



# Competitive Industries Note: *Flexible Delivery: Organizations that Can Fail and Still Succeed*

## INDUSTRIAL POLICY NEEDS TO BE FLEXIBLE

As Albert Hirschman showed, long-term development often requires continuously finding partial solutions and switching between approaches, as much as finding an “optimal” policy mix (Hirschman, 1970). This is nowhere more true than in industrial policy, which tackles complex problems, must interact with rapidly changing global markets, and requires difficult and uncertain choices under conditions of uncertainty.

As importantly, there are many different forms of industrial policy, each appropriate to a different local context. Many of the errors of the past have come from deploying a top-down approach using instruments that were poorly fitted to the local political economy.

That poor fit manifested itself in the details of the design and implementation of policies, but getting those details right requires iterative change and learning (Rodrik, 2008). Iterative change, in turn, requires flexibility: the ability to try an approach, understand if it is working or not, and fine-tune or discard it.

All of this must be grounded in institutions. Policy programs are run by agencies, so for the programs to be flexible, the agencies must be flexible, whether Ministries or small “reform teams” (Criscuolo and Palmade, 2008). In a bureaucracy, however, flexibility is easier said than done (Wilson, 1989). Many agencies try to be flexible, but fail, either becoming rigid *de facto* or exploiting the discretion required by flexibility, and shirking or being captured.

There are, though, some agencies that have managed to achieve flexible delivery, and been instrumental in transforming countries and industries. One of the most striking is DARPA.

### TABLE OF CONTENTS

DARPA: Extreme Flexibility in Action.....	1
Flexibility in the History of Industrial Policy.....	2
The Theory of Flexibility and Risk.....	3

### ABOUT THE AUTHORS

#### Luke Simon Jordan

Luke Jordan is a Private Sector Development Specialist with the Competitive Industries Practice, based in New Delhi. He works on manufacturing in India and mining based growth in Afghanistan.

#### Katerina Koinis

Katerina Koinis is a Private Sector Development Consultant with the Competitive Industries Practice, based in Washington DC. She is a core member of the Practice's knowledge program on the implementation of industrial policy.

## DARPA: EXTREME FLEXIBILITY IN ACTION

The Defense Advanced Research Projects Agency (DARPA), part of the U.S. Department of Defense, is one of the most flexible of all public organizations. It can claim a key role in the birth of the internet, the global positioning system, and stealth.

One of DARPA's most important features is its clearly defined relationship to its sole *client*, the U.S. military, and its *mission*, to avoid technological surprise. The focus and

clarity of a long-term mission has created discipline and liberated short-term programs from incrementalism.

The *ecosystem* of institutions within which DARPA operates is also vital to the agency's effectiveness. DARPA neither conducts research itself nor implements any of its programs. It funds researchers and connects them and their output to customers. Without them, DARPA would not be able to operate, as a venture capital fund cannot function without a deal flow.

DARPA also relies on a collection of outside contractors for much of its own activities. This allows it to keep its permanent staff small, only 100-150 program managers (PMs).

These PMs arrive from academia, government and industry. One of DARPA's most striking organizational features is their *4-year term limits*. This screens personality type: PMs have to be innate risk-takers, believing that in 4 years they will achieve a breakthrough that will be beneficial both to the agency as well as to their later career. Moreover, the term-limit strongly supports flexibility: those who might resist a change in direction leave within a few years.

DARPA's basic *decision-making* architecture combines rigor in reviews with autonomy between them. Programs must be approved by the Office Director (OD) and the DARPA Director, following the "Heilmeier Catechism" (Table 1). After and between reviews, however, PMs have almost complete autonomy in writing bid documents and contracts to implement approaches. To decide to tackle a problem the bar is set very high, seeking to avoid mistaken programs, but once underway, the bias is towards not missing opportunities to succeed. The first means high approval thresholds; the second means autonomy in action (Sah and Stiglitz, 1986).

DARPA contracts are informally known to set performance goals that are impossible to achieve. This triggers continuous problem-solving discussions, and creates a continual justification for PMs to rework contracts, should they wish to. The agency is then sometimes described as "spending all its time talking" – but this is purposeful,

active talking. PMs, in this respect, are facilitators. They take an active role in discussing with the performers and deciding on results.

It is interesting to note what DARPA *does not do*: peer review; results measurement; "killing" programs; long-term career development; formal performance incentives; or strict controls against revolving doors, capture or collusion.

Given this, DARPA might face risks to its effectiveness due to informal *collusion and capture*. This is a substantial and present threat to the agency. Besides the rigorous reviews, continuous flow of information, and the hard discipline of the long-term mission, one of the key ways this risk is mitigated is the informal practice of never relying on a single institution, person or organization for too long. Instead, DARPA continually seeks to seed capabilities in new hosts, so that it only faces a monopoly for as short as possible.

In all this, what is vital is not the ability to fail, but the ability to admit failure and redirect resources away from it. DARPA's reputation and the *separation of programs and approaches* – where even if an approach may fail, a program can still persist – are among the key features that help overcome obstacles leading to the admission of failure.

## **FLEXIBILITY IN THE HISTORY OF INDUSTRIAL POLICY**

Several examples can also be drawn directly from industrial policy. Perhaps the most famous is the Ministry of Trade and Industry (MITI) in Japan. In facilitating Japan's rise, it would often try several different approaches before finding one that worked. In the auto industry it tried to induce 'rationalization' through mergers between carmakers, a move successfully – and fortunately – resisted by the industry. It then tweaked the approach, and deployed it with auto components industry, with far more successful results.

Likewise, through the 1950s and 1960s it tried an array of approaches to facilitate Japan's exit from coal mining. It finally achieved this through training for workers, policies to

**TABLE 1: The Heilmeier Catechism**

1	What are you trying to do? Articulate your objectives using absolutely no jargon.
2	How is it done today, and what are the limits of current practice?
3	What's new in your approach and why do you think it will be successful?
4	Who cares? If you're successful, what difference will it make?
5	What are the risks and the payoffs?
6	How much will it cost? How long will it take?
7	What are the "midterm exams" and "final exams" to check for success?

enable shipping, investment in foreign mines, and more. Throughout, MITI kept the number of key officials small – under 100 – and rarely, if ever, sought to wield direct control.

A similar story from East Asia can be told about the Blue House Secretariat in Korea. With a small staff mediating between Ministries and bureaus, it oversaw a decade of approaches to fostering the emergence of a globally competitive steel company and automakers, trying and jettisoning one consortium and policy package after another until it found solutions (Kim, 2011).

In France there was the Commissariat Général du Plan (CGP), founded by Jean Monnet in 1946. Its mission and nature changed enormously as it sought to facilitate France's recovery from World War II. The first years focused on heavy industry and agriculture, the subsequent years on greater 'modernization'. Throughout, it stayed small and used a long list of supporting agencies and councils to implement flexibly (Cazes, 1990).

## A THEORY OF FLEXIBILITY AND RISK

The organizations that succeeded in delivering flexibly managed – at least for a time – to solve three interlocking problems: creating enough discipline to allow discretion without shirking and indiscipline; managing the political costs of failing while keeping enough support to be effective; and deciding, under uncertainty, when a program, policy or investment is a failure, or is just facing teething trouble.

These can be summarized as *governing discretion*; *managing exit costs*; and *making decisions under uncertainty*. Table 2 provides a summary of ways in which DARPA and some of the agencies described above have solved them. Three key strategies stand out:

1. Set an ambitious goal, unambiguous and easy to observe, roughly a decade in the future, and tie the agency's existence to it – this hard wall of future discipline then allows flexibility now
2. Distinguish between "programs" and "approaches": set a high bar for approving programs, but make approaches easy to try and to exit – concentrate failure and exit in approaches
3. Make officials of the agency accountable above all for surfacing and using information, using difficult goals as a tool of people and information management rather than a substitute

Finally, these agencies stay small – almost never above 100 people – and in recruiting they bias towards *practice*, especially engineers and officials, over *theory*.

It is clear that much of this in practice is a tall order. In many contexts it will be impossible. With sufficient care, and hard choices in framing their mission, they can be introduced in unlikely places, and when they are, they can change history.

**TABLE 2: Fourteen Contributing Factors in Flexible Delivery**

Structural characteristic	
1	<i>A threat made politically salient to a broad section of the elite</i>
2	<i>A clear and simple mission</i> whose achievement will answer the threat, and whose failure will make its realization much more likely
3	<i>Ambition and simplicity of measurement</i> in defining the goal, more so than attribution (removing the ability to “fudge” success is more important than being able to attribute it)
4	<i>Strong but delayed incentives</i> , collective (the end of the agency if it fails) and individual (career-making or career-breaking)
5	<i>A surrounding system of diverse capabilities</i> , whether to find solutions (e.g., diversity of firms and research institutes) or to implement them (e.g., military services)
Formal and informal techniques	
1	<i>Build developmental coalitions rather than relying on (or waiting for) political will</i> ; Bring together previously unconnected capabilities, using political capital as a carrot, rather than spending that capital in command-and-control and close monitoring
2	<i>Distinguish “programs” and “approaches”</i> : The first are high-level outcomes (e.g., invest in Google, build a car industry), the second are policies and investments that may or may not advance toward that outcome (e.g., add a manager to a start-up team, subsidize Hyundai).
3	<i>For programs, bias towards consensus and caution</i> , to cut down on broad failures; <i>for approaches, bias toward autonomy</i> , to cut down on missed opportunities. Use a tool like the Heilmeyer Catechism for both decisions.
4	<i>Keep the agency small</i> : Do not grow past about 100, and stay smaller if possible. Maintain a bias toward operational experience (bureaucratic or industrial) over theory, although not dogmatically
5	<i>Over-invest in obtaining, sharing and using information</i> , formal and informal: Use frequent (weekly) meetings focused on problems not process, and “observer rights” or the equivalent.
6	<i>Use quantitative goals as a tool of people management, rather than a substitute for it</i> : Use simple, clear but difficult goals to orient action, bring information to the surface, trigger problem-solving, and adjust opinions, primarily about people and capabilities ( <i>who</i> more than <i>what</i> ).
7	Faced with a potential failure, in order: Bring more information to the surface; add new capabilities; adjust the team or coalition; and find a new, equally ambitious goal. Only then exit. Use tools such as the questions: <i>Can it still be a home run? If yes, what can we fix? Whom can we bring?</i>
8	<i>Keep quiet at first</i> , building a record of success that can cushion the political costs of exit before exposing the agency to attack.
9	<i>Enforce entry to prevent the risk of capture</i> : Ensure that periods when a single entrant has monopolized a capability or industry are short, supporting the entry of credible competitors.

*This note is sourced from “Flexible Implementation: Techniques in Venture Capital, Defense Research, and Industrial Policy” (submitted to Policy Studies).*

**Key References:**

Cazes, B., & Mioche, P. (1990). *Modernisation ou décadence : études, témoignages et documents sur la planification française*. Université de Provence

Criscuolo, A. Palmade, V. (2008). *Reform Teams: How the Most Successful Reformers Organized Themselves*. Public Policy for the Private Sector Note no. 318. The World Bank.

Hirschman, A. (1970). *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States*. Harvard University Press.

Kim, P. G. (2011). *The Park Chung Hee Era: The Transformation of South Korea*. B. K. Kim, & E. F. Vogel (Eds.). Harvard University Press.

Rodrik, D. (2008). *The New Development Economics: We Shall Experiment, but How Shall We Learn?* HKS Working Paper No. RWPO8-055.

Sah, R. K. Stiglitz, J. (1986). *The Architecture of Economic Systems: Hierarchies and Polyarchies*. American Economic Review, Vol. 76, No. 4.

Wilson, J. (1989). *Bureaucracy*. NY: Basic Books.

**Disclaimer**

CI Notes are produced by the Competitive Industries Practice at the World Bank Group. The series aims to share lessons learned in interventions focused on boosting industry competitiveness.

CI Notes are funded by the:

**Competitive Industries and Innovation Program (CIIP)**



The findings, interpretations, and conclusions expressed in this paper are those of the author(s) and do not necessarily reflect the views of the CIIP Partners, the World Bank Group, the Executive Directors of The World Bank or the governments they represent.