

# Sponsored R&D: Lessons Learned Outside Academia

- Current Context
- Overview of Federal Funding for R&D
- Differences between the Academic & Corporate Models

Grants vs. Contracts

Shaping, Capture & Proposal a.k.a. “Pre-Award”

P<sub>win</sub>, Pipeline, B&P Investments, & Long-Term Strategy

- The Hydrology of Federal R&D Funding
- Steps Forward

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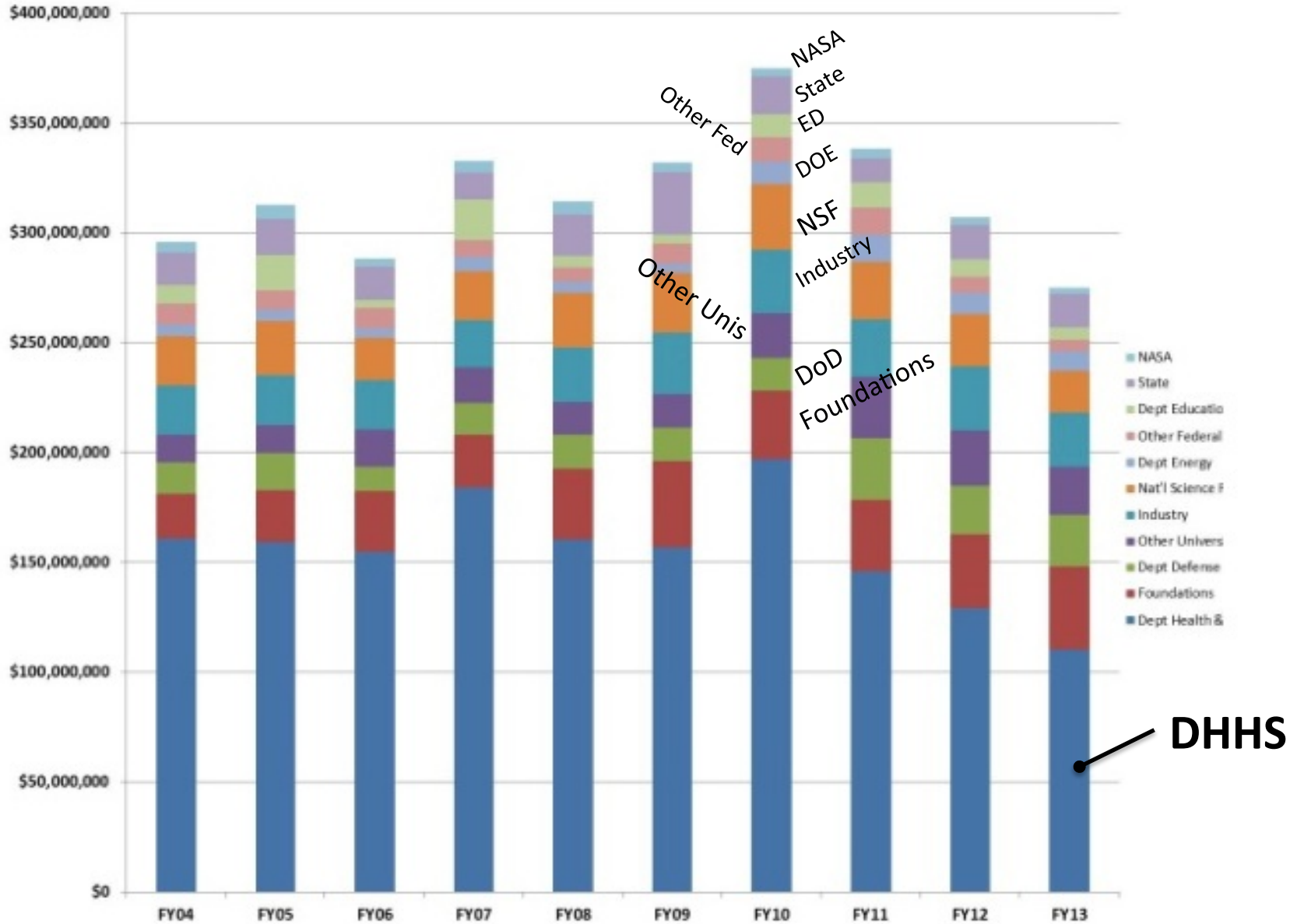
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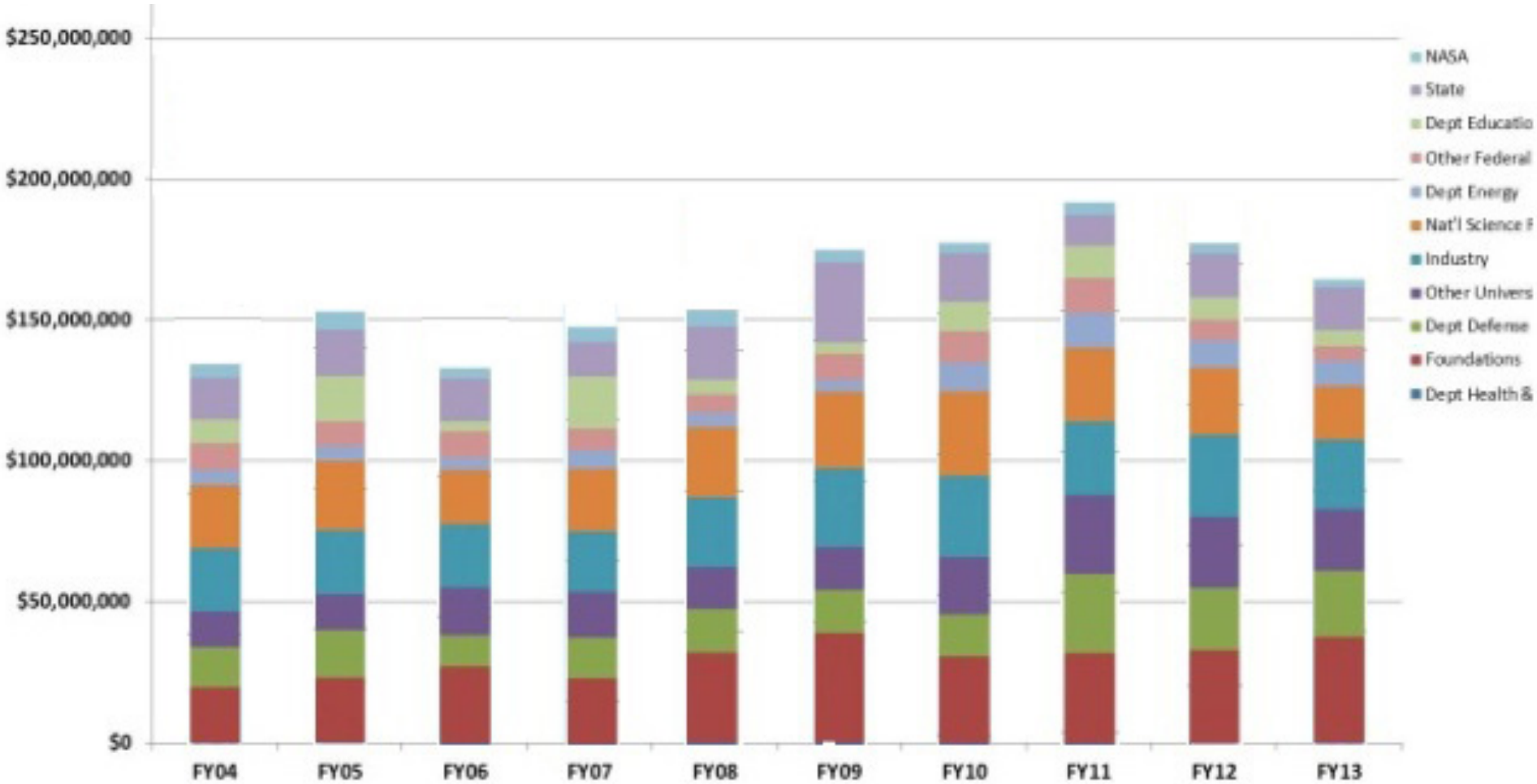
# U.Va. Context...

## Annual Research Awards by Granting Agency



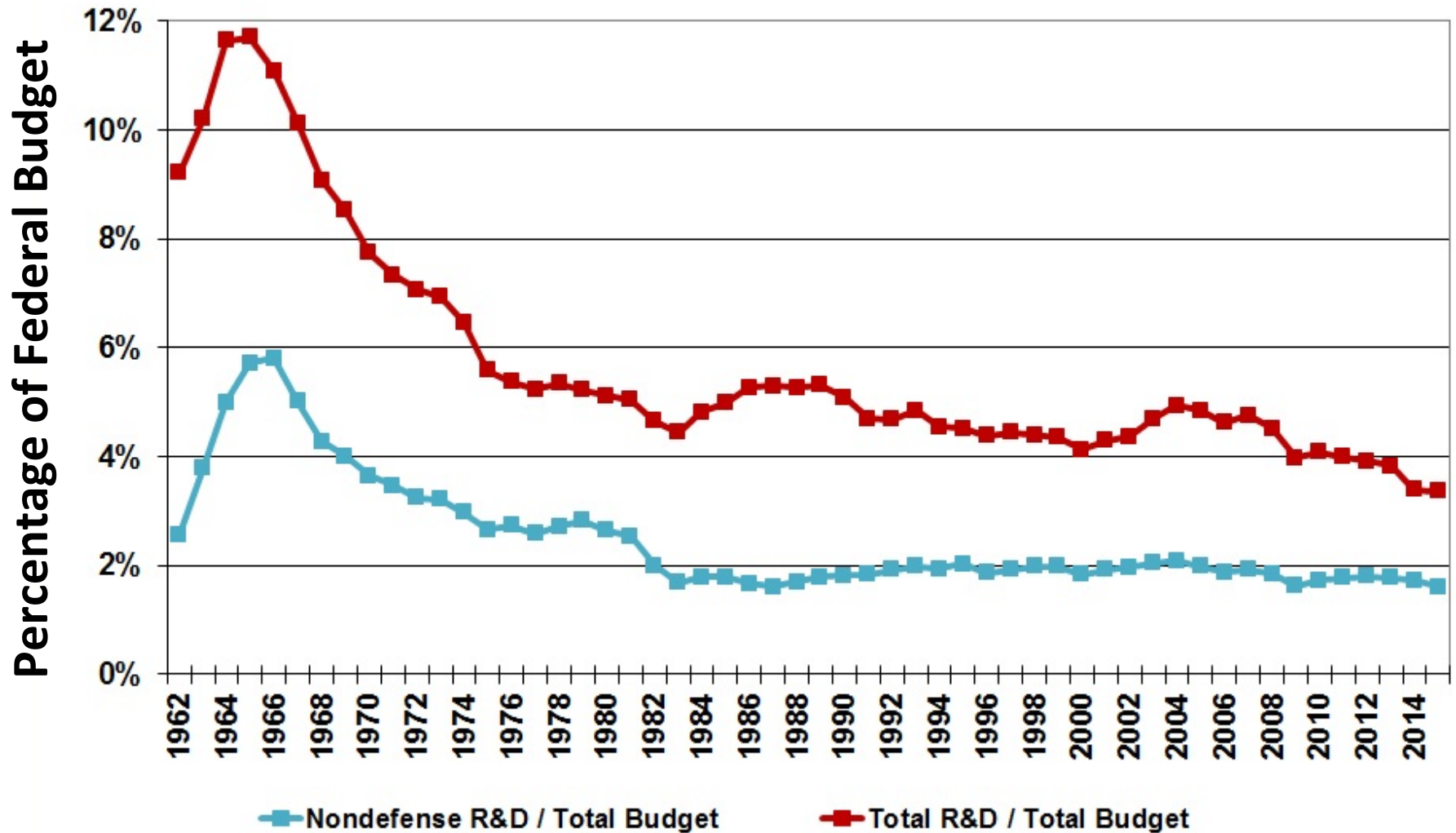
Ex DHHS...

... within a ~\$50M band for 10 years.



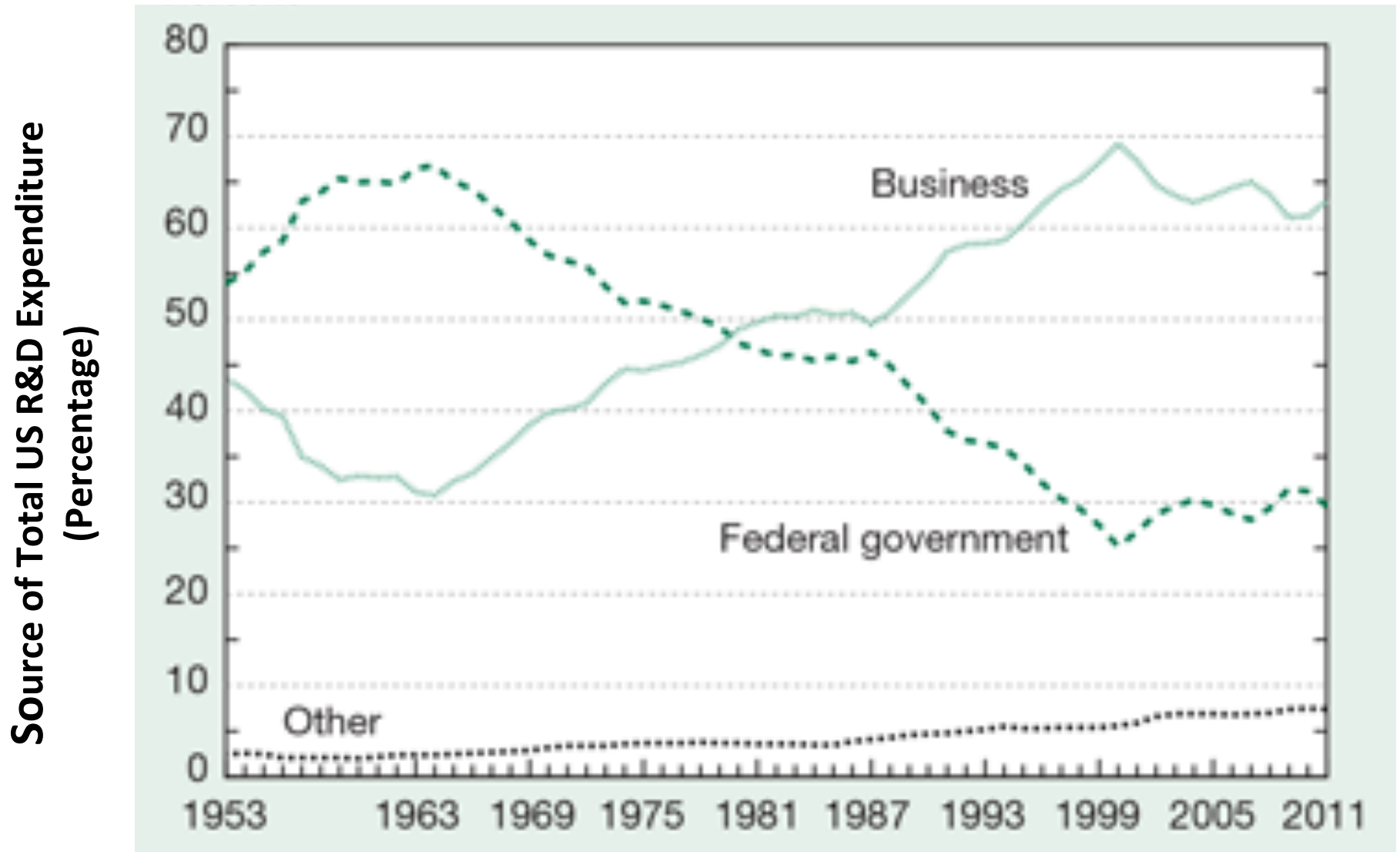
(PS removal of DHHS contributions)

# Snapshot of Federal Funding for R&D

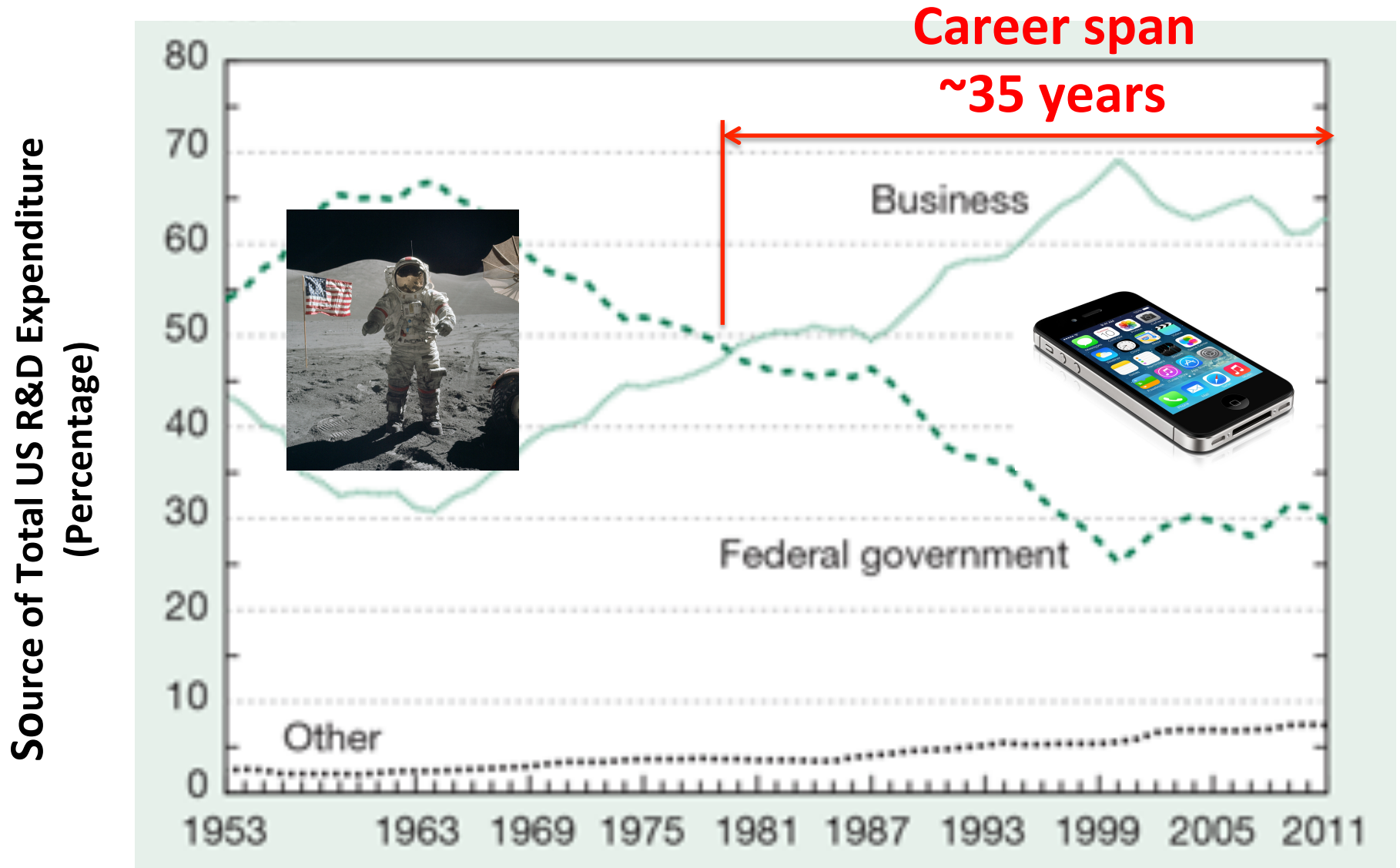


Source: *Budget of the U.S. Government FY 2015 Historical Tables*. FY 2014 is the request. © 2014 AAAS

# Snapshot of Federal Funding for R&D



# Generation Gap?



# Can Universities Adapt?

**A viable strategy is to grow sponsorship via R&D contracts,  
*....but that requires a rather different posture.***

- Mission & Business Model
- Contracts vs. grants
- Shaping, capture, proposals, B&P budgeting
- $P_{win}$
- Building bridges across the gap... for faculty & graduates





# Key Differences of Mission, Business Model

Corporate mission:      Serve clients (DoD, DOE, NASA...)  
Provide technical talent & solutions

Corporate model:      (for-profit) Grow by winning more  
contracts & serving more clients;  
Consume ceiling & grow, and shape  
future opportunities;  
Identify a large pipeline & pursue.

~

Academic mission:      Education || Research

Academic model:      (non-profit) Grow R&D sponsorship  
by hiring and developing faculty.

highly  
scalable  
& elastic

Mostly  
unscalable  
& inelastic

# Grants vs. Contracts (in brief)

## Contracts

- ceiling must be filled by “selling out” capacity
- constant, daily interaction between PM team, contract org rep (COR), clients, & new clients
- many types of contracts to suit work
- extensive list of deliverables & requirements
- variable level of effort
- formal monthly & yearly activity reports

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## Grants

- ceiling is automatically filled (usually!)
- PI & grant agency personnel seldom interact
- no formal time-keeping on PI side
- sparse reports, typically handled by administrators

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**Aside:** Much room for improvement on contracts ed; many faculty seem unaware that they are or could be contractors!

# Shaping, Capture, Proposal, B&P Investment

## Academic:

- Little shaping;
- Most investigators work very independently;
- Most proposal writing is done by faculty;
- No pricing strategy... faculty rarely participate in formal budget preparation;
- Long gestation: 9-12 months.

~

## R&D Contractor:

- Extensive shaping, ~1-2 years ahead of RFP;
- Lots of teaming negotiations;
- Team writing by a few lead technicals and shared-service proposal center (turnaround ~2-3 weeks);
- Detailed pricing strategy;
- Short gestation... ~1 month.

# $P_{win}$ : Win probability on my side...

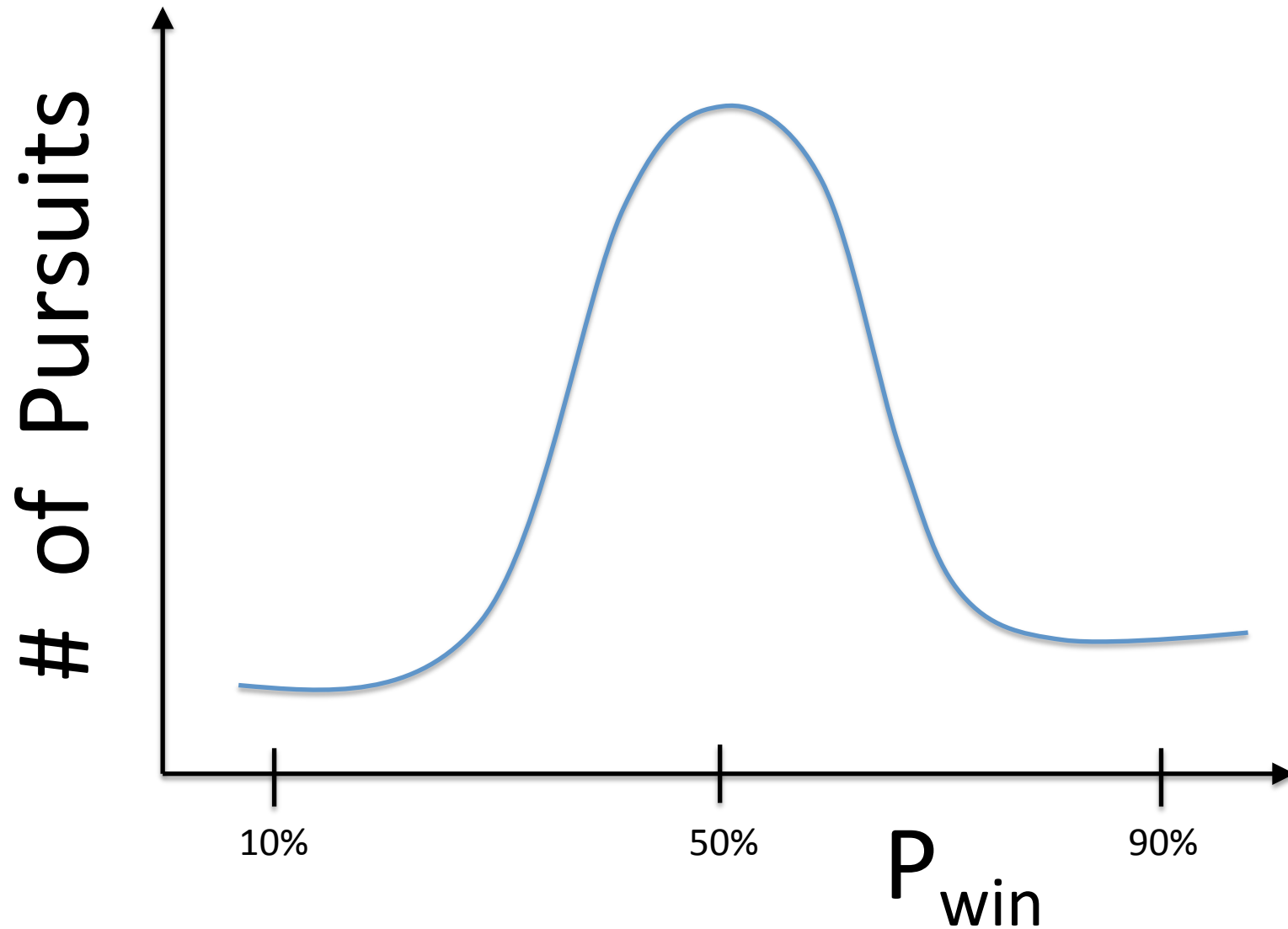
- $P_{win}$  is computed via well-developed information, including competitive intelligence, gap analysis, teaming strategy etc.
- Develop a risk-reward profile around  $\sim 50\% P_{win}$ ...
- ...and don't even think about pursuing very small contracts e.g. below  $\sim \$1M$ ! (not when larger opps exist)
- Lose a contract  $\rightarrow$  lose valuable people... *immediately*.
- Leverage the **shared** services of qualified administrative help e.g. proposal writers, graphics, pricing experts, contracts experts, etc. to reduce opportunity cost.
- If an opp hasn't been 'shaped' then  $P_{win}$  is probably too low.

# $P_{win}$ : Win probability in academia

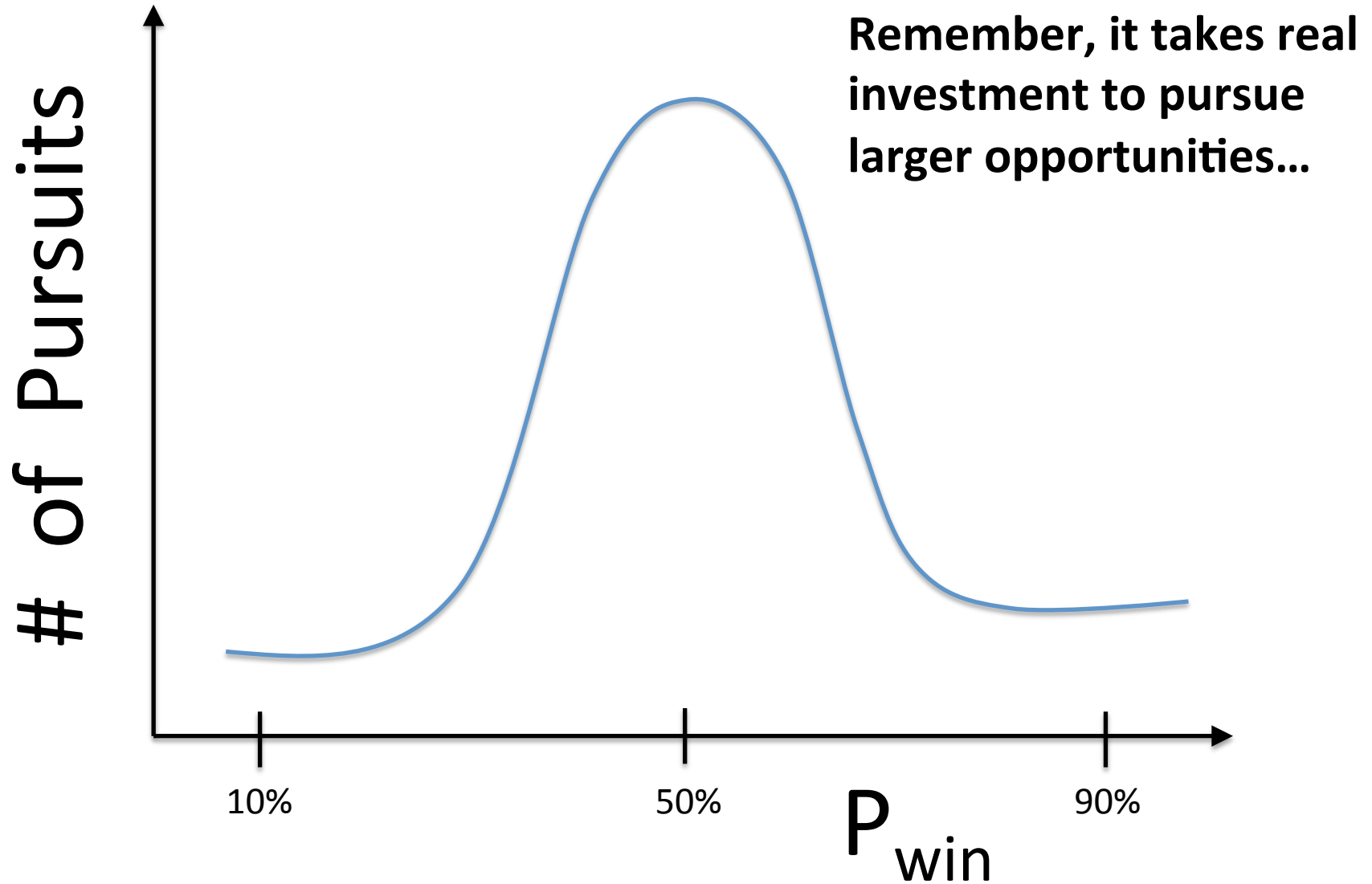
- Most academic programs do not formally record faculty hours spent **pursuing** research sponsorship (grant writing)
- Grant writing time is **overhead cost**... at full labor rate
- **Culture: P/T decisions are closely tied to PI grant wins**
- Multi-PI / group / synergistic work is typically not rewarded... and may even be discouraged
- Growing number of proposal submissions & resubmissions, decreasing  $P_{win}$  for all

**Q: What if faculty were not allowed to pursue low  $P_{win}$  opps?**

# A Well-Balanced Risk Profile...

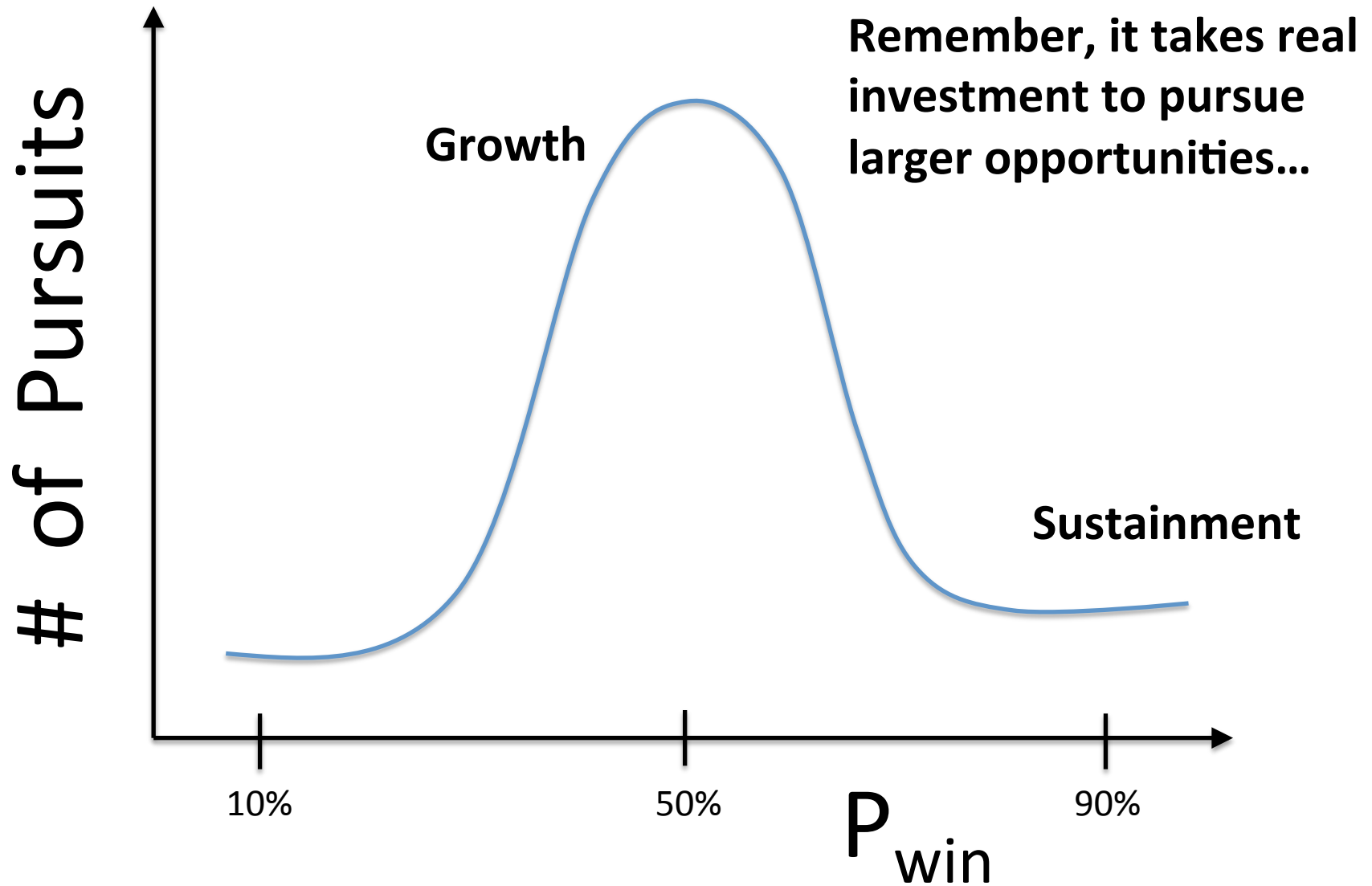


# A Well-Balanced Risk Profile...

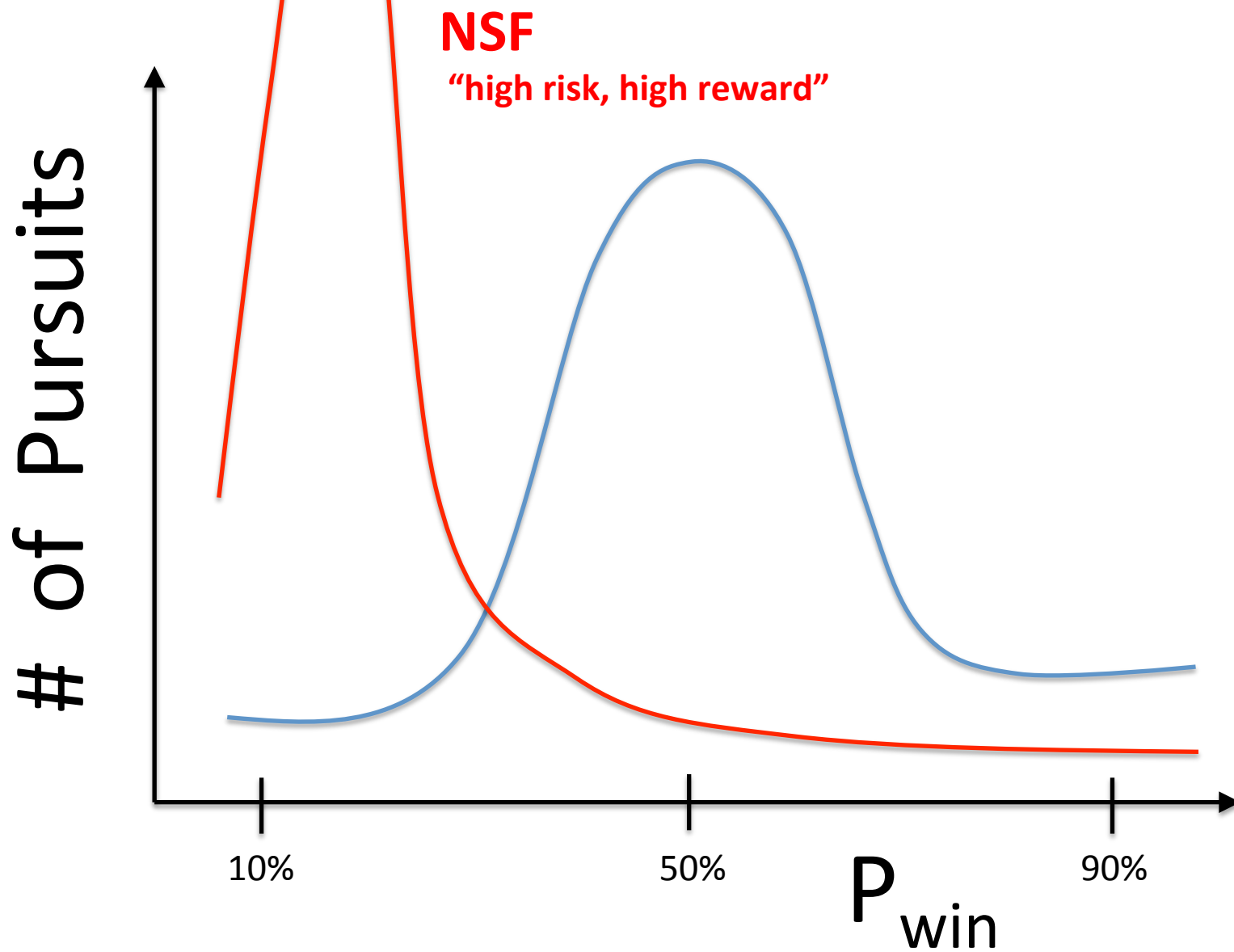




# A Well-Balanced Risk Profile...

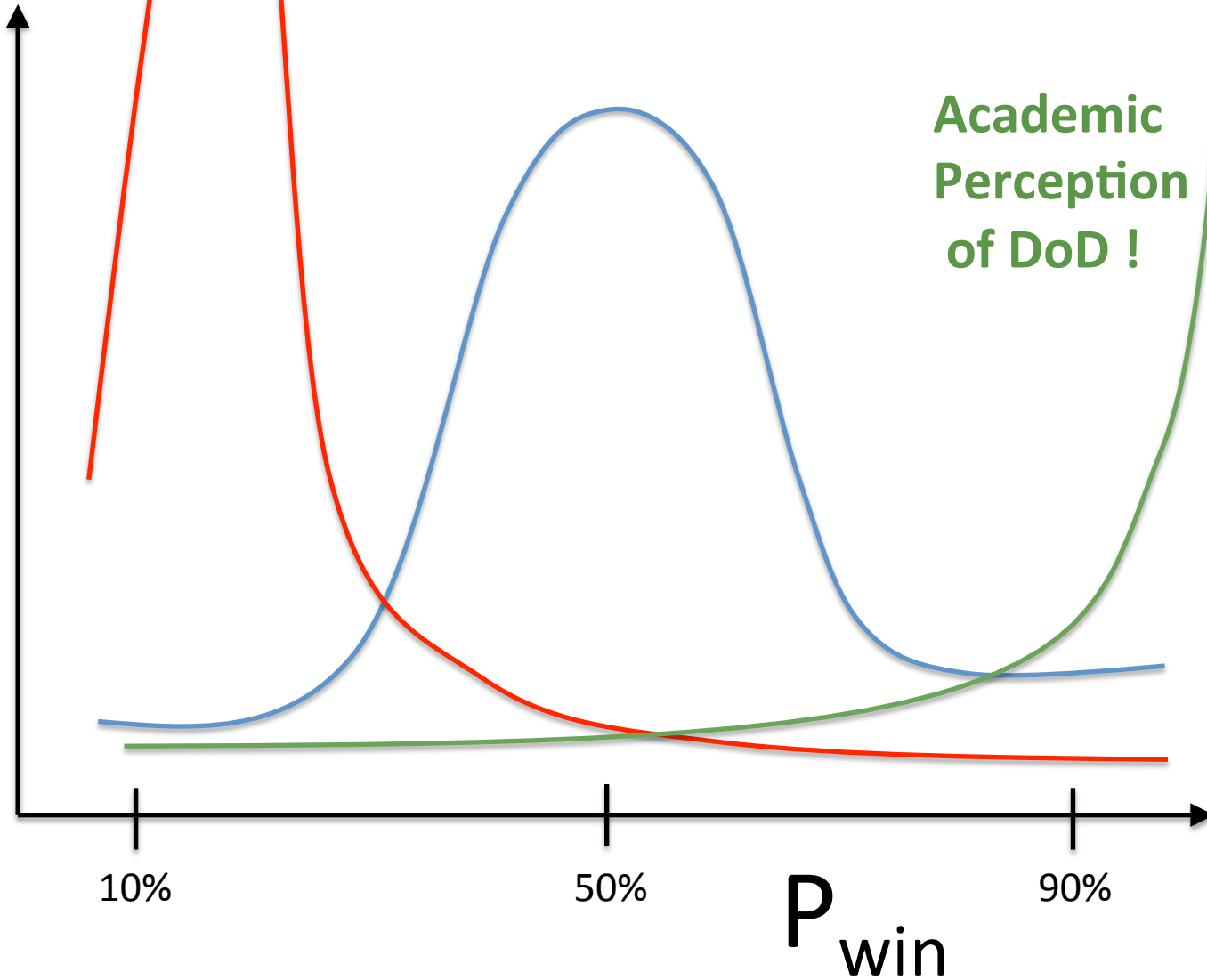


# My fear for Fed-sponsored academia...



# Perceptions...

# of Pursuits



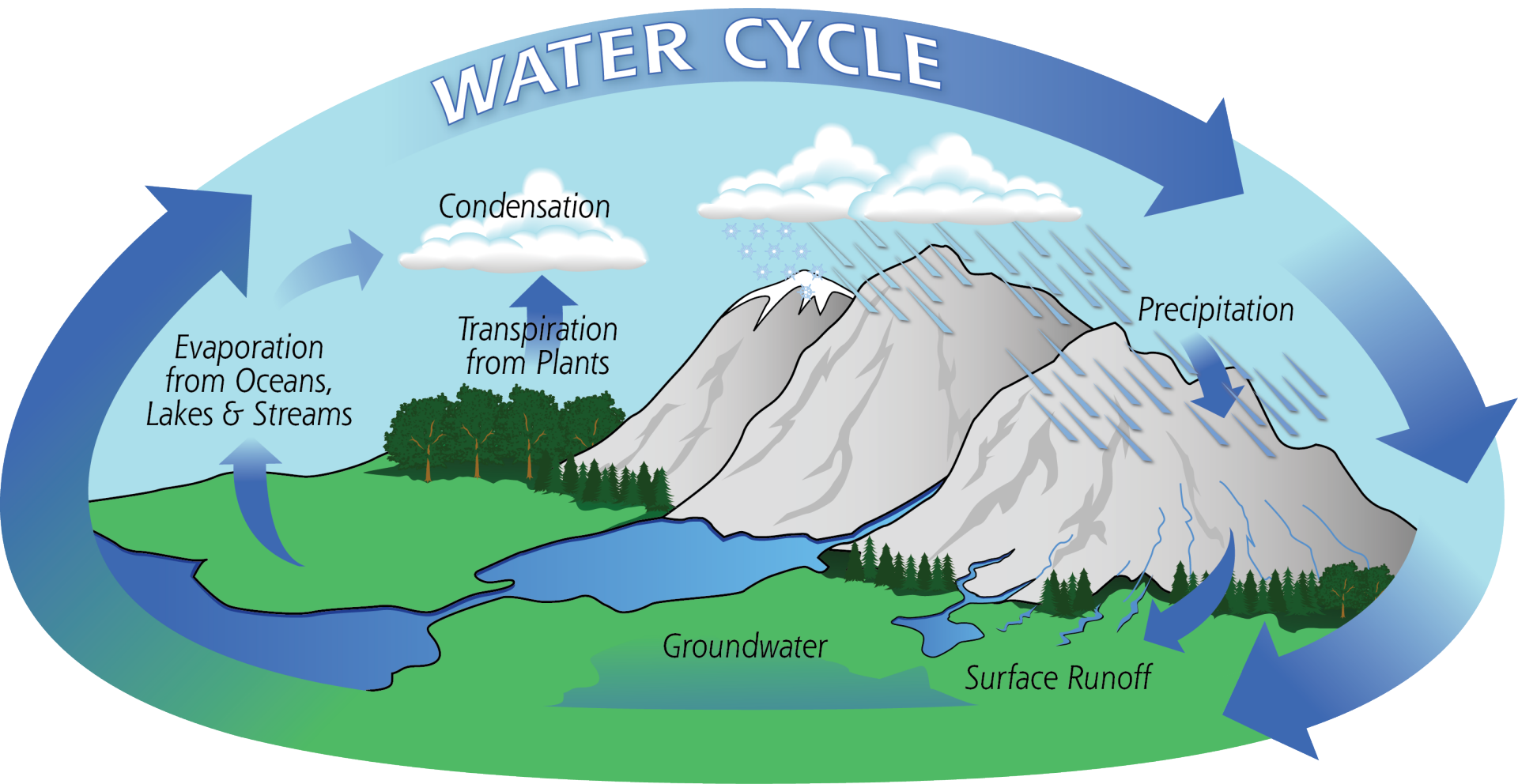
Academic  
Perception  
of DoD !



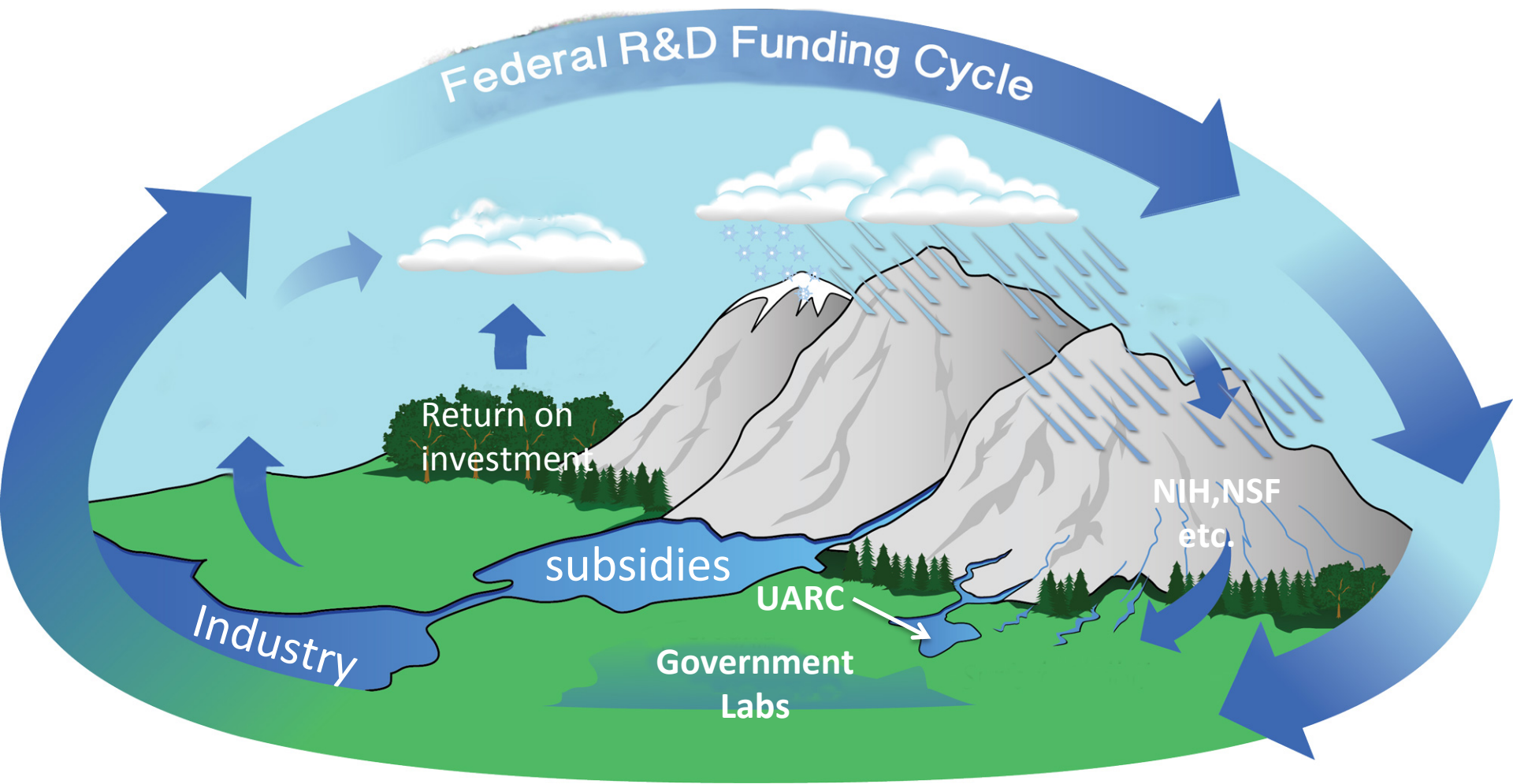
# $P_{win}$ in academic context is problematic:

- Most academic investigators do little ‘shaping;’ interaction with agencies like NSF is very limited, & program directors are usually short-term, hence  $P_{win}$  is hard to quantify
- Knowledgeable, ethical, and impartial proposal reviewers are in *very* short supply
- ~Zero reconsideration within the same funding cycle
- Competitive intelligence is limited because many proposals are for new-start work... agencies like NSF emphasize “novel”
- Hyper-competitive culture discourages potential PIs from sharing information; whatever is presented at a conference or written into a paper was already funded & completed.

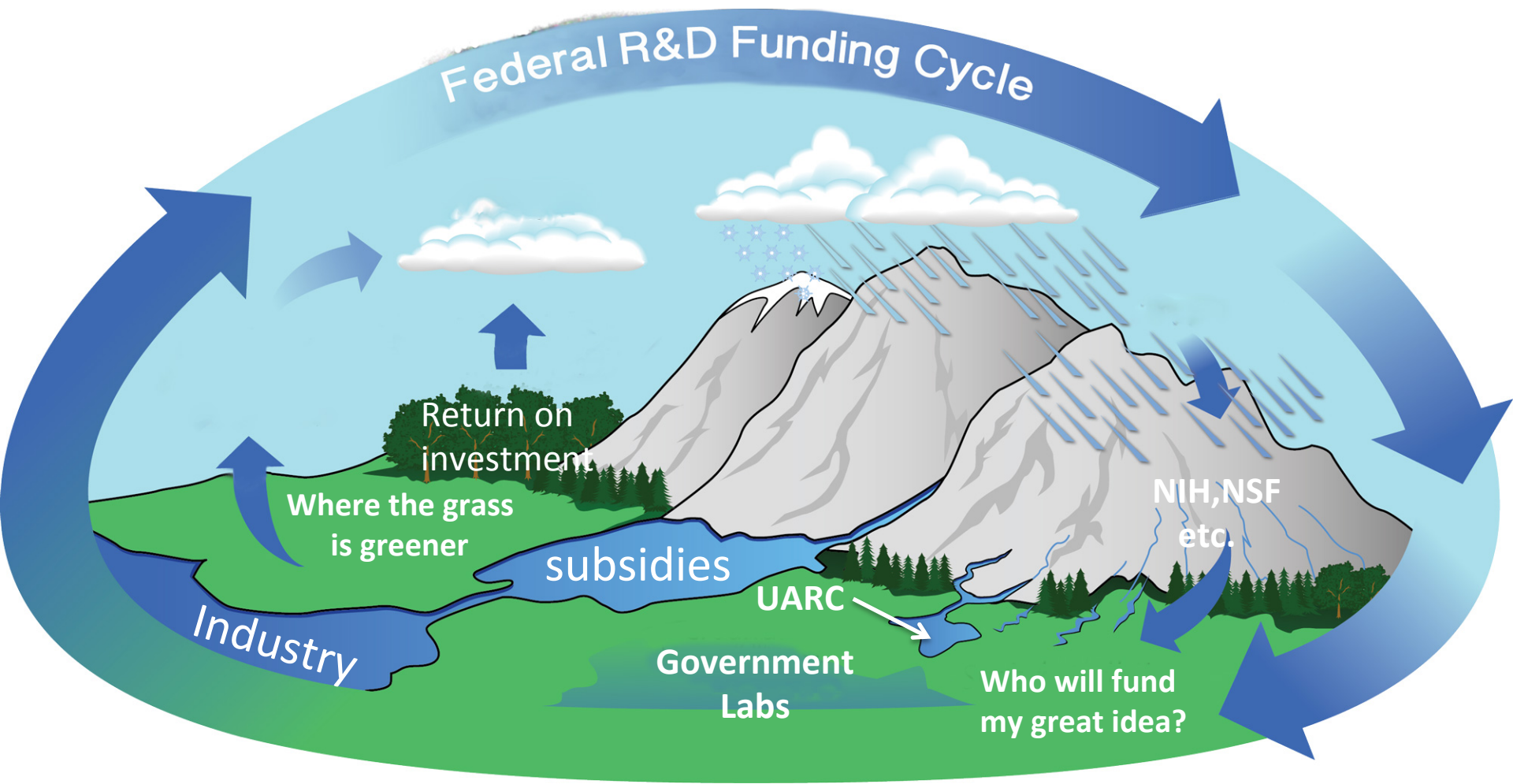
# A helpful analogy...



# Federal R&D Funding Cycle...

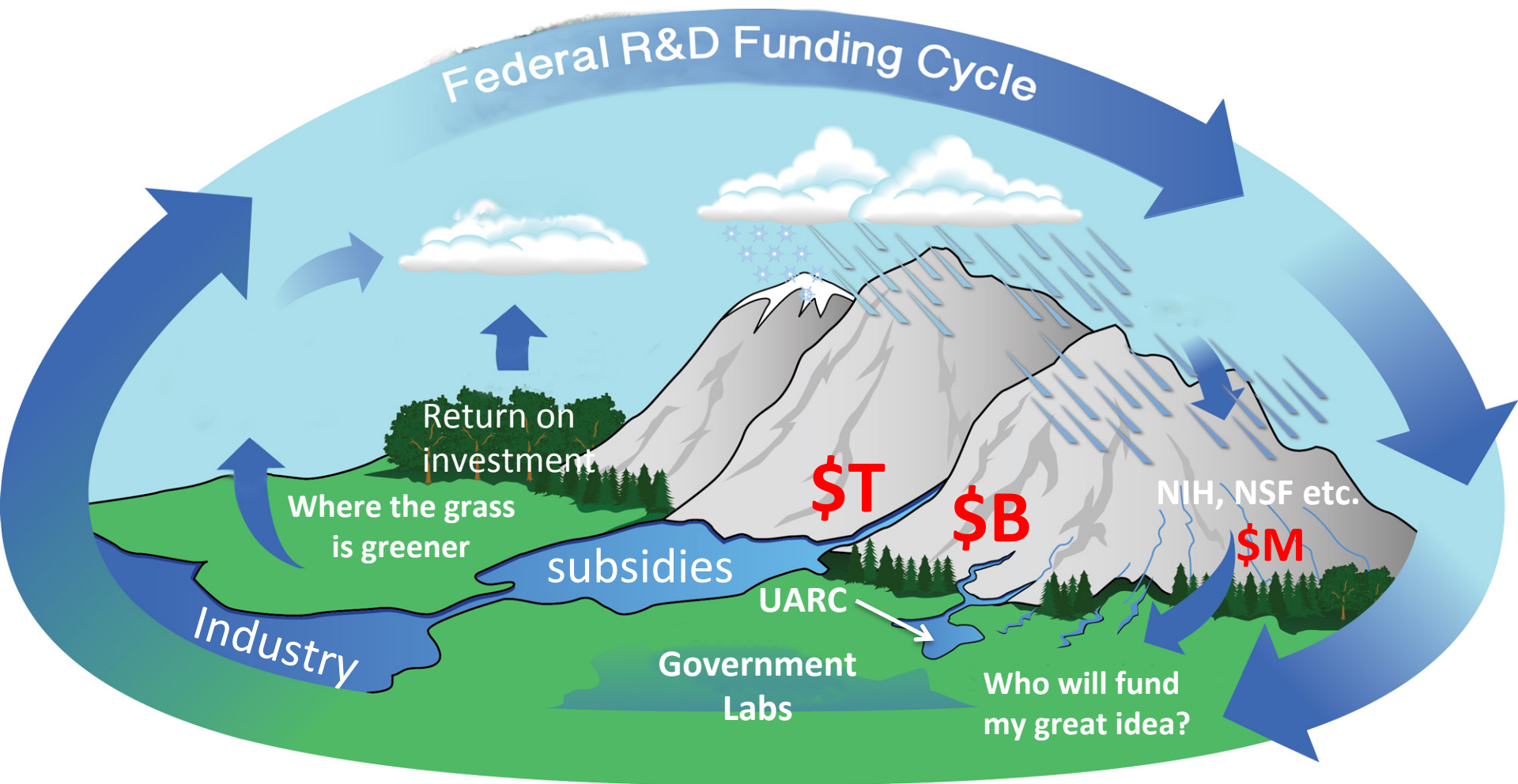


# Federal R&D Funding Cycle...





# Federal R&D Funding Cycle...



**Academia needs a different posture and a 'ground game' ...**



# Steps forward for Academic Institutions

## Performing Basic R&D:

1. **Educate!** Help investigators learn about sponsorship opportunities.
2. **Develop a hiring strategy** consistent with evolving sponsorship;
3. **Pursue *all* routes of funding** consistent with institutional interests and capabilities;
4. **Develop a 'ground game'** ... it's okay to lament the data & argue for better R&D investment, but we must also **lobby hard** at Federal & State levels for specific projects; (UVa: use proximity...)
5. **Remember the core mission: Do world-class R&D and help graduates find employment.**