A Call for Agile Governance Principles

World Economic Forum Global Agenda Council on the Future of Software and Society

Software is changing the way we live. It is integrated into every aspect of our lives, bringing a speed, efficiency, and connectivity unimaginable just a few decades ago. Software is so integral to the way we conduct business, educate ourselves, and communicate with friends and family, most of us can't imagine a modern world without it. With innovations arriving at a breakneck pace, software applications will continue to expand and transform our lives well into the foreseeable future, touching every aspect of our lives.

The immense changes software brings are sometimes referred to by their technological nickname: a "disrupted world." As software "disrupts" our lives with its tremendous benefits for scientific, economic, and cultural endeavors it poses new challenges for policymakers as it enables the "gig" economy, driverless cars, and outside the norm methods of payments.

Governments will need a new framework for governance both in the ways evolving technologies and the personal and business opportunities they create affect policy decisions, as well as the means for efficiently executing government functions to the benefit of citizens.

Developing this framework requires an approach that is as novel as the technology it governs, one that is agile and responsive enough to accommodate software's enormous impact.

We, the members of the World Economic Forum Global Agenda Council on the Future of Software and Society, believe that such principles of agility are already successfully employed in the arena of software development. Section 1 of this paper outlines these agile principles and suggests ways governments can successfully implement methods already in wide use in software development. We further believe that these results-oriented principles are readily transferrable to government policy decisions and can help an economy lay the foundation for greater success. In addition, novel policy challenges are posed because of the ways software is driving the emergence of new economic activity. In section 2 we describe some of the transformative changes and identify a number of key policy challenges. Overall, we believe a system that is open and adaptive to change is more attractive to investment and opportunity.

THE DRAFT PRINCIPLES

The purpose of this section is to explain the agile principles and describe how, when applied to governance, they can lead to improved efficiency, public services, and public welfare, better equipping government agencies to respond to change. We recognize that it will be a challenge for government to respond to new software and technology developments and their impact on society, and we offer our continued support in this complex task. We hope the ideas presented here will provide a starting point for close collaboration between policymakers and the technology community.

We believe in governance systems that are robust, adaptable and responsive. Agile software development is a proven means to achieve rapid results which meet the goals of users efficiently. These methods are readily adaptable to governance. Through this we value:

1. Outcomes over rules
2. Responding to change over following a plan
3. Participation over control
4. Self-organization over centralization

That is, while there is value in the items on the right, we value the items on the left more.

Section 1: Agile Governance

1. ***Outcomes* over rules**

Governance should favor outcomes over rules-based compliance.

Agile software development prioritizes individual approaches and customer interactions over adherence to a rigid process. Delivering timely solutions is a more important measure of success than meeting a static checklist of rules. We believe the same principles should hold true for government actors. Governance should shift from the traditional focus on rules-based compliance to an outcome-oriented approach that can respond to changing dynamics. Implementing policy and executing on goals should evolve through incremental changes that are tested and measured for effectiveness as they are developed.

Actions:
- Systematic efforts to test policy outcomes by task and at each step in a process, including use of pilot programs and testing outcomes in measurable objective ways
- Develop a plan based on component elements and execute on each element as opposed to waiting for action until all the elements of the plan are established
- Remove impediments as they arise rather than attempting to anticipate and resolve all potential issues before executing on components
- Individual teams should be empowered to make decisions
- Empower the experts with substantive experience (as opposed to senior political managers)
- Develop the best team by including anyone with a relevant skill set, not just those within a particular agency or function

2. ***Responding to change* over following a plan**

Governments should employ flexible action plans that can adapt to change.

Software development is agile because we proactively and routinely collect, analyze, and incorporate feedback and data to inform decision making. This allows us to detect the need for change and adapt rapidly. Government can implement a similar approach by breaking down policy decision-making into incremental parts with short-term deadlines. As outcomes emerge, they can be analyzed and the results used to adjust future policy making. Government should share this data accumulation with stakeholders over whom they legislate or regulate. These principles can also be used to encourage valuable experimentation since any negative impacts will be detected in time to adjust for a better outcome.

Actions:
- Requirements should be task specific and flexible based on evolving needs and information
- Adapt dynamically, as new issues arise in the course of executing on elements
- An impediment on one issue should not delay action on other component elements for achieving the goals
- Establish short term and frequent check-in benchmarks, test beds
- Create "sunsets" which require methods to be periodically validated or abandoned
- Use innovative metrics to assess outcomes and solutions

3. *Participation* **over control**

Governments should offer open and transparent collaboration with a wide range of citizens and interest groups.

In the software arena we deliver higher quality results by collaborating with customers during the development process, instead of adhering to a rigidly-constructed process. Government already responds to stakeholders. We believe government will more effectively address technologically-driven changes by also encouraging citizen engagement in the decision-making process. An important component of this approach is ensuring clear roles and responsibilities for government, industry stakeholders and citizenry. Input from these groups can also help policymakers devise incentives for voluntary compliance, which can be more effective than command-and-control style regulation. Precedents for this approach are already emerging. The U.S. Office of Science and Technology Policy has begun crowd-sourcing public comments on regulatory proposals through GitHub. And the U.S.-based nonprofit Code for America has had great success with a project helping cities develop a web application that solves civic problems identified by citizens.

Actions:
- Solicit input from experts in other government agencies
- Seek input from best-available sources among stakeholders and citizens
- Develop formal and informal ways to exchange information and seek guidance on specific problems
- Cast a wide net for input through crowd sourcing and other communities

4. *Self-organization* over centralization

Governments should encourage and incorporate the self-organization made possible by technology.

Today's new technologies allow knowledge and power to be distributed more widely than ever before. They allow the collection and dissemination of experience, the collective assessment of problems, and the design and application of solutions and improvements. The ability to self-organize decreases many of the burdens on central governance. Policymakers should embrace this organizational shift and redirect rule-making resources, and their influence, to those areas in which self-organization is less effective.

Actions:
- Organize collaborative groups based on highest value-input, not organizational affiliation, rank or political influence
- Reevaluate, adjust, and as needed, restructure institutional and collaborative groups regularly
- Add and subtract resources based on dynamic needs
- Empower decision making as needed throughout the process rather than based on schedules

Section 2:

<u>Disruptive Software Creates New Enterprises and Novel Policy Issues</u>

The result of agile software developments is innovation at quantum speed. That innovation creates novel markets such as the "gig" economic activity, new forms of conducting financial transactions, shifts in labor force to projects and away from full time jobs, and many more. Each of these developments poses "first impression" policy questions on taxation, worker rights, efficacy of monetary policy, and many more.

Today's laws and regulations governing employment, industry, and consumer protections were enacted well before the arrival of today's technological advances. In some areas, technology has so fundamentally changed the behaviors and processes being governed that the regulation is not fully relevant.

What follows is a set of opportunities for examining, and where needed, generating new policy in areas that are being transformed by the advent of software and other technology with the goal of embracing and not impeding these pro-entrepreneurship developments.

The Emerging Project-Based Workforce

Digital technologies and global communication infrastructure have significantly changed the concept of paid employment. Instead of employment based on a traditional contract for a fixed salary, a growing segment of the workforce now consists of project-based, small-scale entrepreneurship made possible by the immense connectivity of the Internet. Although the trend began with freelance computer programmers and designers, it has expanded to include such entities as Uber, which links customers to independent taxi drivers, and Airbnb, which coordinates property rentals between individuals. This so-called "gig economy" allows for highly-flexible working arrangements and promises to not only grow, but to evolve even more innovative ways to earn a living.

These new arrangements are attractive to employers and employees alike. But they also entail different approaches from established models, for example, they offer much greater freedom for individual entrepreneurship and adapting work shedules to indiviudal's needs, but many do not offer the healthcare or retirement benefits normally provided under traditional employment schemes. Because they are on-demand, such jobs also offer little in the way of traditional job security. They may also create opportunities for "employees" to work "off-book" with the resultant tax implications. As the size and scope of this new workforce develops, policymakers will need to address whether new types of employee protection must grow with it.

Decentralized Payment Systems and Currencies

Digitally-mediated payment systems offer the benefit of instant, accurate and transparent transactions for all parties. Most, such as Paypal, operate via government-regulated financial institutions. But new systems are now emerging that are designed to operate outside of this traditional infrastructure. Some recent examples of digital asset and virtual payment systems, so called "virtual currency," include Bitcoin, Litecoin, and PPcoin. A decentralized, virtual payment system, the Bitcoin and similar networks allow peer-to-peer transactions, operating independently of government-regulated financial institutions.

Although virtual payment systems have gained in acceptability, their arrival raises novel governance issues. Policymakers must address such issues as accountability, consumer protections, and tax collection. As virtual currencies grow in scope and usage, policymakers will need to consider their potential impact on the stability of the national currency and the nation's monetary policy.

Peer-to-Peer Transactions for Services

Technological advances now enable individuals to interact with one another on a peer-to-peer basis for goods and services--the so-called "sharing economy." Intermediaries are emerging to coordinate and facilitate these interactions and include such operators as Uber and Airbnb. These marketplace developments enable inviduals to use their assets (such as apartments and cars) in new ways to increase their incomes and better use these assets. Today, some of these operators provide terms of usage that include protections for those using and supplying

services, further legislative actions may be needed to clarify the rights and obligations of the parties.

Autonomous Devices

Technology is allowing the automation of many functions. Positive Train Control, an advanced technology designed to automatically stop a train before an accident can occur, is already deployed in some parts of the U.S. and Europe. Driverless cars are currently in the testing phase. The arrival of these and future autonomous devices raises novel issues regarding responsibility and liability. For example, if a driverless car is involved in an accident, it is not currently clear how responsibility and liability will be apportioned among the manufacturer, software producer, and user. Policymakers should consider what changes to legal frameworks may be needed to encompass these new variables.

Data, Privacy and Security

Technology now allows the aggregation of immense datasets. Developing targeted understanding of consumers through data analysis and inference techniques is opening the way for businesses to provide new, highly customized services. Though these benefit companies and consumers, they also raise important concerns when it comes to privacy and individual autonomy.

At the same time, terrorist threats, cybercrime, and identity theft continue to grow in scope and frequency. Policymakers have responded with powerful measures for detecting threats and criminal activity in cyberspace.

The laws regarding these many competing interests, including how data on inviduals is gathered and used, and especially what constitutes a lawful order for a 3rd party data processor to turn over user data to governments, remain fragmented and inconsistent across the globe. While some jurisdictions are enacting legislation to protect a consumer's right to privacy and information self-determination (e.g. the right to be forgotten in Europe), others are lobbying for a system of total surveillance, placing national security above individual concerns. At the same time, users and service providers are increasingly relying on data to conduct online commerce. Policymakers must work toward legislation that will balance these complex goals with an individual's interests.

Inclusion in the Digital Age

Citizens today use technology to drive their businesses, advance their careers, increase their education, and for social and civic engagement. All of these activities foment a thriving economy. Citizens lacking the means to access the Internet, or the skills they need to use it, are unable to make these contributions, neither serving themselves nor the economy. Policymakers must reduce this digital divide by making access to the internet affordable while providing citizens with the knowledge they need to use it. In addition, policymakers may need to consider

other ways to rebalance the technological inequalities between tech-savvy individuals, who understand and control advances in technologies, and less knowledgeable individuals.

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