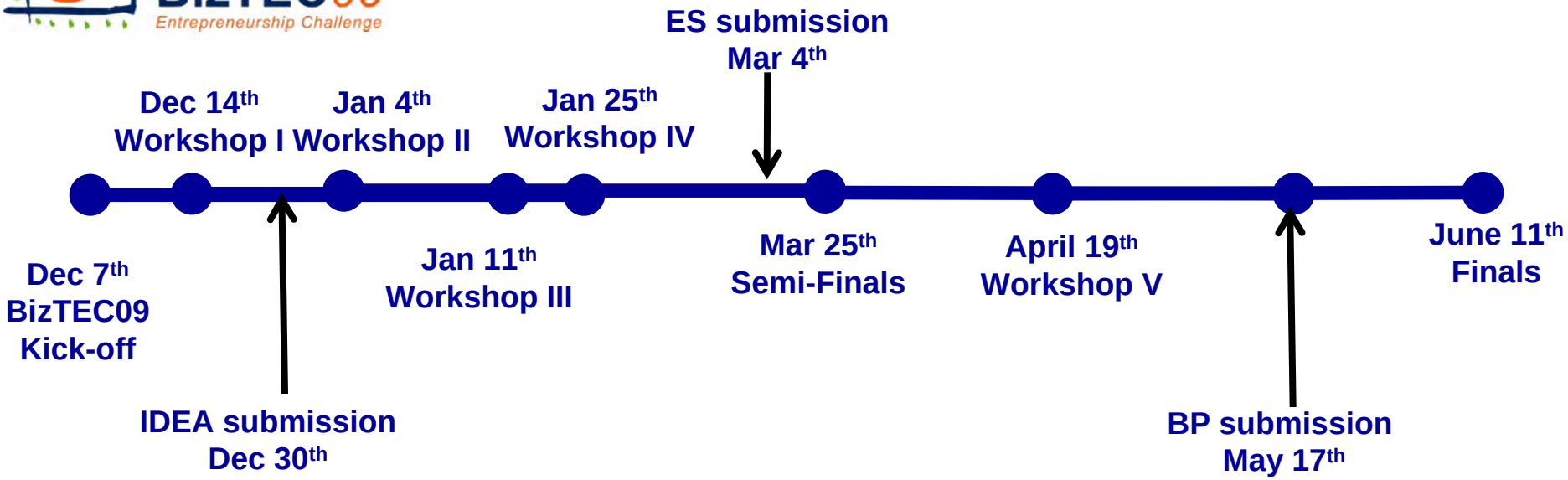
BizTEC

The Annual BPlan Competition:

- The first Israeli student-led entrepreneurship contest, running for the 5th year with great success
- BizTEC created 7 funded companies
- BEIC supports BizTEC both logistically and with content (Academic director, workshop planning, judges etc)
- BEIC provides follow-up and guidance to all BizTEC participants
- More details at: www.biztec.org.il

BizTEC09
Entrepreneurship Challenge

BizTEC09
Entrepreneurship Challenge



IDEAS

Submit a short paper describing you IDEA. Get feedback and win prizes

Executive Summary

Submit an Executive Summary for you venture. Winners will receive mentors to assist in preparing the Business Plan

Business Plans:

Submit full Business Plan. Winners receive cash prizes to support venture launch, vast media exposure and a ticket to International Competitions

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INNOVATION LAB

Bronica Entrepreneurship & Innovation Center

Pre-seed	Seed	Investment stage
Innovation Lab	Incubators / Early Investors	Venture Capital

- Offering promising student-entrepreneurs the opportunity to mature their idea and be exposed to business network
- Directing and financing faculty and grads in final research stage towards commercial end
- Providing a workroom with flexible workplaces, computers, wireless internet and more for teams working on new ventures
- Providing resources to perform market research and develop business plans, including mentors and initial funding ($5000)

Technion for Life

- Entrepreneurial support for Technion alumni
- Chief executives from Technion's "Club 100" become mentors to budding entrepreneurs
- over 35 start-ups in 3 years of activity;
- High success rate: 70% of companies raised money / achieved sales / performed exit

Comprehensive Website

www.yazamut.technion.ac.il

A Hebrew website offers a wealth of practical knowledge:

- Learn about the “entrepreneurial path” (how to write a BP, how to raise money, how to open a company…) through summarized information, samples and important links
- Information on the different activities, seminars and courses on campus
- Social network for Technion entrepreneurs
- Success stories and more

Action Learning Courses

BEIC offers entrepreneurial education in a systematic fashion by broadening the scope and increasing the number of entrepreneurship courses. Some examples:

- **From Patent to First Investment**: teams composed of graduates and MBA students develop business plans for patent invented by Technion researchers. As a result of the first two courses, two startups received an investment.
- **Entrepreneurship and Intellectual Property**: intended for undergrads and grads from across the Technion, the course aim is to provide knowledge and tools on how to start a technology venture and how to create and protect IP.

“From Research to Start-Up”

- A series of 6 seminars and workshops for Technion graduate students and faculty
- The goal is to provide an initial tool box on how to turn a research into a viable business and to increase awareness for the importance of technology transfer within the Technion
- Cooperation between the Graduate Student Organization, the Business Development Unit and the Center

Research Activities

Cross- Disciplinary Research

- Support research of 4 faculty members in entrepreneurship, innovation and strategic management and their interactions
- Currently six graduate students are involved in action research and “clinical research” projects
- Research subjects include: technology transfer in universities, team characteristics and the entrepreneurial process, opportunity recognition, and entrepreneurial education

Pre-Seed Program Details

Pre-Seed

Incubators
Provides a framework and support for nascent companies to develop their innovative technological ideas and form new business ventures that can attract private investors.
The program is open to private investors to become owners of the incubators and to invest in the nascent companies at an earlier stage, thus enabling a greater return on investment.
Grants are up to 85% of the approved expenses. Budget: approximately $30 M/yr.
www.incubators.org.il

Tnufa
Designed to encourage and support an individual entrepreneur in his initial efforts to build a prototype, register a patent, design a business plan etc.
Grants are up to 85% of the approved expenses.
www.tnufa.org.il

Noffar
Designed to support applied academic research in biotechnology in order to promote the transfer of the technology to Industry.
Grants are up to 90% of the approved expenses. No royalty payments.
www.consortia.org.il

Competitive R&D

R&D Fund
Supports industrial competitive R&D projects.
Grants are on a sliding scale from 20%-50% of R&D budget. Royalty payment is 3%-5% of future product sales.
Budget: approximately $300 M/yr.
Supports over 1000 projects /yr from more than 500 companies.
www.moit.gov.il/madan.htm

Generic R&D

Magnet
Supports the formation of consortia comprised of industrial firms and academic institutions in order to jointly develop generic, pre competitive technologies.
Grants are up to 66% of the approved budget.
No royalty payments.
Budget: approximately $60 M/yr.
www.consortia.org.il

Mini - Magnet
Promotes technology transfer from academic institutions to Industry via mutual cooperation between one company and one academic research program.
Grants are up to 66% of the approved budget.
No royalty payments.
www.consortia.org.il

Generic R&D
Encourages companies that invest heavily in R&D to invest a larger portion of it in Generic Long term R&D.
Grants are up to 50% of the approved budget.
No royalty payments.
www.moit.gov.il/madan.htm

Seed Program Details

Pre-Seed

Heznek
Designed to encourage investments and increase the number of new startup companies.
The government and the investor will invest matching funds in a seed company.
Grants are up to 50% of the approved work program.
The investor will be given an option to purchase the government shares.
www.moit.gov.il/heznek.htm

Competitive R&D

Bi-National Funds
Enables participation in a joint R&D program with a foreign counterpart.
Grants are up to 50% of R&D expenses of each company from each state.
BIRD: IL - USA
CIRDF: IL - Canada
SIIRD: IL - Singapore
BRITECH: IL- Britain
KORIL: IL- Korea

Eureka
Europe-wide network promoting collaborative market-driven R&D projects in most fields of advanced civilian technology.
The project enjoys access to sources of national funding -
Israeli companies taking part in the program are entitled to receive R&D grants from the OCS.
www.matimop.org.il

Bi-Lateral R&D programs
R&D agreements with numerous countries
The project enjoys access to sources of national funding.
Israeli companies taking part in the program are entitled to receive R&D grants from the OCS.
www.moit.gov.il/madan.htm

Generic R&D

Europe's R&D Framework Agreement - ISERD
Gives an opportunity for Israeli companies and research organizations engaged in R&D to participate in jointly implemented programs with European counterparts and thus become better integrated into European business and science communities.
Grants are up to 50% of the budget without limits.
No royalty payments.
www.iserd.org.il

Partnering Services

Matimop
Promotes and assists participation of Israeli companies in international bilateral or multilateral cooperation programs for industrial R&D.
Promotes joint industrial development of advanced technologies.
Keeps a constantly updated database of projects in diverse advanced technologies and also a database of profiles of Israeli technological companies seeking international cooperation.
www.matimop.org.il