



The "DARPA" model is
unique.

Most people don't
understand it.



There is a misconception
that ARPA-E will diminish
the role of DOE
Laboratories.

**By understanding the DARPA
model, these misconceptions are
corrected.**



DOE Mission

“The **Office of Science** ... largest supporter of basic research in the physical sciences in the United States...”

DOE enriches scientific investigation and theory.

This doesn't address **technology transition.**



ARPA-E Mission

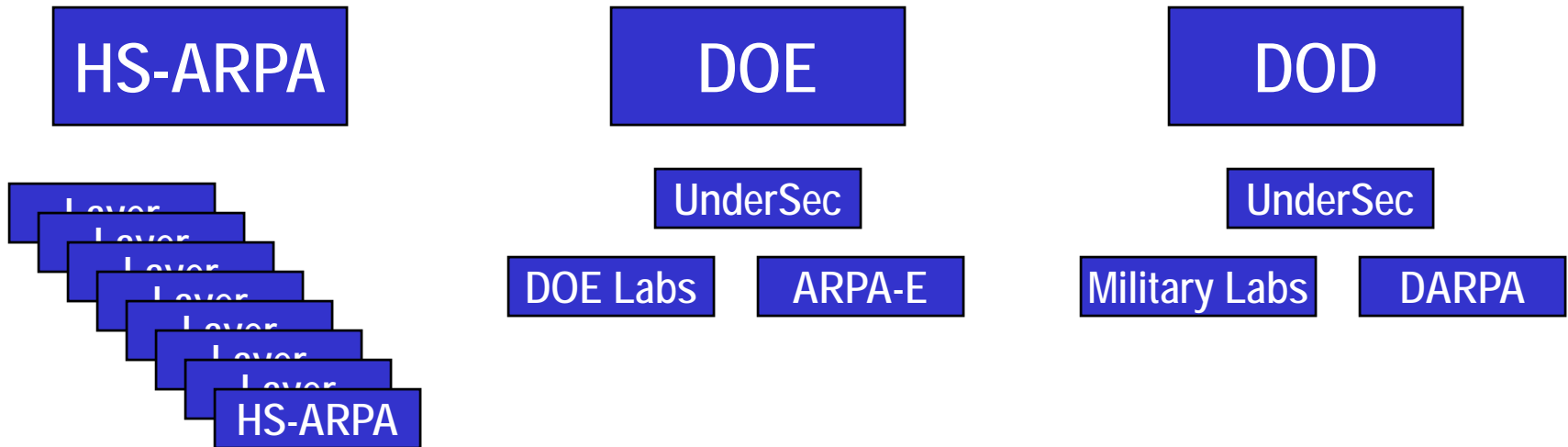
(from legislation)

- ID and promote **revolutionary** advances in fundamental science
- Translating scientific discoveries into **technological innovations**
- **Accelerating** transformational technological advances

Strictly High-risk – High Payoff



Agency quick look



Org chart:
27 pages long

Org chart:
1 page

Org chart:
1 page



Unique features of the DARPA model

- **Independent**
- **Flat organization**
- **Decision and Budget control**
- **Temporary tenure**
- **Idea-driven**
- **Project-driven**



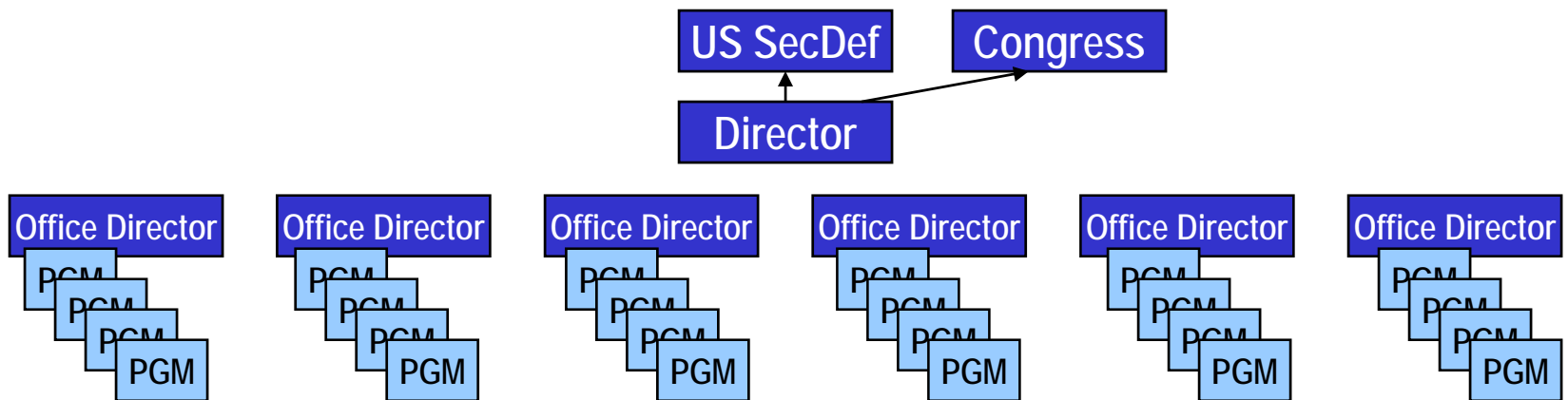
DARPA is independent.

- “Back-pocket” organization for **SecDef**
- Freedom to pursue radical ideas
- Freedom to fail
- Examine things we *don't know*

ARPA-E transforms science into transformational innovations by way of *ideas.*



DARPA is a flat organization.



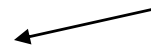
Not bureaucratic.



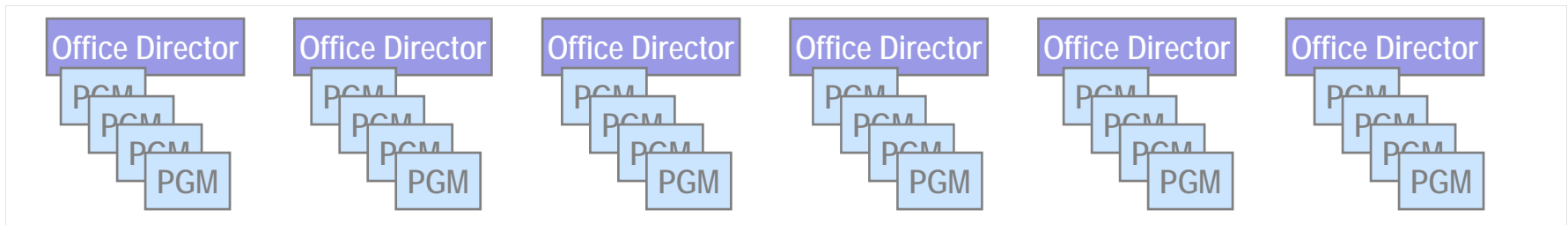
DARPA has control over technical and funding decisions.

- **Selects (or Kills)**
- **Cuts losses**
- **Operates like a venture capital organization**

Director



*Director has control.
Takes years off the
transition process.*





DARPA does not invest in infrastructure.

- **Intentionally small**
- **Offices, desktops, scientist/engineers**
- **No laboratories, test sites, etc.**
- **3% of budget on operations**

No R&D is done at DARPA.



DARPA PMs are hired on the merit of ideas - only.

- **Must know state-of-the-art**
- **Must be an expert**
- **Usually radical**



ALL managers at DARPA
(Director, Office Directors
and Program Managers)
change every 4 years.

*This keeps new,
revolutionary ideas flowing!*



DARPA is project-driven.

- **Projects have...**
 - *a beginning*
 - *a middle*
 - *and an end.*

Pre-determined metrics **DEFINE success.**



Core criteria for a DARPA Program:

- *Not* incremental improvement
- *Not* endless science project
- *Beyond* the state-of-the-art
- *Absolutely* transformational

DARPA does **NOT** invest in incremental advances in technologies that *already exist*.



A project lifespan is 3-4 years.

- **Proof of concept (Phase 1)**
- **Maturation and Demonstration (Phase 2)**
- **Prototype and Transition (Phase 3)**



**Transition (or Memorandum of Agreement)
signed at this point.**

Cost-share agreement.



Misconceptions

**Overcome during writing of ARPA-E
legislation**



Misconception: ARPA-E will diminish the role of DOE Labs

- **Partnerships**
- **Infrastructure**
- **Funding**



Misconception: DARPA will compete with military labs.

- Source of **innovative Program Managers**
- Negotiate and hold performer contracts
- Provide technical support
- Provide infrastructure

It is a partnership.



Misconception: DARPA will duplicate valuable infrastructure

- **Public law says....*NO!***
 - **DARPA has offices, managers, ideas only**
- **DARPA partners with military labs on experimental and test facilities**
- **Military labs provide independent testing and evaluation of ideas.**



Misconception:
DARPA transitions to the
military, while ARPA-E
transitions to industry.

Think “Internet”

*...and don't underestimate the Government
as an energy consumer.*



True statement:
DARPA will compete with
DOE for federal dollars.

Yes, it will.

ARPA-E budget:
300M annual

DOE budget:
25B annual



Military Labs can (and often do) get percentage of DARPA funds.

- **Approximately 3-5% for contract negotiations**
- **Approximately 10% for technical support**
- **Payment for test and evaluation services**
- **.....**



All models have limitation, even DOE.

- **Can the limitations be tolerated?**
- **Is there pressing evidence that we should change something?**



DOE is a career-driven organization.

- **Projects are managed by career managers.**
- **Motivation to “finish” is less compelling.**
- **Project stay within the DOE system.**



DOE Laboratories can be legislated into putting more funding towards transitioning technologies.

- **They can and are.**
- **The amount of funding isn't the issue.**
- **The model has not proved to support transition to the extent needed.**



National Academy of Sciences agree that ARPA-E should be stood up.

Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future



Recommendation includes Secretary of Defense, Robert Gates.



The critical need for energy technology advances has become an issue of National Security.



States Gain

- **The hidden goal of ARPA-E is to**
 - *enlarge the Energy markets and*
 - *create NEW energy markets*
- **More competition**
- **More businesses**
- **Collaborative projects → Transition to market**



Questions?