

# Enabling Emerging Technologies and Technical Solutions for the Defense of Our Nation

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# GOALS

- Define the Problem (Nothing New Here)
- Discuss the Environment (Significant Changes Here)
- Show Historical Examples (Fun stuff)
- Suggest Solutions

# DoD Budget and Planning Process

Faced with a 20-year threat,  
the Gov't responds with a 15-year plan;  
Programmed in a 6-year POM;  
Managed by 3-year personnel;  
who develop a 2-year budget;  
funded by a 1-year appropriation;  
formulated over a 3-day weekend;  
and approved in a 1-hour decision brief.

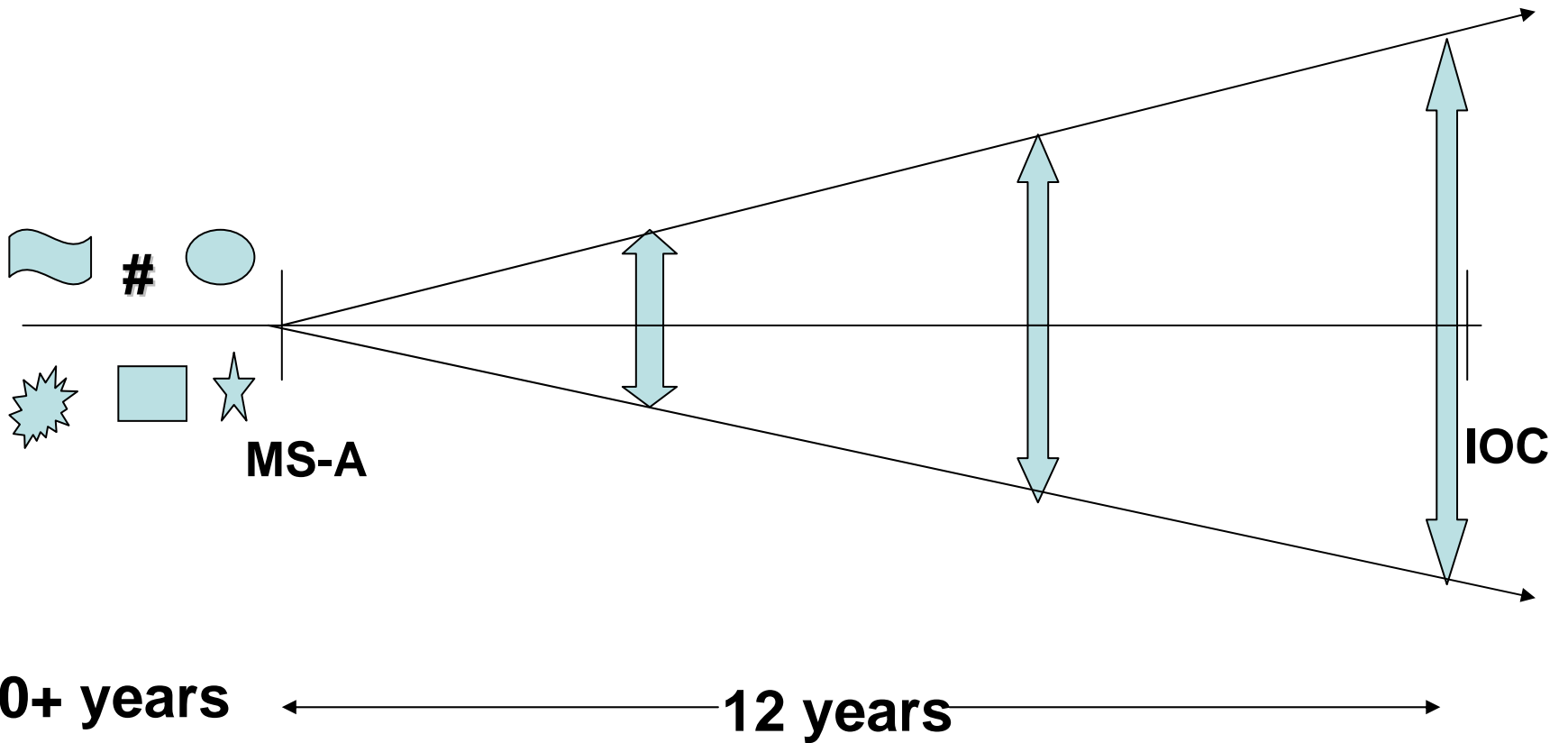
# Five Reasons Programs Go Off Track

- Unstable requirements
- Faulty cost estimates
- No test buy in
- Inadequate system's engineering
- Unstable funding

***OUR OWN PROCESSES CAUSE THESE PROBLEMS –  
DOING WHAT WE DO NOW FASTER WON'T FIX IT***

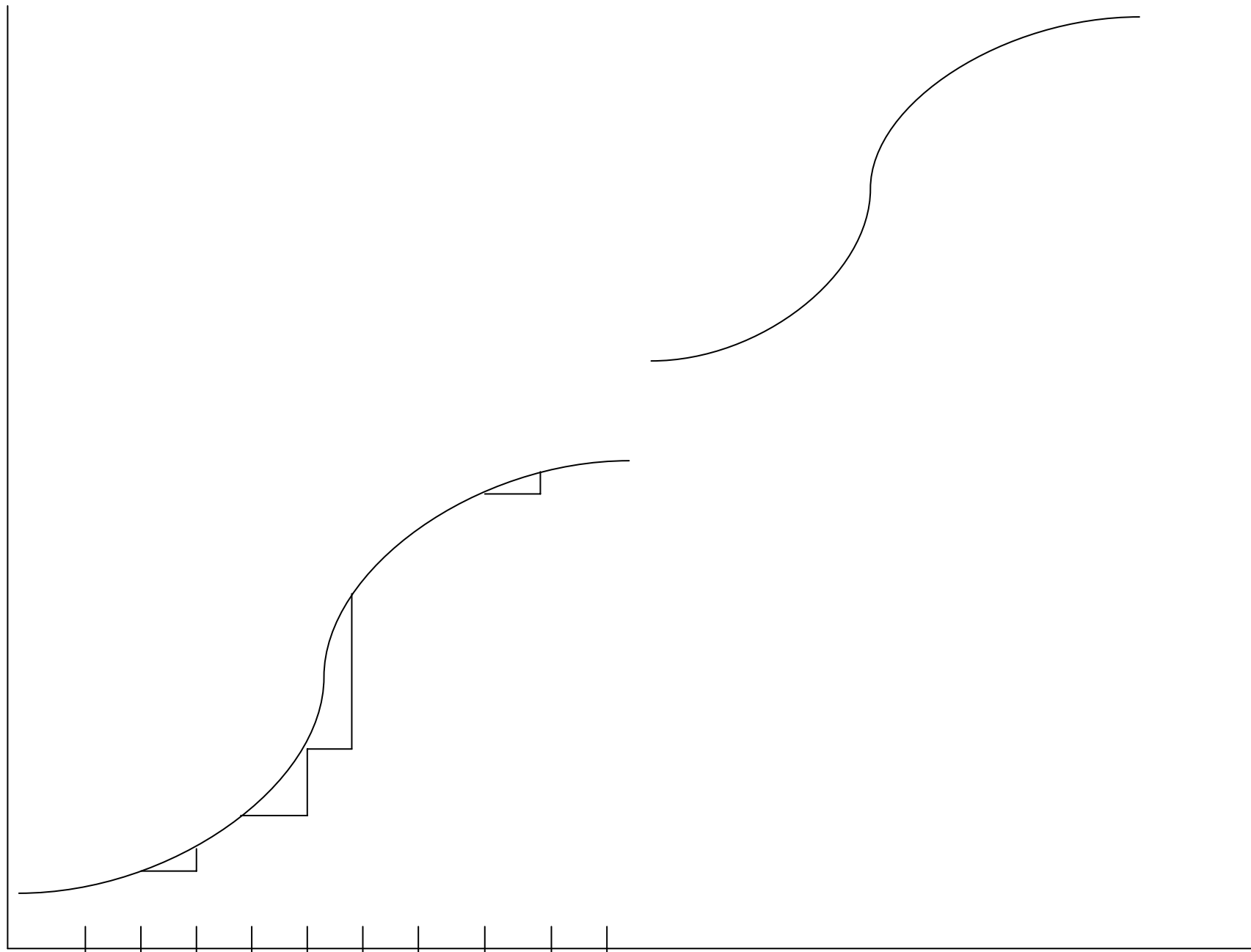


# ONE Development Cycle = 11.5-15 years\*



\* Gansler memo Jul 99 says 11.5 yrs, GAO MAR 06 report says 15.3

**GOODNESS**



**TIME + \$\$\$\$\$**

# 1908 Galloway Truck





# 1910 Sears



# 1915 Ford Towncar



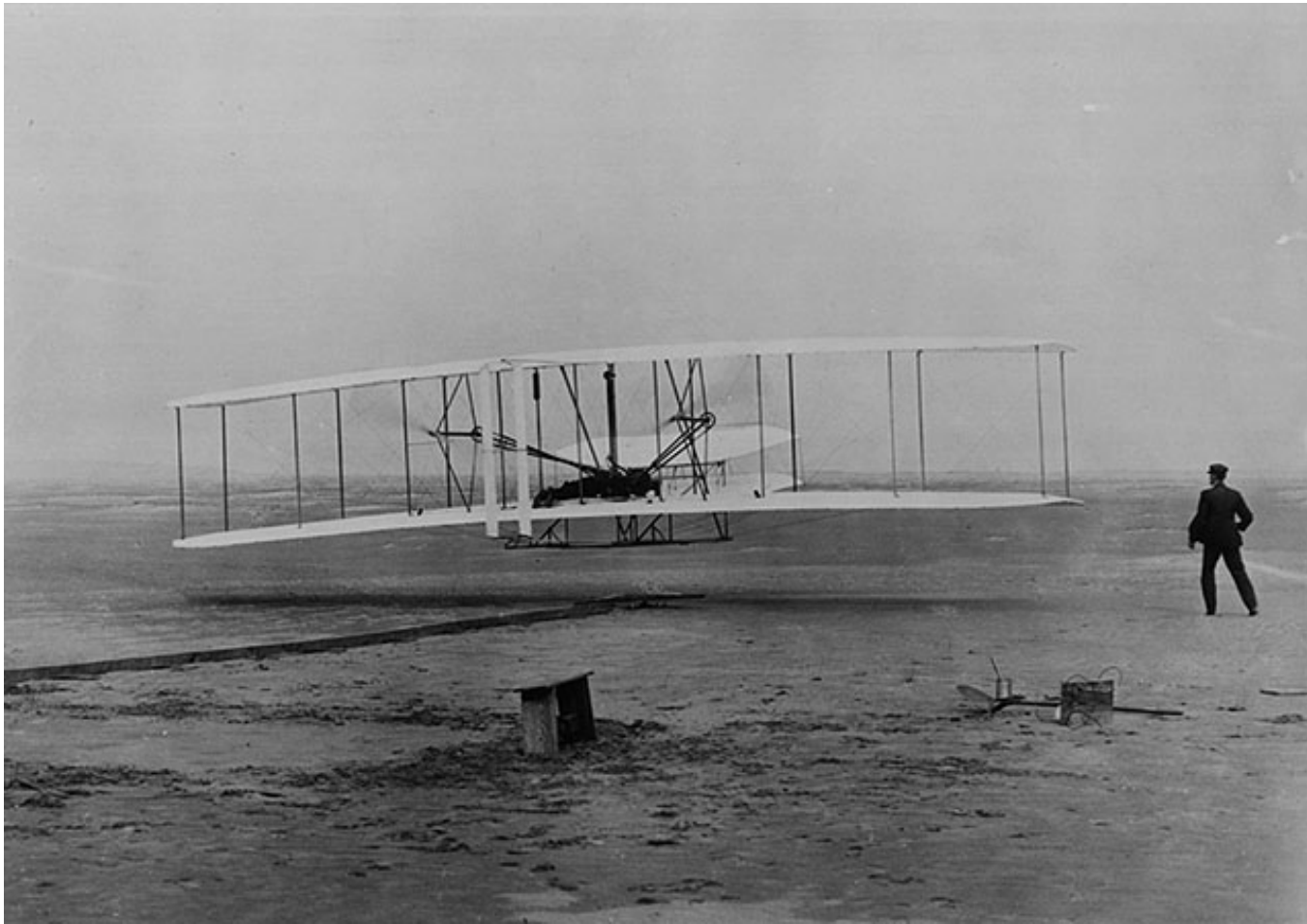
# 1921 Armeleder 2 Ton



# 1929 Ford



# 1903 Wright Flyer



# 1914 Wright Model H



# 1937 Grumman Duck



# 1939 B-24 Liberator





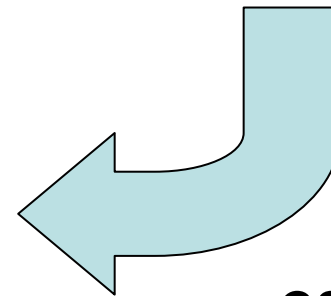
# 1962 A-12 "OXCART"



# 1914-1939-1962

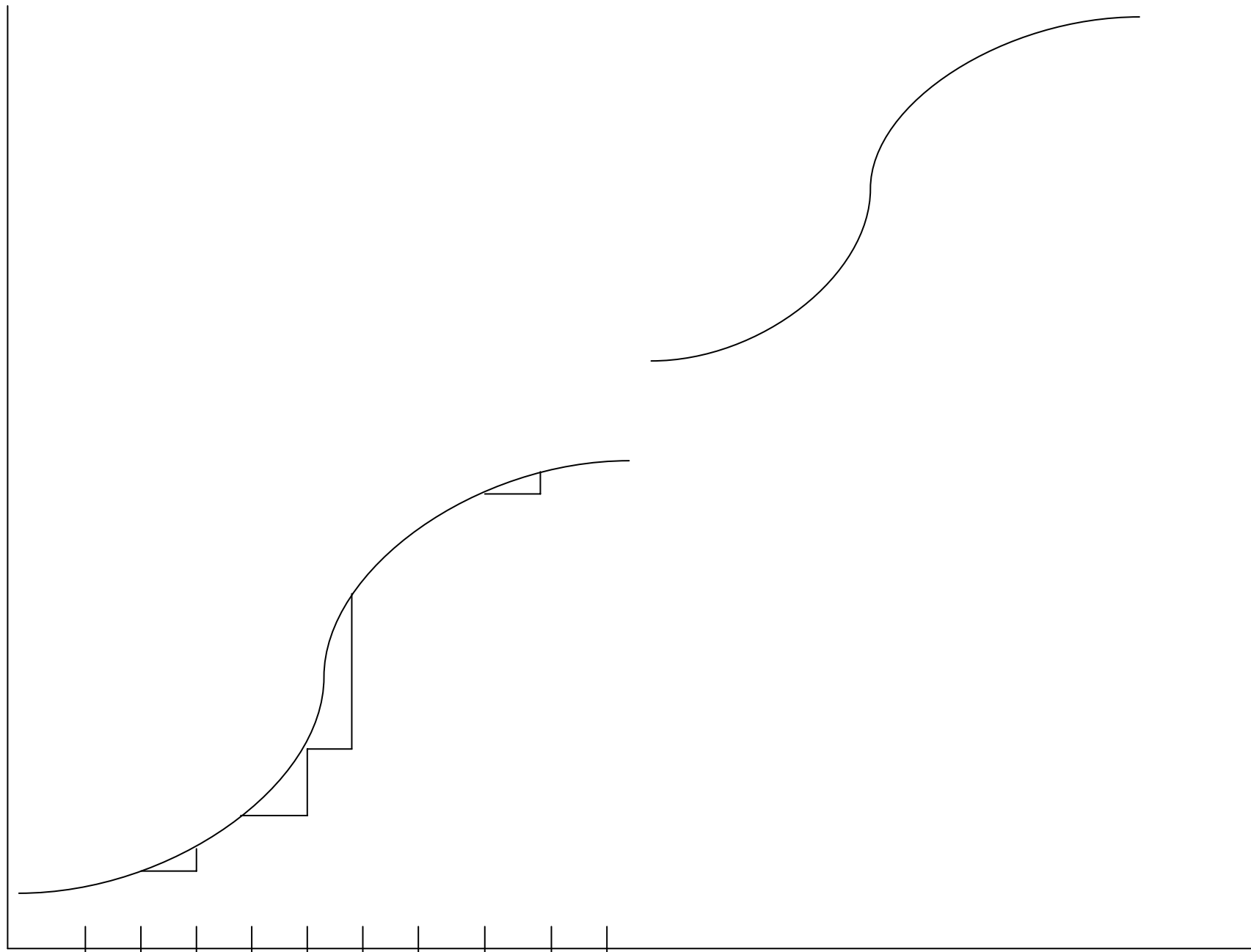


**25 Years**



**23 Years**

**GOODNESS**



**TIME + \$\$\$\$\$**



# DoDR&E 2007 Strategic Plan

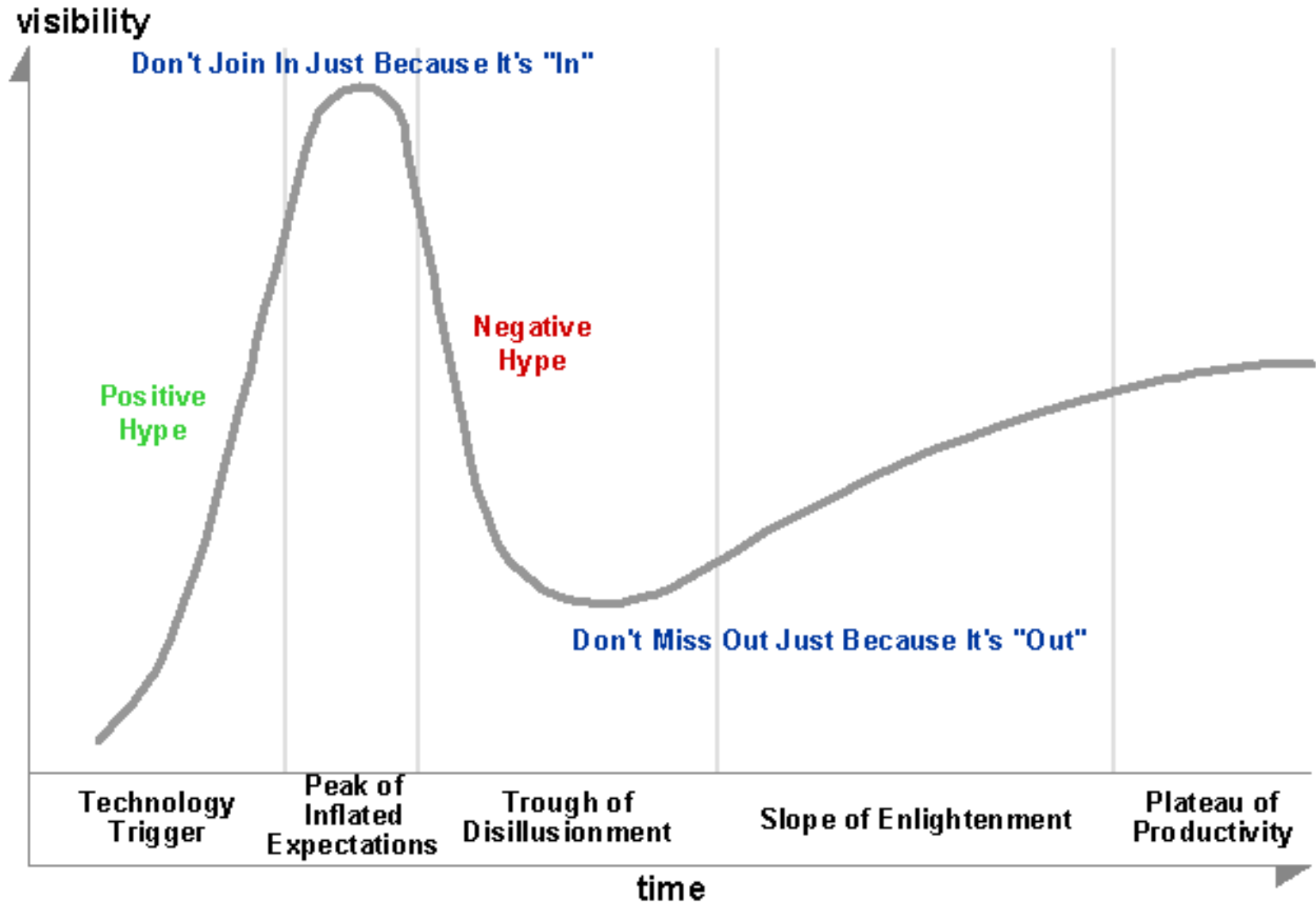
- **Biometrics & Bio-inspired Technologies**
- **Nanotechnology**
- **Information Technologies**
- **Persistent Surveillance Technologies**
- **Networks & Communications**
- **Software Research**
- **Organization, Fusion, & Mining Data**
- **Human, Social, Cultural, & Behavioral Modeling**
- **Cognitive Enhancements**
- **Casualty Care & Human Performance Optimization**
- **Advanced Materials**
- **Advanced Electronics**
- **Energy & Power Technologies**
- **Alternative Fuels & Energy Sources**
- **Energetic Materials, Rocket Propellants , & Explosives**
- **Directed Energy Technologies**
- **Hyperspectral Sensors**
- **Radar**
- **Autonomous Systems Technologies**
- **Robotics**
- **Manufacturing Technologies**
  - - Affordability & Producibility
  - - Agile Fabrication
- **Combating Weapons of Mass Destruction Technologies**
- **Large Data Set Analysis Tools**

Technologies	Capabilities																						
	Biometrics	Nanotechnology	Info Technology	Surveillance Technologies	Networks & Communications	Software Research	Organization, Fusion, & Mining Data	Human, Social Cult. & Behavioral Modeling	Cognitive Enhancement	Casualty Care & Human Performance Ops.	Advanced Materials	Advanced Electronics	Energy & Power Technologies	Alternate Fuels & Energy Sources	Energetic Materials Rocket Propulsn. & Exp.	Directed Energy Technology	Hyperspectral Sensors	Radar	Autonomous Systems	Robotics	Manufacturing Technology	Combating WMD	Data Set Analysis
Persistent Surveillance*	•	•	•	•						•	•	•				•	•	•	•	•	•	•	•
Locate, Tag, & Track Terrorists & WMD*	•	•	•	•			•	•	•		•	•				•	•	•	•	•	•	•	•
Fuse Intelligence Information*			•		•	•	•	•														•	•
Improved Language & Cultural Awareness*			•				•	•	•													•	•
Human Intelligence (HUMINT)*		•	•		•		•	•	•	•												•	•
Tailored Lethality with Non-Lethal Options*				•							•	•		•	•					•	•		
Urban Warfare*	•	•	•	•	•			•	•		•	•	•				•	•	•	•	•	•	•
Prompt Global Strike*		•	•	•	•						•	•	•	•	•	•	•	•	•	•	•	•	
Small Unit & Riverine Warfare*		•	•	•	•			•	•			•	•	•	•		•	•		•	•		
Protect Against IEDs	•		•	•				•	•	•	•	•			•	•	•	•	•	•	•		
Interoperable, Joint Command & Control*		•	•		•	•		•			•	•									•	•	
Enhanced Air & Maritime Awareness		•	•	•	•		•	•	•			•	•	•			•	•	•	•	•	•	•
Consequence Management	•		•		•			•	•	•		•	•						•			•	•
Broad Spectrum Medical Countermeasures		•	•																		•	•	
Air & Missile Defense*		•	•	•	•						•	•	•	•	•	•		•	•	•	•	•	
Large Vessel Stop/Maritime Interdict Ops*			•	•	•		•	•				•				•	•	•		•	•	•	
Secure Broadband Communications*		•	•		•	•						•									•		
Air Dominance*		•	•	•	•			•			•	•	•	•	•	•		•		•	•	•	
Undersea Warfare*		•	•	•	•						•	•	•	•	•					•	•	•	
Cyberspace Shaping/Defense*		•	•			•	•	•			•	•									•		
Rapid Deployment*			•		•		•	•	•	•		•	•	•	•	•	•	•		•			•
Survivable Joint Command & Control*		•	•		•	•					•	•								•	•	•	
Stand-off Detection of Fissile Materials*	•	•	•	•			•				•								•	•	•	•	
Stand-off Detection of Chem & Bio Agents*	•	•	•	•			•				•								•	•	•	•	
Nuclear & Enhanced High Explosive Mats.		•													•						•		
Capabilities to "Render Safe" WMD*	•		•				•	•				•			•	•				•	•	•	
EMP Shielding of Critical & Vulnerable Sys*		•									•	•									•		
Responsive, Affordable Space Access		•									•	•	•	•	•						•		

\*Indicates ODB Designated Capability

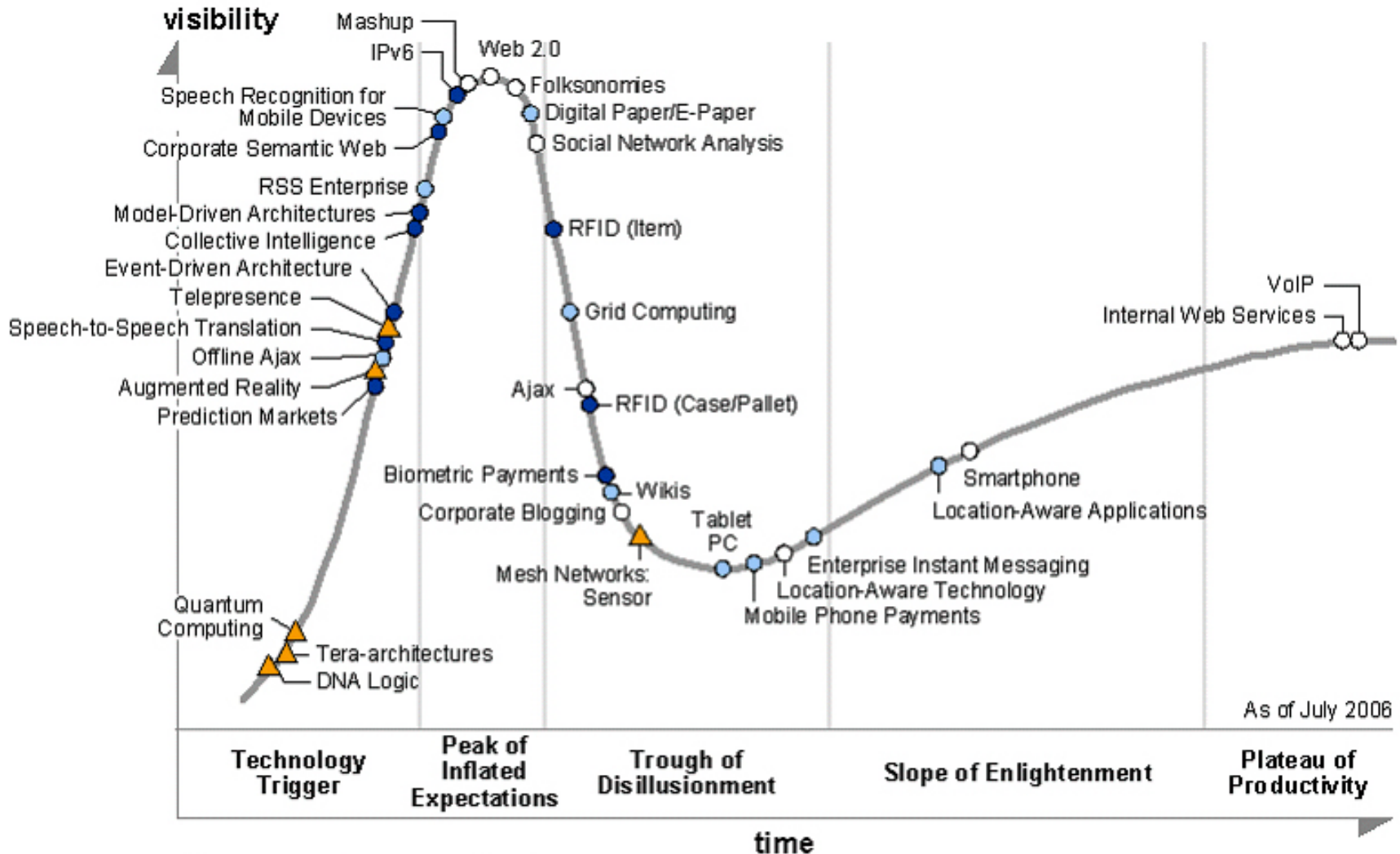


# Granger HYPE Cycle





# Granger HYPE Cycle



As of July 2006

## Years to mainstream adoption:

○ less than 2 years

● 2 to 5 years

● 5 to 10 years

▲ more than 10 years

⊗ obsolete

before plateau