

WELCOME!

Federal Source Code Summit 2020

Hosted by Code.gov and Digital.gov





Federal Source Code Study

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Overview

- Three year study of the implementation of the FSCP
- Trying to understand why some agencies published OSS and others did not
- Provides implications for government employees working with policy and technology
- Available on GitHub
 - https://github.com/GSA/code-gov/tree/master/docs/FederalSourceCodeStudy
- Condensed version on Medium
 - @codedotgov and federal-source-code-study







Policy & Action





Federal Source Code Policy (FSCP)

- Published August 2016
- Agencies develop source code policy, update acquisition language, and inventory code
- Release 20% of code as OSS
- Created Code.gov, program and platform



EXECUTIVE OFFICE OF THE PRESIDENT OFFICE OF MANAGEMENT AND BUDGET

August 8, 2016

M-16-21

MEMORANDUM FOR THE HEADS OF DEPARTMENTS AND AGENCIES

OM: Tony Scott

United State

Anne E. Rung

United States Chief Acquisition Office

SUBJECT: Federal Source Code Policy: Achieving Efficiency, Transparency, and

Innovation through Reusable and Open Source Software

The U.S. Government is committed to improving the way Federal agencies buy, build, and deliver information technology (IT) and software solutions to better support cost efficiency, mission effectiveness, and the consumer experience with Government programs. Each year, the Federal Government spends more than \$6 billion on software through more than 42,000 transactions. A significant proportion of software used by the Government is comprised of either preexisting Federal solutions or commercial solutions. These solutions include proprietary, open source, and mixed source² code and often do not require additional custom code

When Federal agencies are unable to identify an existing Federal or commercial software solution that satisfies their specific needs, they may choose to develop a custom software solution on their own or pay for its development. When agencies procure custom-developed source code, however, they do not necessarily make their new code (source code or code) broadly available for Federal Government-wide reuse. Even when agencies are in a position to make their source code available on a Government-wide basis, they do not make such code available to other agencies in a consistent manner. In some cases, agencies may even have difficulty establishing that the software was produced in the performance of a Federal Government contract. These challenges may result in duplicative acquisitions for substantially similar code and an inefficient use of taxpayer dollars.

This policy seeks to address these challenges by ensuring that new custom-developed Federal source code be made broadly available for reuse across the Federal Government.³ This is





¹ M-16-12: Improving the Acquisition and Management of Common Information Technology: Software Licensing Office of Mgmt. & Budget, Exec. Office of the President, June 2, 2016.

https://www.whitehouse.gov/sites/default/files/omb/memoranda/2016/m-16-12_1.pdf.

² See Appendix A for definitions of key technical terms used throughout this policy document.

³ See Section 6 of this policy for additional information about limited exceptions



Agency	Total Repos	Repos pre FSCP	Repos post FSCP
Nuclear Regulatory Commission	0	0	0
Department of Housing and Urban Development	2	0	2
Department of Education	4	4	0
Agency for International Development	8	8	0
Social Security Administration	8	0	8
Department of Homeland Security	10	4	6
Office of Personnel Management	13	6	7
National Science Foundation	16	0	16
Small Business Administration	21	1	20
Department of the Treasury	22	11	11
Department of Justice	32	14	18
Department of Transportation	37	13	24
Department of Agriculture	40	38	2
Department of Labor	72	53	19
Environmental Protection Agency	144	49	95
Department of State	265	189	76
Department of Energy	307	155	152
Department of Commerce	363	240	123
Department of Veterans Affairs	370	203	167
National Aeronautics and Space Administration	411	186	225
Department of Health and Human Services	420	183	237
Department of Defense	449	270	179
Department of the Interior	993	555	438
General Services Administration	1788	1065	723





Purpose, Framework, & Design





Study Purpose

- Examine agency implementation of FSCP using OSS publication as an indicator of policy compliance
- General research question: Why do some federal agencies publish OSS and others do not?
- Specific research questions:
 - How do unit *beliefs* affect whether it publishes OSS?
 - How does a unit's public engagement efforts affect whether it publishes OSS?
 - How do structural dimensions influence whether a unit publishes OSS?
 - How does *organizational location* affect whether a unit publishes OSS?





Framework

Cultural beliefs

Public engagement

Structural dimensions

Organizational location





Research Design

- Qualitative research
- Metadata analysis with the GitHub API
- Conducted interviews and collected artifacts
- Used grounded theory method for data analysis and theory building

Participants in Study		
Agency Publishing Frequency	Agencies	Participants
Minimally	6	7
Intermediately	6	7
Frequently	8	11
Total	20	25





Publishing Frequency by Unit Function				
Unit Type	Participants	% Sample		
Software	12	42%		
Non-Software	13	46%		

Units Consuming Compared to Publishing OSS					
Unit Publishing Frequency	Consuming	% Consuming	Publishing	% Publishing	
Minimally	7	28%	14	56%	
Intermediately	5	20%	5	20%	
Frequently	13	52%	6	24%	





Data Collection & Analysis





Cultural Beliefs

Cultural beliefs

- Cautionary
 - Align to scope
 - Change in practices
 - Consider risk
 - Need permission
- Advantageous
 - Build community
 - Create efficiencies
 - Demonstrate competency
 - Realize benefits

Publish OSS





Public Engagement

Public engagement

- Promote participation
- Create a forum
- Leverage others
 - Team integration
 - Product integration

Publish OSS





Structural Dimensions & Location

Structural dimensions

Organizational location

- Decide tasks (Centralization)
- Understand capabilities (Formalization)
- Comprised of diverse skills (Differentiation)
- Coordinate tasks (Coordination)

Publish OSS

Publish OSS



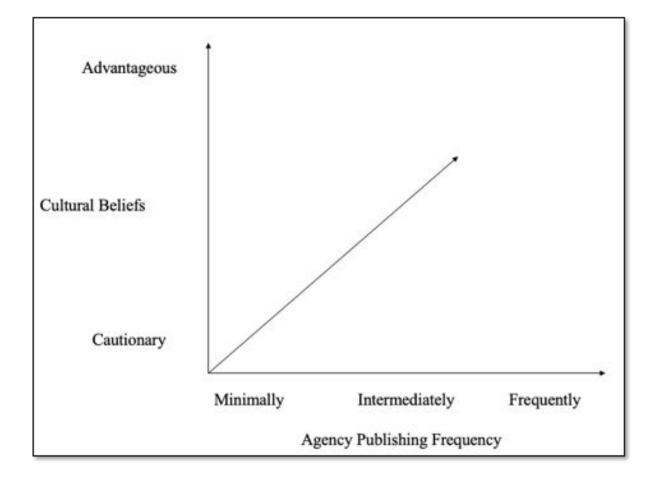


Results





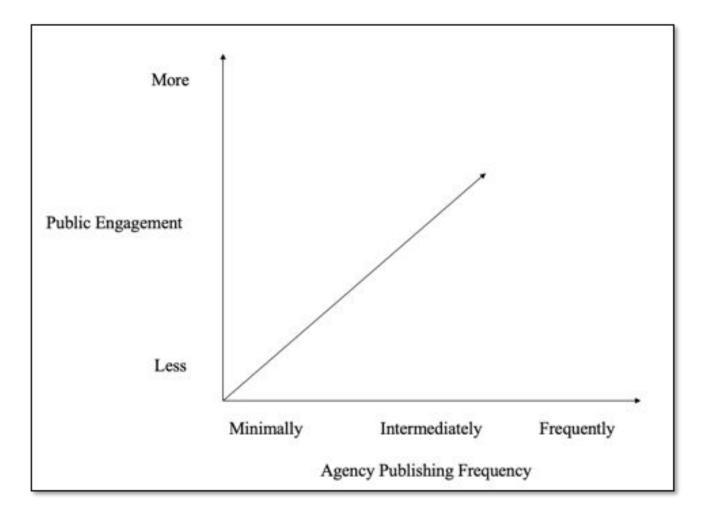
Cultural Beliefs







Public Engagement

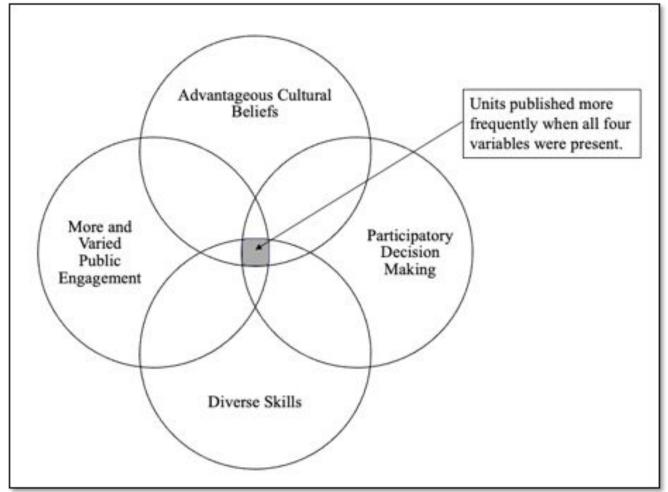








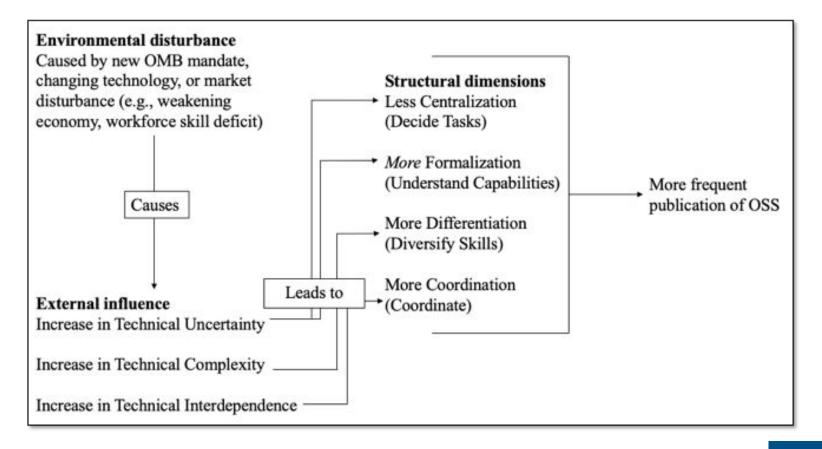
Overlapping Variables







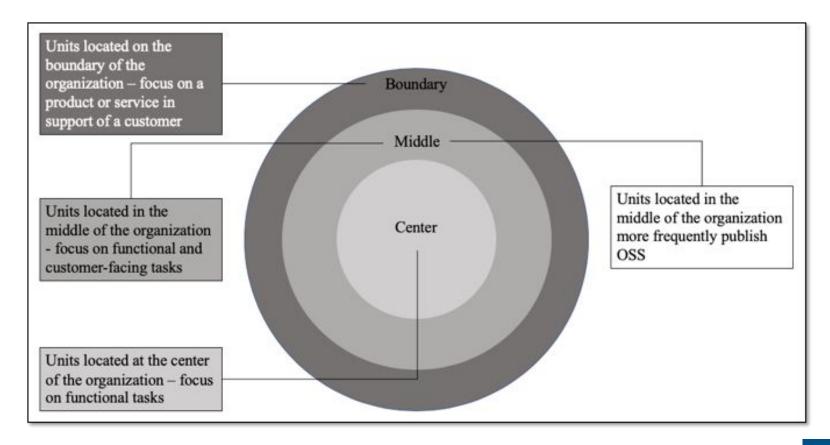
Structural Dimensions







Organizational Location







Theory and Implications





Theory of Policy Implementation for OSS Publication

Cultural beliefs – Non-monolithic, advantageous attributes

Public engagement – More and varied engagement through bi-directional communication, events, and electronic tools

Structural dimensions - Less centralization, more formalization, more differentiation, more coordination

Organizational location -

Metaphorically located in the middle of the organization, unit has less hierarchical layers Publish OSS





Implications

- Policy
 - Units require policy to implement technology
 - Even with policy, it is often unclear what units are operationally required and allowed to do
 - Policy contributes to competing interests among units
- Public administration
 - Public administrators should nurture advantageous cultures
 - Public administrators should encourage more and varied public engagement
- Organizational Theory
 - Organizations should consider how they structure their software development units
 - Organizations should consider where their unit resides in the larger organization





Thank You!!

