Making Digital Transformation Work For You

Nicole M. Radziwill, PhD, MBA

ASQ Fellow & Editor, *Software Quality Professional*

SVP, Quality & Strategy, *Ultranauts* (http://ultranauts.co)

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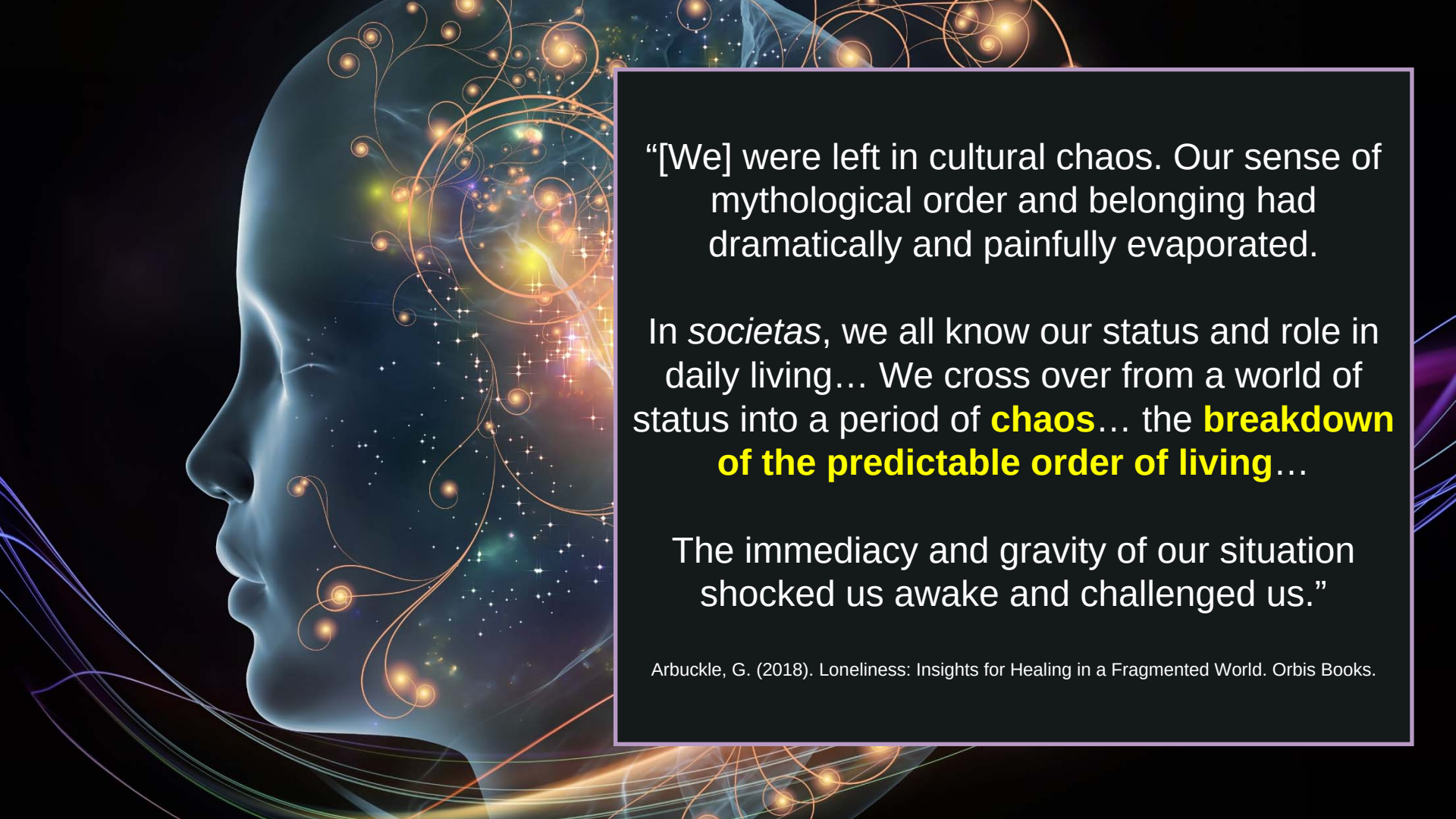
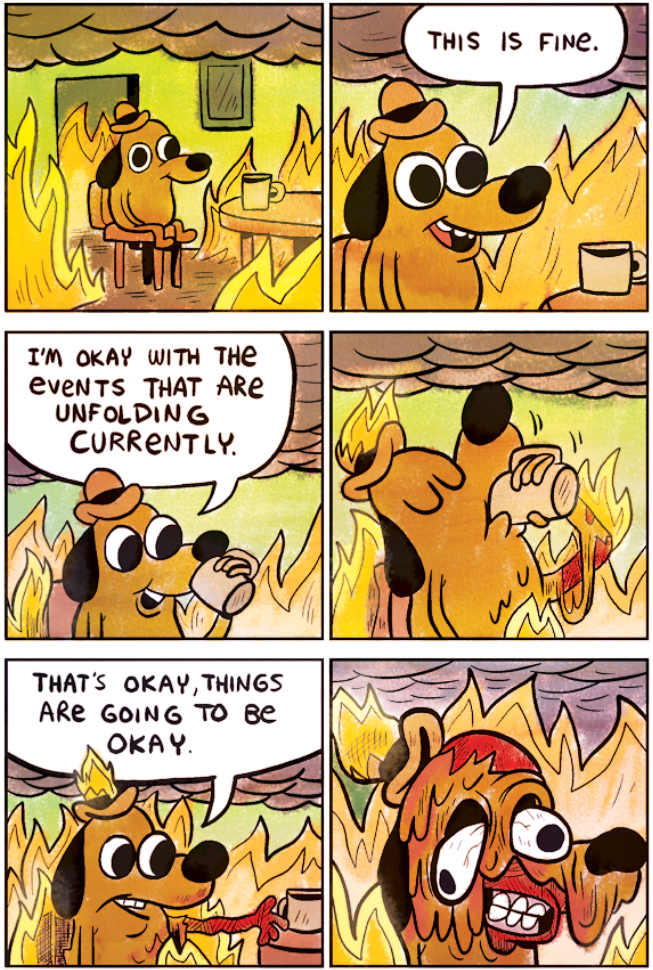


"[We] were left in cultural chaos. Our sense of mythological order and belonging had dramatically and painfully evaporated.

In *societas*, we all know our status and role in daily living… We cross over from a world of status into a period of **chaos**… the **breakdown of the predictable order of living**…

The immediacy and gravity of our situation shocked us awake and challenged us."

Arbuckle, G. (2018). Loneliness: Insights for Healing in a Fragmented World. Orbis Books.



Green, K.C. (2013, January 9). *The Pills are Working.* Gunshow #648. Available from http://gunshowcomic.com/648

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- **70% of digital transformations fail**, most often due to resistance from employees.
- Of the $1.3 trillion spent on digital transformation in 2018, **an estimated $900 billion was wasted** when initiatives didn't meet their goals.
- **Only 16% of employees in one survey said their company's digital transformations have improved performance** and are sustainable long term.
- 55% of companies without a digital transformation believe they have **less than a year** before they start to lose market share
- 45% of executives don't think their company has the right **technology** to implement a digital transformation.

Morgan, B. (2019, December 16). 100 Stats on Digital Transformation and Customer Experience. *Forbes*. Available from https://www.forbes.com/sites/blakemorgan/2019/12/16/100-stats-on-digital-transformation-and-customer-experience

Nicole Radziwill

SVP Quality & Strategy, **Ultranauts**

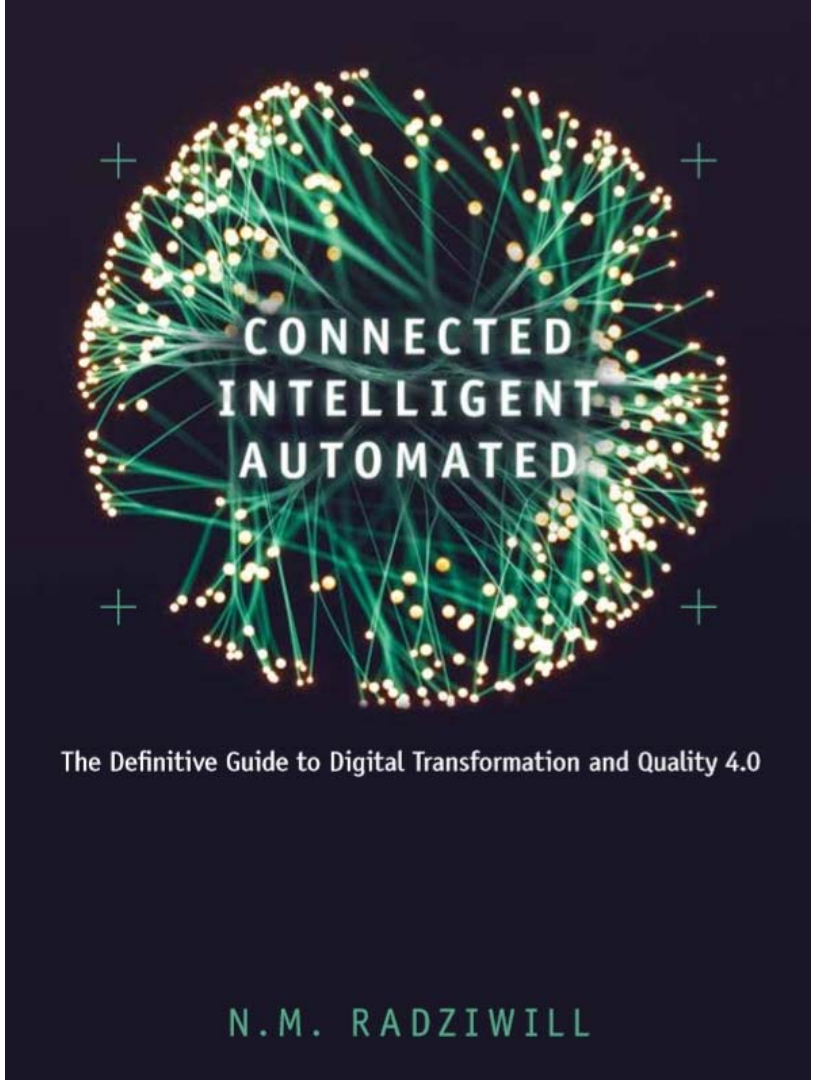
Fellow, American Society for Quality (ASQ)
CSSBB #11962 & CMQ/OE #9583
Ph.D. Quality Systems, Indiana State
Editor, *Software Quality Professional*

Previously:

- **VP Global Quality Practice**, **Intelex**
- **Associate Professor of Data Science and Production Systems**, **JMU**
- **Head of End to End Operations**, **NRAO**

Agenda:

1. **Digital Transformation**
2. **Making It Work**
3. **Thriving in 2020 and Beyond**



1: Digital Transformation

what it means, and how you know when you're "done"

Rise of the Cognitive Enterprise in a Post-Digital Transformation World

By: Brian Solis | January 17, 2020

Dear C-Suite member, I have to ask: How do you define digital transformation, and what does it look like once you've digitally transformed? The truth is that everyone defines digital transformation differently, and as such, the end states are difficult to define.

But what if I told you that most digital transformation roadmaps were no longer enough to compete for the future? In reality, digital transformation has become foundational. It's necessary that every organization embrace digital transformation to modernize infrastructure, operations and most importantly, performance. There is no end state, however. It's an endless process. To compete for the future now, enterprises must start to plan for a post digital transformation world.

From https://www.eweek.com/innovation/rise-of-the-cognitive-enterprise-in-a-post-digital-transformation-world

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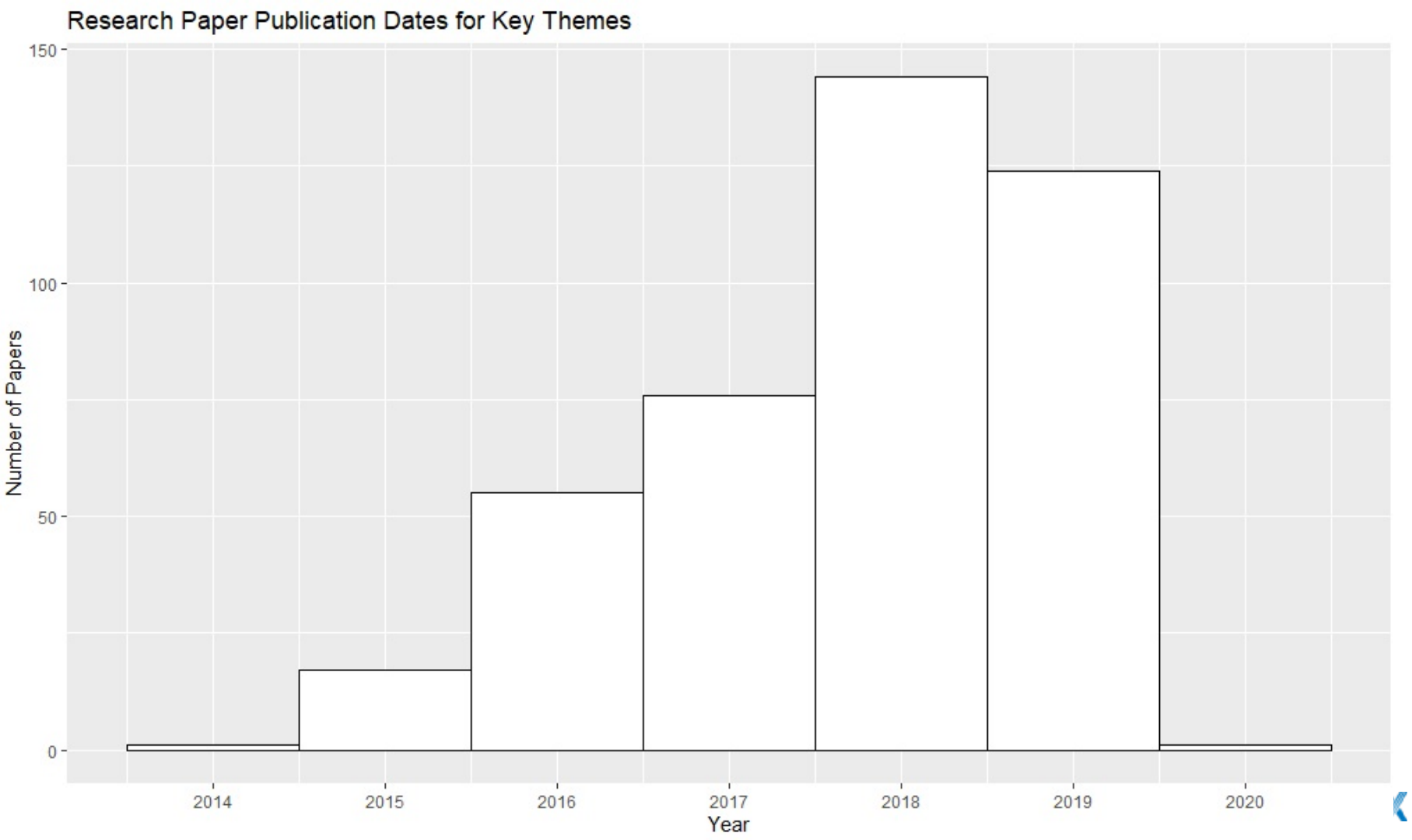
Research Paper Publication Dates for Key Themes
150
100
50
0
Number of Papers
2014
2015
2016
2017
2018
2019
2020
Year

Connectedness

Intelligence

Automation

Radziwill, N. M. (2018, October). Let's Get Digital: The many ways the fourth industrial revolution is reshaping the way we think about quality. *Quality Progress*, p. 24-29. http://qualityprogress.com

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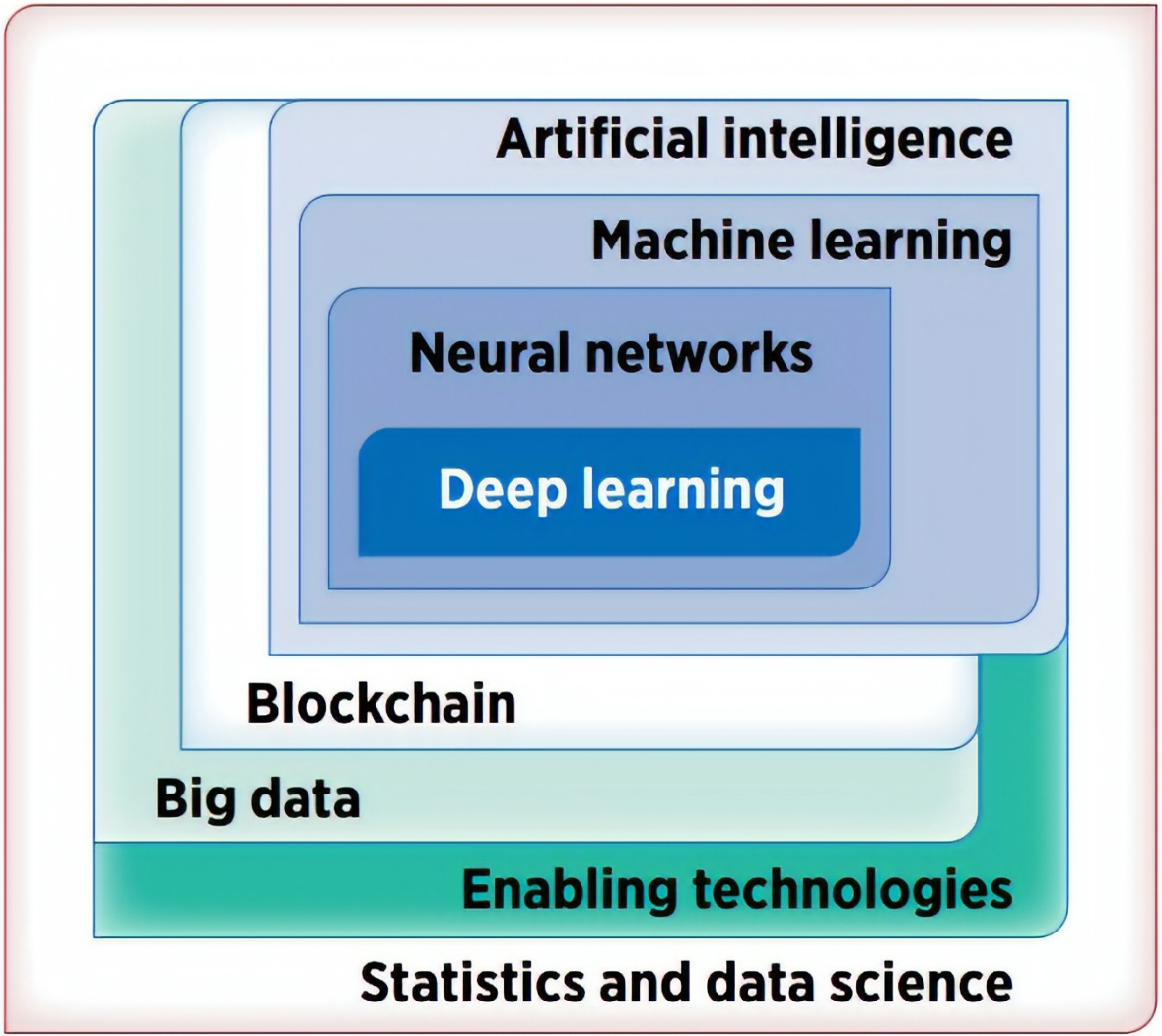
Artificial intelligence
Machine learning
Neural networks
Deep learning
Blockchain
Big data
Enabling technologies
Statistics and data science

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Successful digital transformations are designed to achieve quality and performance goals.

Radziwill, N. M. (2020). Connected, Intelligent, Automated: The Definitive Guide to Digital Transformation with Quality 4.0. *ASQ Quality Press, Milwaukee WI:* 545 pp.

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Agile Transformation

Installing **habits and practices** that enable teams to effectively **respond to change and shorten time-to-value.**

Lean Transformation

Installing **habits and practices** that enable your entire organization to deliver a **continuous flow of value** to customers and stakeholders.

Digital Transformation

Installing **habits and practices** that…

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Agile Transformation

Installing **habits and practices** that enable teams to effectively **respond to change and shorten time-to-value.**

Lean Transformation

Installing **habits and practices** that enable your entire organization to deliver a **continuous flow of value** to customers and stakeholders.

Digital Transformation

Installing **habits and practices** that leverage digital technologies to **increase connectedness, intelligence, and automation**

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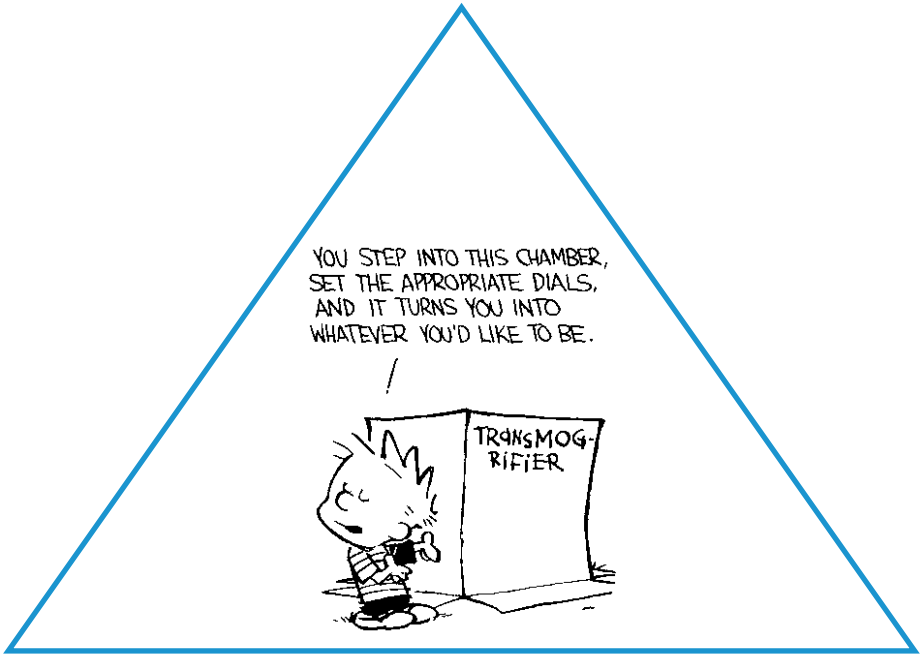
agile



lean

digital

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2: Making It Work

a playbook for successful Quality 4.0 digital transformation

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Guiding Questions

1. **Who are you and how does your organization work?**
2. Why do you want to transform?
3. How can you transform? (Establish value propositions and brainstorm initiatives)
4. How should you transform? (Prioritization of initiatives)
5. How much should you transform? (Buy-Build-Partner)
6. How will you measure success? (KPIs)

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Smart Products and Services
enhancing connectedness, intelligence, and automation

Organizational Backbone
to coordinate people, processes, and technologies

Digital Platform
("Single Source of Truth" for data, information, and sharing)

Digital Offerings

Digitalization

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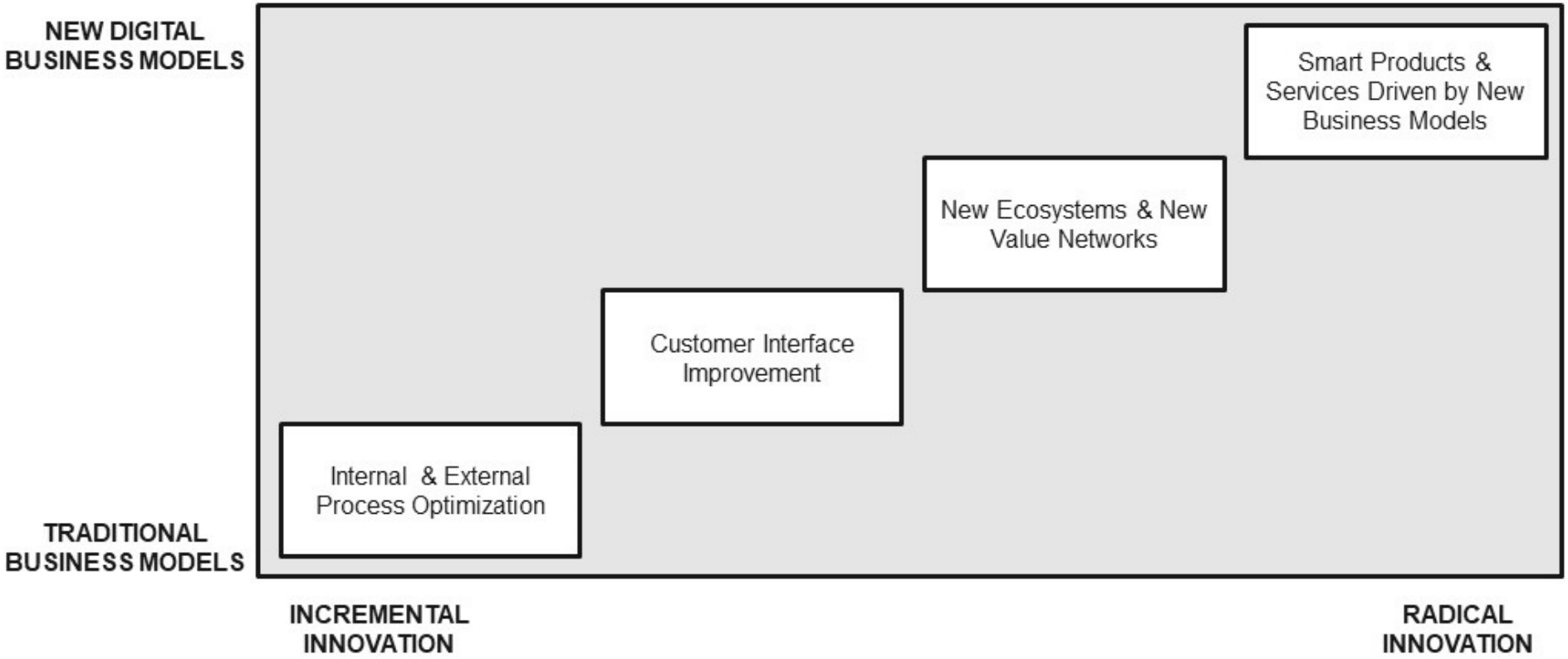

Ibarra, D., Ganzarain, J., & Igartua, J. I. (2018). Business model innovation through Industry 4.0: A review. *Procedia Manufacturing*, 22, 4-10.

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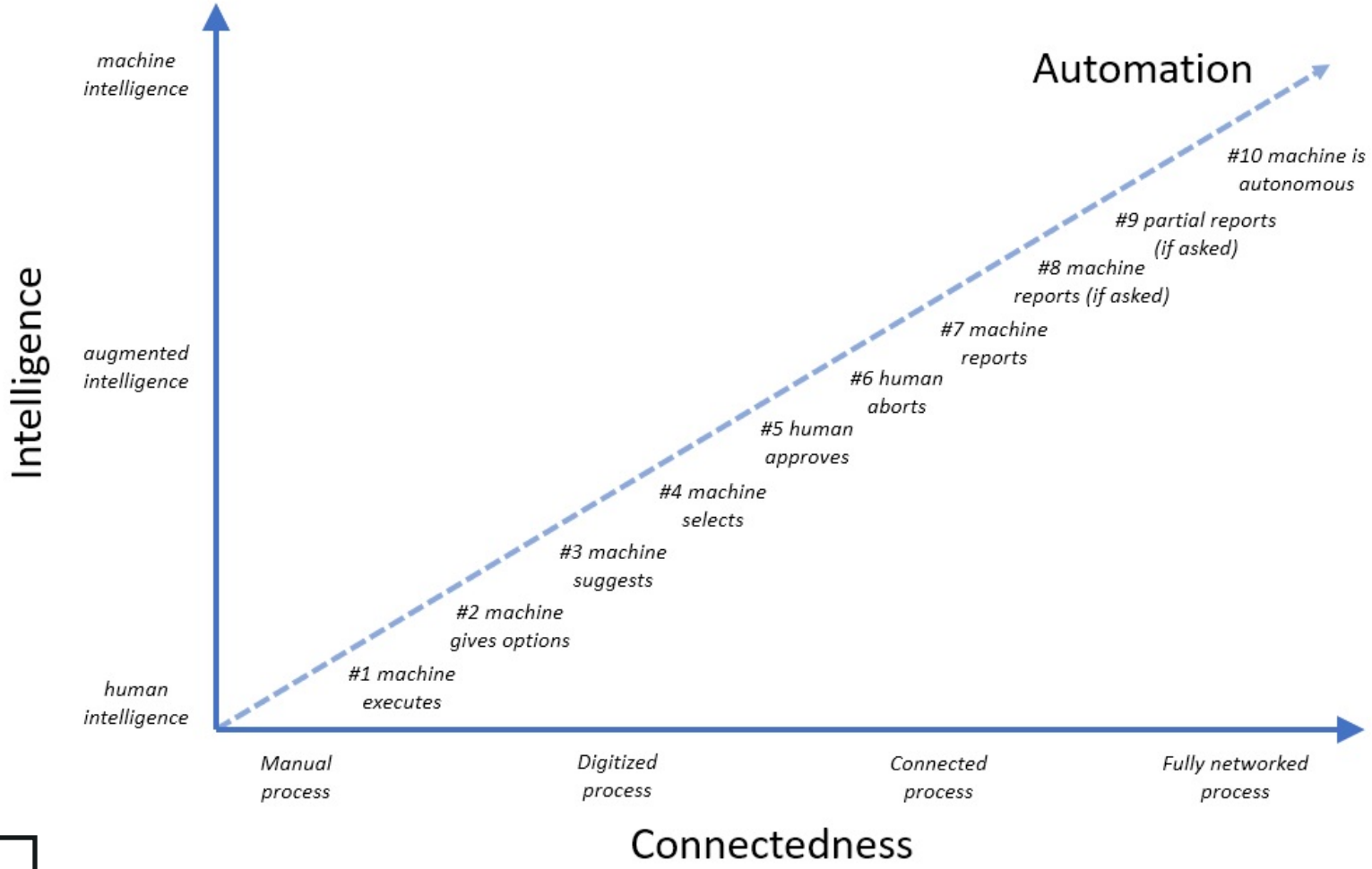
Descriptors	Entities	Processes
Connected: • Electronic • Digitized • Integrated • Remote Intelligent: • Smart • Intelligent • Predictive • Prescriptive Automated: • Augmented • Automated • Autonomous	Person: • Agent • Customer • Intelligent Agent • Operator • Worker Place: • Factory • Office • Site Entity: • Asset • Building • City • Data Platform • Data Repository • Energy • Environment • Equipment • Health • Pollutants • Product • Process • Safety • Software System • Vehicle • Waste	Planning Exploring Designing Improving Executing • Monitoring • Control • Maintenance • Compliance Auditing Managing

Table 4. A brainstorming grid to convert quality and performance goals to initiatives.


Automation
machine intelligence
augmented intelligence
human intelligence
Intelligence
#10 machine is autonomous
#9 partial reports (if asked)
#8 machine reports (if asked)
#7 machine reports
#6 human aborts
#5 human approves
#4 machine selects
#3 machine suggests
#2 machine gives options
#1 machine executes
Manual process
Digitized process
Connected process
Fully networked process
Connectedness

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Evaluate each potential initiative in terms of:

- **Magnitude** - anticipated impacts on customers, stakeholders, employees, society, environment
- **Opportunity** - how well the initiative captures opportunities and addresses intelligent risks
- **Deployment** - whether sufficient workforce capability, capacity, and available assets exist to advance the initiative

Tech	**IT is an:**	Enabler			Supporter	
	Company Ambition:	Innovator		Early Adopter		Follower
Value	**Digital Diversification:**	Online Sales Channels	In Product/Service Delivery	Digitalization of Products/Services	Content Platforms	Extended Business
	Product Type:	Paid	Freemium		Ad Supported	Referrals
Structure	**Leadership:**	CEO	Group CEO		Chief Data Officer (CDO)	Chief Information Officer (CIO)
	Transformation Activities Are:	Integrated into Organization			In Separate Organizational Unit	
	Operational Changes:	Products/Services		Internal Business Processes		Skills & Capabilities
	Build Competencies:	Internally	Through Partnerships		Mergers & Acquisitions	External Sourcing
Finance	**Financial Pressure:**	Low		Medium		High
	Financing Source:	Internal			External	

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Smart Products and Services: Online/offline convergence - Cradle to grave product lifecycle - Product as agent						
Capability	**Connectedness**		**Intelligence**		**Automation**	
Type	**Digitization**	**Integration**	**Descriptive/ Diagnostic**	**Predictive/ Prescriptive**	**Augmentation**	**Autonomy**
Extent of Capability (top=high to bottom=low)	Connected Work Systems Horizontal Integration Vertical Integration Connected/Remote Process Digital Process (Digitization) Manual Process		Machine Intelligence Augmented Collective Intelligence Collective Intelligence Augmented Intelligence Human Intelligence		Complete Autonomy Partial Reports (if asked) Machine Reports (if asked) Machine Reports Action Human Aborts Human Approves Machine Selects Machine Suggests Machine Gives Options Machine Executes/Augments	
Enabling Technologies connect us to people, machines, data	Social media Mobile devices Cloud computing Wearables Augmented reality Virtual reality Enterprise software systems (CRM, ERP, MES, QMS, EHS, EHSQ, PLM, etc.) 4G & 5G		Big Data Descriptive Analytics Diagnostic Analytics Predictive Analytics Prescriptive Analytics Artificial Intelligence Machine Learning Advanced/smart materials		Additive manufacturing/3D printing Robotics Robotic Process Automation (RPA) Internet of Things (IoT) Industrial Internet of Things (IIoT) Edge computing Blockchain (automates data integrity) Modeling and simulation Driverless vehicles & drones	
Support Systems in Digital Platform	Cybersecurity (protect data, assets, process integrity)		Environment, Health & Safety (EHS) systems (protect people and communities)		Process Framework (protect process integrity; do not automate a bad process!)	
Organizational Backbone: Work Systems - Learning Framework - Communications Framework - APIs **Single Source of Truth:** Data Quality, Management, & Governance						

Table 5. Extent of connectedness, intelligence, and automation with enabling technologies.

3: Thriving in 2020 and Beyond

cultural cornerstones for resilience

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What’s Changed?

- Increased health risk
  - Physical distancing
  - Remote work
  - Home/neighborhood is the nexus
  - “Always on” family/roommates/pets
  - Limited circulation
- Intense experiences
- Demand collapse

1. To avoid resistance, get top management support and obtain user involvement in the design process [16];
2. Technically sound systems are less likely to be resisted than those with frequent downtime and poor response time [1];
3. Users resist systems that are not "user friendly" (assertions by EDP equipment vendors);
4. All other things being equal, people will resist change (received wisdom);
5. People will resist an application when the costs outweigh the benefits (received wisdom).

Markus, M. L. (1983). Power, politics, and MIS implementation. Communications of the ACM, 26(6), 430-444. Available from http://130.18.86.27/faculty/warkentin/papers/Markus1983_CACM266_PowerPoliticsMIS.pdf

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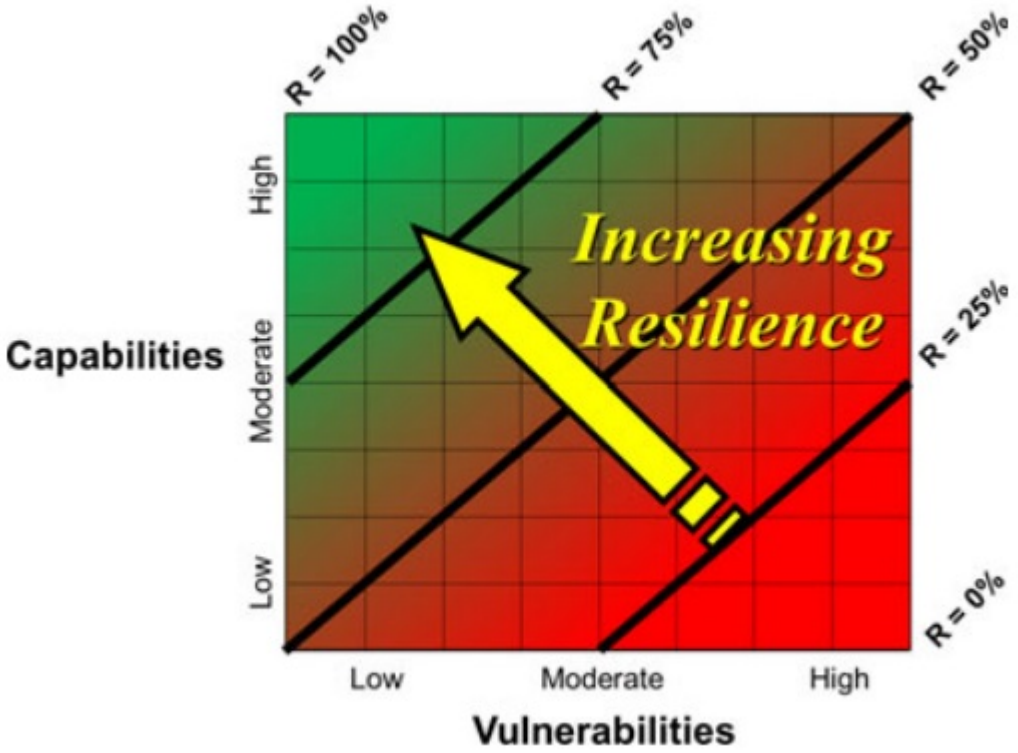
"… **more control is not the solution**. Fearful attempts to get a handle on the situation can compound the problem....

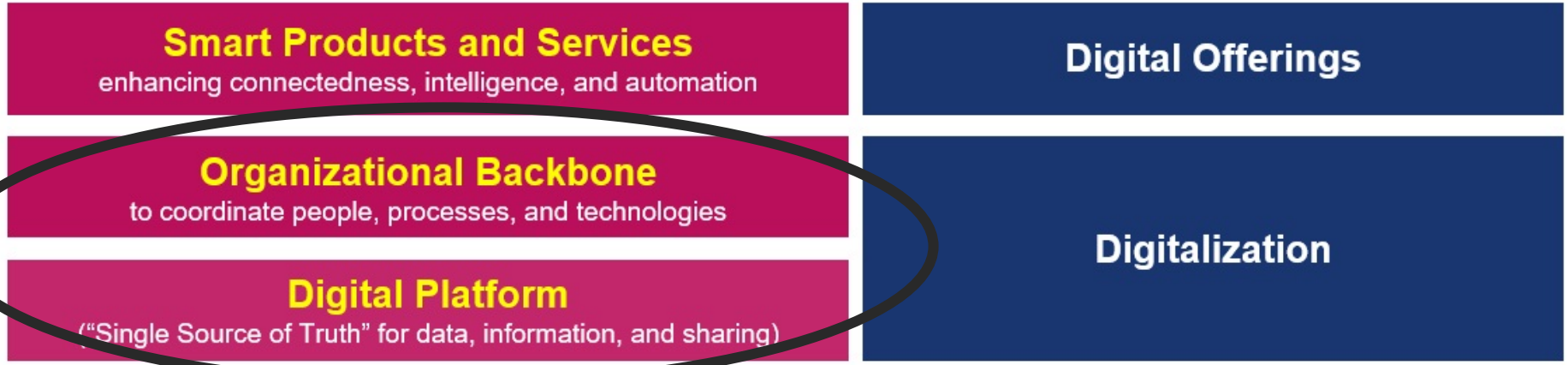
When there's no way to avoid turbulence by shifting strategy, **adjust your speed**. "We can't slow down, there's too much to do!" you might hear from your workforce, or your leaders. You might be saying it yourself! Despite the very real pressure that people feel, and the desire to get to growth goals or revenue targets quickly, even well-intentioned attempts to harness control can backfire.

Take it slowly, and **focus on building the habits and discipline** that provide the foundation for every technology you leverage.

Figure 6: Resilience computation.



From Pettit, T. J., Croxton, K. L., & Fiksel, J. (2013). Ensuring supply chain resilience: development and implementation of an assessment tool. *Journal of business logistics*, *34*(1), 46-76.



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Build an Organizational Backbone

Document processes to ensure good navigational memory

Establish Standard Work, even where it's resisted

Go to the source to get your data (Make Gemba walks routine)

Delay "solutioning"

Tech follows behavior

Create a “Single Source of Truth”

The effectiveness of data-driven decision making depends entirely on the quality of the data

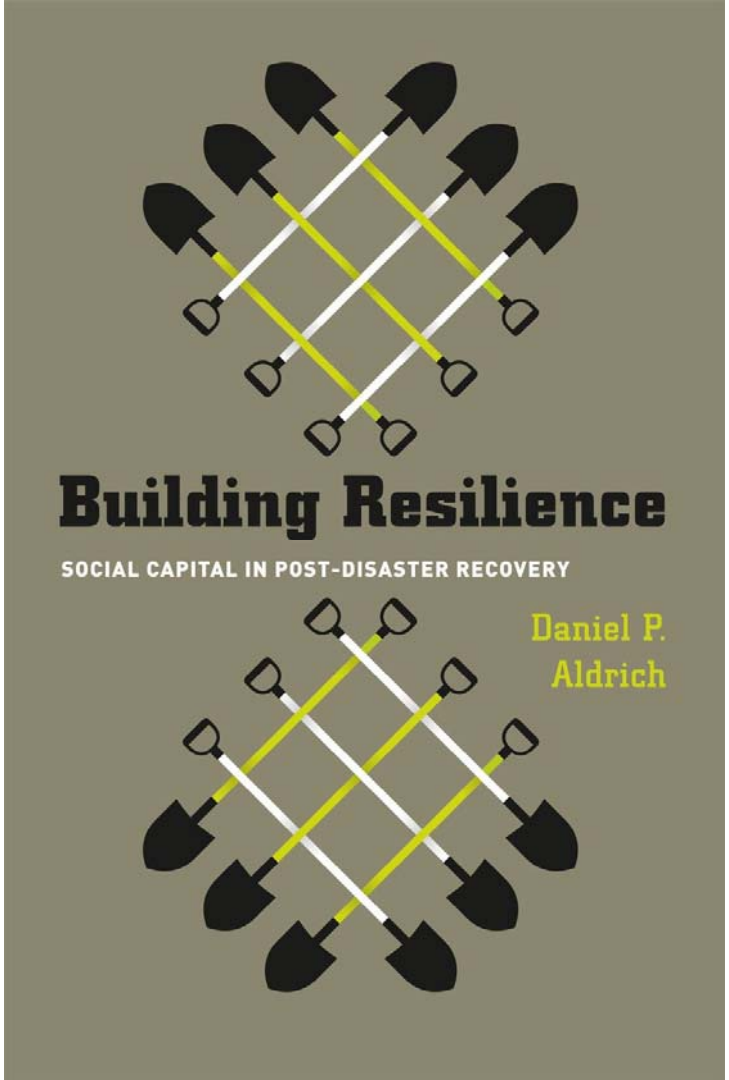
Dig deep to understand all aspects of the data

“Lean out” your KPIs/ metrics & ensure alignment

"**The great enemy of communication, we find, is the illusion of it**.
We have talked enough; but we have not listened.

And by not listening we have failed to concede the immense complexity of our society – and thus the great gaps between ourselves and those with whom we seek understanding."

-- William H. Whyte in Fortune (1950)



Build Social Capital

The best predictors of effective recovery over the long term are a community's **social capital**.

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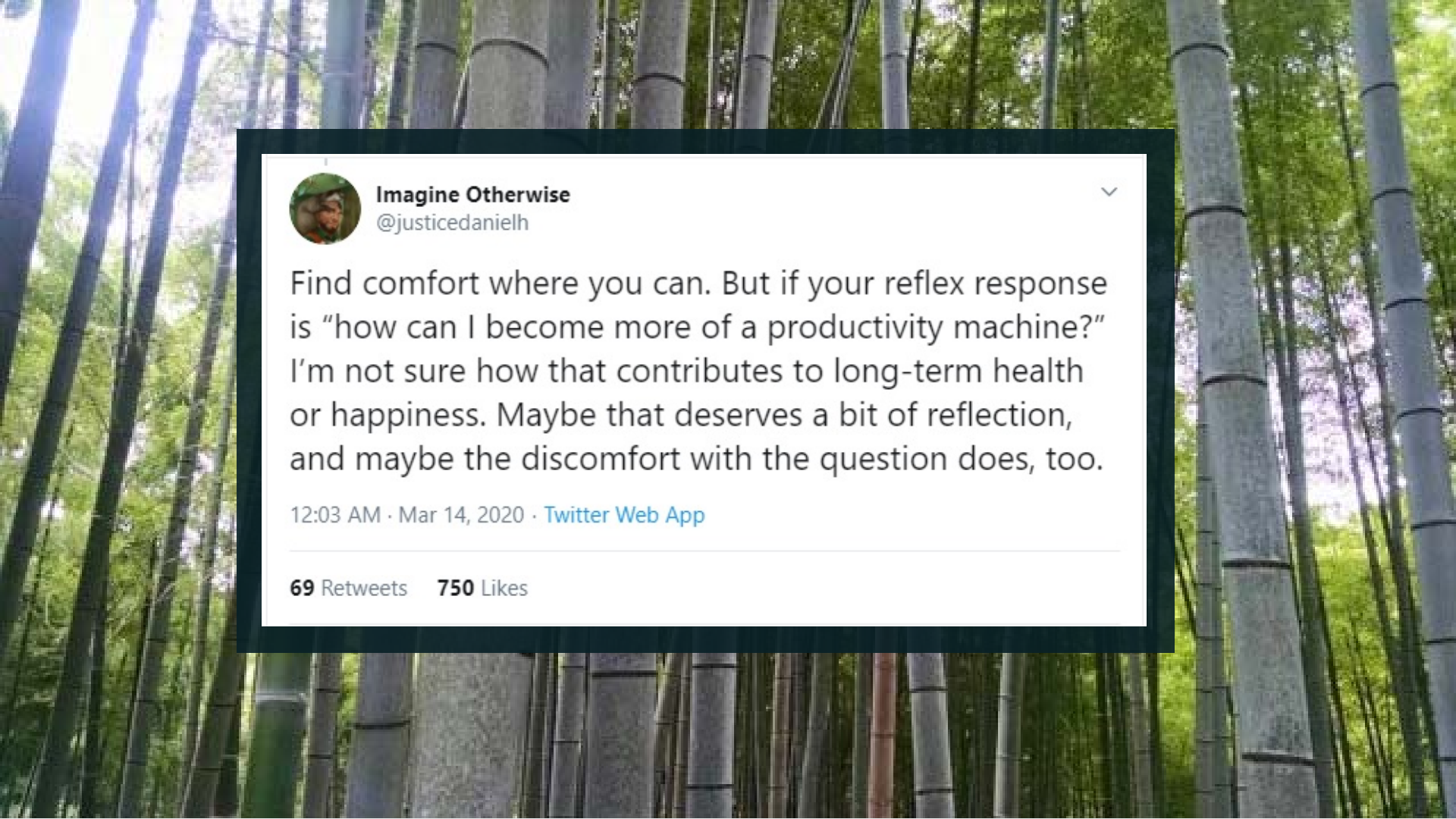
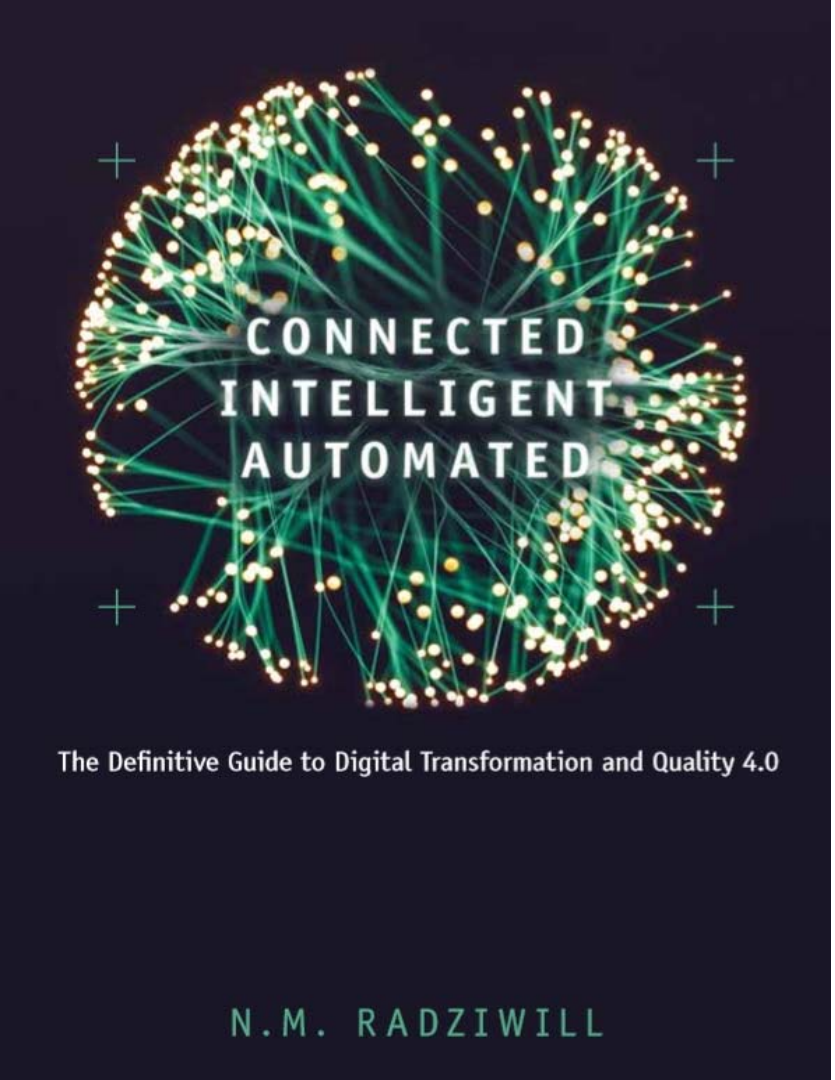
	Type of Waste	Strategic Remedy
T	**Transportation**	Local and regional sourcing
I	**Inventory**	Diversify suppliers, balance holding costs & risk
M	**Motion**	Effective facility and process design
C	**Confusion**	Multi-modal communication; navigational memory using logical software containers
W	**Waiting**	Engineer pull systems; automate testing
O	**Overproduction**	Improve capacity planning/demand forecasting
O	**Overprocessing**	Simplify processes; introduce agile approaches
D	**Defects**	Design quality in; automate testing
S	**Skills**	Personalized management/flexible roles


Imagine Otherwise
@justicedanielh
Find comfort where you can. But if your reflex response is “how can I become more of a productivity machine?” I’m not sure how that contributes to long-term health or happiness. Maybe that deserves a bit of reflection, and maybe the discomfort with the question does, too.
12:03 AM · Mar 14, 2020 · Twitter Web App
69 Retweets 750 Likes



1. Slow Down
2. Increase Resilience
3. Improve Communication
4. Build Social Capital
5. Question Your Priorities

Nicole Radziwill
nradziwill@ultranauts.co
@nicoleradziwill
https://www.linkedin.com/in/nicoleradziwill/

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