



*ATP's Economic Assessment Program  
ATP Advisory Committee Meeting  
Wednesday, February 2, 2000*

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Economic Assessment Office*

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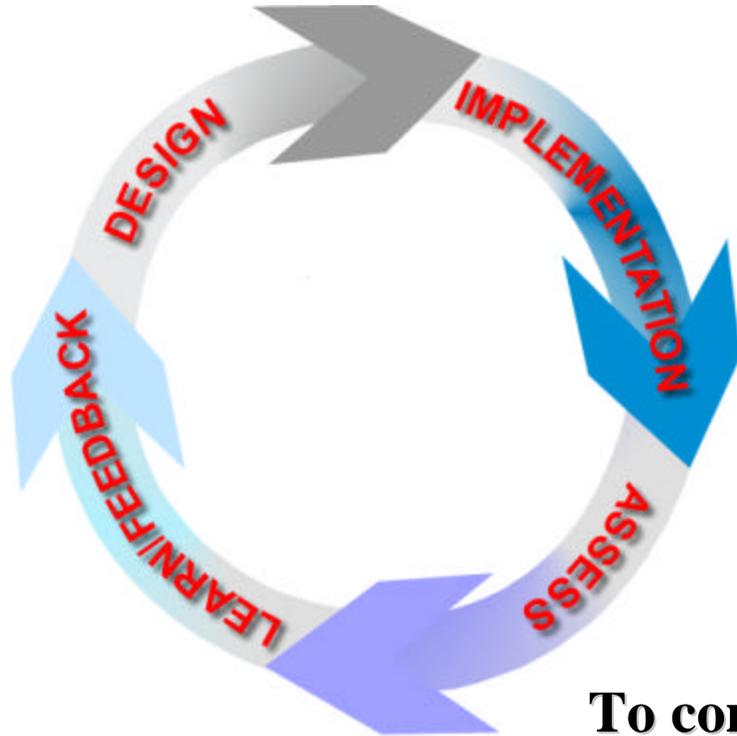
*rosalie.ruegg@nist.gov*

*www.atp.nist.gov/eao/eao\_main.htm*



National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

**To better manage the ATP!**

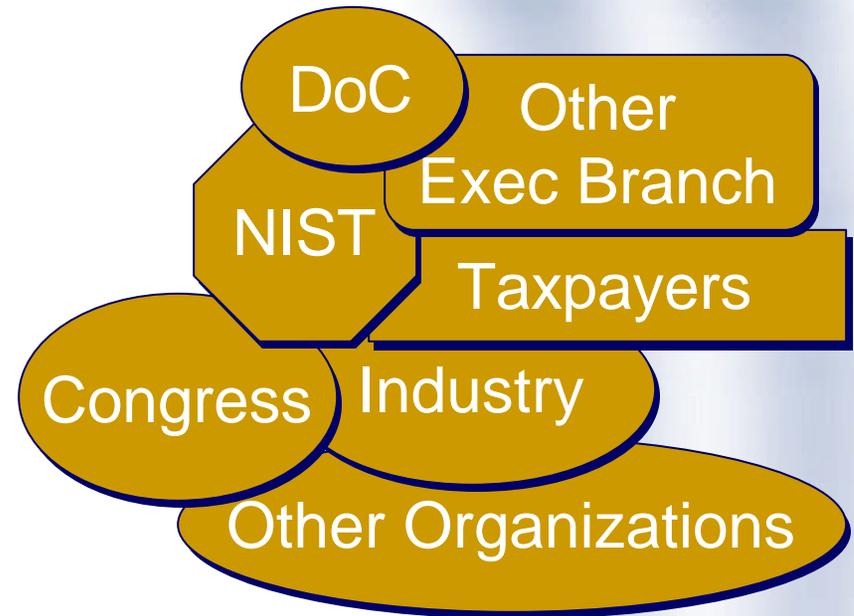


**To comply with the Law!**

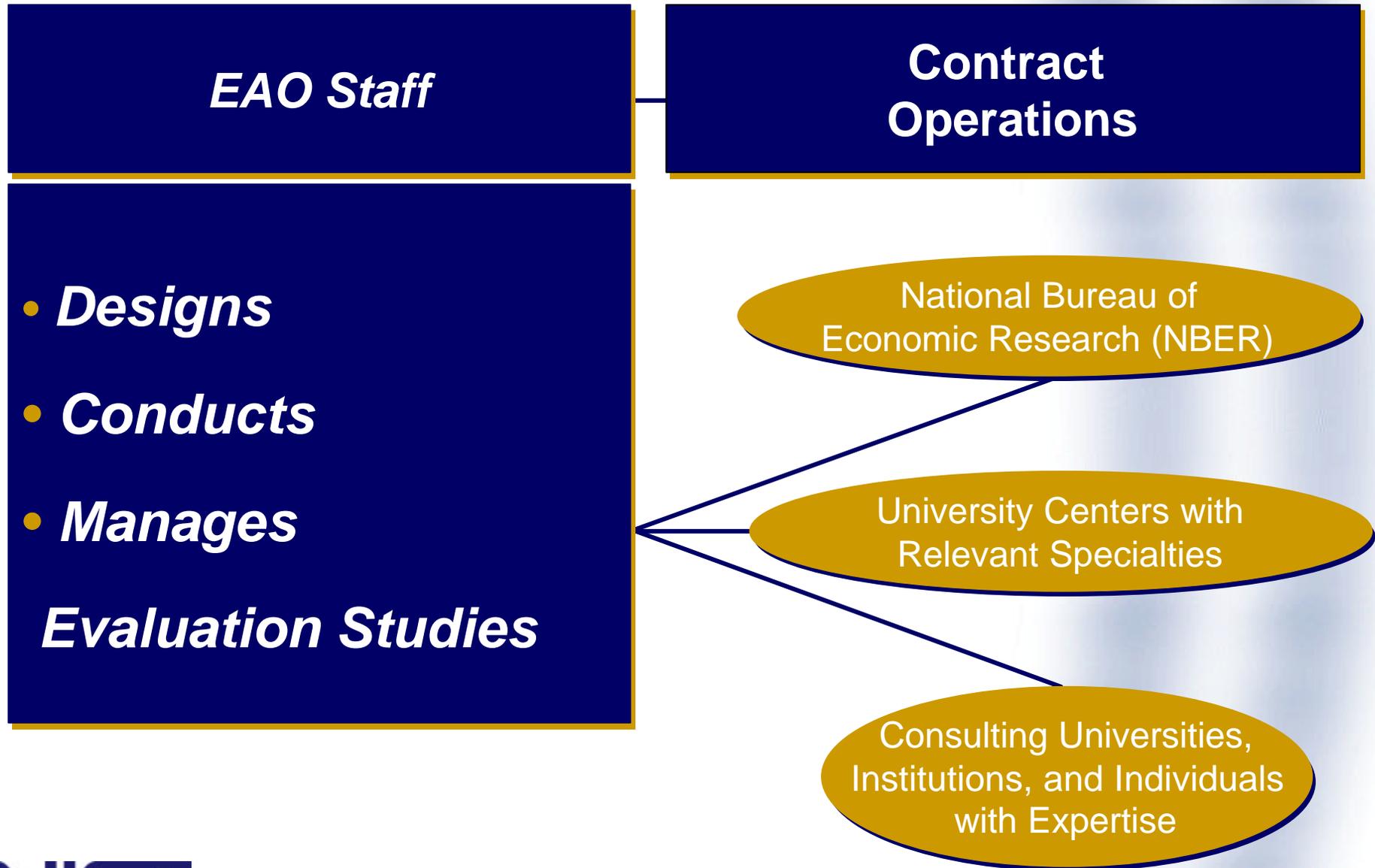
***Government  
Performance  
Results Act  
(GPRA)***

# *Why Assess?*

**To answer to our “Stakeholders”!**

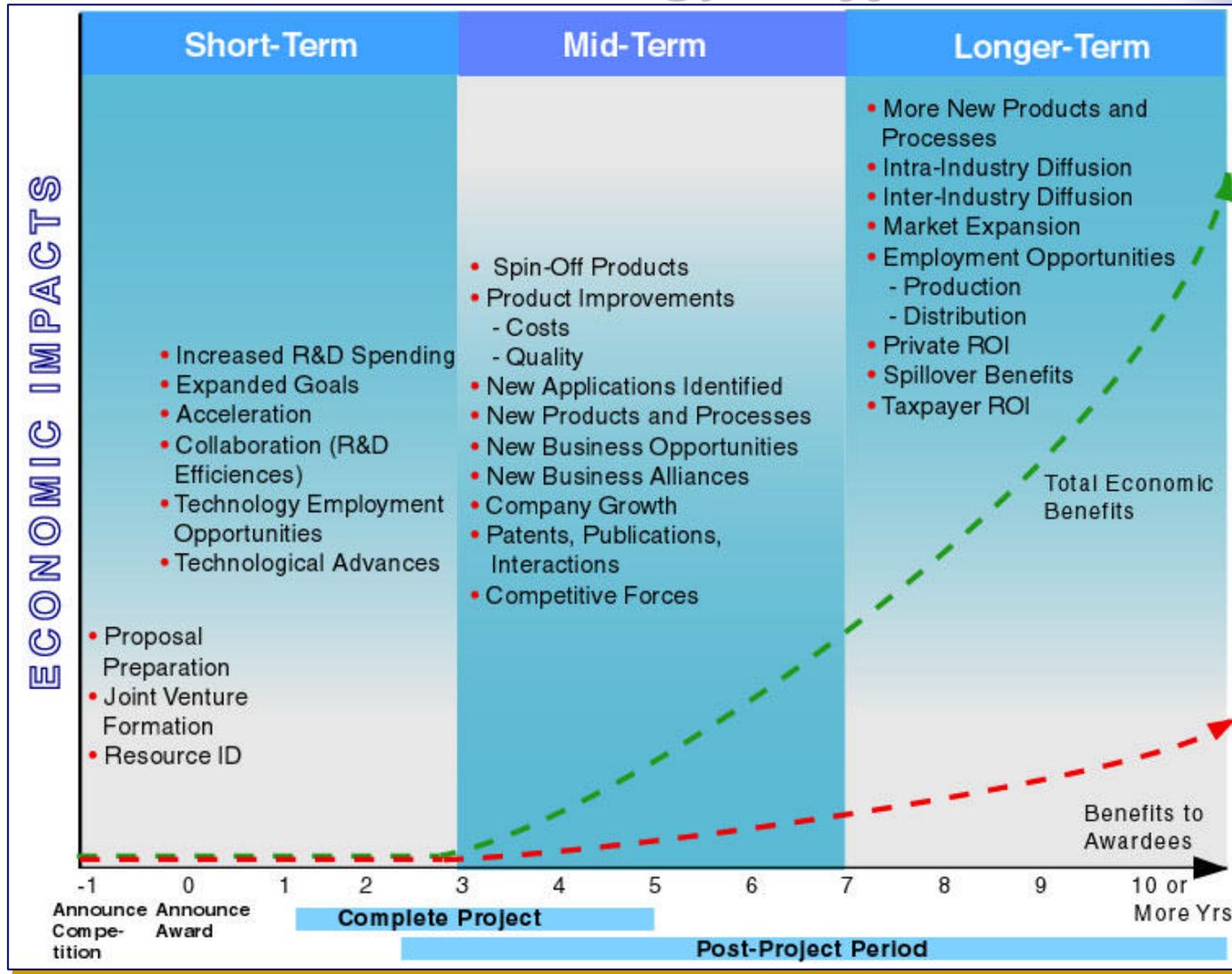


# Who Does the Studies?



# Conceptual Time for ATP's Technology Diffusion and Expected Impacts

## Impacts

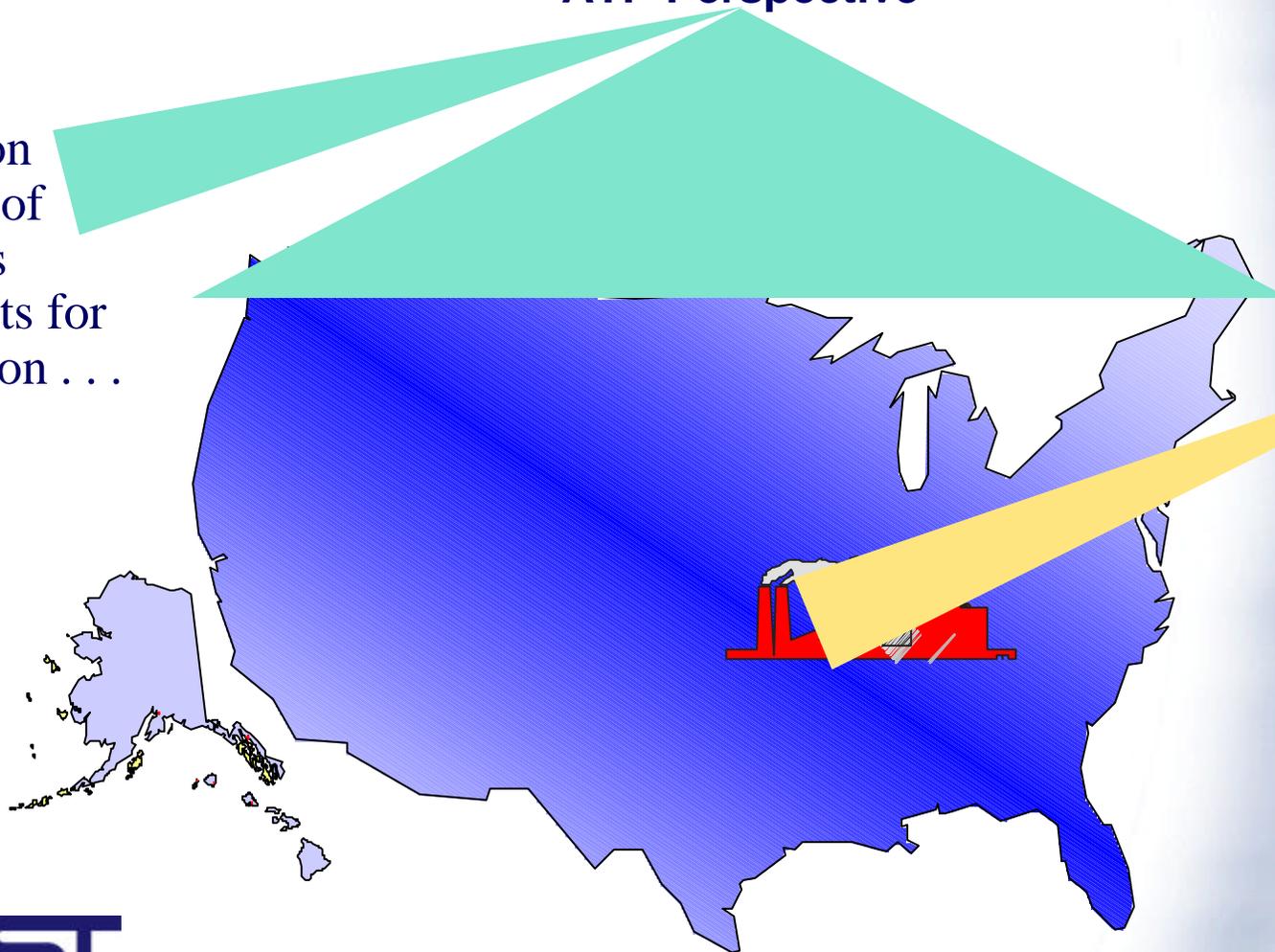


# *What Counts Towards Success?*

## **ATP Perspective vs. Company Perspective**

**ATP Perspective**

Focus on  
totality of  
benefits  
and costs for  
the nation . . .



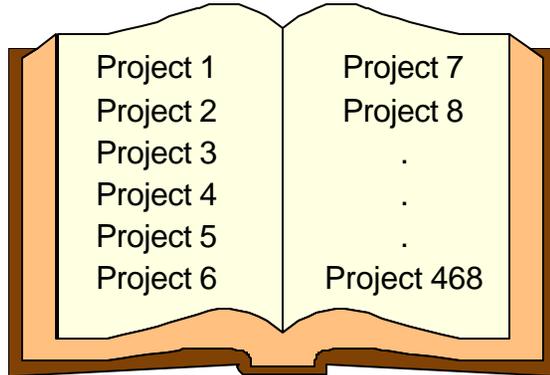
**Company  
Perspective**

Focus on  
revenue and  
costs that make  
up company  
profit/loss . . .

# Three Tests for the Program's Economic Success

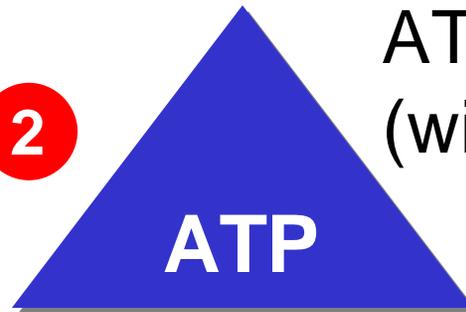
## ATP Portfolio of Projects

1



Large Net Social Benefits

2



ATP made a difference  
(with ATP vs. without ATP)

3



**Net Social Benefits**

>

Private Returns  
Awardee 1

+

Private Returns  
Awardee 2

+

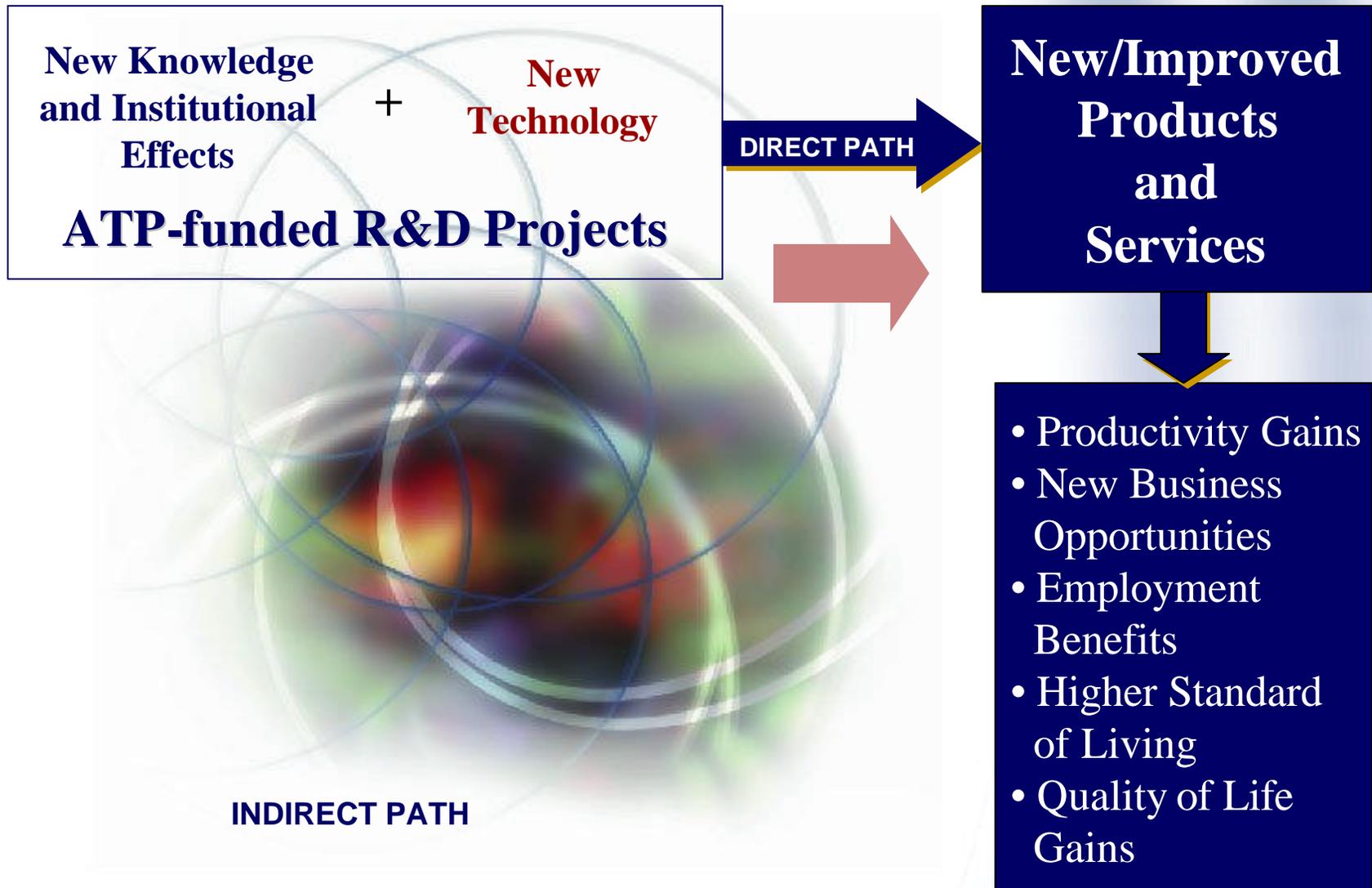
...

Private Returns  
Awardee  
468

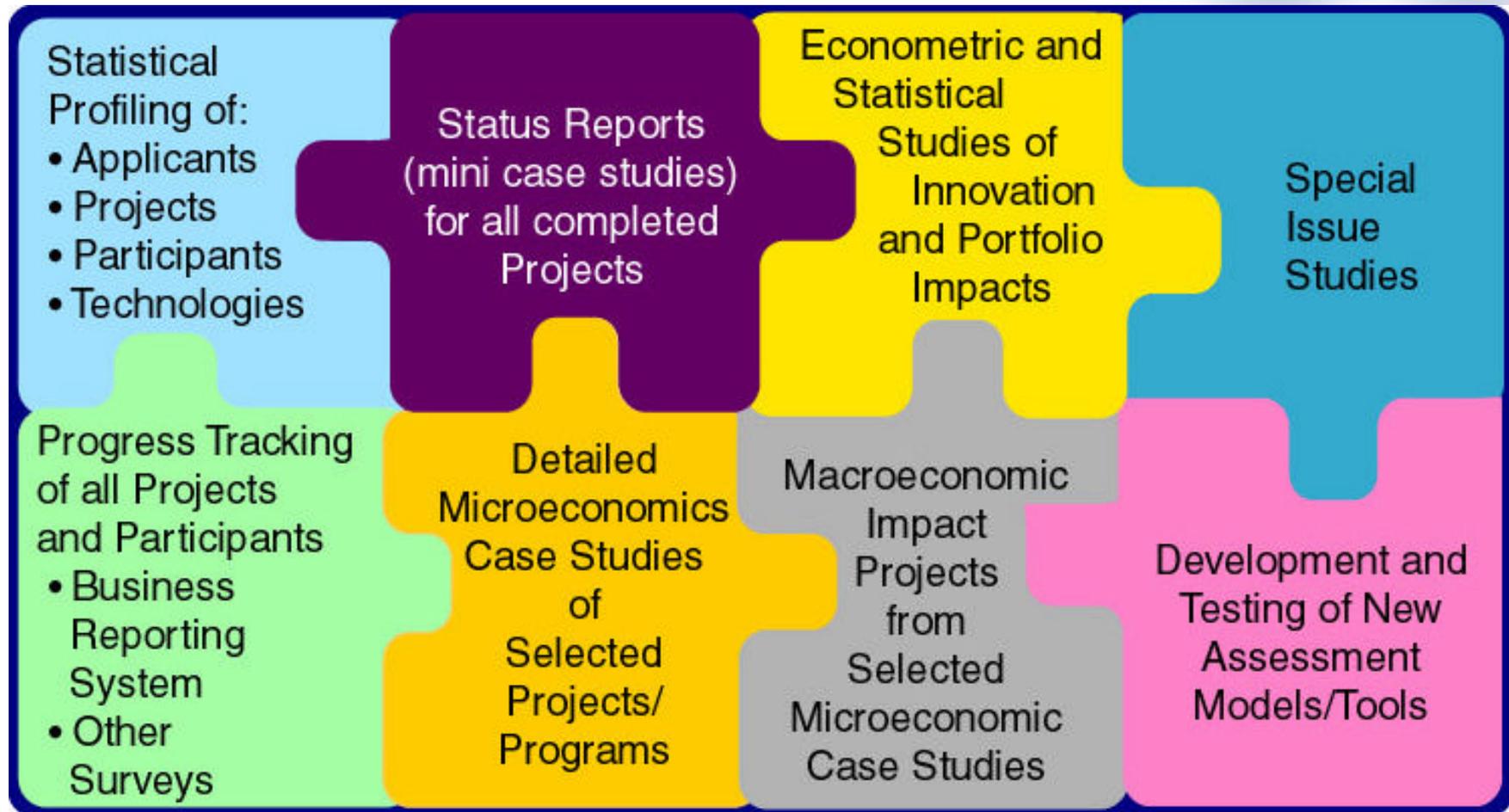
(Spillover Benefits)

Net Social Benefits > Total Private Returns

# Commercialization Economic Impacts



# *Components of ATP's Evaluation Program*





# *ATP's Business Reporting System*

- Tracking progress of:
  - projects
  - companies
  - applications





# *ATP Technologies are “Enabling”*

- Multi-Use
  - 1200 applications identified
  - 4.5 applications per project
- Path-breaking
  - 37% of applications are “new-to-the world” innovations

*Source:* BRS.



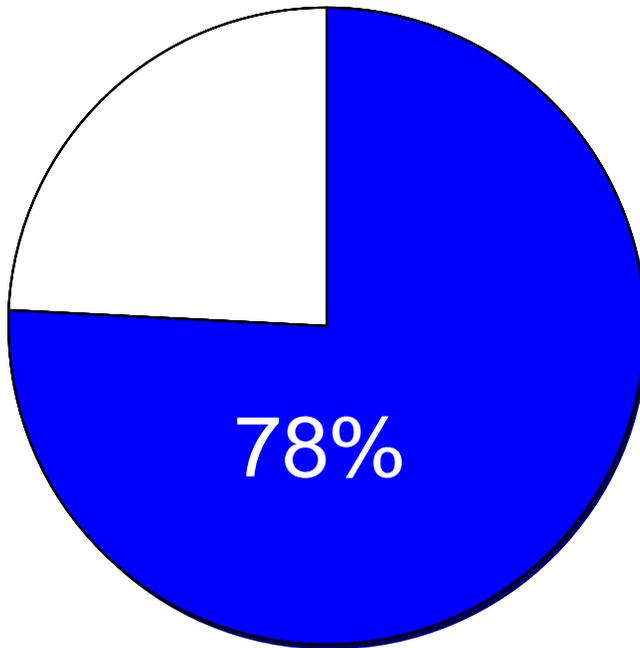
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# *R&D Collaboration is Extensive*

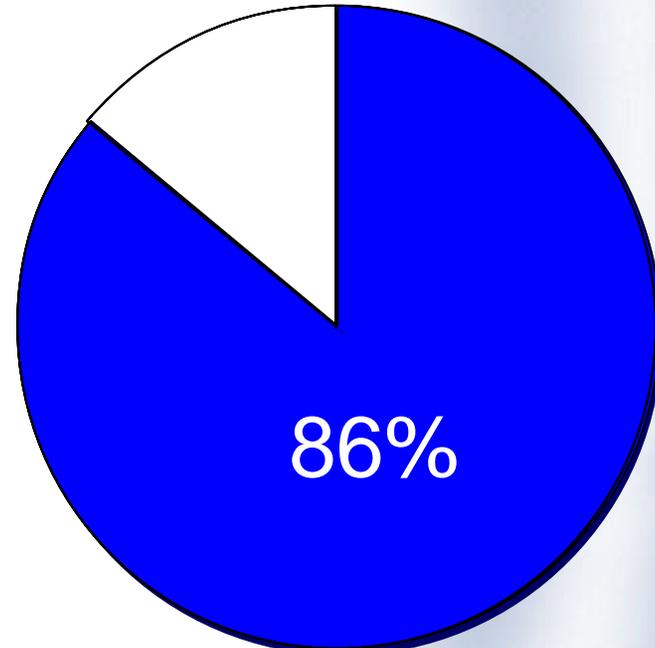
## **Organizations Using Collaboration to Achieve Project Goals**

**1996**



286 Organizations

**1998**



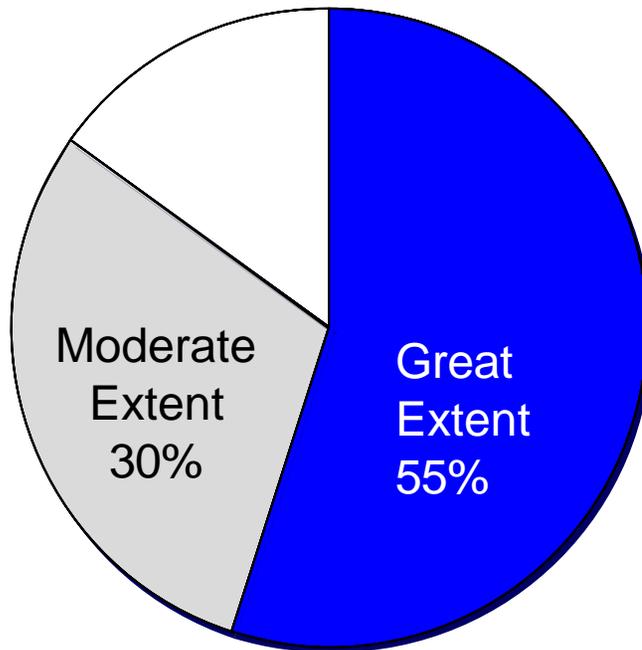
415 Organizations

Source: BRS.



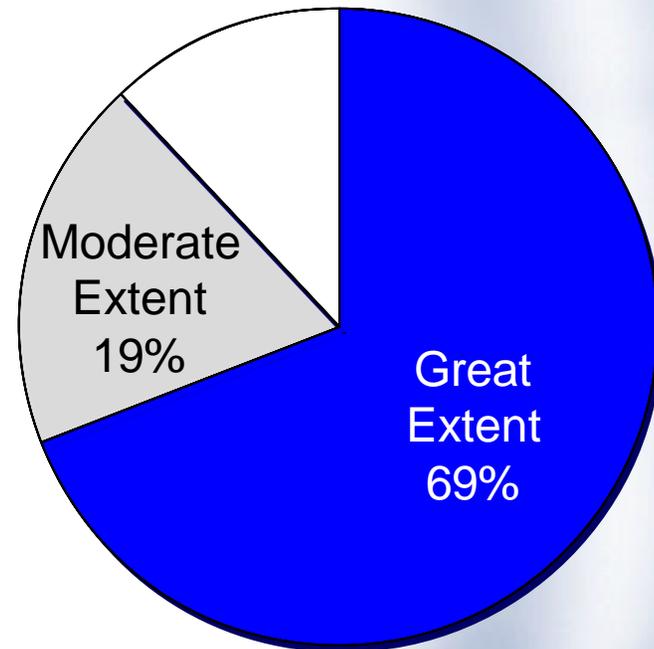
# *ATP Fosters Collaboration*

**1996**



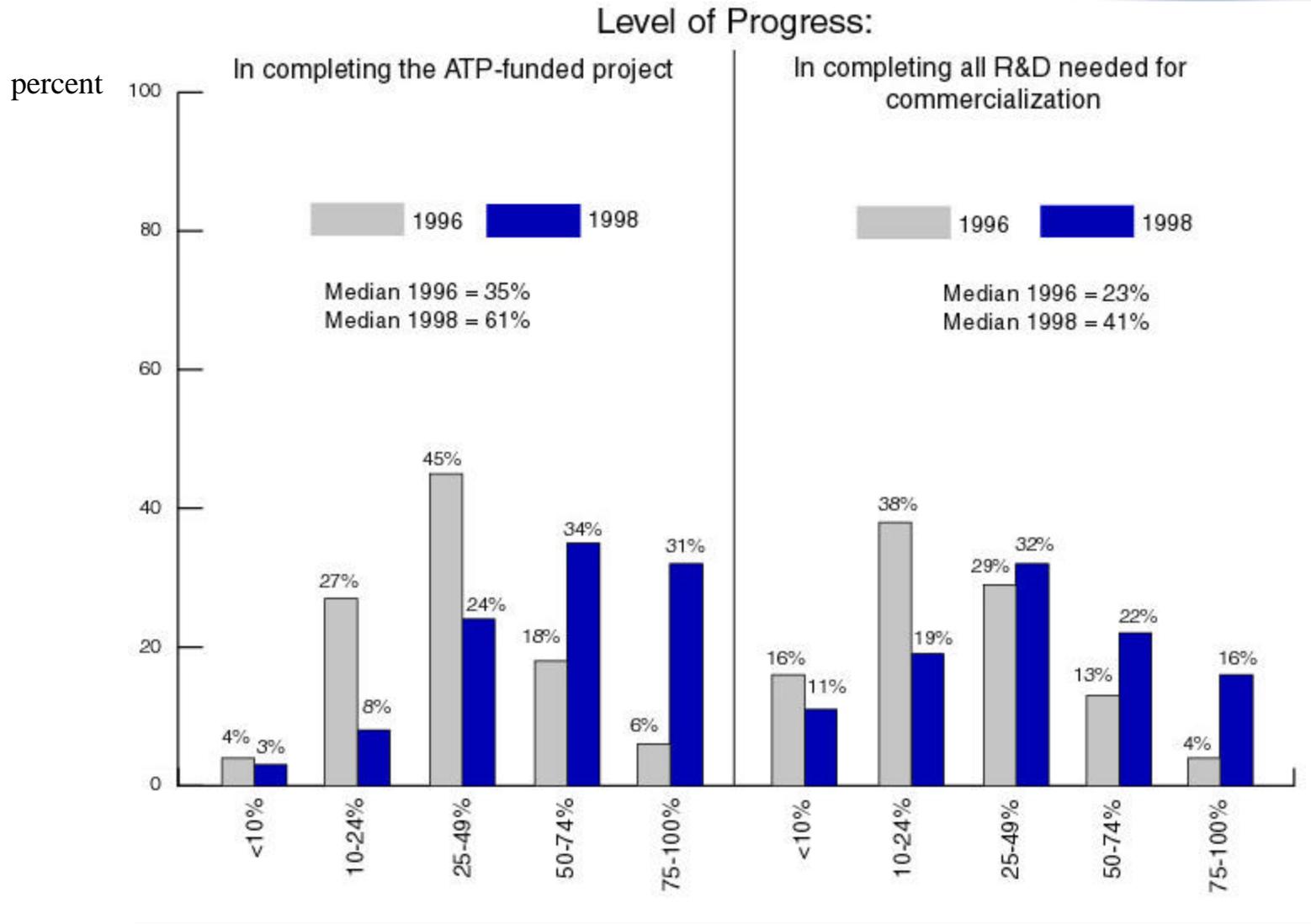
286 Organizations

**1998**



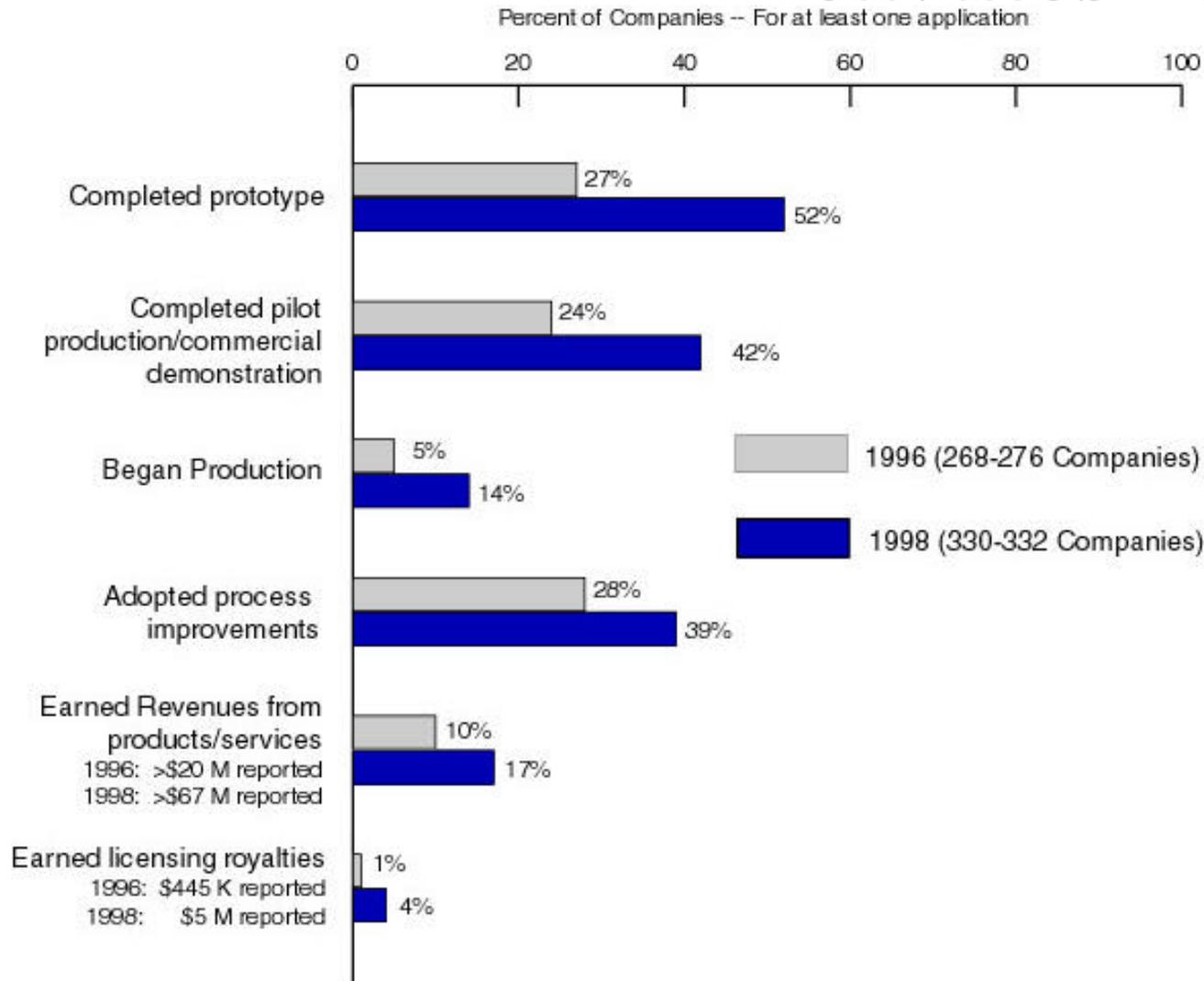
415 Organizations

Source: BRS.





# Early Commercialization Activities--Commercial Production and Sales



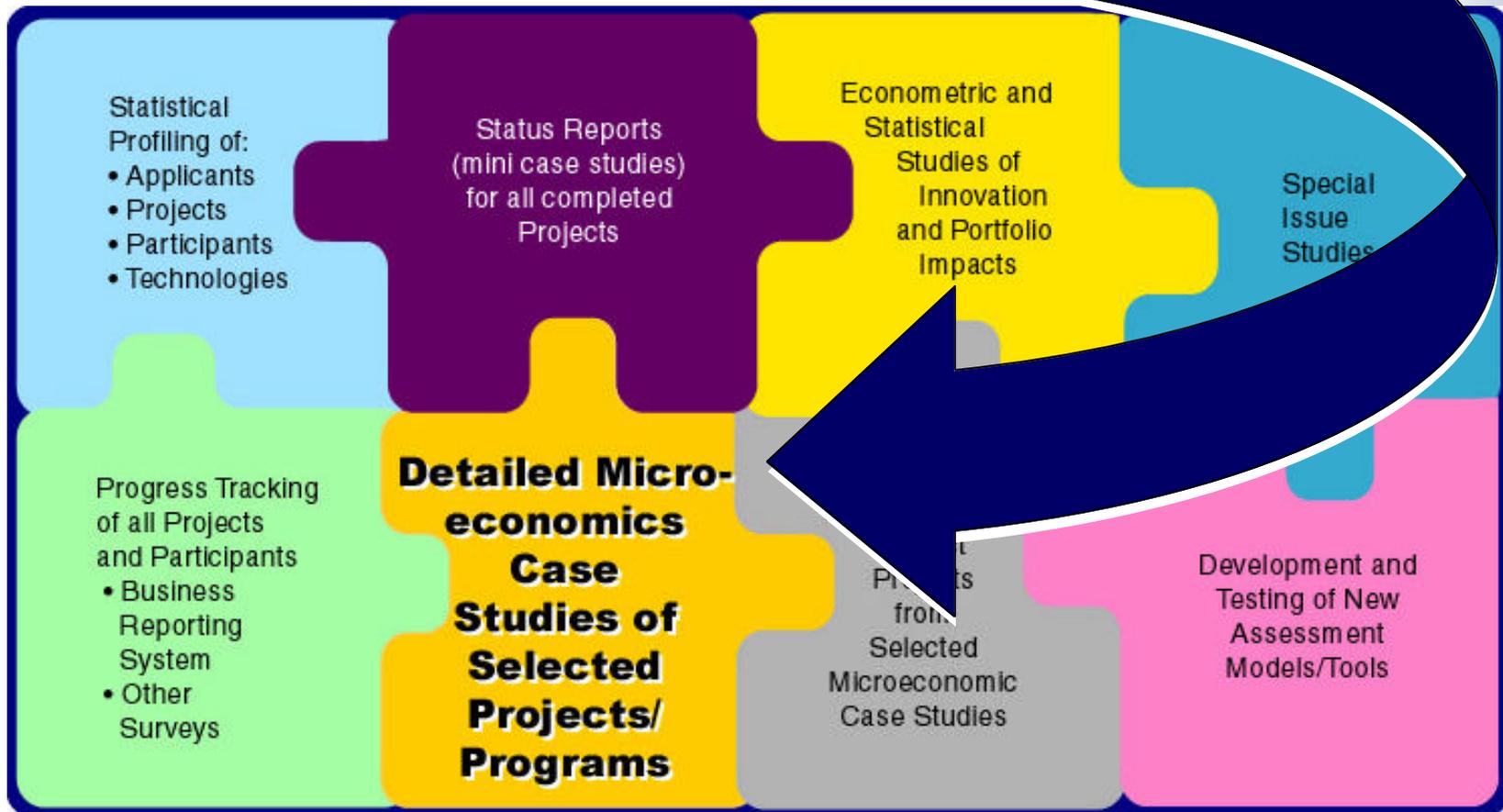


# *Dissemination of Non-proprietary Information*

	Total		Average Per Project	
	1996	1998	1996	1998
Patents Filed	105	239	0.6	1.2
Papers in Professional Journals	131	250	0.7	1.3
Papers Presented at Conferences	372	706	2.1	3.6



*Detailed microeconomics case studies of selected projects/programs:*





## *Case Studies: Examples*

- Printed Wiring Board project
- 2mm project
- Seven Tissue Engineering projects
- Flow Control Machining project
- RAMM project
- Two Digital Data Storage projects
- 24 Component-Based Software projects
- Four Photonics projects
- 2mm project revisited



*Status reports (mini case studies) for all completed projects:*





# *Status Reports on Completed Projects*

- Volume 1 *published*
- Volume 2 *in production*
- Volume 3 *underway*





# Progress of First-Completed Projects

<b>R&amp;D Accomplishments</b>	<b>% of Projects</b>
Engaged in patent activity	50
Published on technical results	42
Award-winning technical achievements	18
<b>Business Progress</b>	
Incorporated technology in new products/processes/services	63
<b>% of 27 SA-small companies</b>	
Small companies grew larger	81
Small companies grew >500%	25
<b>Contribution to ATP Success</b>	
Total Net Benefits	<b>\$</b> <b>[ Expected Benefits ] &gt; [ Total Costs ]</b>

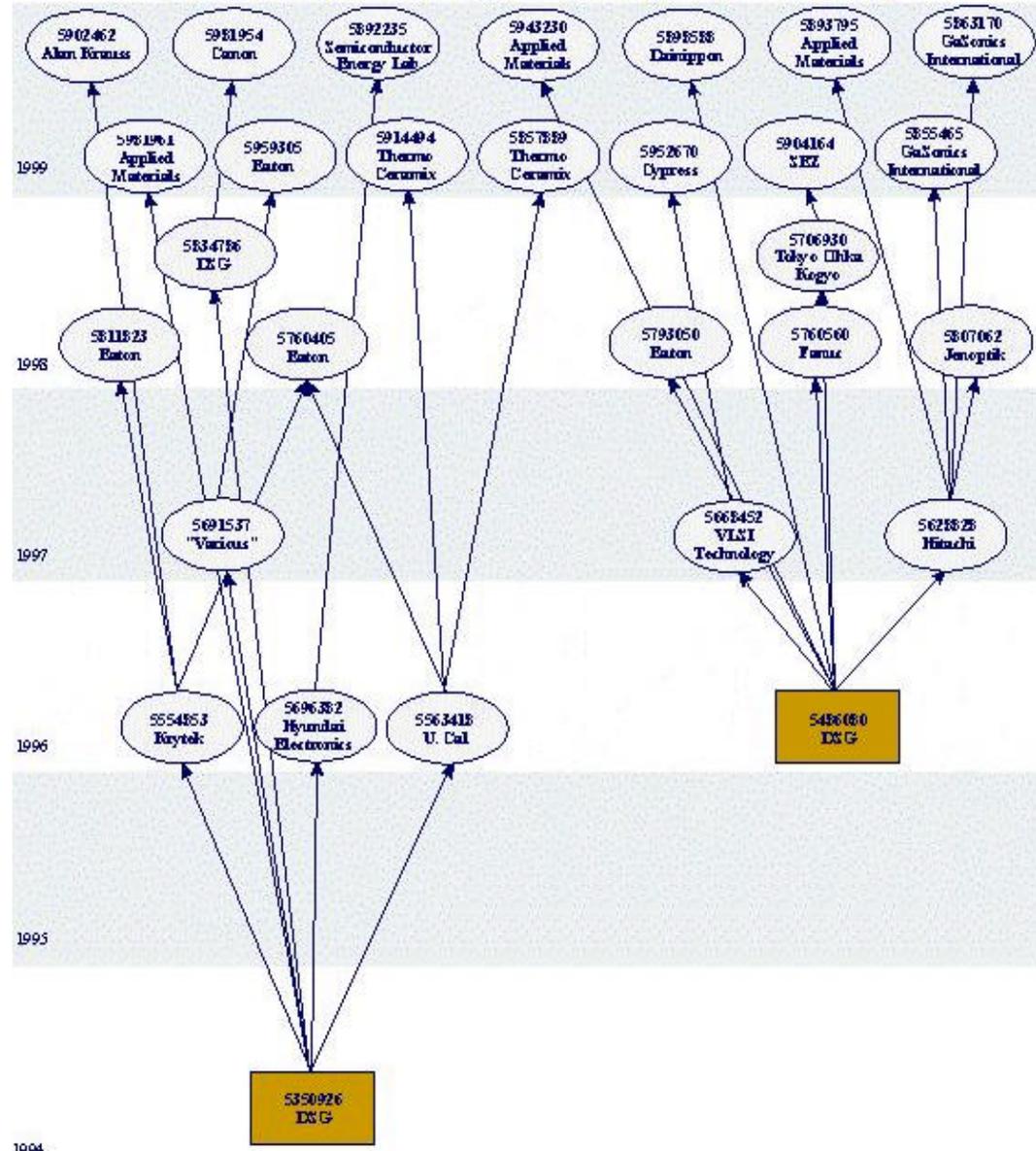
Source: Status Report, Vol. I.



# Diamond Semiconductor Group (DSG)

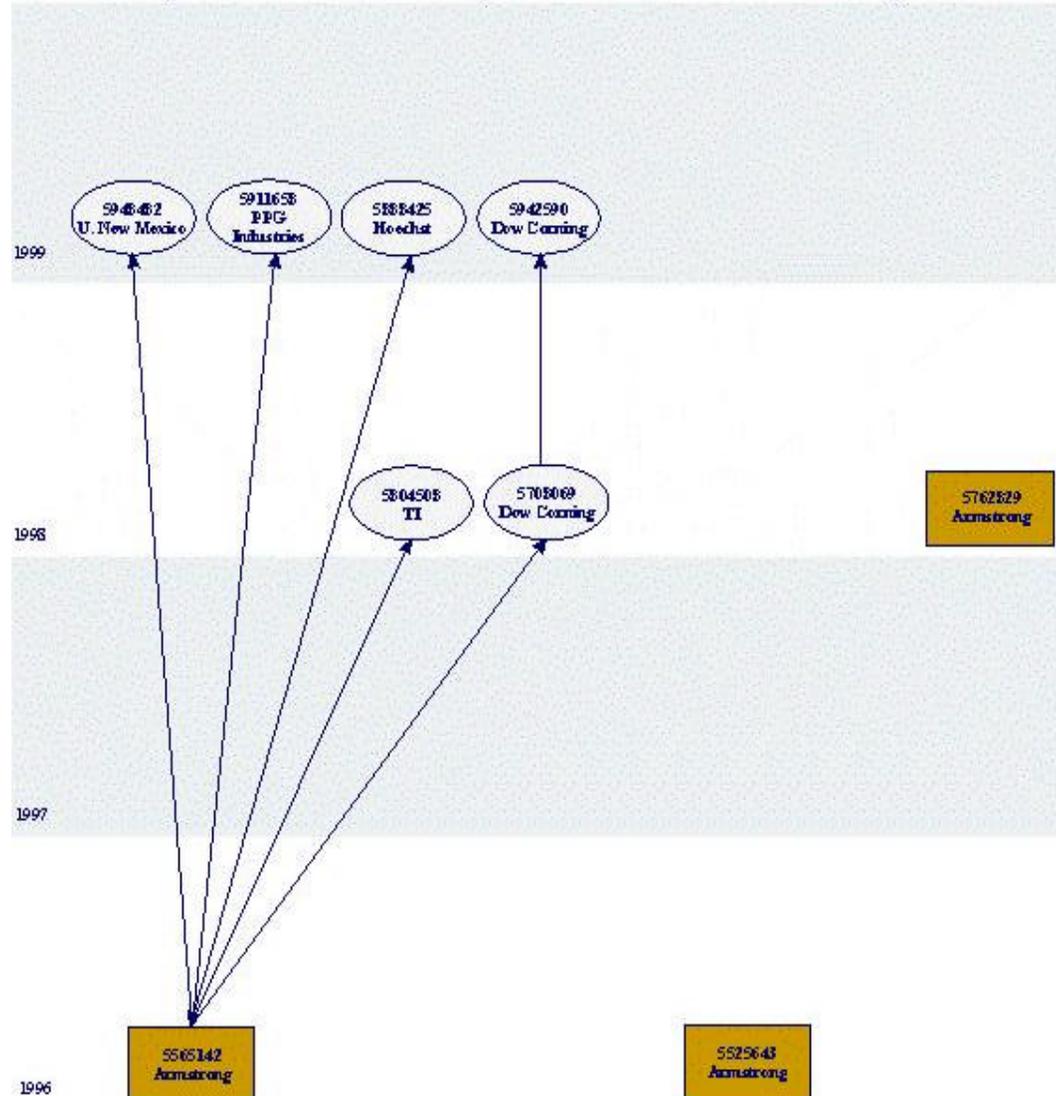
92-01-0115

*(Current as of December 1999)*



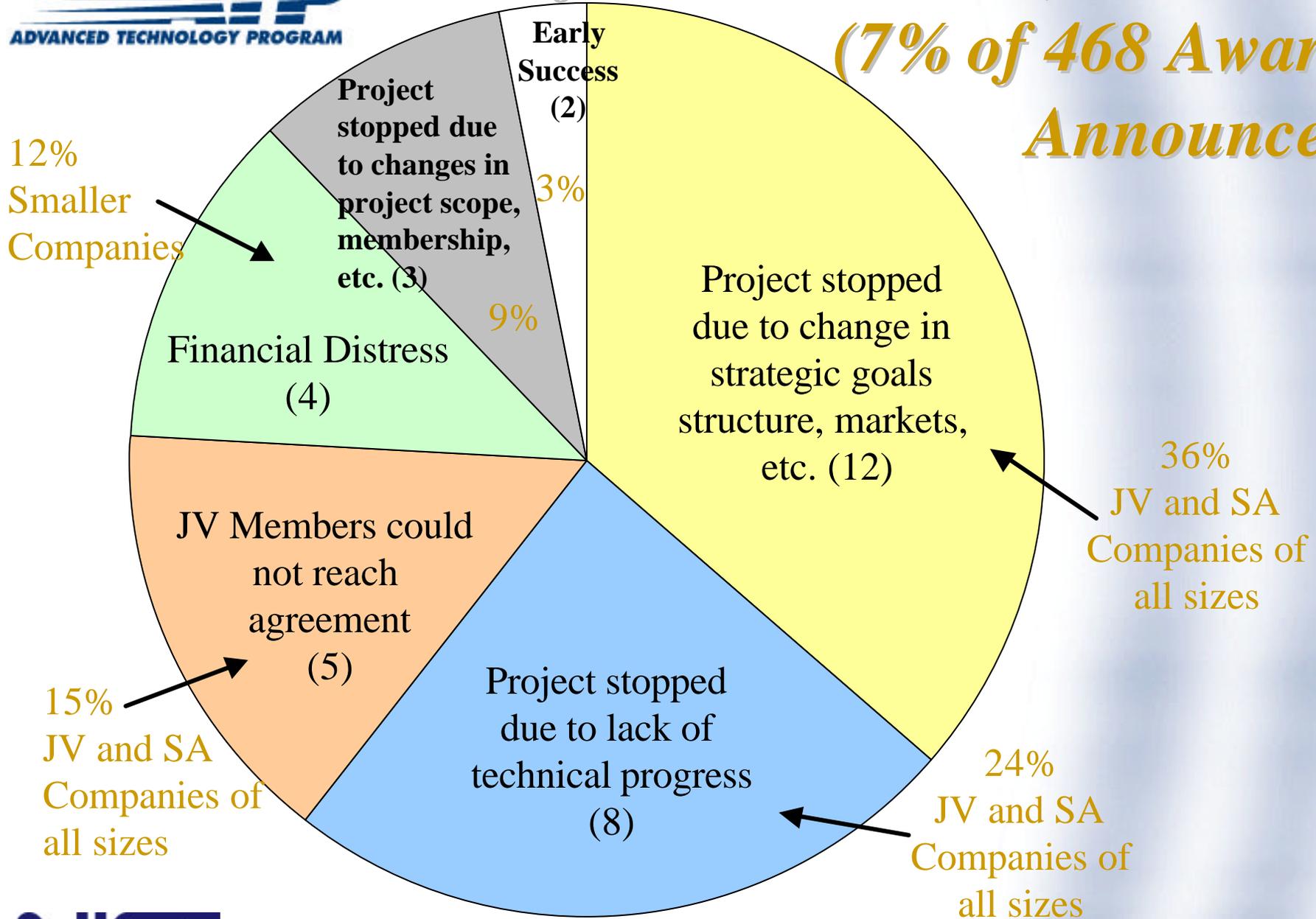


# Armstrong World Industries (Armstrong) 91-01-0025 *(Current as of December 1999)*



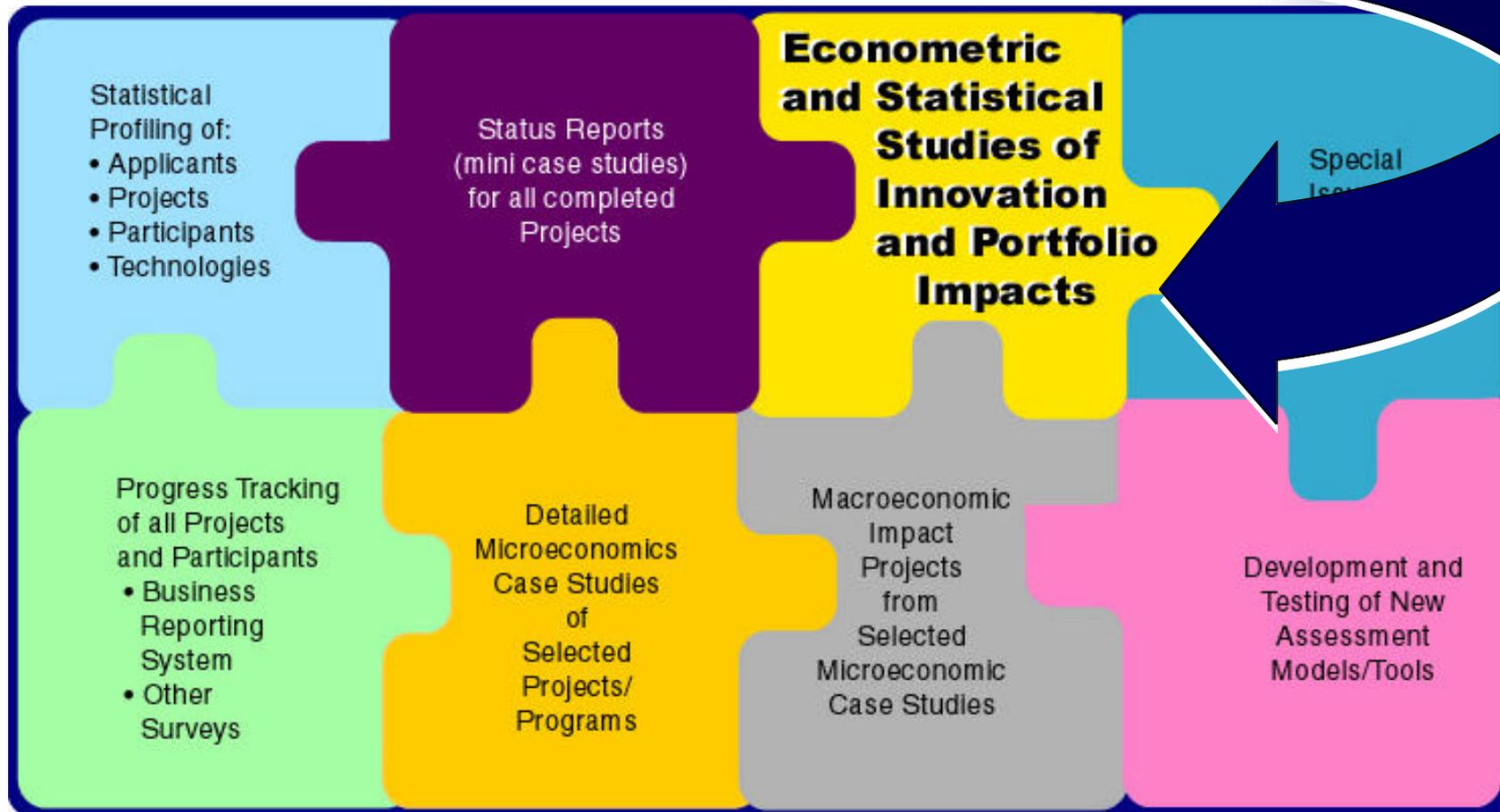


# 34 Projects Terminated, 1990-1999 (7% of 468 Awards Announced)



# *Econometric and Statistical Studies*

*Econometric and statistical studies of innovation and portfolio impacts:*



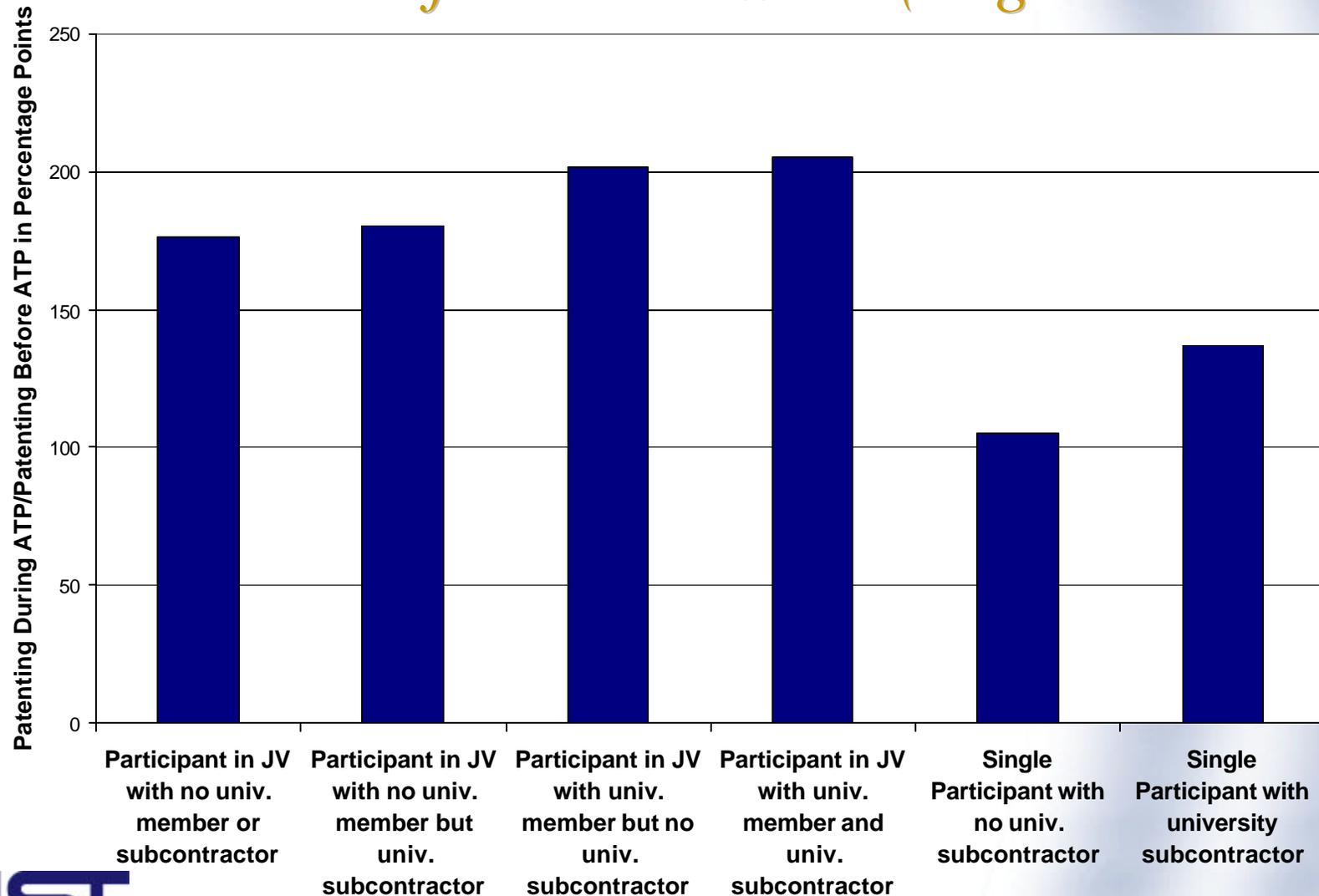


# *Statistical and Econometric Studies: Examples*

- ***Zucker/Darby*** Study (UCLA)
- ***Branstetter*** Study (UC-Davis)
- ***Feldman*** Study (Johns Hopkins University)



# Zucker/Darby Study (UCLA): Small Firm Patenting before and after ATP Award (Regression Based)





## *Zucker/Darby Study (UCLA): Small Firm Patenting before and after ATP Award (Regression Based)*

- Companies increased their rate of patenting after receiving an ATP award.
- Joint Venture participants increased their rate more than single applicants.
- University involvement was associated with a greater increase in patenting.



## *Branstetter Study (UC-Davis)*

- Estimated that an ATP JV participant increases patent output per R&D dollar by 8% per year





# *Feldman Study: Proposers' Views of the ATP Selection Process*

## **Was the ATP review and selection process fair?**

	All		
	<u>Awardees</u>	<u>Non-Awardees</u>	<u>Applicants</u>
Yes	95%	67%	81%

## **Plan to apply to ATP in the future?**

	All		
	<u>Awardees</u>	<u>Non-Awardees</u>	<u>Applicants</u>
Definitely/ Very Likely	82%	59%	70%
Undecided	15%	12%	13%
Not Very Likely/ Definitely Not	4%	29%	17%





# *Feldman Study: Public-Private Partnerships*

All

Awardees      Non-Winners      Applicants

First-Time applicant

47%

54%

50%

ATP Winner prior to 1998

31%

18%

24%

Never successful applicant in previous years

22%

28%

25%





# *Feldman Study: R&D partnerships with other firms, universities, and national laboratories*

	Awardees	Non-Winners	All Applicants
Have research partners	83%	80%	82%
First-Time collaboration*	59%	43%	50%

\* With most important partner





# *Feldman Study: Seeking New Funding: “Halo” Effect of ATP Award*

	Awardees	Non-Winners	All Applicants
Application to any source	25%	47%	38%
Success rate for firms seeking funding	73%	33%	44%





## *Feldman Study*

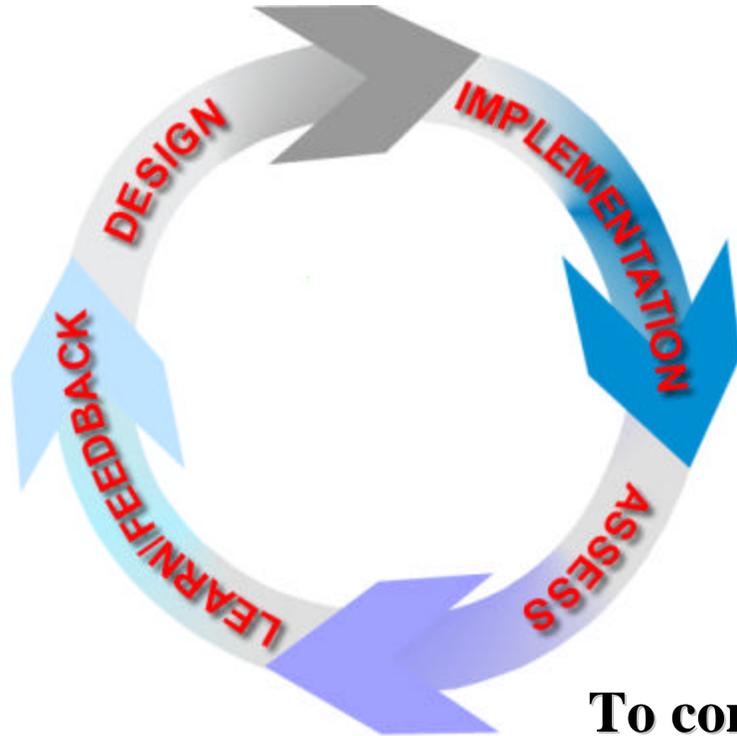
- Most companies found ATP's review and selection process fair.
- Most applicants in 1998 planned to apply in the future.
- Half of 1998 proposals were from first-time applicants
- Of the half that had applied before, about half had won before half had not.
- Of those who had applied before, those who had won before were somewhat more likely to win again than those who had not.
- Most 1998 applicants had collaborative arrangements
- ATP selected more awardees from those with new partners than from those with existing partners.
- In 1999, less than half of 1998 non-awardees applied to another source, compared with a quarter of ATP awardees.
- Of those who did apply to another source of funding, ATP awardees were more than twice as likely to get the funding than non-awardees



- ATP's Evaluation Program is tracking progress, answering questions, and providing metrics
- Individual success and failures observed
- Large benefits from ATP project portfolio (B>>C)
- Large spillover benefits (not Corporate welfare)
- Large part of impact attributed to ATP (with/without ATP)

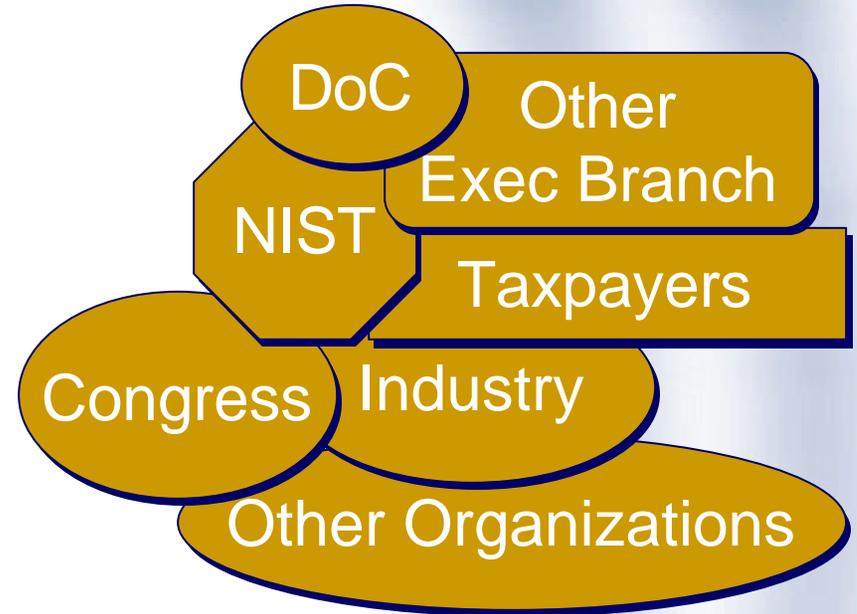


To better manage the ATP!



# Metrics

To answer to our "Stakeholders"!



To comply with the Law!

**Government  
Performance  
Results Act  
(GPRA)**

