

Designing the Digital Organization

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The Digital Organization

- Mobile apps, social media, artificial intelligence, cloud computing, Internet of Things, and 3-D printing play an increasingly important role in all aspects of operating both private and public enterprises.
- These rapidly expanding digital technologies are changing the way organizations assess opportunities, develop and deliver products and services, and interact with customers.
- Digital technology also makes it possible for members of an organization to self-organize and thereby avoid the delays distortions, and other damaging effects of hierarchically organized systems.



https://upload.wikimedia.org/wikipedia/commons/9/9b/Intel_CPU_Core_i7_2600K_Sandy_Bridge_bottom.jpg

Basics of Organization Design

1. **An organization is a goal-directed, boundary-maintaining activity system. It must be controlled and coordinated for it to work.**
2. **The organization identifies, arranges, and deploys resources to achieve its goals.**
3. **Resources can be organized by markets, hierarchies, or the organization members themselves – or by some combination of all three.**
4. **Everything must fit, both internally and externally.**

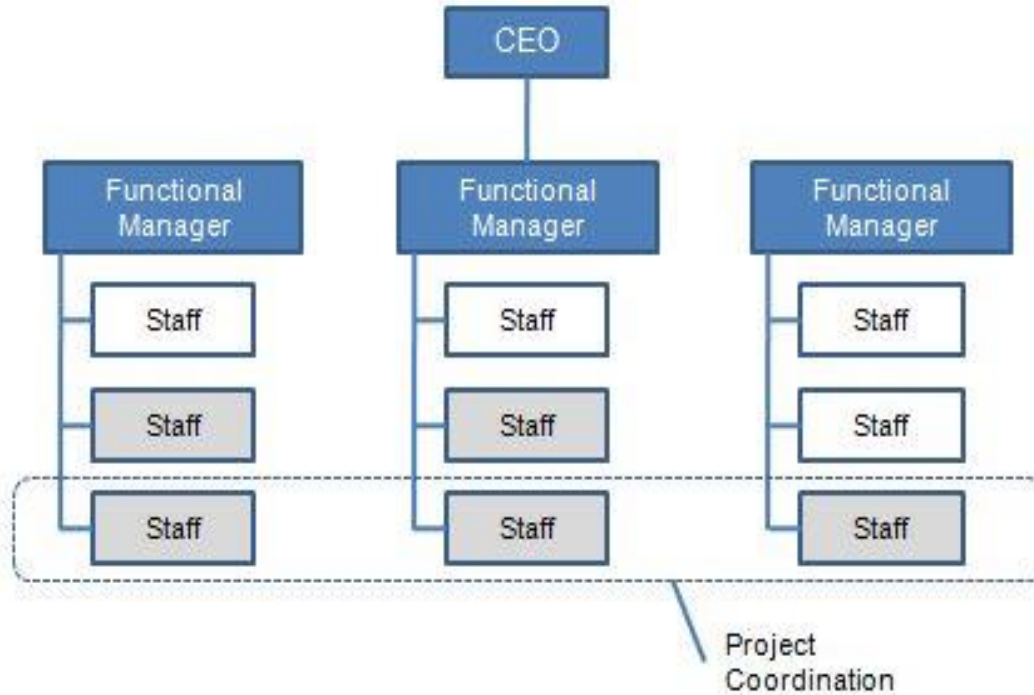
Hierarchy

‘a complex system in which each of the subsystems is subordinated by an authority relation to the system it belongs to.’ (Simon, 1962)



<http://theromansbyjp.wikispaces.com/file/view/soldiers.jpg/229394054/soldiers.jpg>

Functional Structure



Hierarchical Organizational Forms

Organizational form	Purpose	Control and coordination mechanisms
Simple hierarchy Simple structure Machine bureaucracy Professional bureaucracy	Achieve economies of scale through specialization of functions and expertise	Higher-level units control and coordinate lower-level units Planning Standardization of skills and values
Divisional	Respond to differentiated customer demand and achieve economies of scope	Division level controls and coordinates functional units Corporate level controls and coordinates cross-divisional activities and resources
Matrix	Combine responsiveness to differentiated customer demand with varied technological expertise	Multiple superiors (e.g., functional, product group, and regional/country) Cross-functional teams
Multi-firm network	Use flexible assembly of firms with specialized capabilities to achieve economies of scale and experience	Hierarchical control and coordination by the lead firm over the total network Hierarchical control and coordination within network member firms

A network is a set of actors (nodes) and the ties (links) between them. In a social network, an actor can be an individual, group, firm, organization, or national government (cf Castells, 2010; Johnson, 2014).



<http://www.pngall.com/wp-content/uploads/2016/07/Networking-PNG-Images.png>

Advantages of Networks

Flexibility (ability to change and adapt)

Variety of capabilities (economies of scope)

Economies of scale (right-sizing)

Economies of experience (leverage the knowledge and other resources of partner organizations)



It's getting harder to predict the future



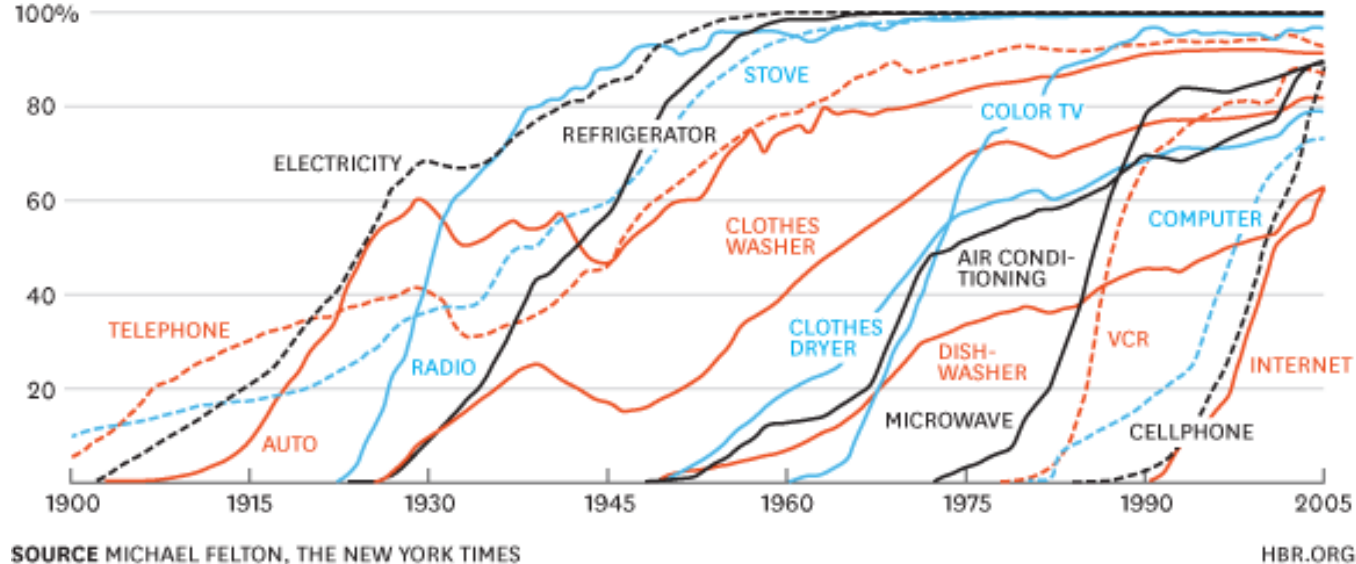
It isn't your imagination. According to A.T. Kearney's Turbulence Index, your operating environment is probably twice as volatile as it was 10 years ago.

https://www.atkearney.com/strategy/ideas-insights/article/-/asset_publisher/LCcgOeS4t85g/content/winning-in-a-turbulent-world/10192

Things are moving faster all the time....

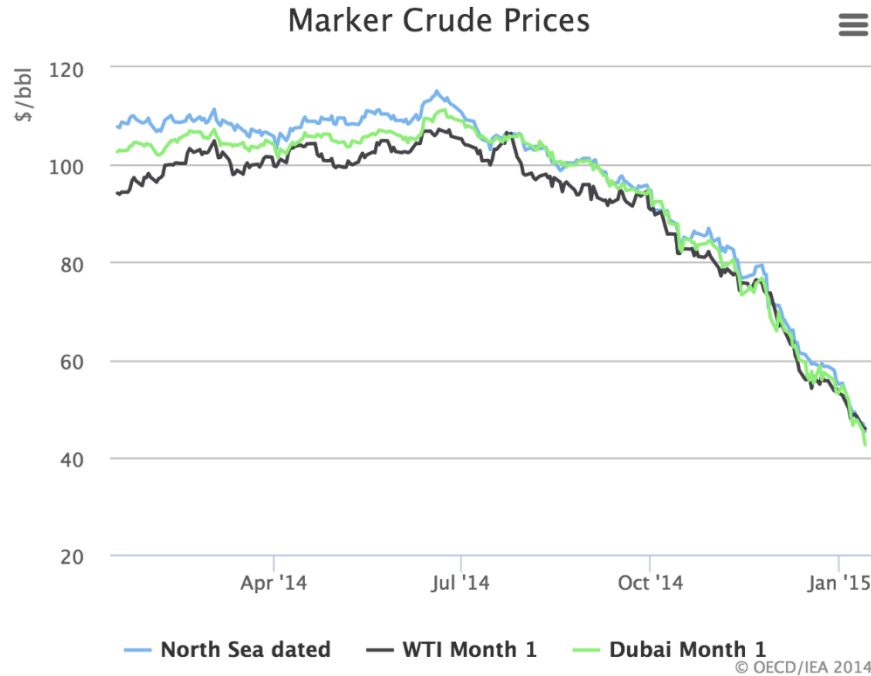
CONSUMPTION SPREADS FASTER TODAY

PERCENT OF U.S. HOUSEHOLDS



<https://hbr.org/2013/11/the-pace-of-technology-adoption-is-speeding-up/>

Market conditions change rapidly



The World is getting more uncertain

Figure 1

The world economy is in an especially volatile period

Global Business Policy Council Volatility Index, 1999-2011

(1999=100)



Sources: U.N. Food and Agriculture Organization, European Central Bank, International Monetary Fund, Chicago Board Options Exchange Volatility Index, Dow Jones-Union Bank of Switzerland Commodity Index; A.T. Kearney analysis

Collaboration: working together to achieve something



Advantages of Collaboration

When a firm's knowledge base is complex, growing, and widely diffused, the locus of innovation is beyond the firm. *(Powell et al., 1996)*

Collaboration has been shown to reduce risk, speed products to market, decrease the cost of product development and process improvement, and provide access to new markets and technologies *(Fjeldstad & al. 2012)*

New organization designs are emerging in which rich sets of resources are made available to large sets of actors who self-organize on unlimited sets of projects. *(Benkler, 2002)*

Examples of Collaboration

Linux community

Crowdsourcing (e.g., Innocentive,
Kickstarter)

Platform leadership (e.g., Apple)

User-driven innovation (e.g., Lego)

Many collaborative organizations use actor-oriented organizational designs

Actor Oriented Organizational Architectures

- **Actor Capabilities and Values**
- **Protocols, processes and infrastructures**
 - Principles for how to work together in a shared space
 - Process the participants perform and that together achieve the results
 - Infrastructures that tie them together
- **Shared “commons”**
 - Shared situational awareness: a shared “real-time” representation of the situation
 - Shared knowledge: shared practices, information, findings etc.

Fjeldstad, Øystein D., et al. "The architecture of collaboration." *Strategic Management Journal* 33.6 (2012): 734-750.

Designing the Digital Organization

The digital organization is a powerful combination of:

- Human and digital agents working together
- Technologies that can potentially enhance everything – products/services, internal operations, relationships with customers, etc.
- Members' ability to self-organize, thus saving many of the costs of hierarchy and enabling collaborative activities

Design Challenges

Identifying and selecting competent actors

**Assimilating digital agents that can automate,
augment, and learn**

Motivating Millennials

**Creating commons, protocols, and
infrastructures that enable collaboration**

EXHIBIT 1 | Turbulence Has Increased Across Multiple Dimensions

Demand is becoming more unpredictable ...



5-year average revenue growth volatility (%)¹



... industry position is becoming increasingly unstable ...



Annual average positional volatility²



... companies are facing large changes in profitability ...



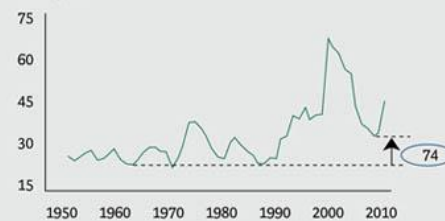
5-year average EBIT margin volatility (%)¹



... and there is increasing volatility in market expectations



5-year average market-cap-growth volatility (%)³



xx Percentage increase in turbulence

Sources: Compustat; BCG ValueScience Center; BCG analysis.

¹Weighted average across 9,960 U.S. public companies, based on revenue.

²Average positional volatility among S&P 500 firms.

³Weighted average across Russell 3000 index constituents, based on market cap.

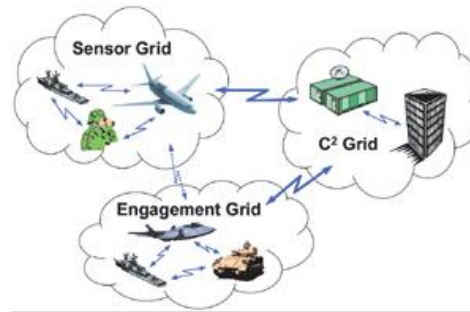
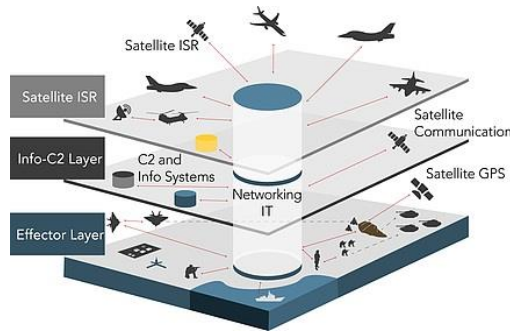
Google organizes itself into flexible, diverse, and modular units of employees that can be reconfigured quickly. To enable cross-functional collaboration, Google fosters a “marketplace of ideas” in which briefs about new ideas and projects are published internally. Employees can vote for the most promising projects and choose which ones to support with their time.

Martin R, Love C, and Mathur N
“Winning in an Age of Turbulence”,
BCG 2012

Network Centric Operations

..is a military doctrine or theory of war pioneered by the United States Department of Defense. The first complete articulation of the idea was contained in the book *Network Centric Warfare: Developing and Leveraging Information Superiority* by Alberts, Garstka and Stein (1999).

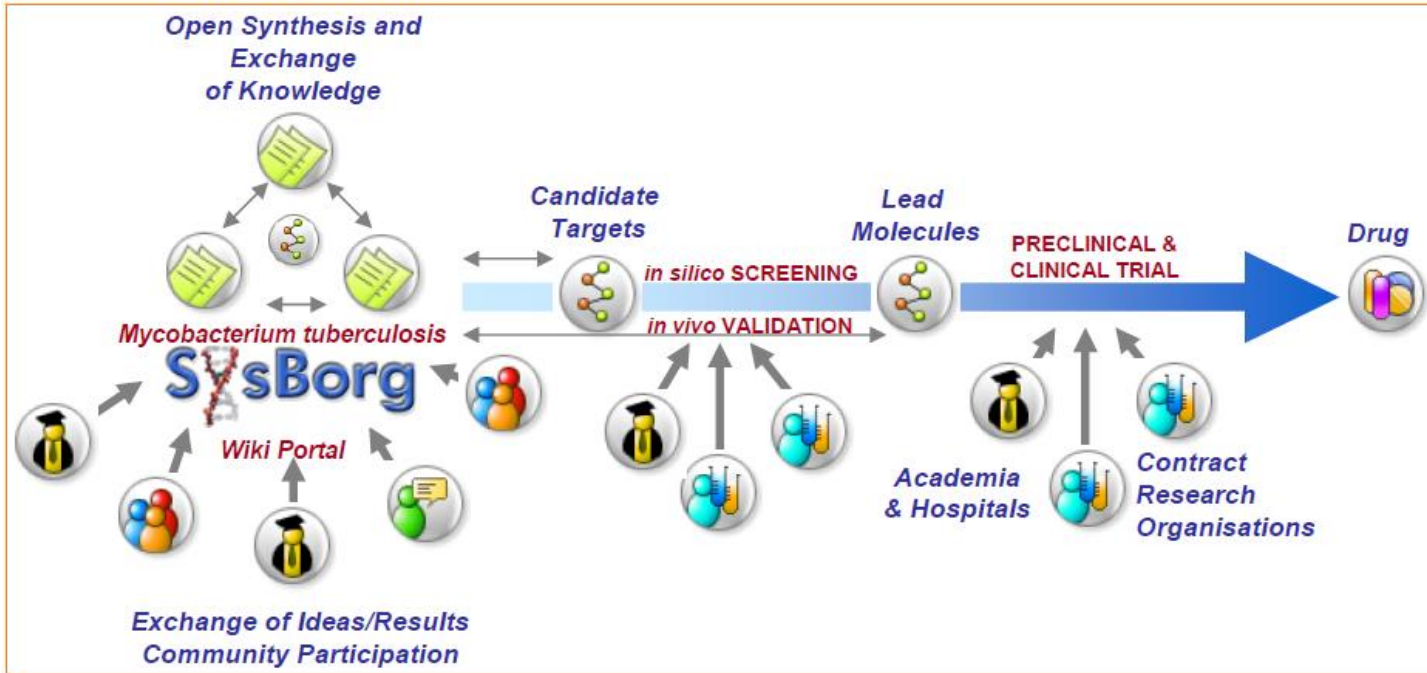
Source: https://en.wikipedia.org/wiki/Network-centric_warfare



<http://mil-embedded.com/articles/the-internet-things-the-intelligence-community/>

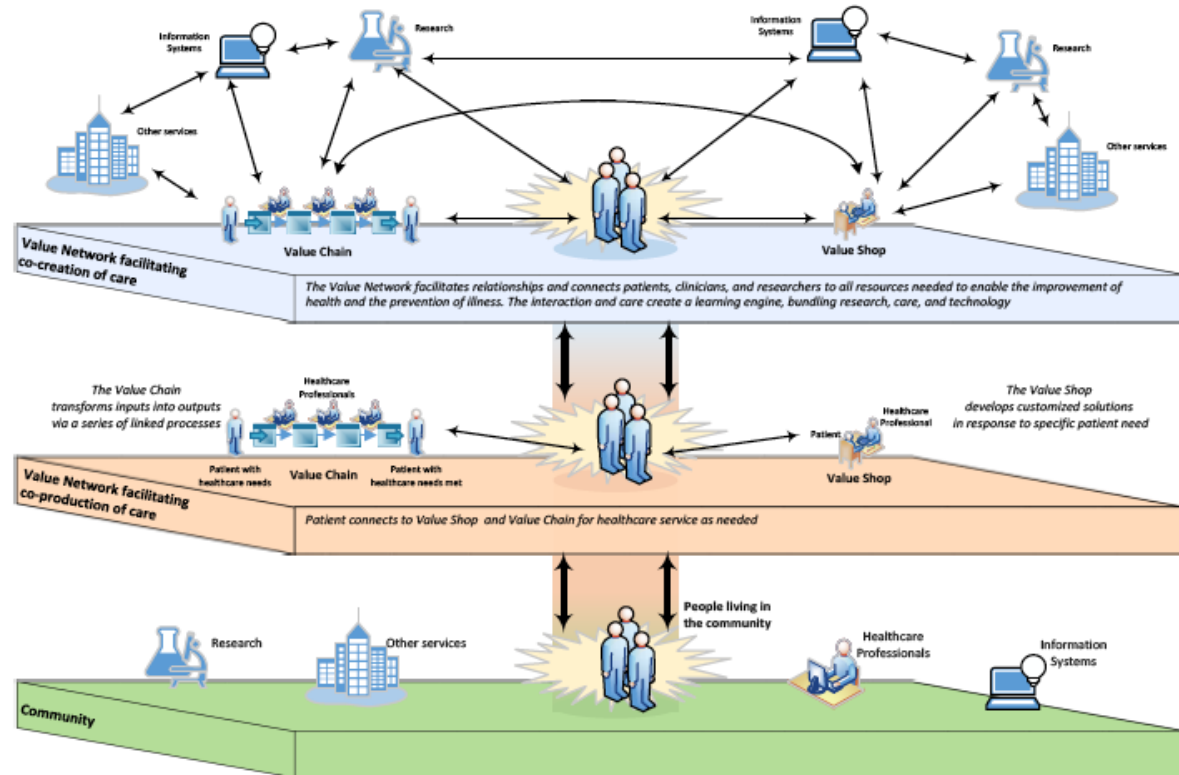
<http://defense.gov.au>

Collaborative Drug Discovery – and Development



<http://www.osdd.net/about-us/how-osdd-works>

Value designed around patient needs



Take lessons from the ants

- **Ants systematically explore and exploit food resources.**
- **The queen ant does not directly control and coordinate the worker ants. Instead, ants operate based on a simple set of processes and communication protocols that enable self-organized collaboration to get work done.**
 - **When an ant finds food, it releases pheromones on the way back to the nest.**
 - **The smell is a signal that mobilizes other ants to follow the traces to the source.**
 - **They then collect food in columns until the source is empty.**
 - **When there is no more food to collect, the ants stop releasing pheromones on the way back. The trace weakens and the ants start exploring new terrain to find more food.**
- **Good general principles for collaboration can save a lot of time spent on management meetings**

Practical tips for re-designing organizations

1. **Look for ways to disassemble hierarchy. Reduce the number of levels in the organization and the number of predefined vertical and horizontal relationships.**
2. **Identify opportunities for self-organizing using these design principles. There are likely more such opportunities than one would think at the outset.**
3. **Examine what is needed to realize this in the form of skills, digital infrastructures, commons, protocols, norms, and values.**
4. **Facilitate and support people in making the transition. Technology is not a solution in and of itself, but if part of an overall design,, it can support collaboration and self-organization.**

Conclusions

- **Digital organizations are collaborative, agile, and non-hierarchical.**
- **They are populated by Millennials and digital agents who intelligently work side by side.**
- **Digital organizations need digitally aware and adept leaders who can set the digital agenda and create the context for the digitization of every relevant aspect of their organizations.**
- **Digitization is occurring at an accelerating pace; successful digital leaders need to synchronize their organizations to digital clock speed.**