

# nanoUtah 2015

# University/Research Nanotechnology Centers

## By Country



USA : 179



China : 162



Germany : 57



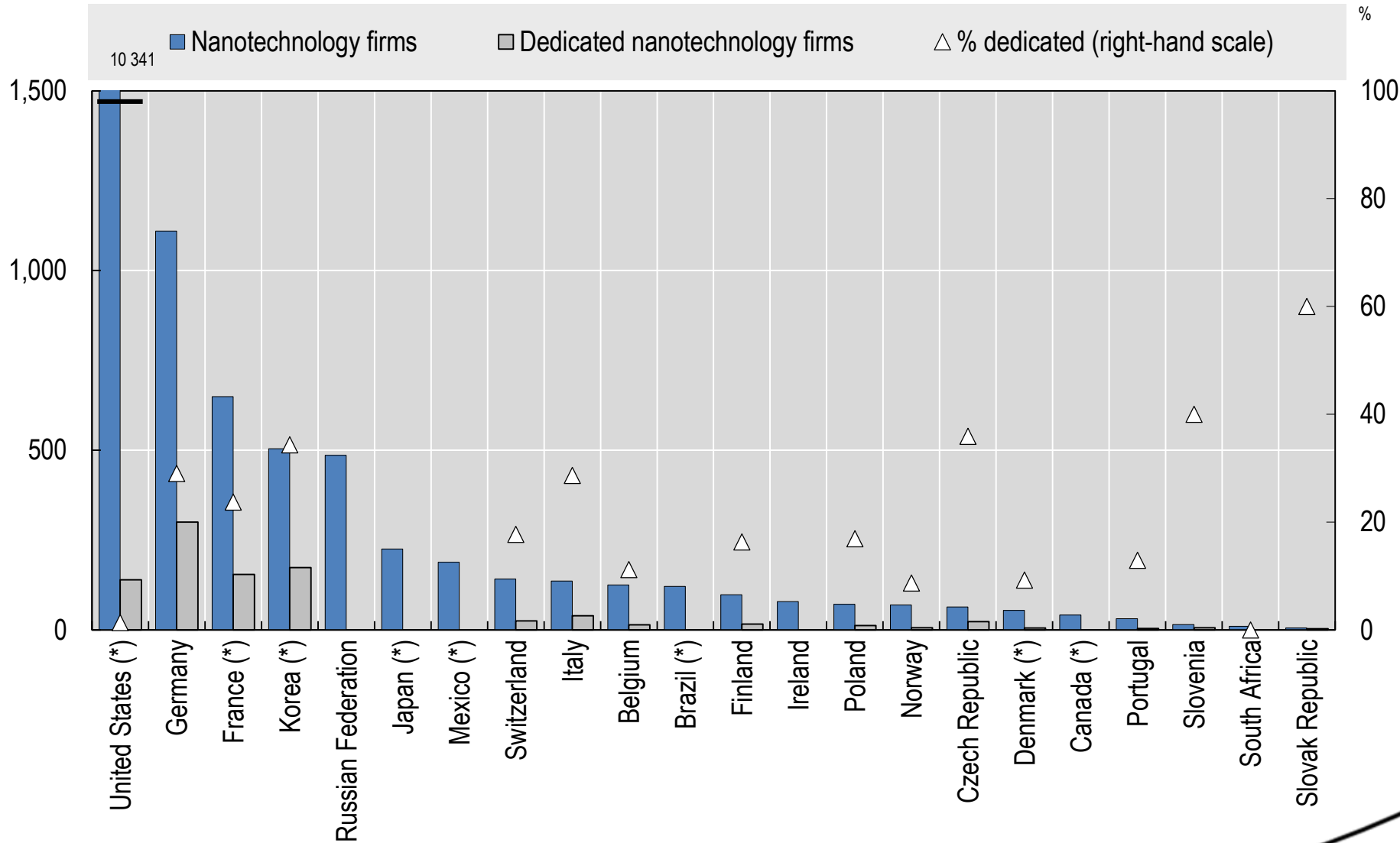
South Korea : 52



India : 50

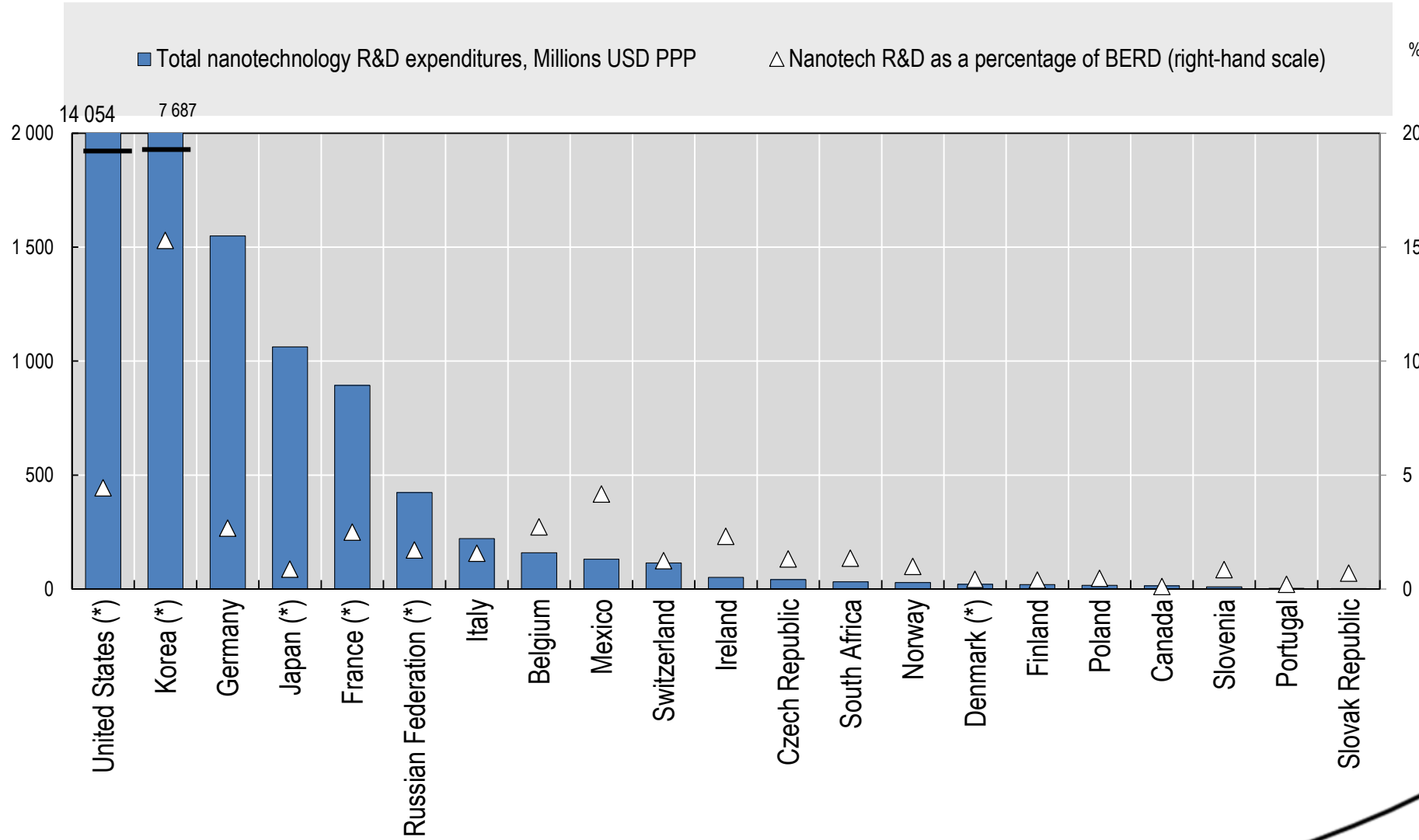
Source: <http://statnano.com/orgs>

# Global Nanotechnology Commercial Activity



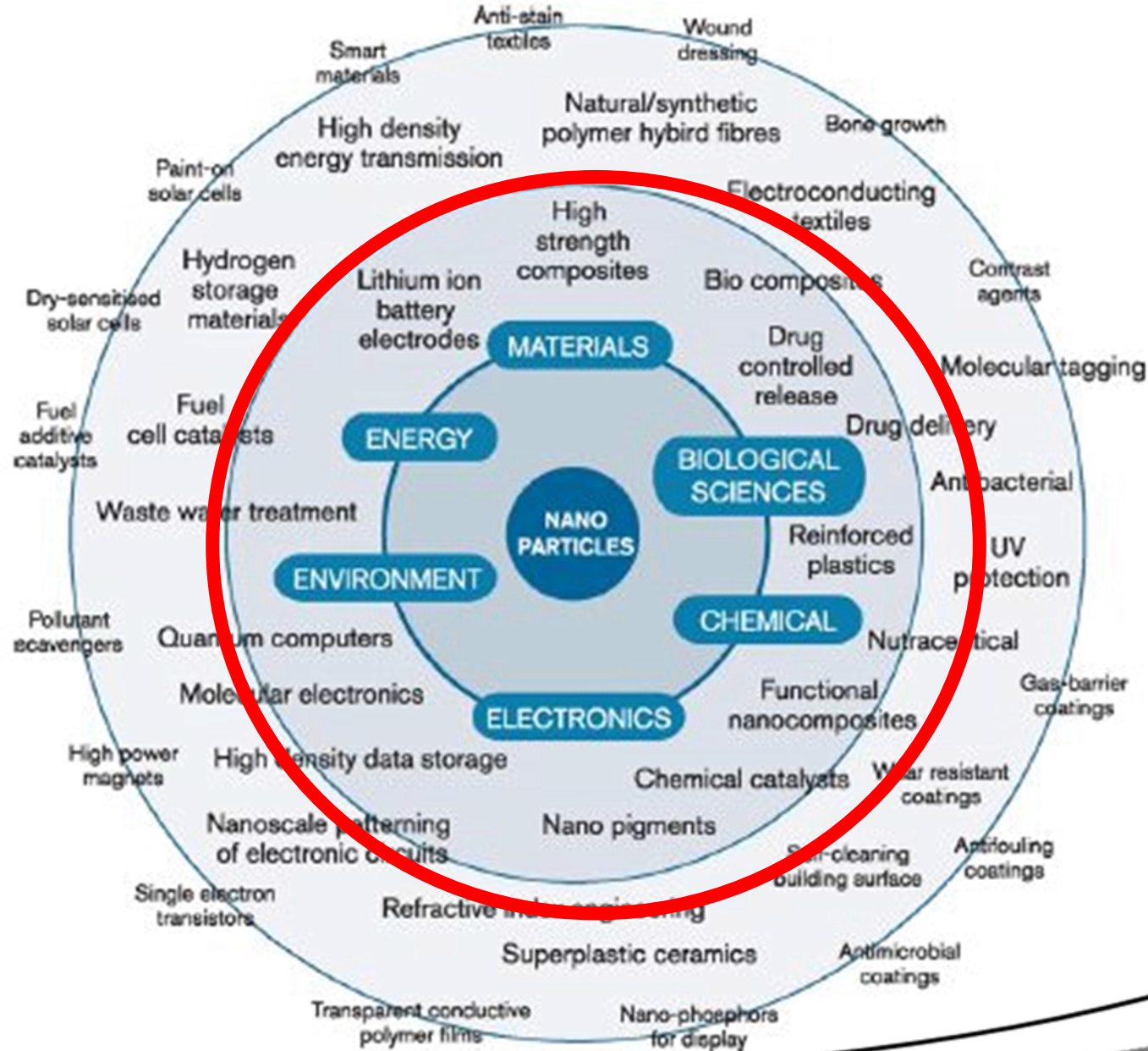
Source: OECD Key Nanotech Indicators

# Global Nanotechnology Expenditures by Country



Source: OECD Key Nanotech Indicators

# Industry Applications in Nanotechnology



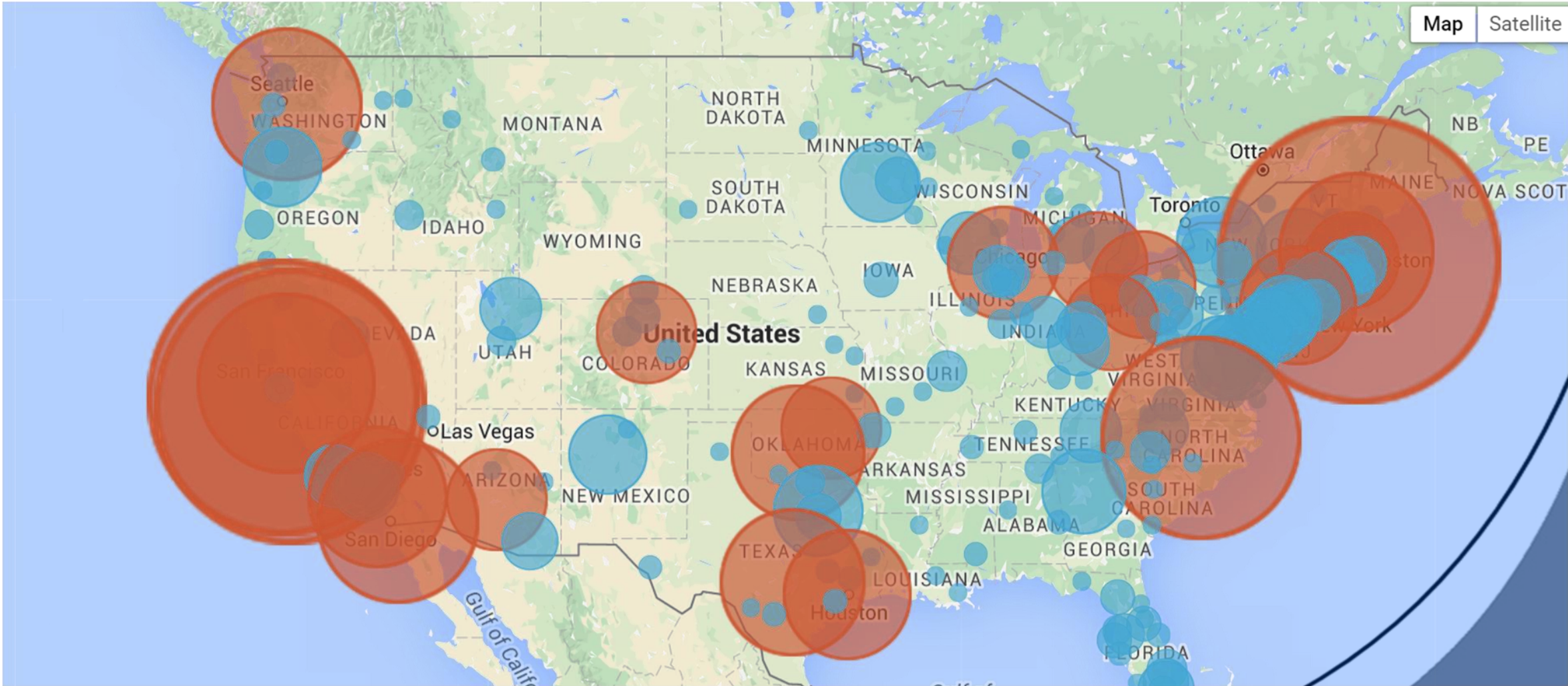
# Nanotechnology Revenue

The global market for goods based on nanotechnology is predicted to grow from \$147 billion in 2007 to **\$3.1 trillion in 2015.**

(Source: Lux Research)



Map Satellite



Source: <http://www.nanotechproject.org/inventories/map/>

# Key US Data

## Nanotechnology Map Highlights:

- The top 4 states overall (each with over 75 entries) are California, Massachusetts, New York, and Texas.
- **All 50 states** and the District of Columbia have at least one company, university, government laboratory, or organization working in the field of nanotechnology.
- The top 6 Nano Metros (each with 30 or more entries) are: Boston; San Francisco; San Jose, Calif.; Raleigh; Middlesex-Essex, Mass.;
- **The top 3 sectors for companies working in nanotechnology (each with over 200 entries) are: materials; tools and instruments; and medicine and health.**



# Utah Nanotechnology History

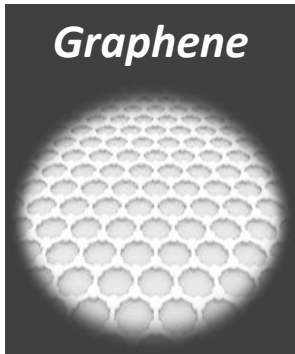
| Key Events   | Timeline   |
|--|------------|
| Governor Michael Leavitt creates the Utah Governor's <b>Engineering Initiative</b>                                   | 2000       |
| First <b>NanoUtah</b> Conference at the University of Utah   | 2003       |
| Jon M. Huntsman, Jr. elected governor of Utah  | 2005       |
| <b>Utah Nanotechnology Initiative</b> organized incorporating business, investment, education and government leaders | 2005       |
| First nanotechnology initiative planning meeting   | 2005       |
| <b>USTAR charter</b> and organization developed by Utah business community   | 2005-2006  |
| Utah legislature passed <b>Senate Bill 75</b> creating USTAR   | March 2006 |

# Utah Nanotechnology Companies



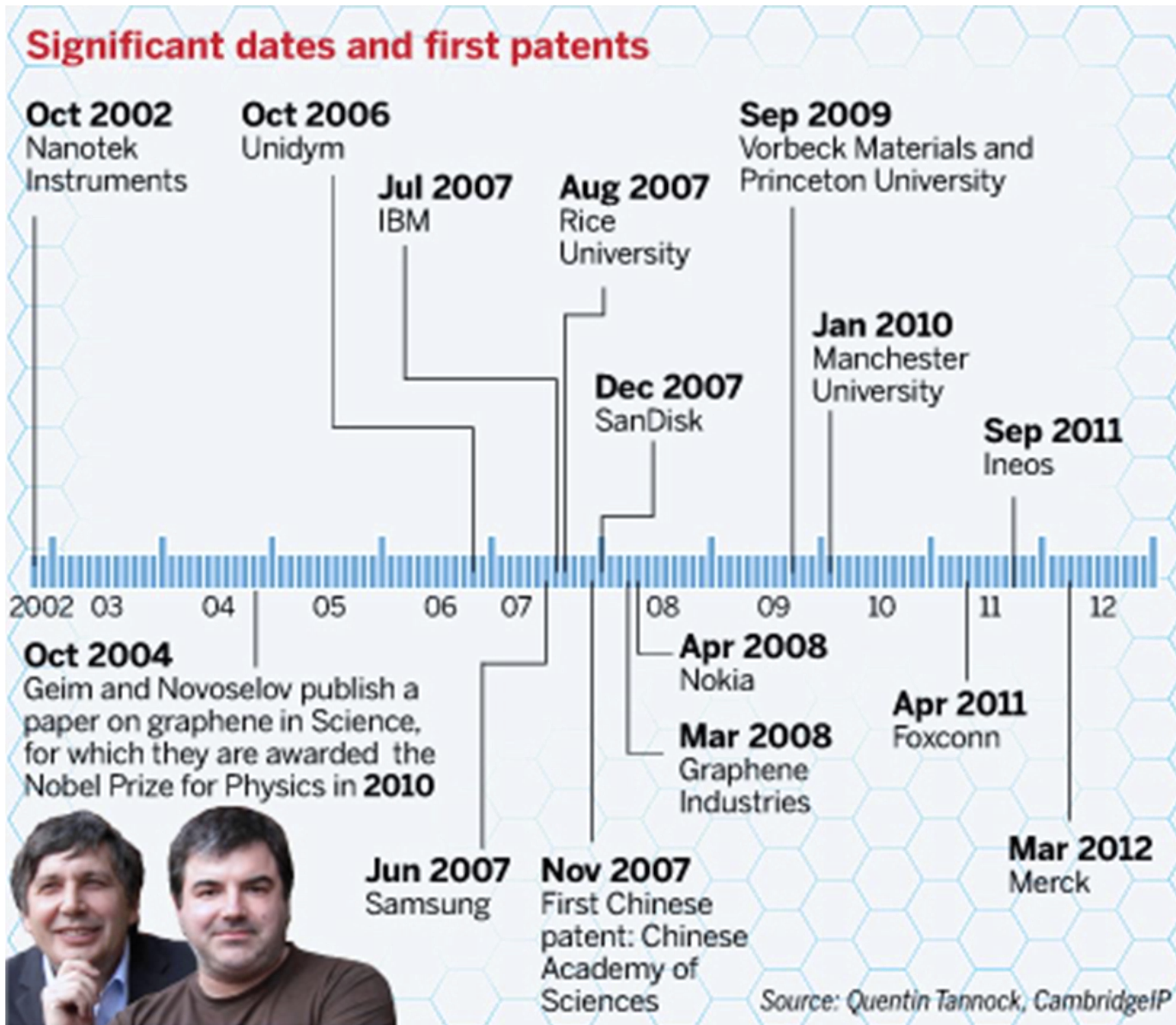
...and many more.

# Disruptive Properties of Graphene



- Thinnest material known to man (1 molecule thick)
- Strongest material ever measured (theoretical limit; 200 times stronger than steel)
- Highest strength-to-weight ratio
- Most stretchable crystal (up to 20% elasticity)
- Record thermal conductivity (outperforming diamond)
- Highest current density at room temperature (million times that of copper)
- Highest intrinsic mobility (electron-transfer) (100 times that of Silicon)
- Highest electrical conductivity – no electron skip or friction heat
- Transparent

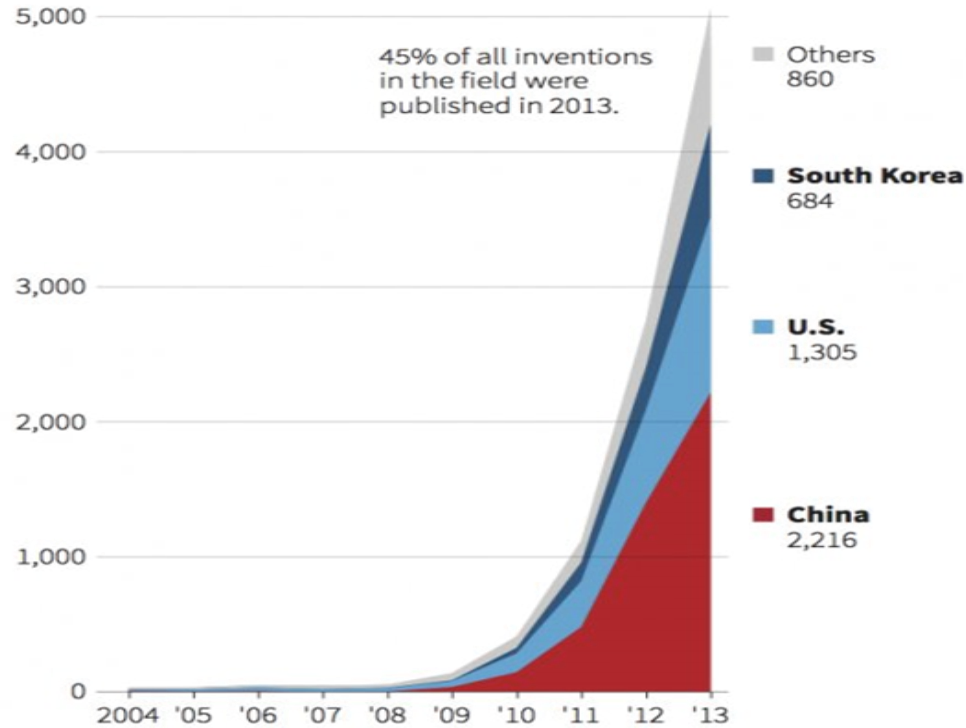
# Graphene History



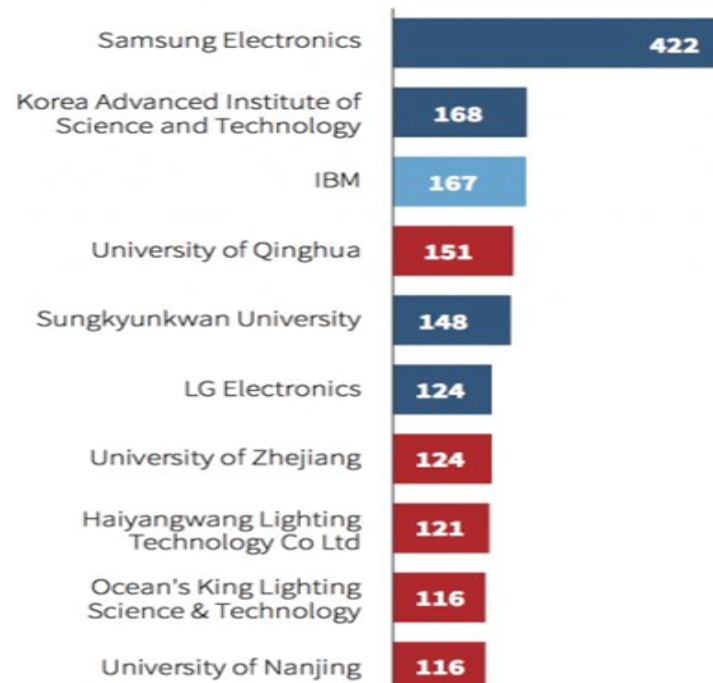
# Global Graphene Patents

## Graphene patents

Countries with the most graphene inventions



Top ten companies/institutions with the most patents



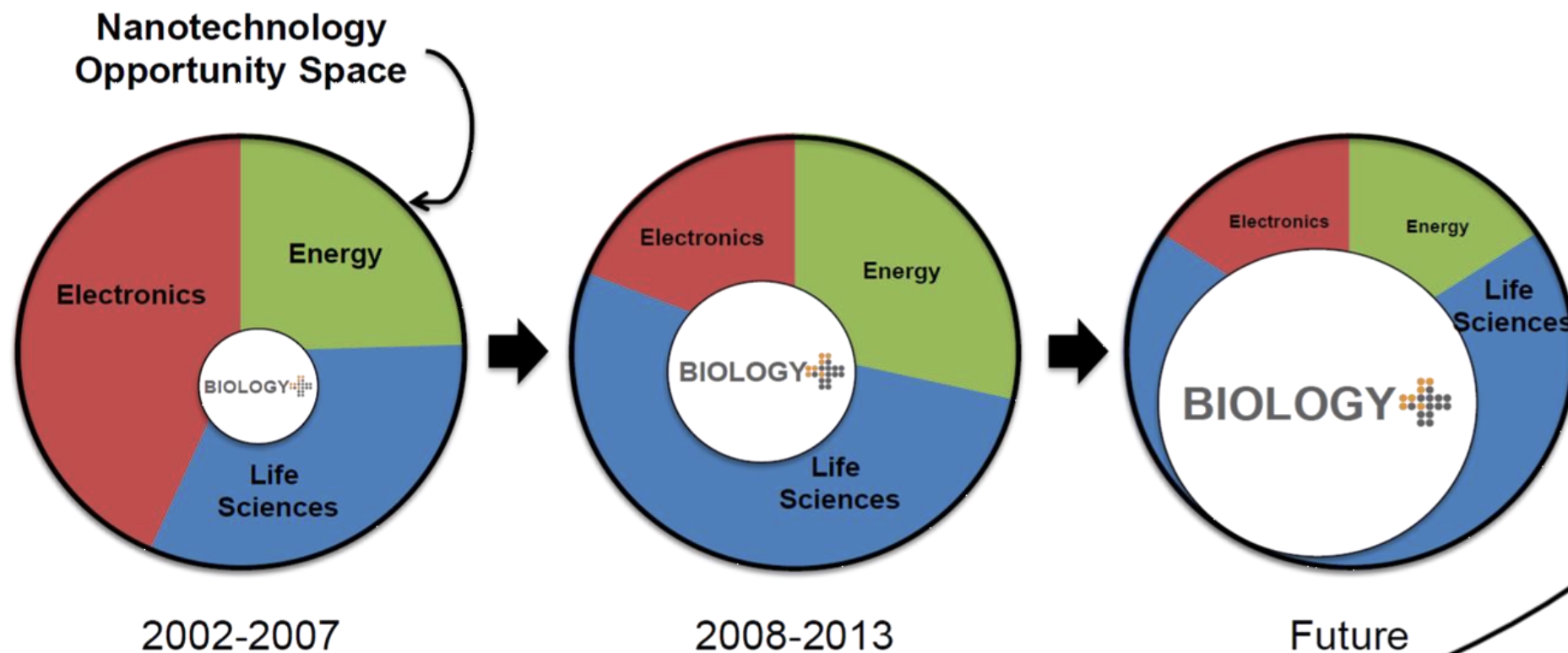
Source: Reuters

C. Inton, 29/04/2014

REUTERS



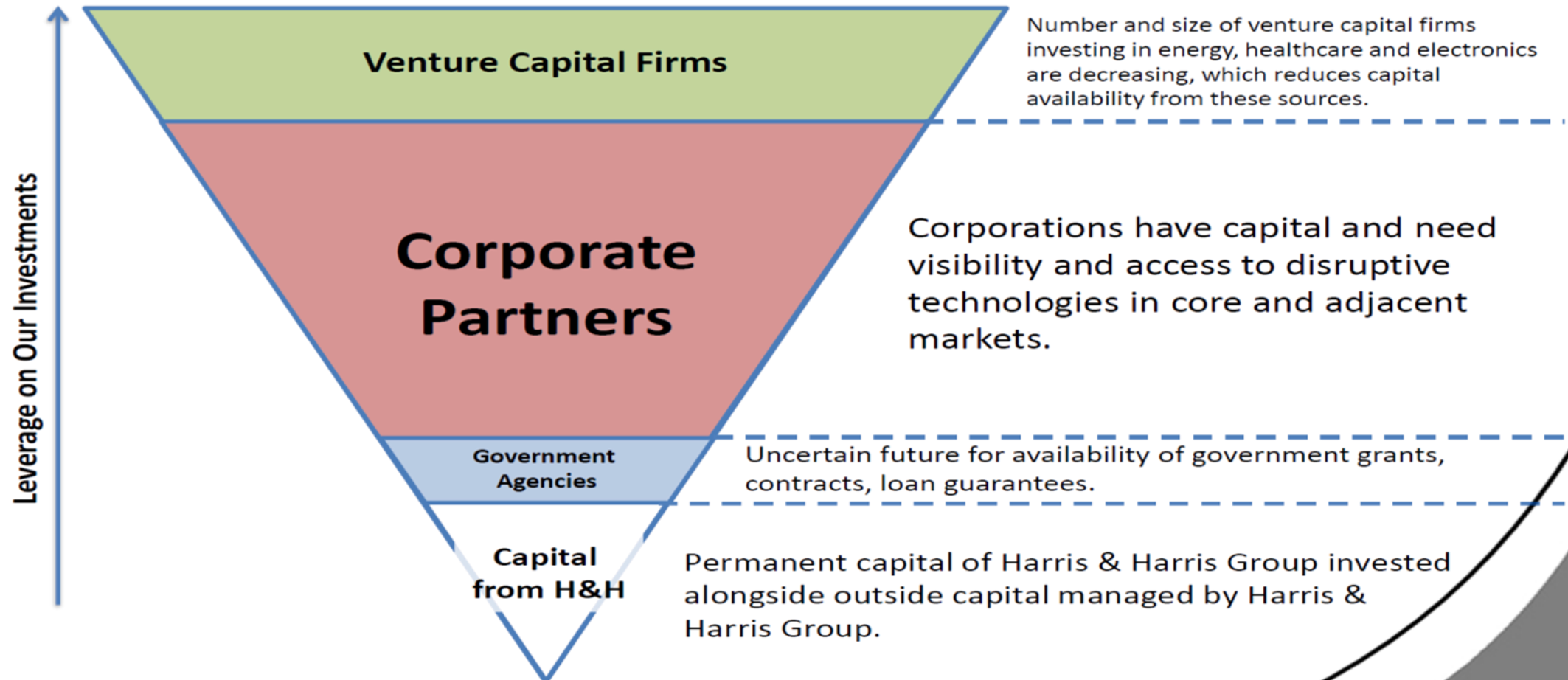
## EVOLUTION OF OUR INVESTMENT FOCUS



# One Investors Outlook – Beyond 2015

- Opportunities exist
  - Seed and Series A Opportunities – applications in life science markets
  - Move up the value chain
- Corporate Involvement is Becoming Critical and its Value increasing
- Be creative in thinking about growing revenue quickly
- The public markets have re-set values for non-consumer focused technologies
  - Requires capital efficiency
  - Requires re-learning the public market ecosystem for IPOs and trading.

# Investor Outlook – Beyond 2015



## Future Investment

- Creative, financially engineered funding vehicles
- Long term investment focus
  - Family funds
  - Private equity
- Include corporate venture capital
- Public trading on alternative exchanges
- Exploit hundreds of government grants and funding programs