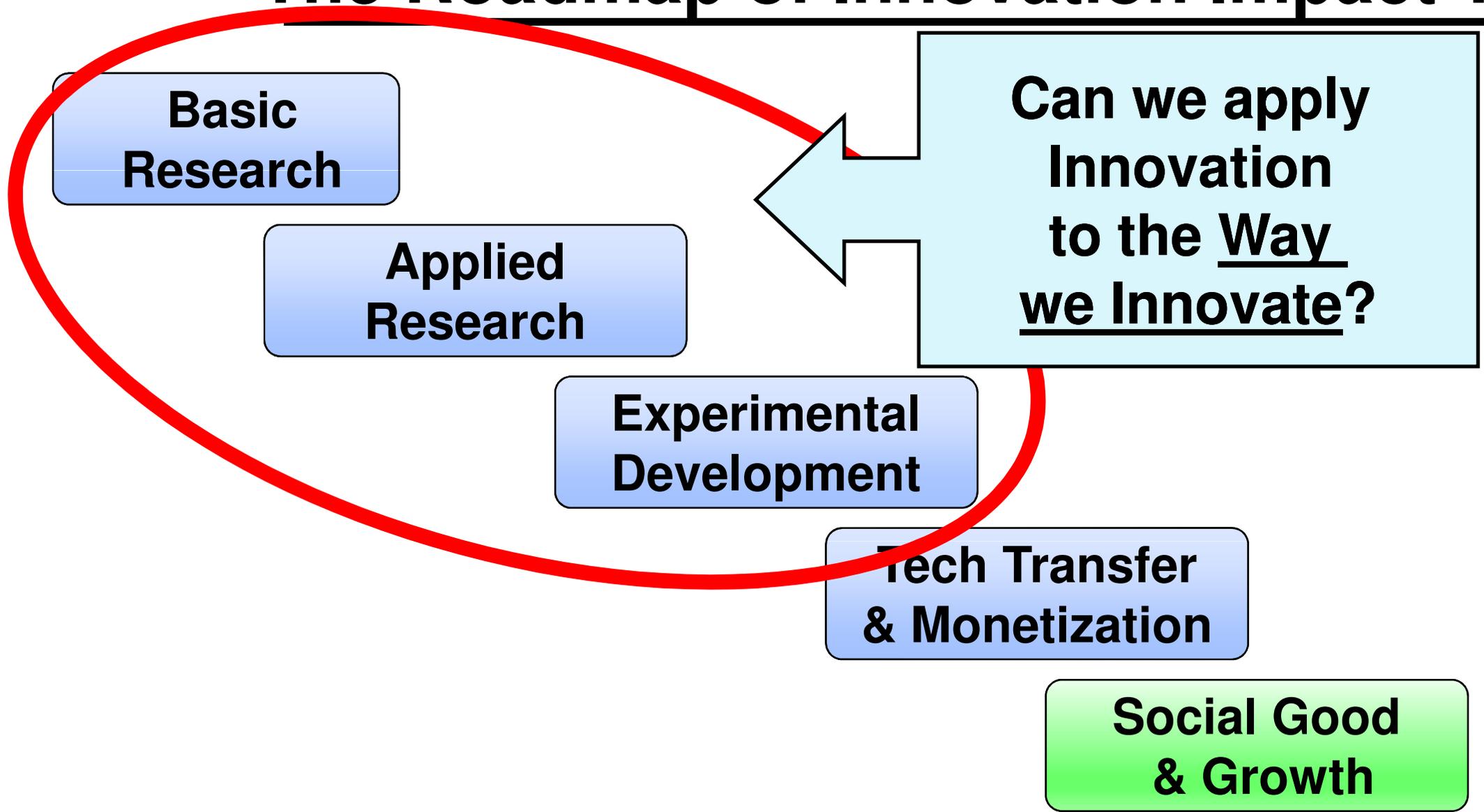
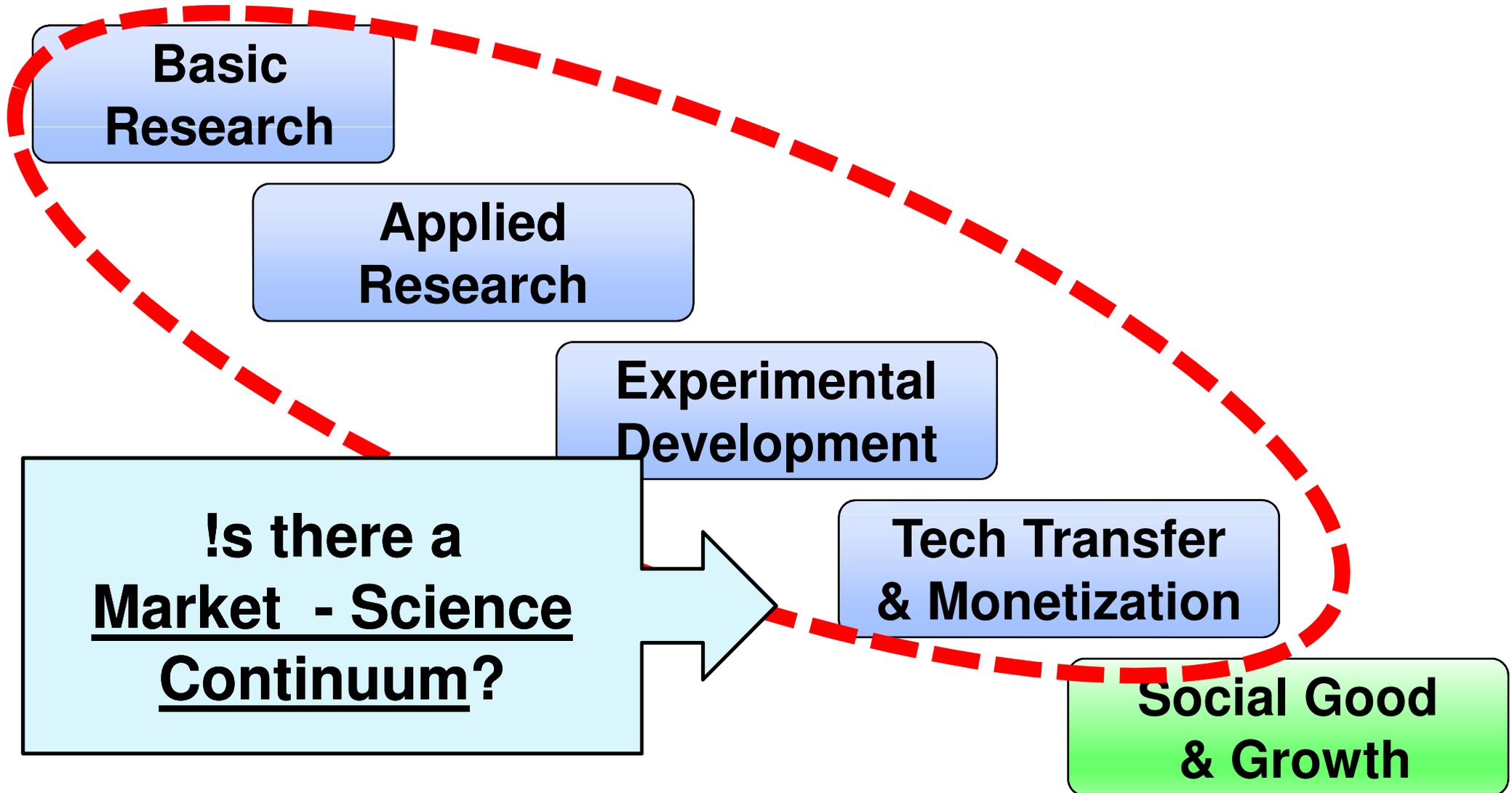


New Business Models & Innovation

The Roadmap of Innovation Impact ?



The Roadmap of Innovation Impact ?



Risk Design
in the
Pharmaceutical Industry

Pharmaceuticals Patents Expire

Big Pharma
Price = 100



Generics
Price = 20

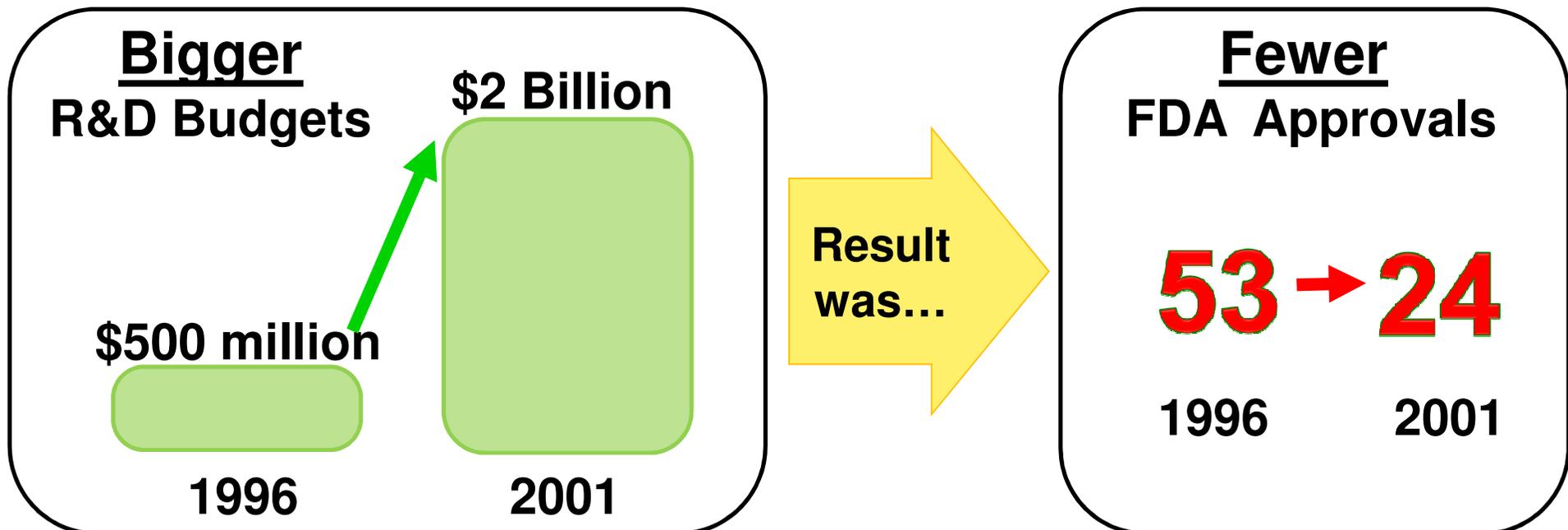


Patent Rights
Expiration

The Road to Survival = Innovation

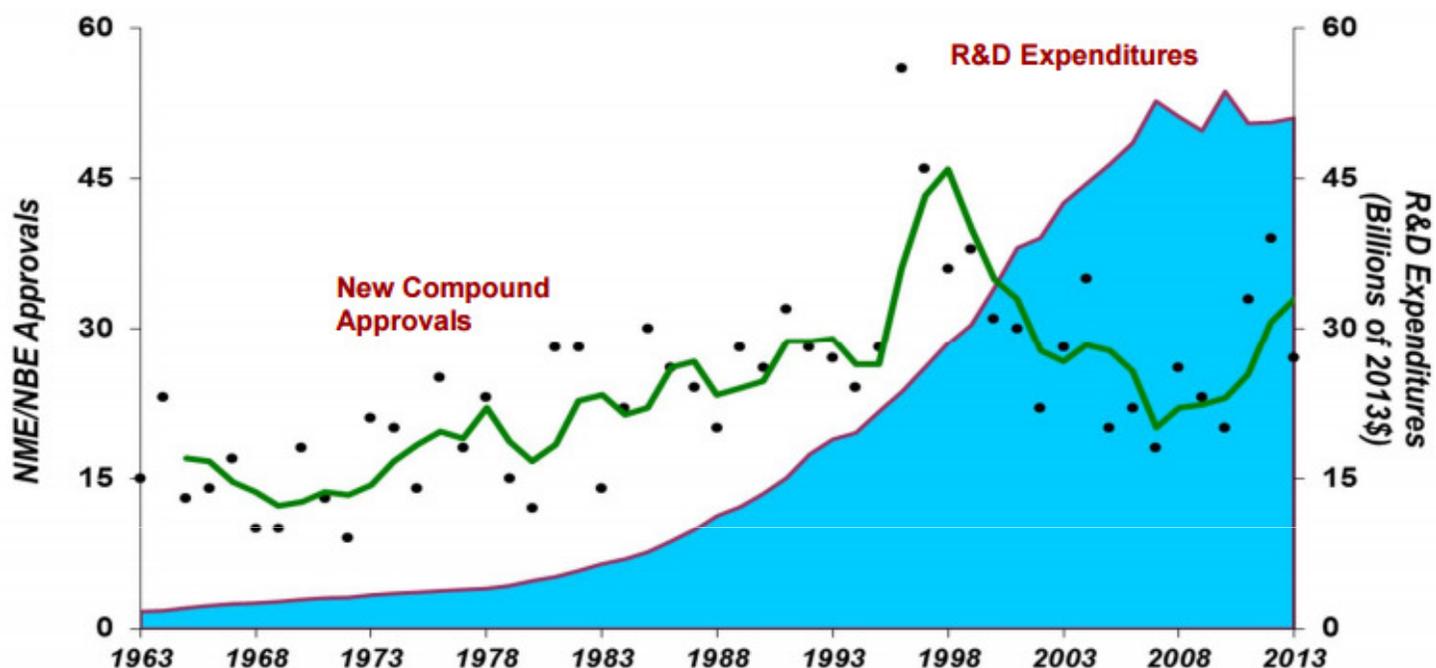
**Tufts University Study:
Successful New Drug Discovery
Requires circa \$ 1 Billion and 10 to 15 years in R&D**

**Industry Response: 1994 to early 2000's
Massive Mergers to reach Critical R&D Budgets**



Can Money Buy Success?

New Drug and Biologics Approvals and R&D Spending



R&D expenditures are adjusted for inflation; curve is a 3-year moving average for NME/NBEs
Sources: Tufts CSDD; PhRMA, 2014 Industry Profile

Source: Tufts University Center for the Study of Drug Development
http://csdd.tufts.edu/files/uploads/Tufts_CSDD_briefing_on_RD_cost_study_-_Nov_18,_2014..pdf

Why Didn't More R&D Resources Produce More R&D Results?

**Innovation Is a
Game of Chance (Risk)**

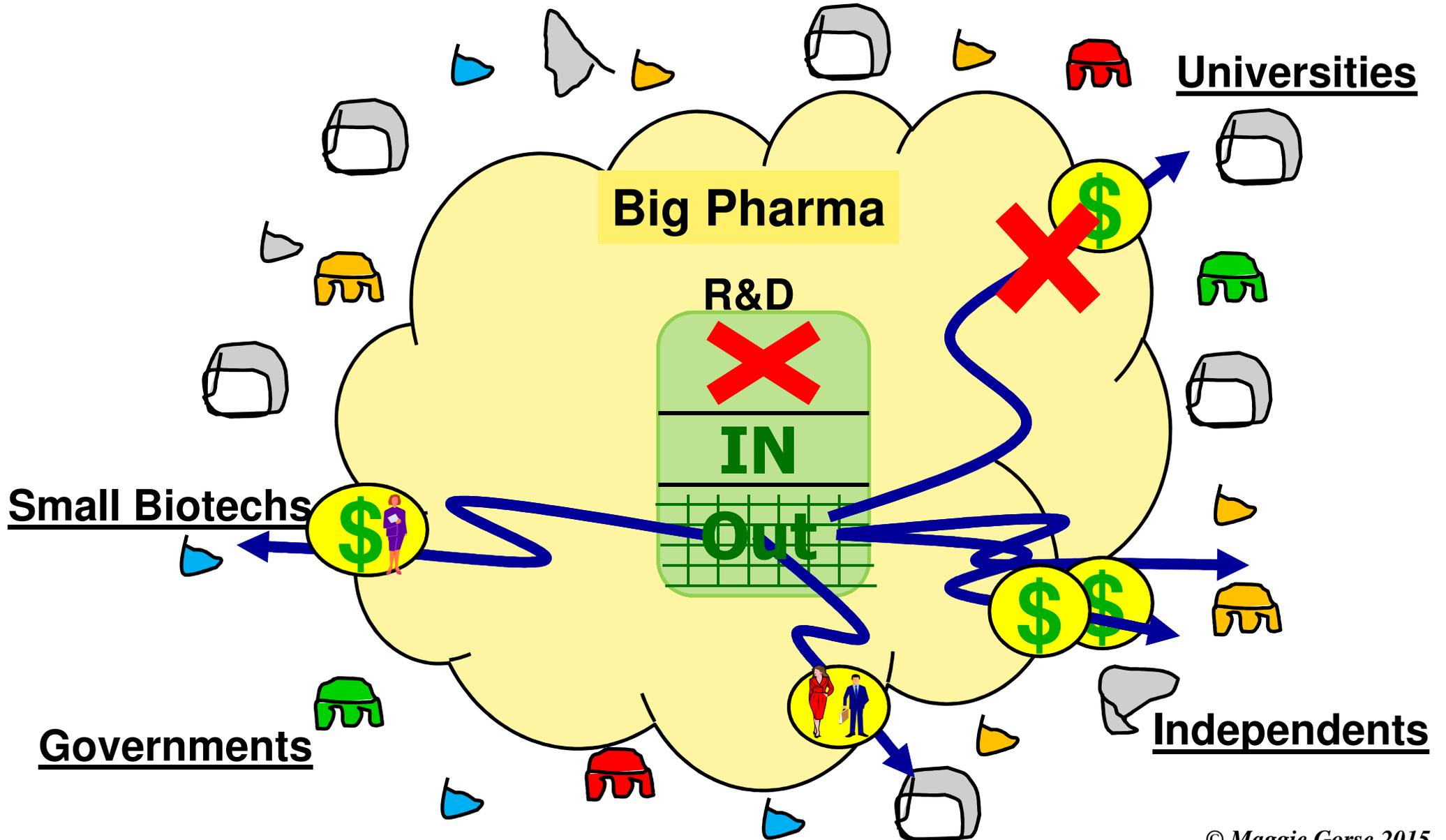


**To Win, you need both
Skill and Probabilities**

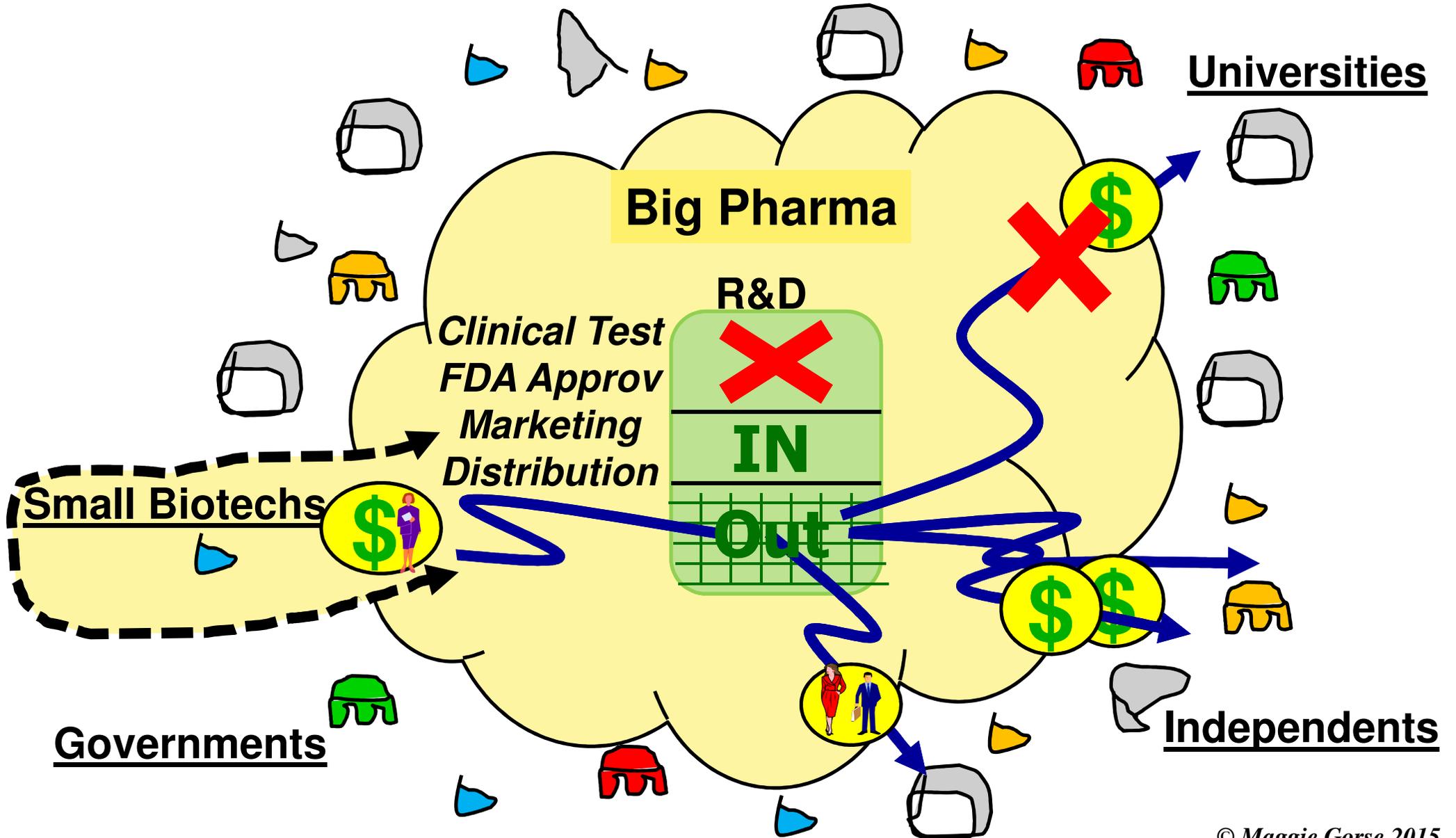


**Risk Design is more
important to Success than
More Money or Size**

Big Pharma Reduces R&D Budget, Uses New R&D Design for Innovation



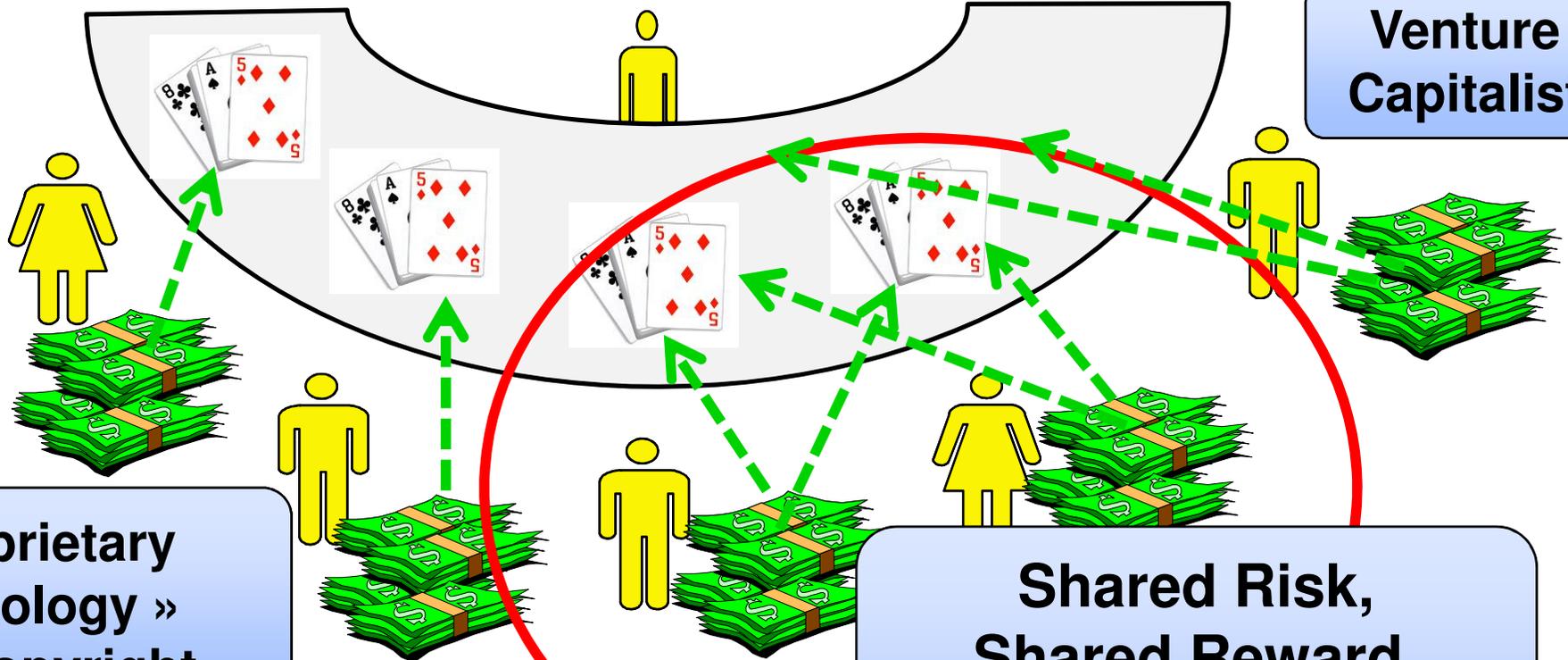
Big Pharma Reduces R&D Budget, Uses New R&D Design for Innovation



A Lesson in Risk Design

More money on own cards does not increase chance of winning

Venture Capitalist



« Proprietary Technology »
with Copyright

Shared Risk,
Shared Reward.
Same Money, More
Chances to Win

High Value even without Proprietary Copyright ?

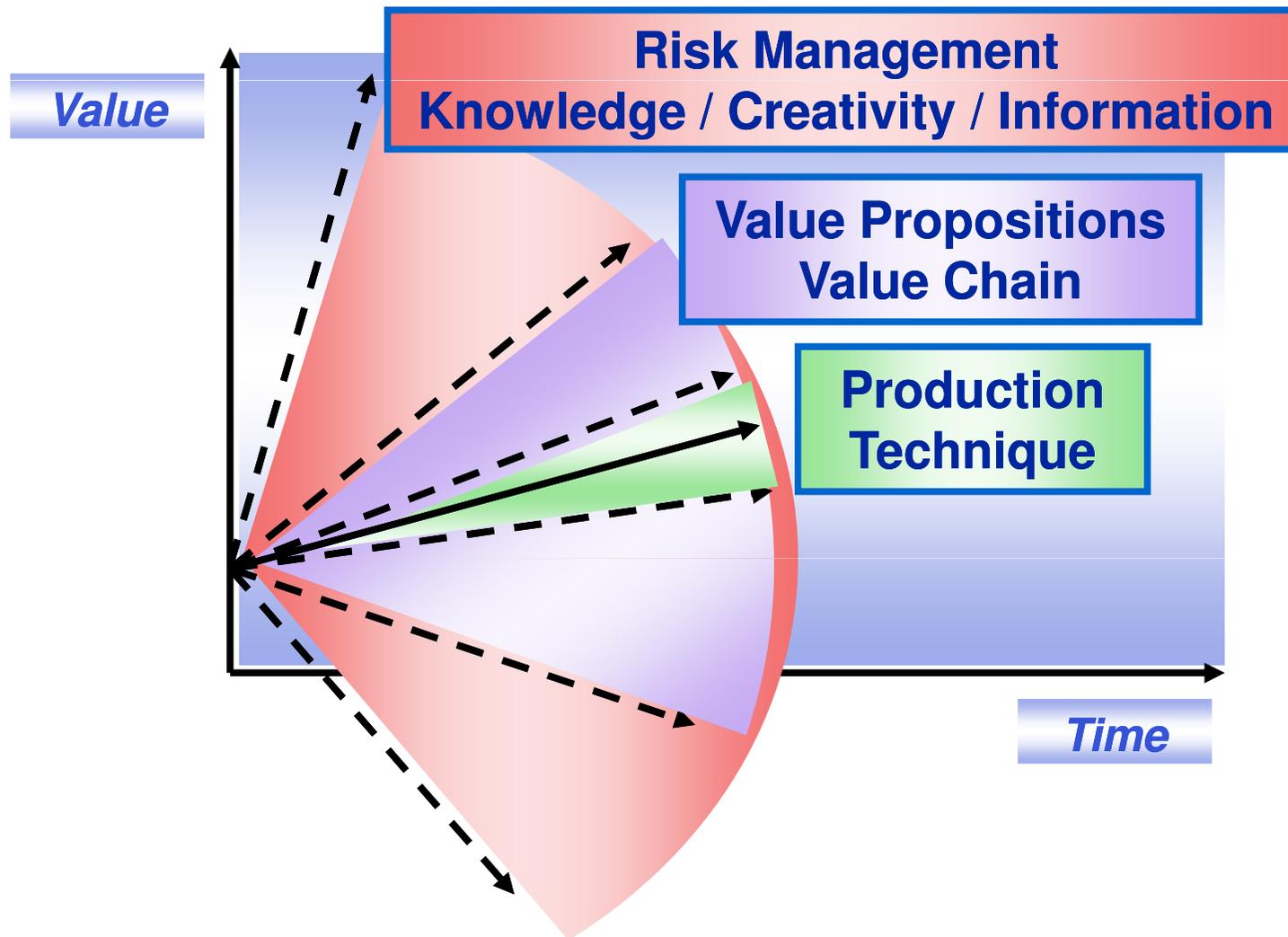
Big Pharma:

- ✓ Shared Risk – more opportunities with less investment
- ✓ Privileged & Priority Access to many Innovators & their technology
- ✓ « Absorb » Potential Competitors – becomes cooperative relationship

**Biotechs,
Universities,
Gov't, Etc:**

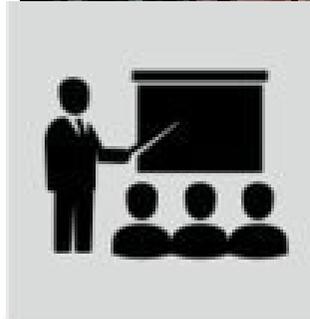
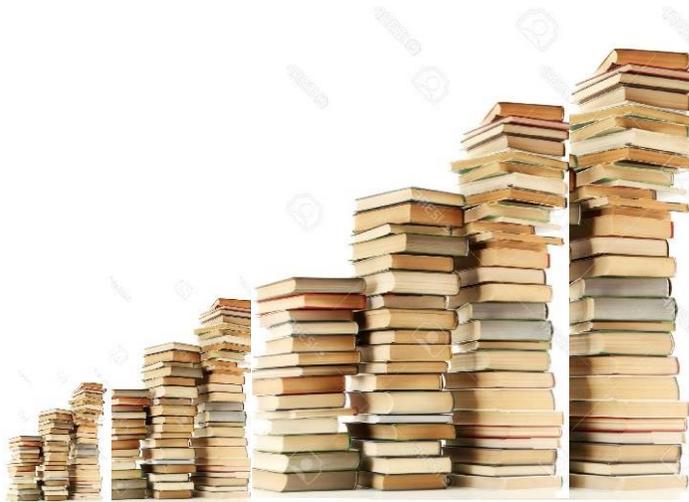
- ✓ Access more resources: Money, Methods, Talent, other Patents, etc
- ✓ Fast Monetization of Discovery– using Big Pharma Test & Marketing

Economic Evolution & Risk

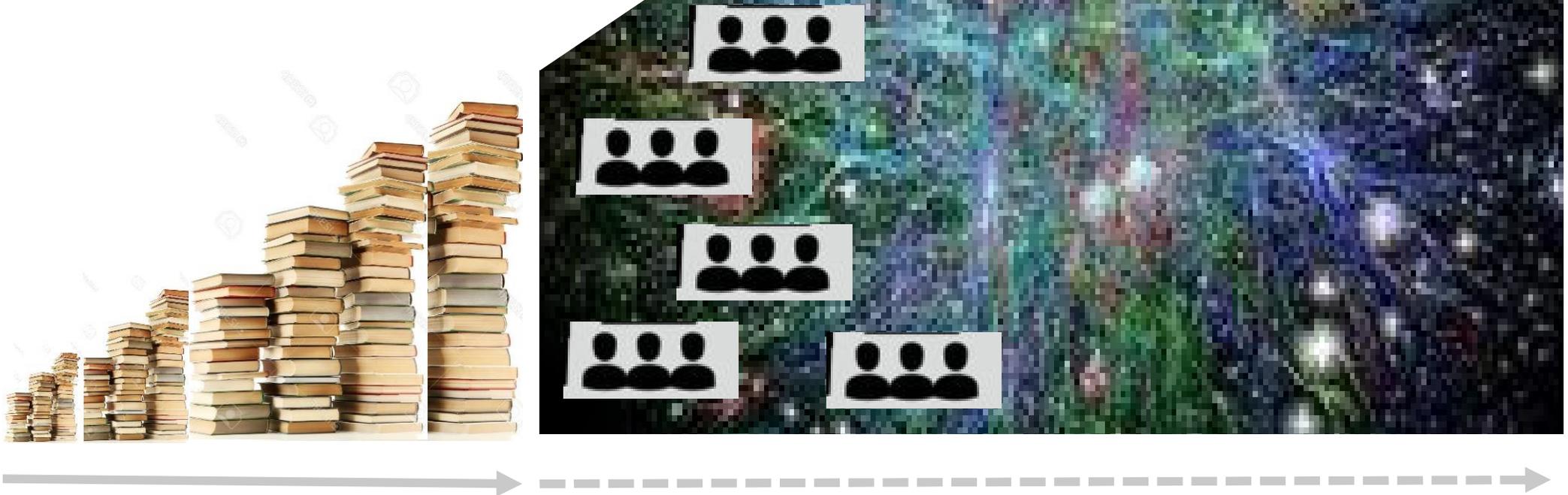


**Sustainable Innovation
Means Risk Design**

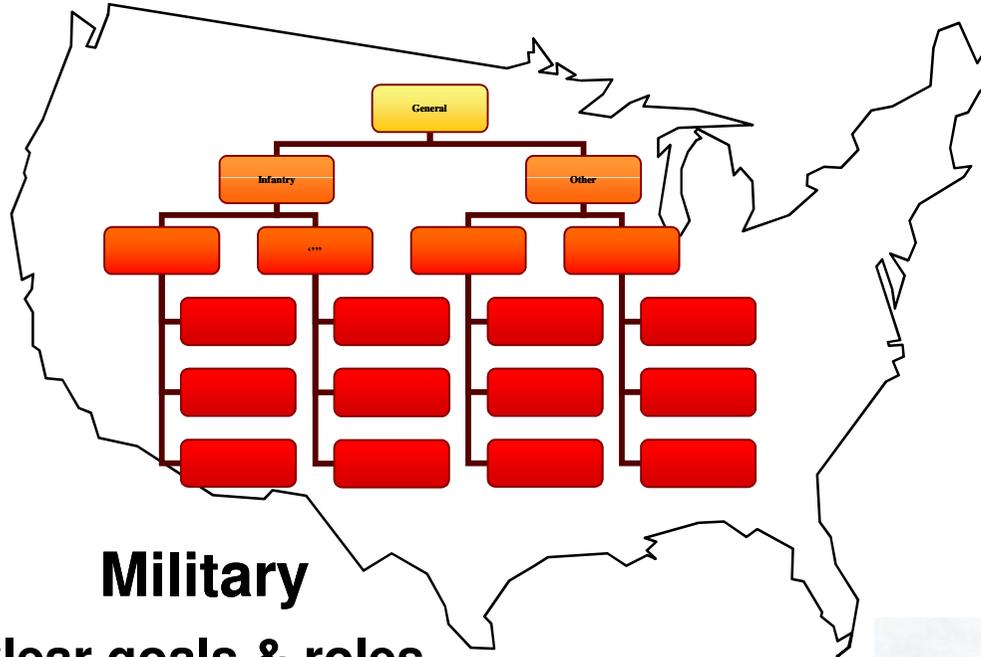
Where is Knowledge ?



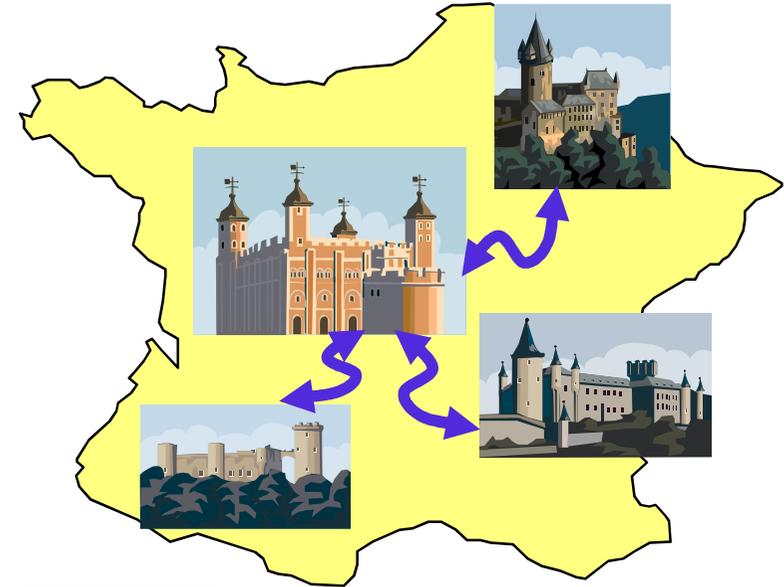
Exploring Ignorance



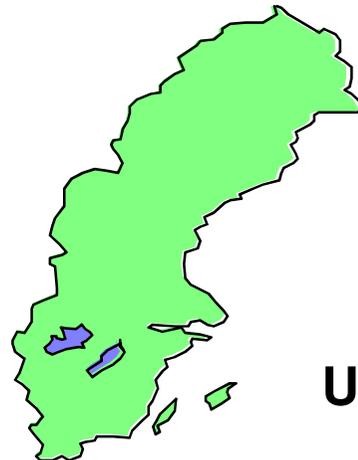
Organization for Risk



Military
Clear goals & roles
Mass Deployment



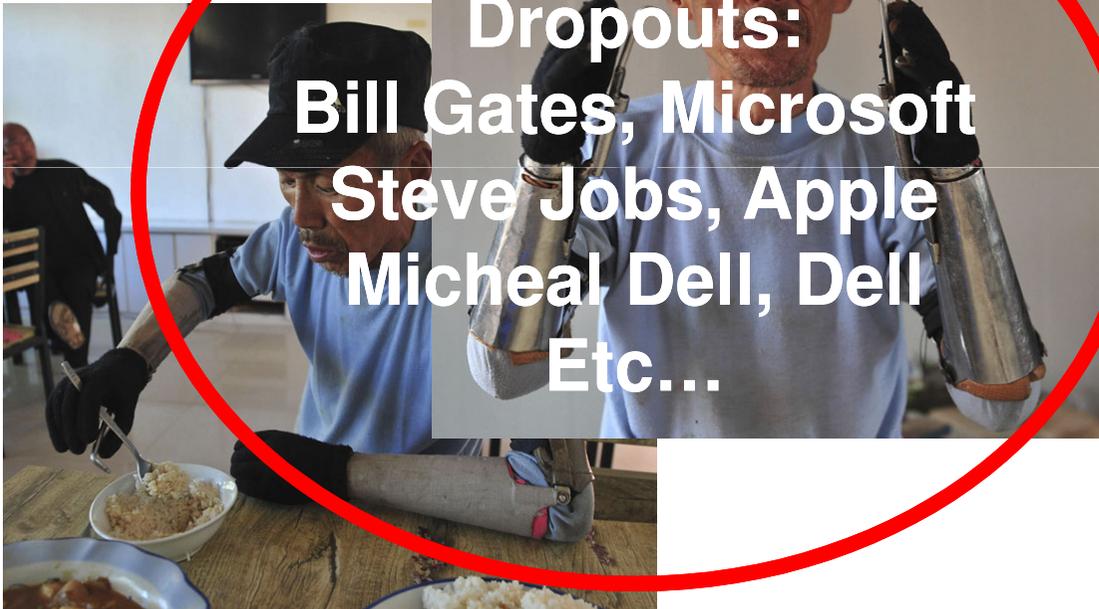
Feudal
Protect established territory



Viking
Unknown Destination
Unknown Dangers

May 2013 report in « The Atlantic »: China Has Broad & Rich Talent for Innovation

Sun Jifa, farmer in Jilin province, lost his forearms 32 years ago – instructed his nephews to build these prosthetic forearms from scrap metal, plastic and rubber. Sun & nephews have sold 300 prosthetic limbs for people in need for 3000 RMB each.
September, 2012
(Reuters/Sheng Li)



Dropouts:
Bill Gates, Microsoft
Steve Jobs, Apple
Micheal Dell, Dell
Etc...



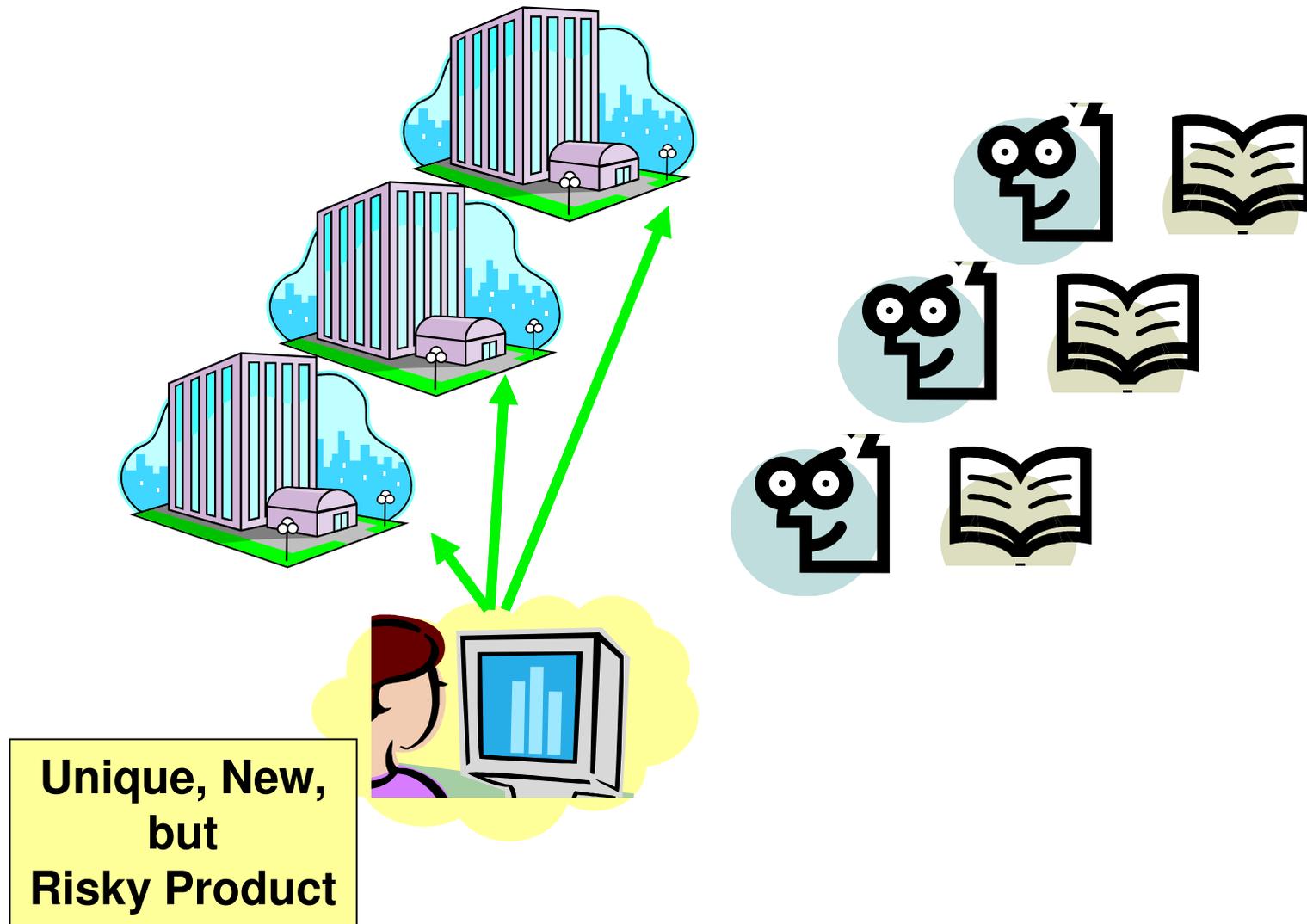
Noah's Ark of China, six-ton “survival” ball by Chinese inventor Yang Zongfu, in Yiwu, Zhejiang province. Yang spent 2 years & 1.5 million RMB to build 4m diameter vessel, capable of housing 3 people with enough food to live 10 months, protected from external heat, water & impact.

August, 2012. (Reuters/China Daily)
© Maggie Gorse 2015

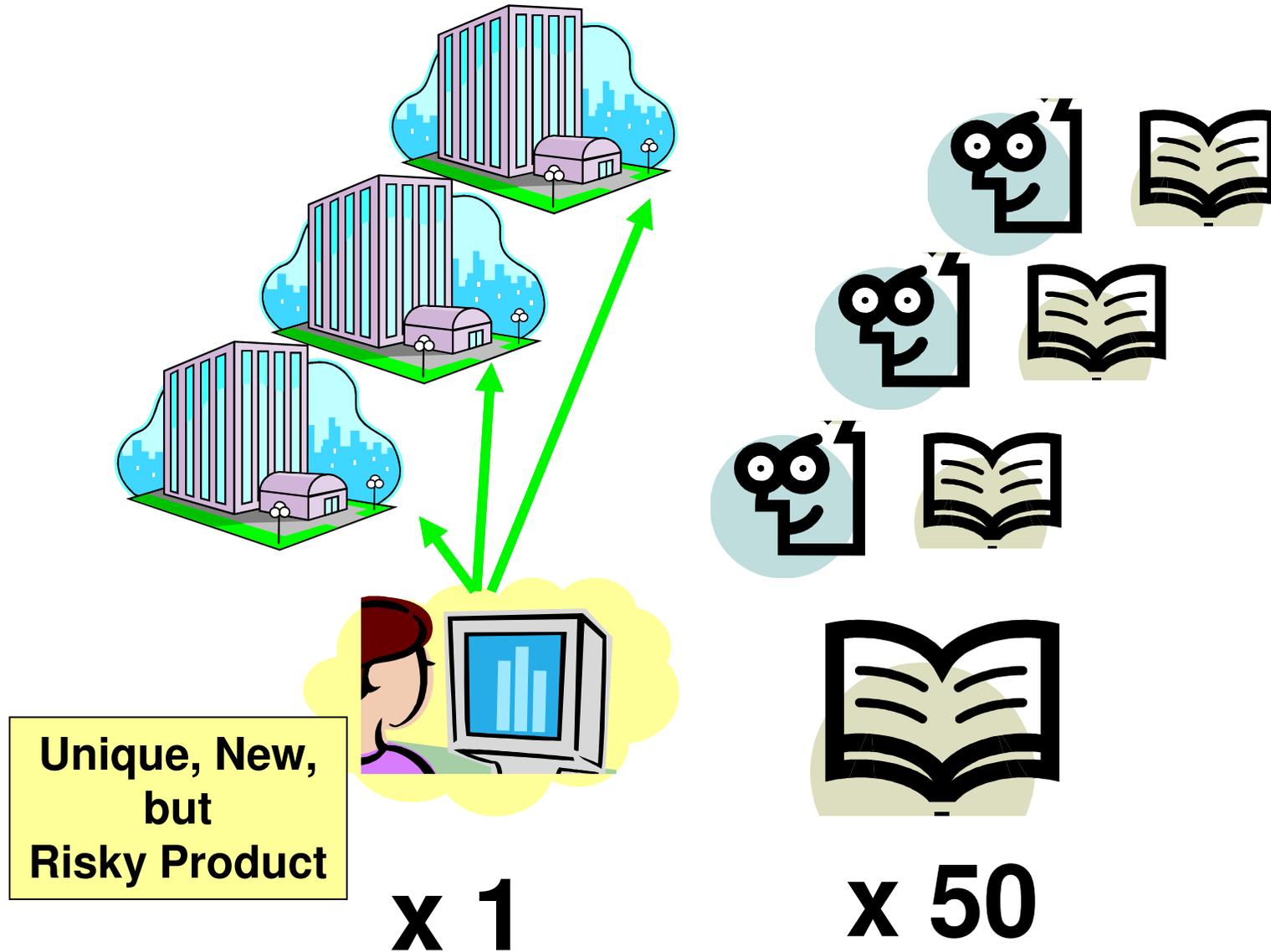
**Sustainable Innovation
Means Small, Agile,
Multi-Disciplinary Teams**

Innovation in Business
and
Science & Technology

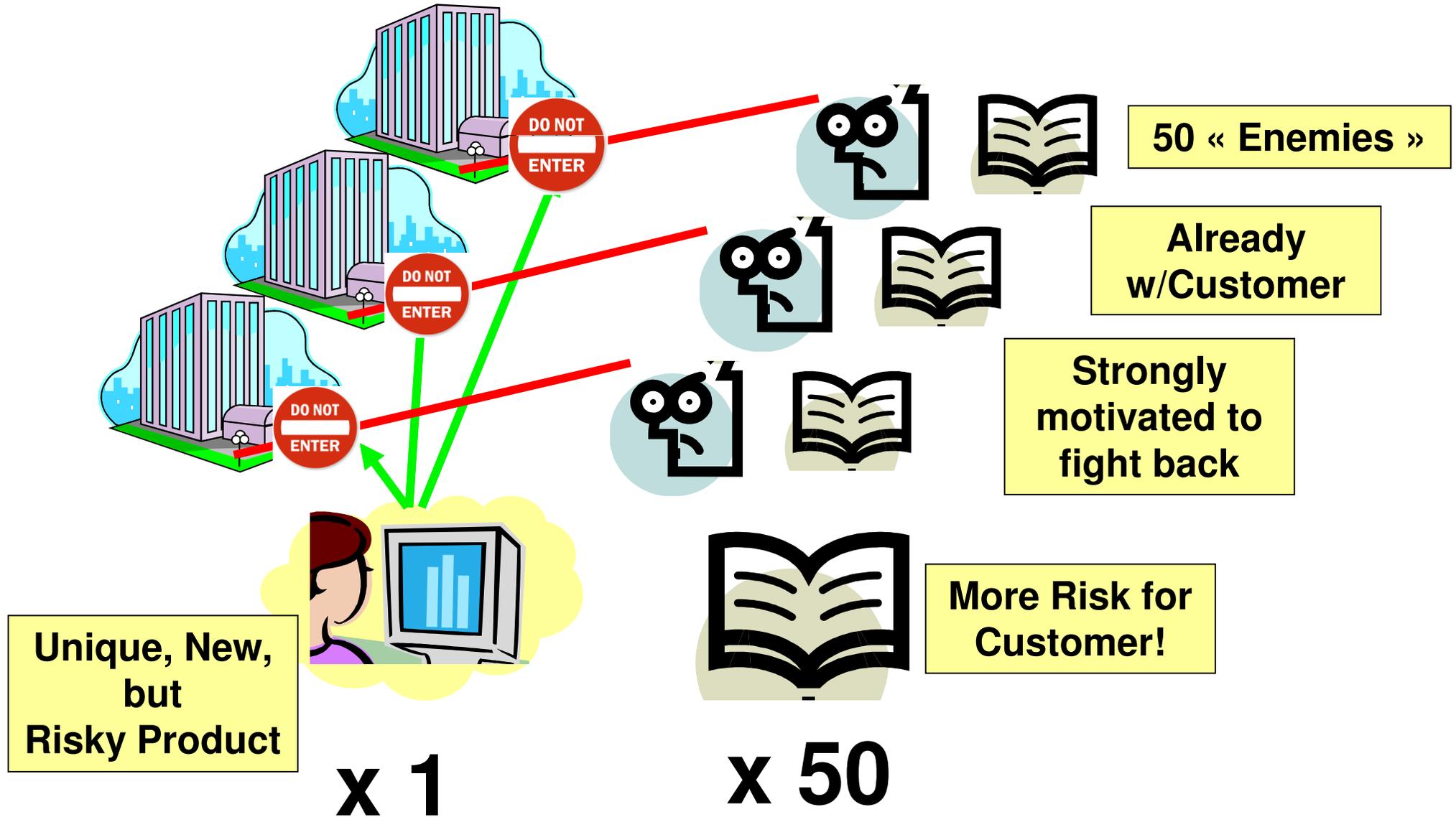
Reaching your Market, Risk & Value



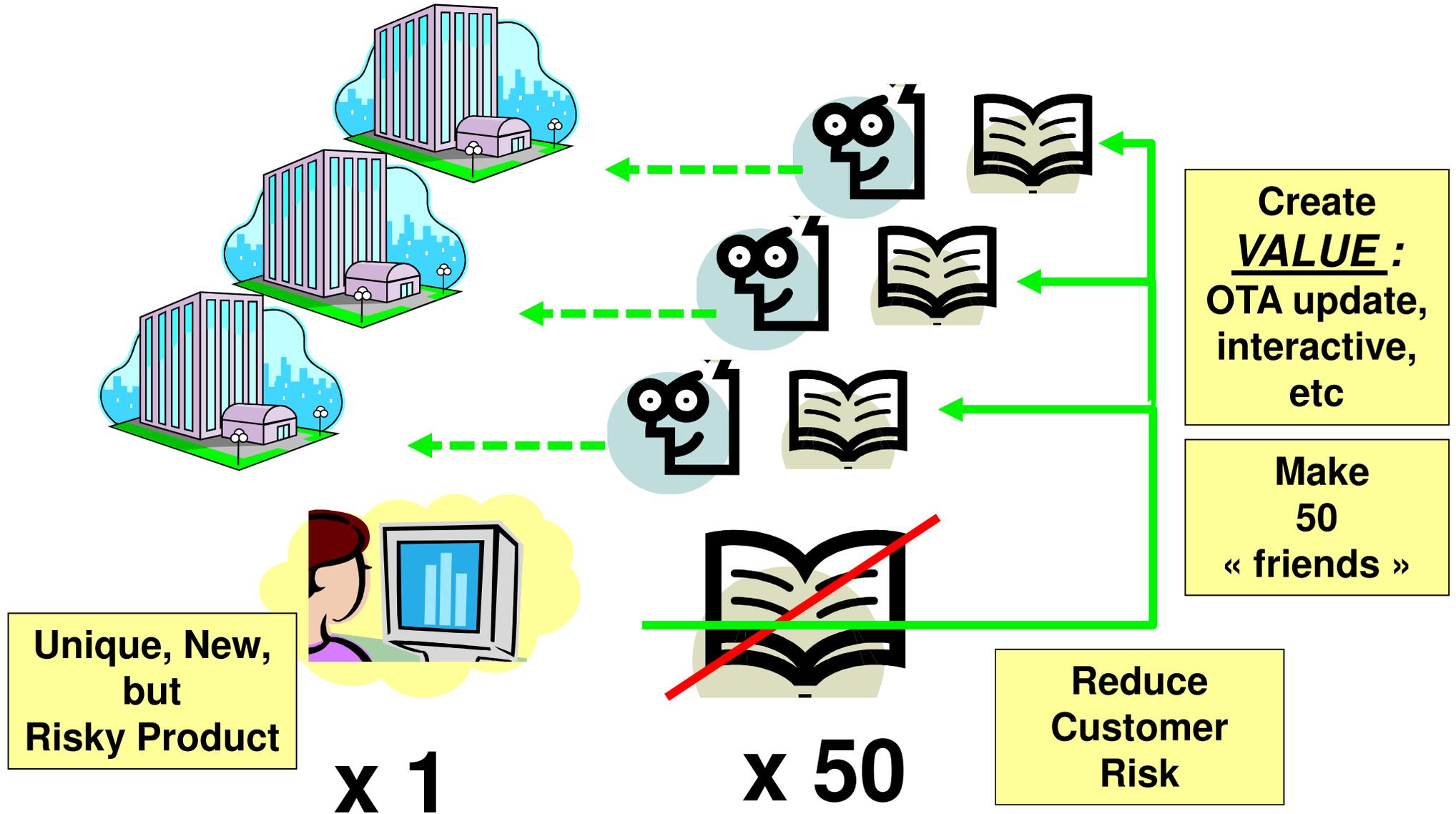
Reaching your Market, Risk & Value



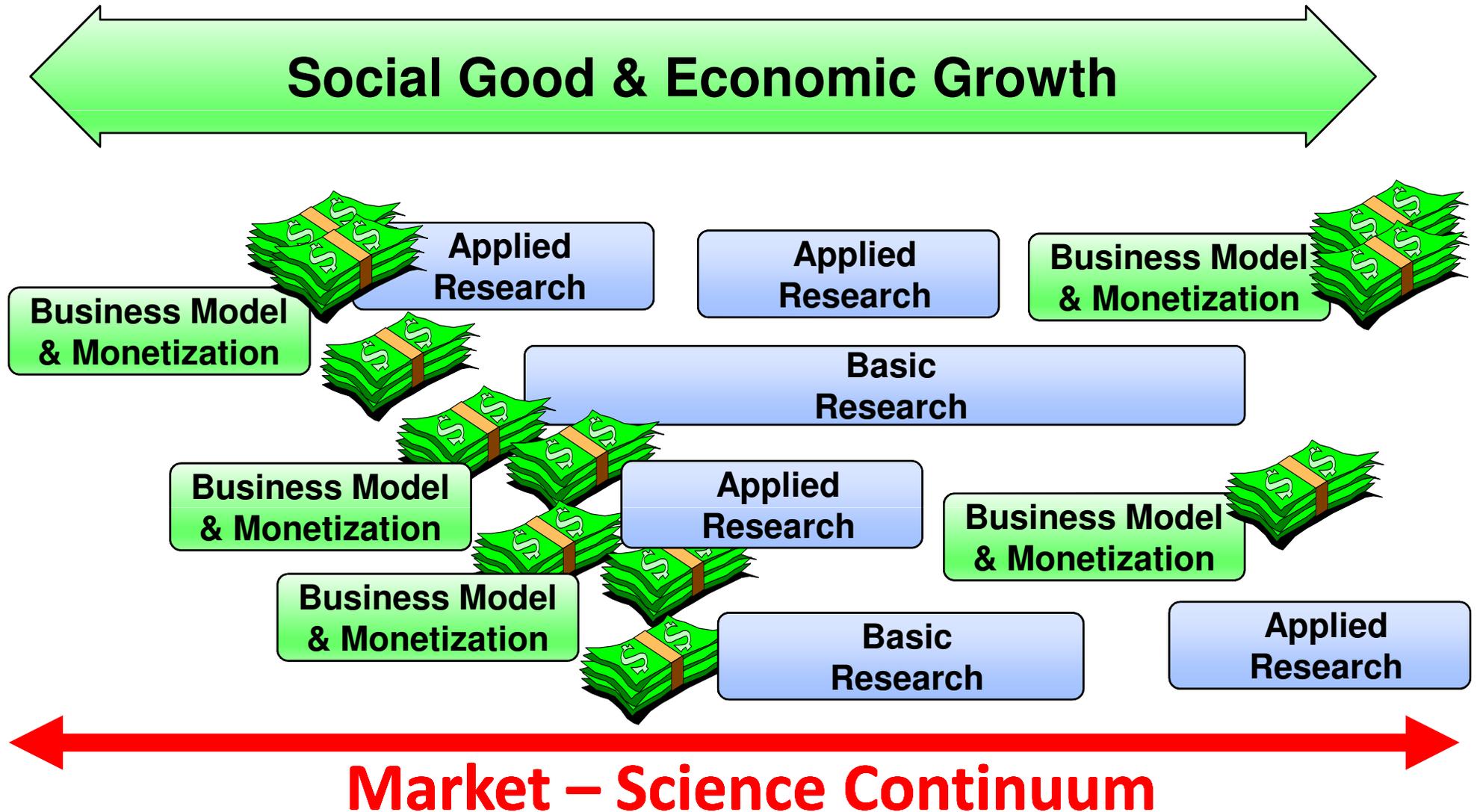
Reaching your Market, Risk & Value



Reaching your Market, Risk & Value



Roadmap of Sustainable Innovation



**Sustainable Innovation
Means Business Innovation
for Sustainable Financing**

Sustainable Innovation
Means
Business Model Innovation

Sustainable Innovation

- Risk Design is a Primary Skill
- Knowledge is ahead of us
 - Viking approach to discovery
 - Knowledge is plentiful: Value is in monetization
- Roadmap starts with “quick fix” monetization for sustainable financing
- Business Model innovation is as important as STEM innovation