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SOONER SAFER HAPPIER

ANTIPATTERNS AND PATTERNS FOR BUSINESS AGILITY

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with Zsolt Berend, Myles Ogilvie and Simon Rohrer

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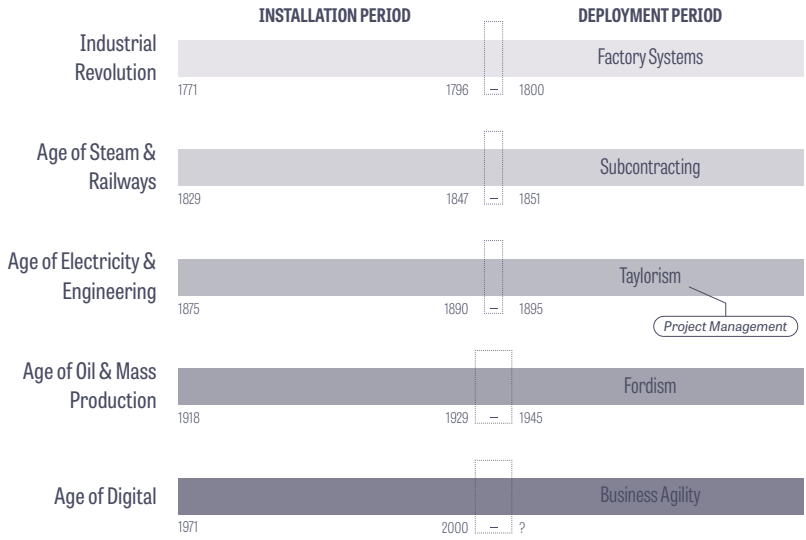
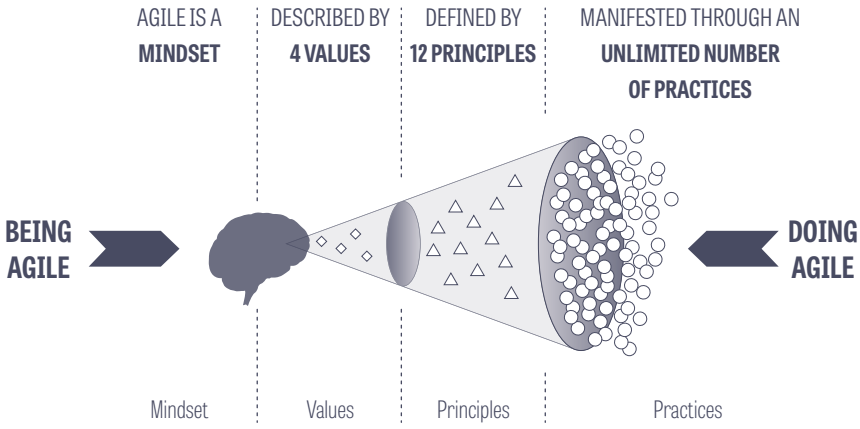


Figure A.1: Technological Revolutions

Adapted from Perez, *Technological Revolutions and Financial Capital*



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Adapted from Ahmed Sidky

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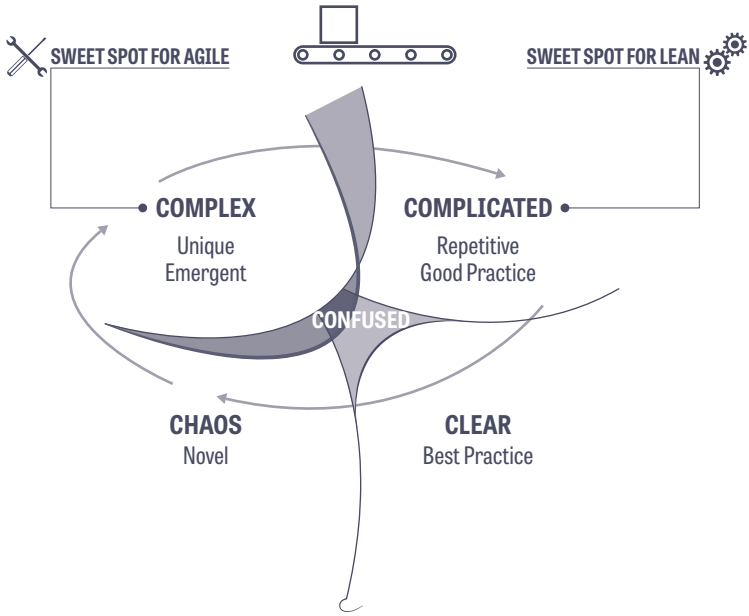
Adapted from Dave Snowden



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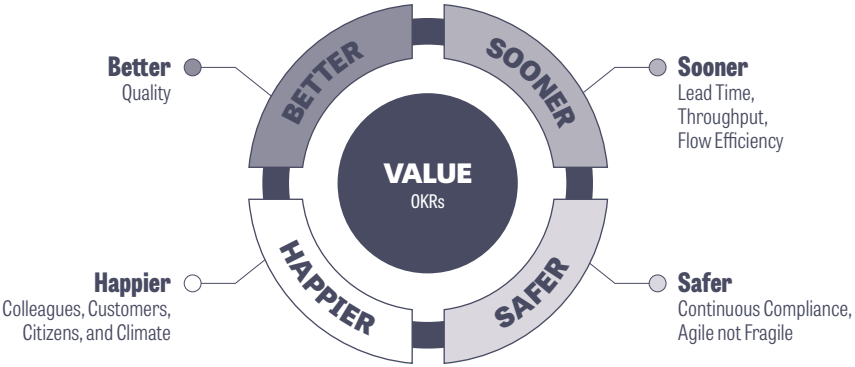

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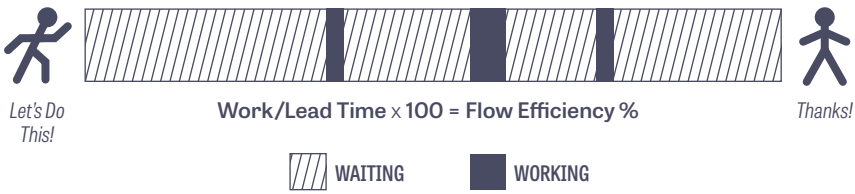

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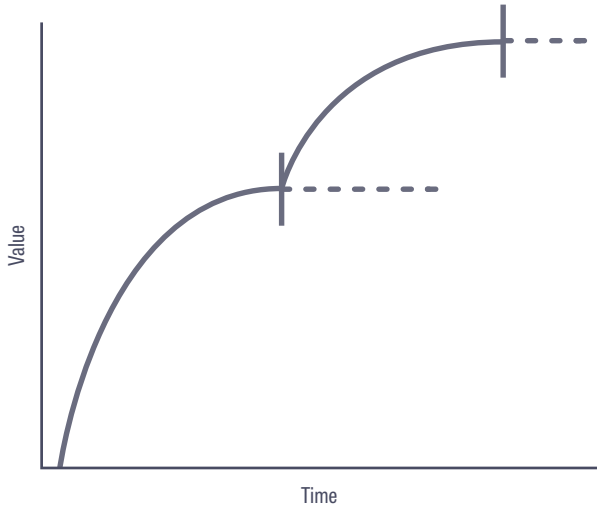

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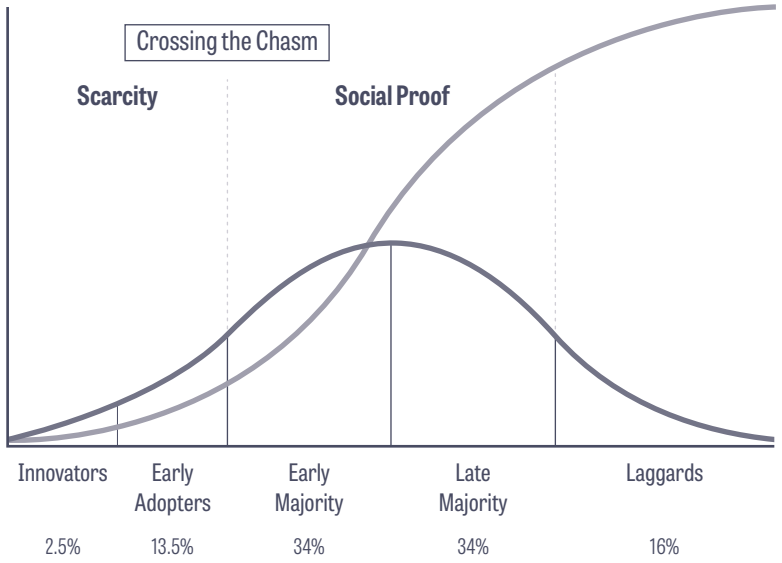

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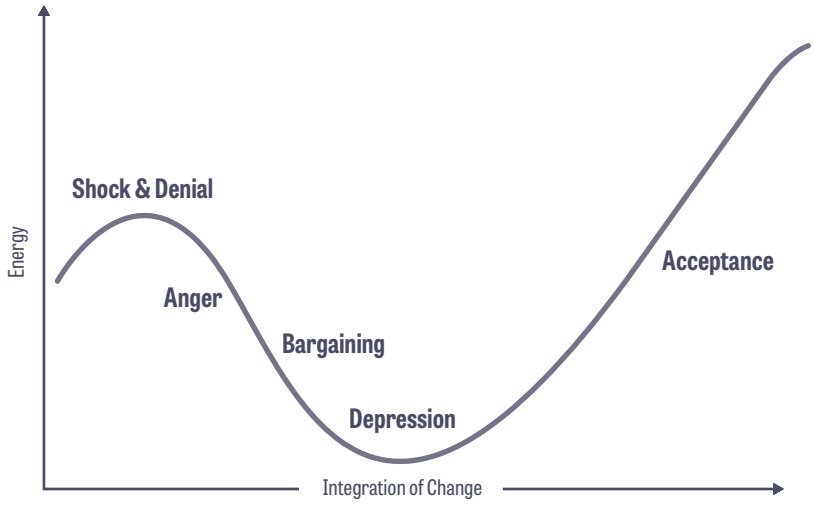

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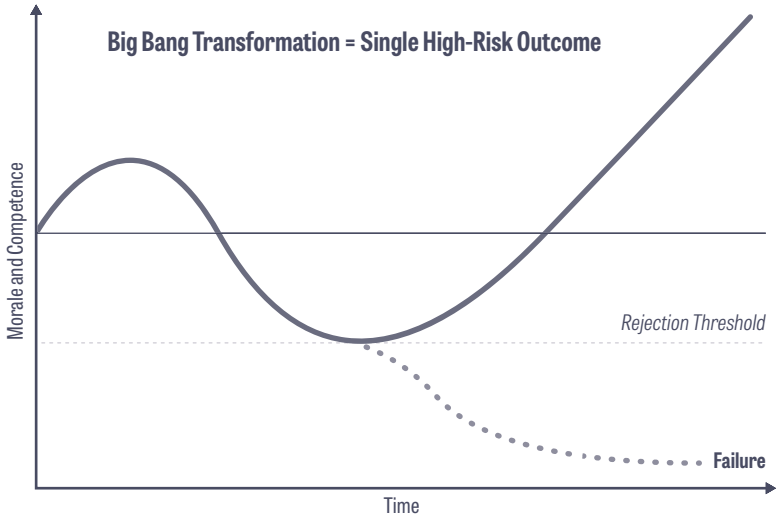
Adapted from Kübler-Ross, *On Death and Dying*



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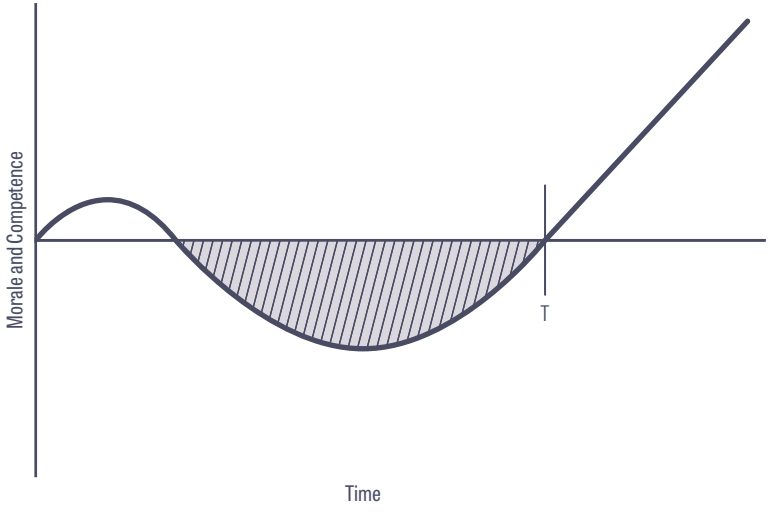

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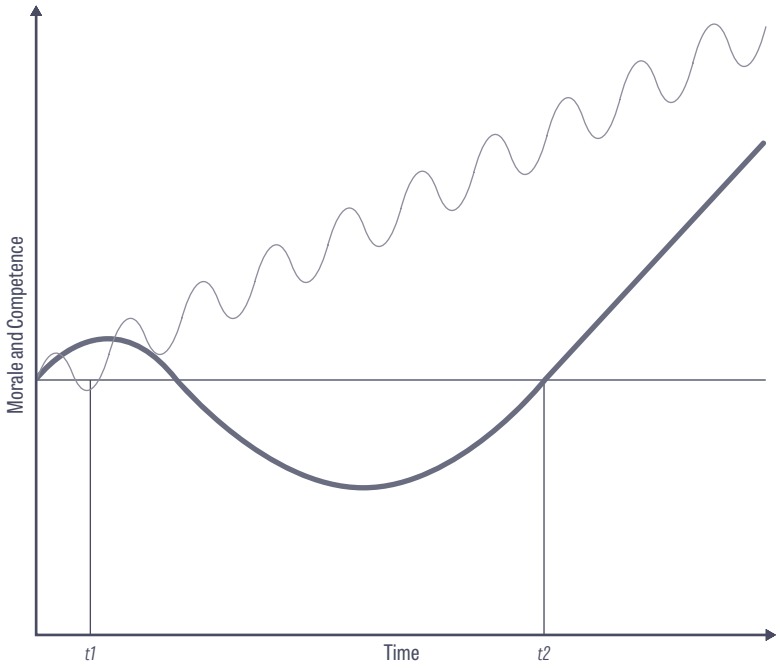

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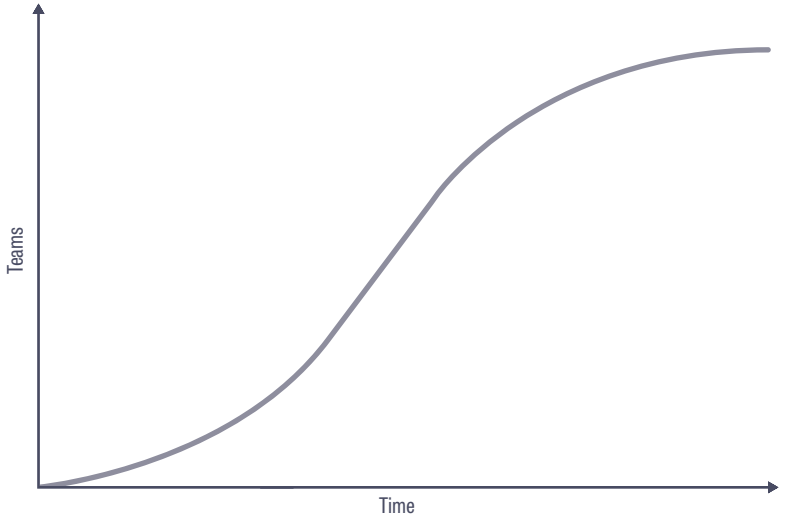

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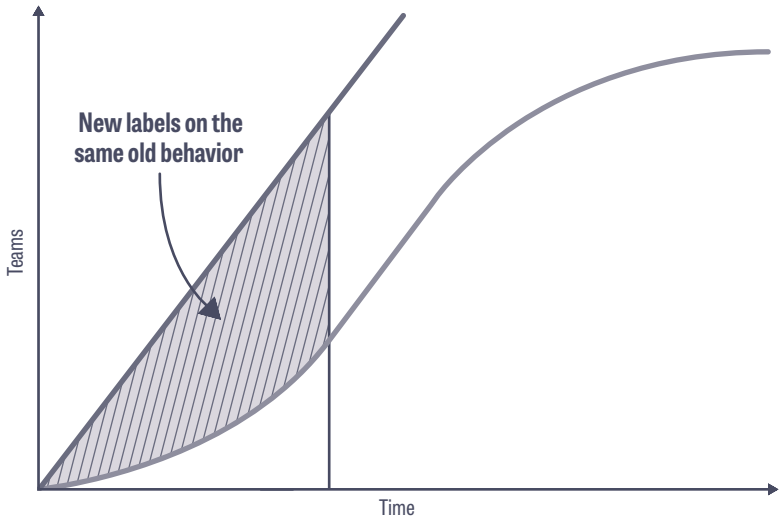


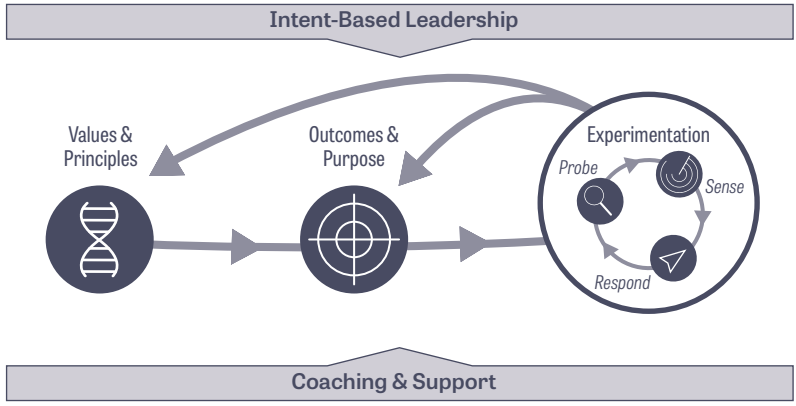
Figure 2.6: #AsYouWere

ORGANIZATION	PEOPLE	PRODUCTS
Impediments	Culture (org, business unit, dept., team)	Criticality (life critical)
Starting points	Leader & leadership team buy-in	Cost of delay
Industry volatility & disruption	Prior experience in different ways of working	Rate, predictability, and size of work entering the system
Competitors	Psychological safety	
Urgency	Customer expectations	Level of uncertainty and risk (degree of knowability)
Cost of delay of changing	Customer elasticity	
Organization size	Ease of getting customer feedback	Degree of "scaling" needed
Organization age	Diversity	Degree of coupling
Locations	National cultural norms	Degree of cohesion
Diversity of businesses	Survival anxiety	Type (shared, customer journey aligned, channel)
Purpose, values	Duration that team members have worked together	
History, folklore	Org structure	# handoffs to deliver value
Past mergers & acquisitions	Geographical distribution	Current lead time
Org identity	Permanent vs. outsourced	Current flow efficiency
Safety criticality	Skill level	Current quality
Public vs. private	Knowledge & insight	Amount of regulation
Short-term vs. long-term pressure	Capabilities	**TECHNICAL**
PROCESS	HR processes (promotion, recognition, reward)	Architecture: monolithic vs. micro services
Policies	Tenure	Technologies used
Standards	Orthodoxies & belief	Degree of coupling
Processes	Defined roles	Degree of cohesion
Regulation	Incentivization	Engineering skills
Finance	Training, coaching, support availability	Engineering practices
Hiring	Career paths available	Environment provisioning
Procurement	Working environment	Degree of automation
Degree of framework fundamentalism	Ability to collaborate across boundaries	Branching strategies
Audit	Existence of Communities of Practice	Build & deployment strategy & frequency
Governance, Risk & Compliance	**TOOLS & DATA**	Observability
Product vs. project	Wall space (or tooling) to be able to radiate information	Resilience
Environment provisioning		Embedded
	Degree of data-led insights being mined	
	Availability of date-led insights	
	Speed of data feedback loop	
	Ability to drill into the data	
	Tools available	
	End-to-end integration of tools	
	No choice, some limited choice, or Wild West	

Figure 3.1: An Incomplete List of Example Criteria That Make Up Your Unique Context

Pathological	Bureaucratic	Generative
Power oriented	Rule oriented	Performance oriented
Low cooperation	Modest cooperation	High cooperation
Messengers shot	Messengers neglected	Messengers trained
Responsibilities shirked	Narrow responsibilities	Risks are shared
Bridging discouraged	Bridging tolerated	Bridging encouraged
Failure ➡ scapegoating	Failure ➡ justice	Failure ➡ inquiry
Novelty crushed	Novelty ➡ problems	Novelty implemented

Table 3.1: Westrum's Three Cultural Types



V = Values & Principles **O** = Outcomes & Purpose **I** = Intent-Based Leadership **C** = Coaching & Support **E** = Experimentation

Figure 3.2: VOICE

	Revolution Or Evolution	Ways of Working Adaptable?	Enabling Constraint
Scrum	Revolution	No. "Scrum's roles, events, artifacts, and rules are immutable. It's possible to implement parts of Scrum, but the result is not Scrum."[18]	Iteration
Essential SAFe	Revolution	No. Inherits from Scrum.	Iteration
Scrum@Scale	Revolution	No. Inherits from Scrum.	Iteration
Nexus	Revolution	No. Inherits from Scrum,	Iteration
LeSS	Revolution	No. Inherits from Scrum.	Iteration
Kanban Method	Evolution	Yes. Kanban states that you "start with what you do now, respect current roles and responsibilities, and pursue evolutionary change."[19]	Limited WIP

Table 3.2: Frameworks: Revolution or Evolution and Adaptability *(continued on next page)*

	Revolution Or Evolution	Ways of Working Adaptable?	Enabling Constraint
Disciplined Agile	Revolution or Evolution	Yes. "DA promotes a goal-based rather than a prescriptive strategy that enables teams to choose their way of working. Start where you are, do the best that you can, always try to get better."[20]	Up to the teams
Spotify Model	Are you a young Swedish one-product org? If not, evolve your own model. The Spotify Model is not Spotify's Model (more on this below.)		Up to the teams
Your Own Model	Either or Both	Yes	Optimize in context for BVSSH

Table 3.2: Frameworks: Revolution or Evolution and Adaptability *(continued from previous page)*

Commander	Leader
A position	A behavior and mindset
For a few	For all
Orders	Listens, inspires, informs
Obeying is mandatory	Following is voluntary
Extrinsic motivation	Intrinsic motivation
Power is positional	Power is given by followers
e.g., "commander in chief"	e.g., Greta Thunberg

Table 4.1: Commander vs. Leader

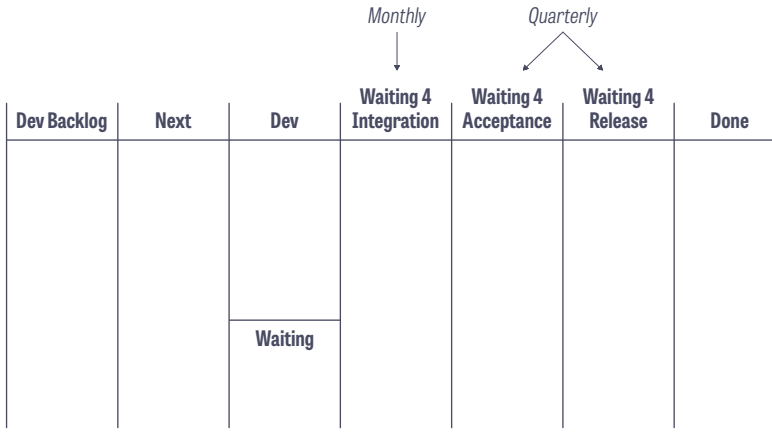


Figure 5.1: Bottleneck at Acceptance Testing and Release

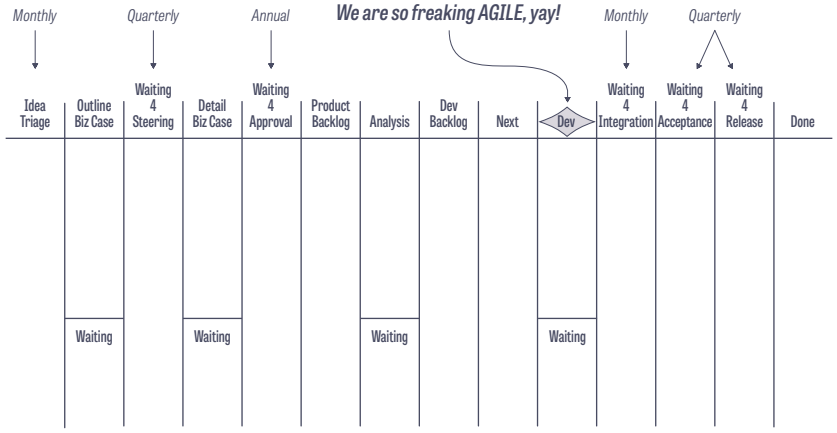


Figure 5.2: We're So Freaking Agile!

Adapted from Klaus Leopold, *Rethinking Agile*

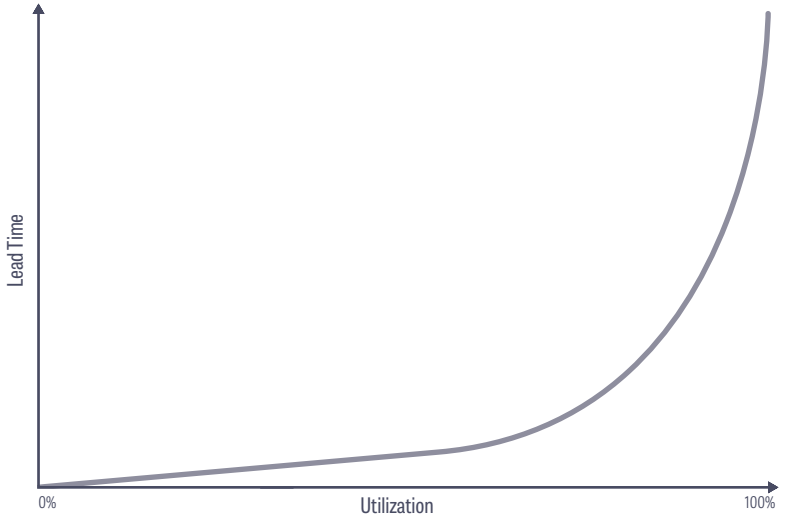


Figure 5.3: The Rise of Lead Time

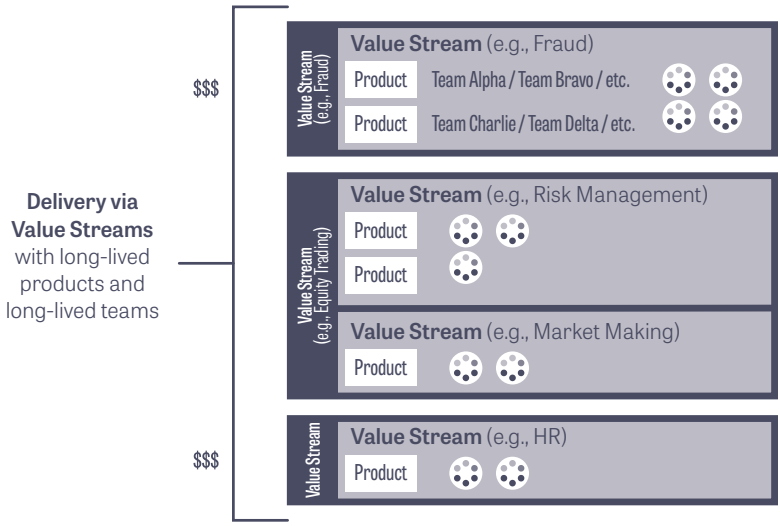


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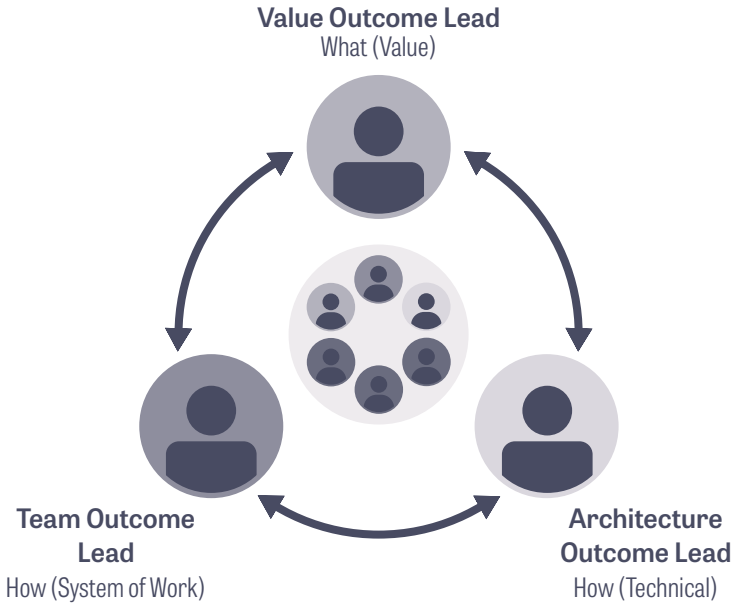
Figure 5.5 Long-Lived Products on Long-Lived Value Streams



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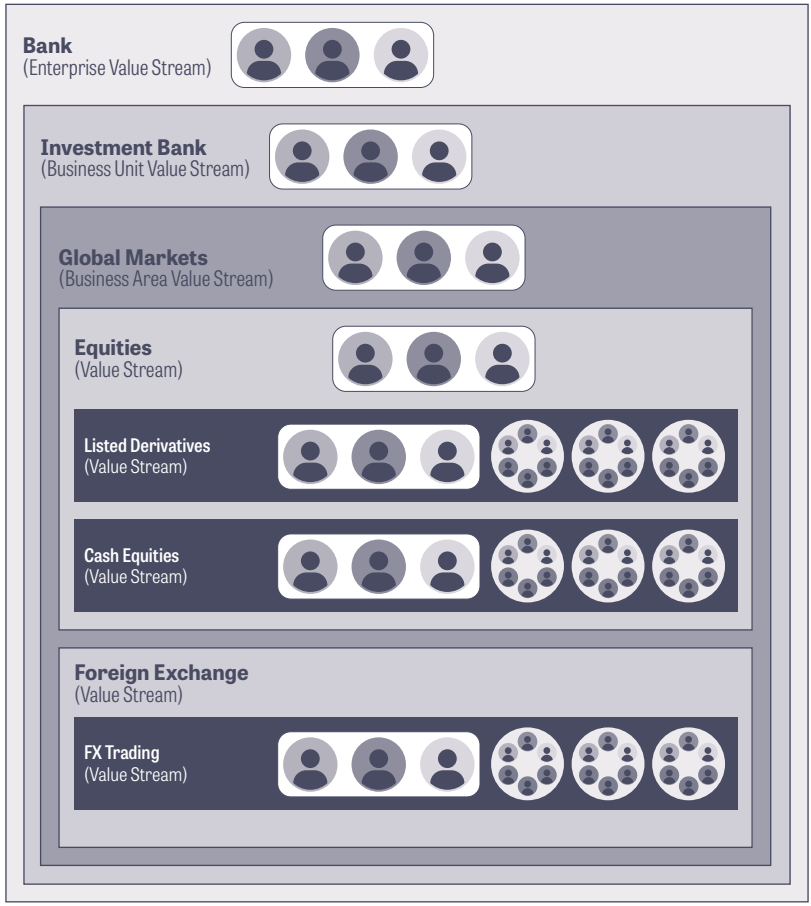

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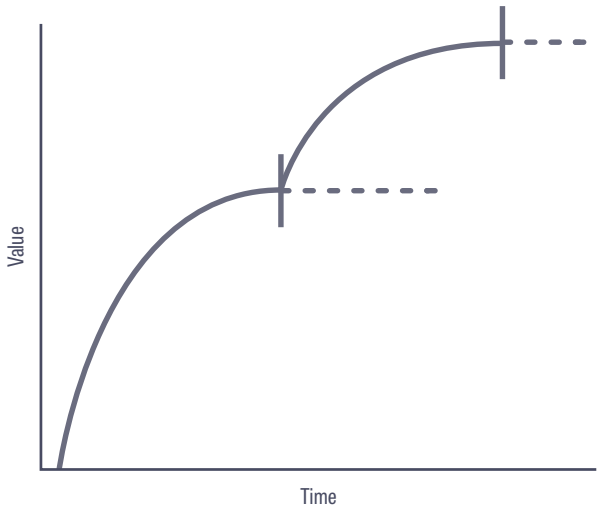


Figure 5.8: Maximize the Value Curve, Cut the Tail

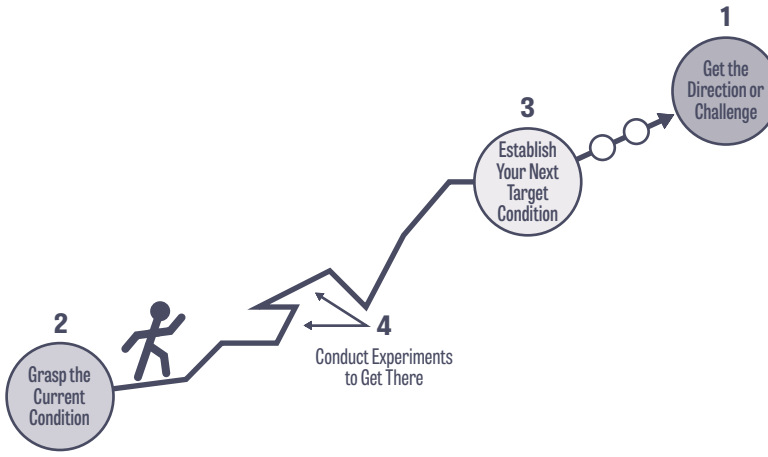


Figure 5.9: The Journey from A to B

Adapted from Rother, *Toyota Kata*

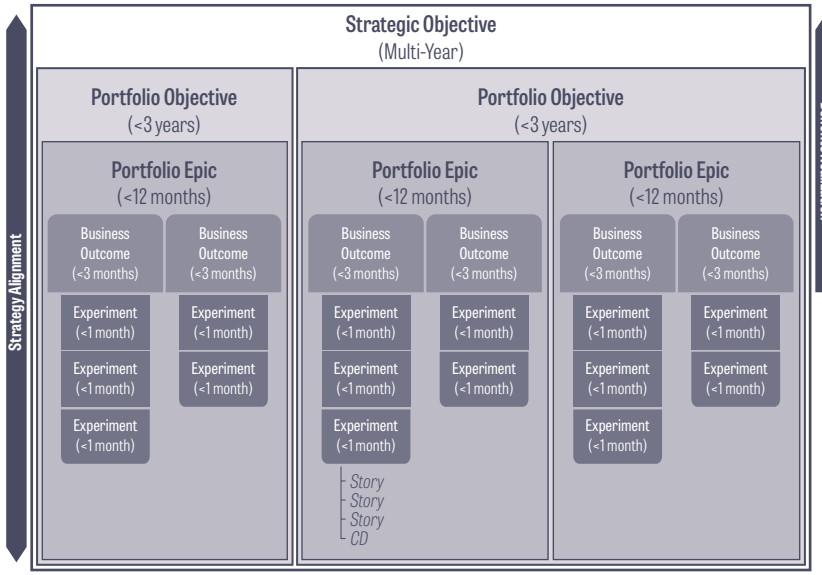
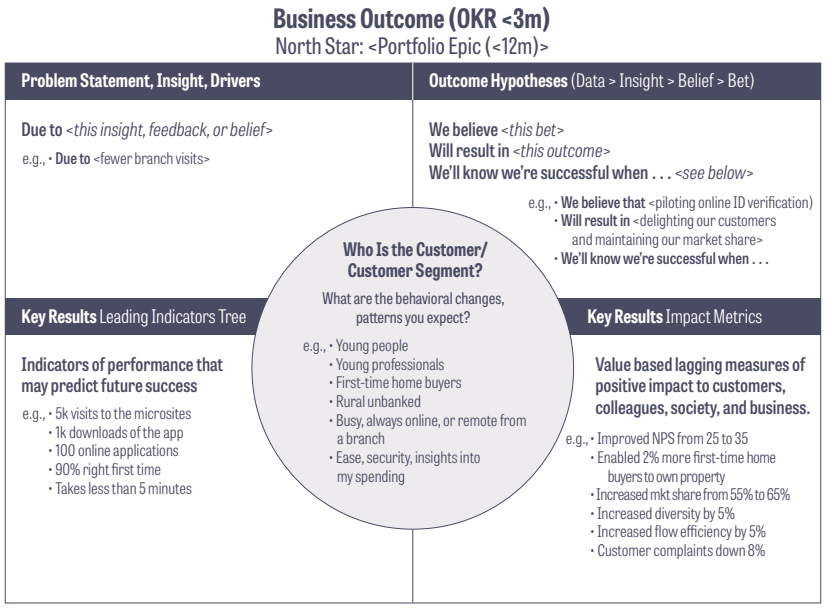


Figure 5.10: Strategic Objectives



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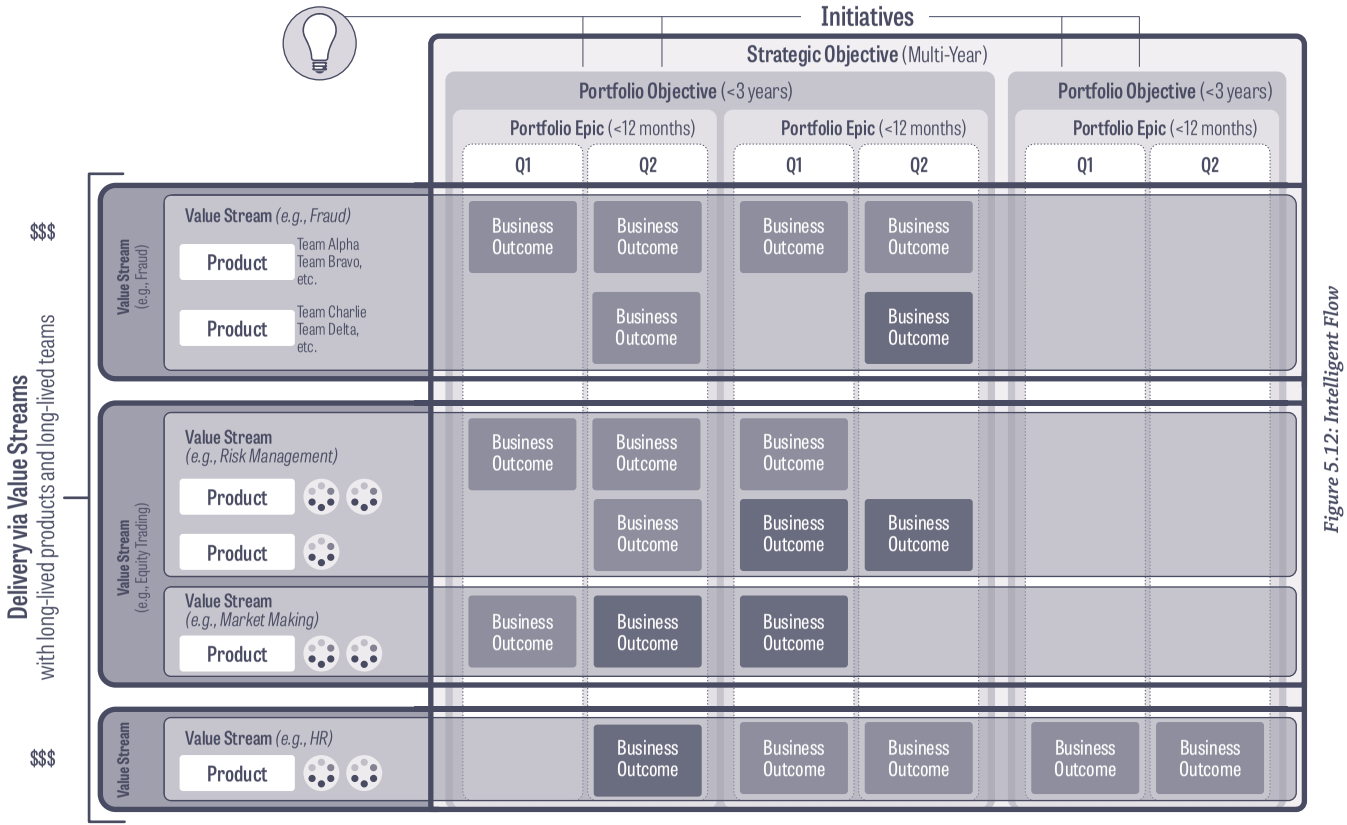
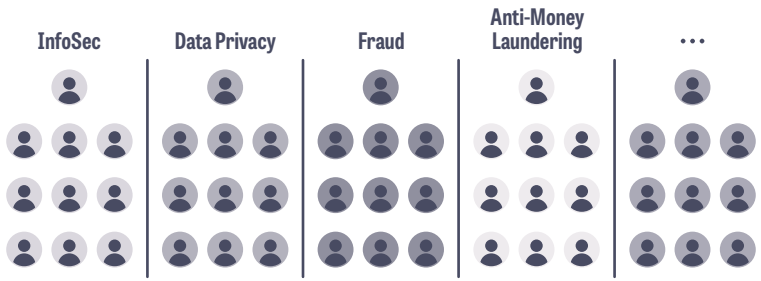


Figure 5.12: Intelligent Flow



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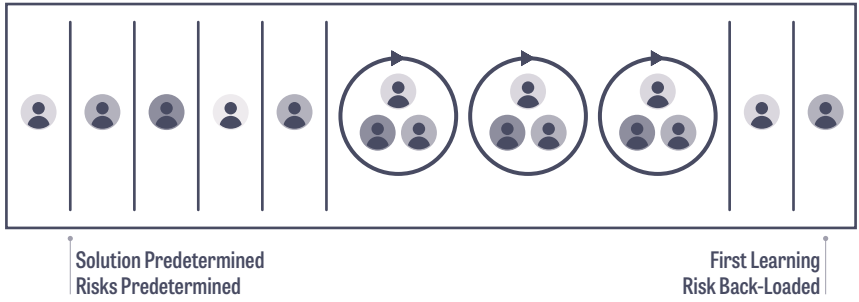

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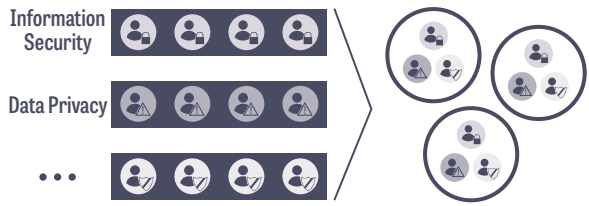
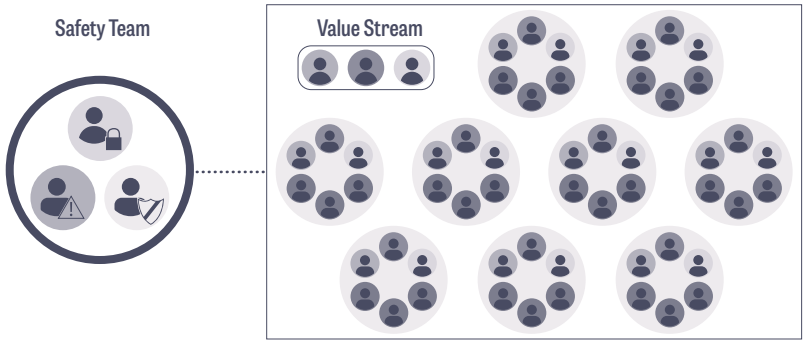


Figure 6.3: From Functional Silos to Cross-Functional, Long-Lived Safety Teams



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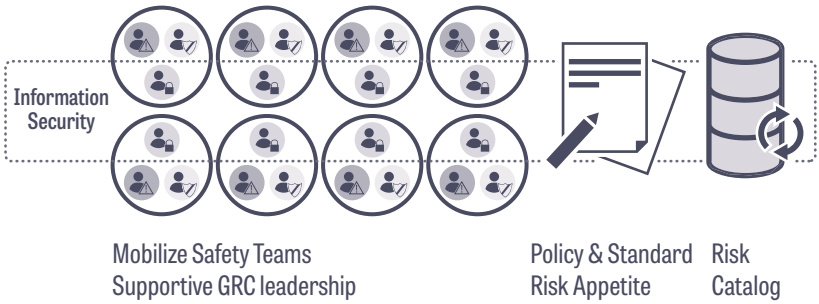

Figure 6.5: Safety Authorities

RiskID-60 Logical Access Management using Public Cloud Database
Level 3 Risk: Failure to protect the confidentiality or integrity or availability of information assets
Link to relevant policies & standards: <document link 1> <document link 2>
GIVEN the context of application teams using public cloud native database which does not yet include automated infrastructure layer database logical assess controls I WANT TO ensure application owners understand their responsibilities for adhering to data retention, password complexity rules, daily reporting of database logins, and permissions SO THAT the organization is able to: a) maintain a central record of which staff have access to what data at what time, allowing reporting and remediation of unauthorized access combinations b) investigate and recover from any accidental or deliberate database deletions c) ensure that data access for staff moving roles or leaving is proactively managed d) mitigate the risk of unapproved data access through password hacking
Mitigations: 1. Establish local automated daily detective reports of logins and permissions to all active database instances in the cloud resource container (aka AWS account) 2. Ensure each login is identifiable to an accountable active member of staff.

Figure 6.6: Risk Story Example

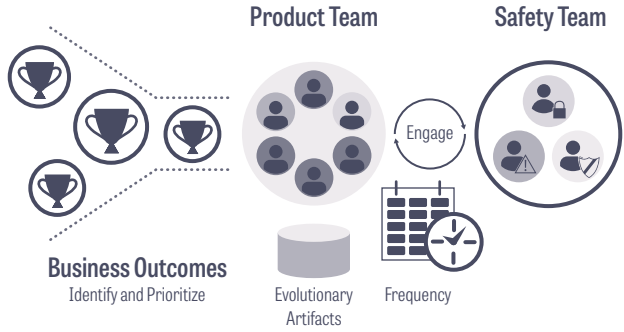

Figure 6.7: Continuous Engagement

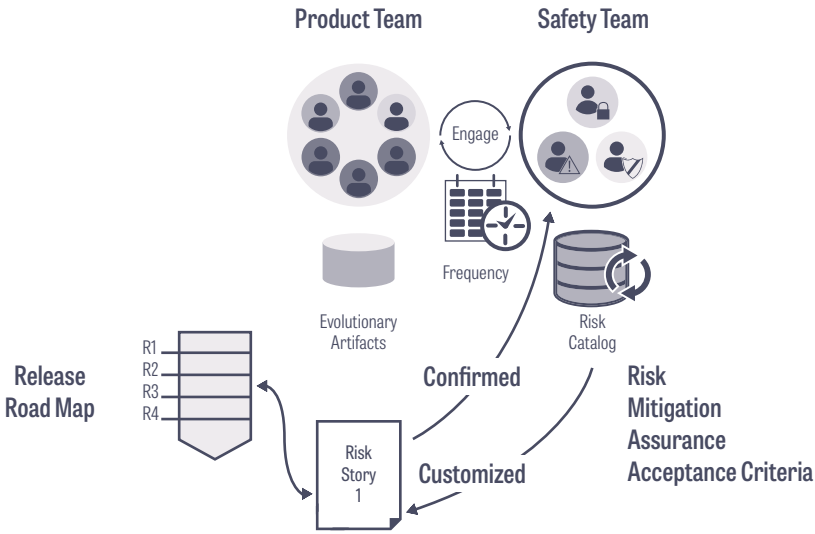

Figure 6.8: Risk Stories and Continuous Testing

Risk of Malware

Level 3 Risk: Failure to protect the confidentiality or integrity or availability of information assets

Link to relevant policies & standards:

<document link 1>

<document link 2>

GIVEN the context of malware risk resulting from copying data from a 3rd party public cloud account into an enterprise public cloud account

WE BELIEVE THAT it will be possible to mitigate this risk using automated scanning in an "airlock" public cloud account that effectively isolates malware and notifies the cyber team

WE WILL KNOW THIS IS TRUE WHEN exceptions can be injected into the 3rd party data set and successfully detected and isolated

Mitigations:

A malware detection pattern will be designed to ensure that:

a) only verified clean files can be copied to the enterprise cloud account
b) files where exceptions are detected are held in isolation within the airlock for investigation
c) an alerting process exists for the cyber operations team to be alerted to exceptions
d) an assurance process is established to periodically inject exceptions into the 3rd party data stream and confirm positive detection in enterprise monitoring tools.

Acceptance Criteria for Risk Story closure:

Acceptance Criteria 1: The pattern is agreed with the Safety team and documented here

Acceptance Criteria 2: Code passes an automated test suite to validate each design element

Acceptance Criteria 3: The code has been reviewed by a member of InfoSec architecture

Acceptance Criteria 4: The alerting process is agreed with the Info Sec representative

Acceptance Criteria 5: The assurance process is agreed with the Info Sec representative

Figure 6.9: Novel Risk Mitigation Story

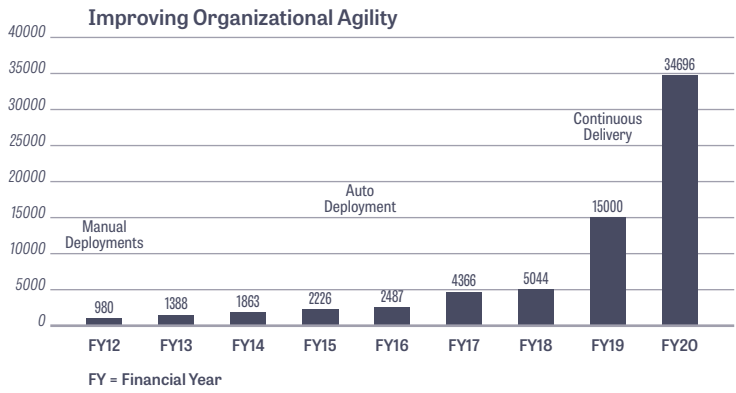

Figure 6.10: AutoTrader Cloud Adoption 2019/20

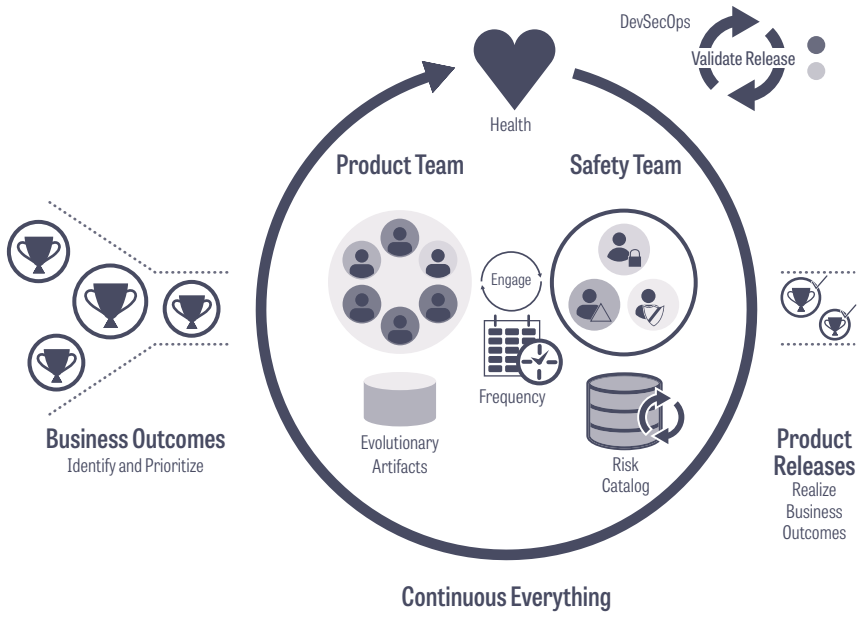

Figure 6.11: Intelligent Control

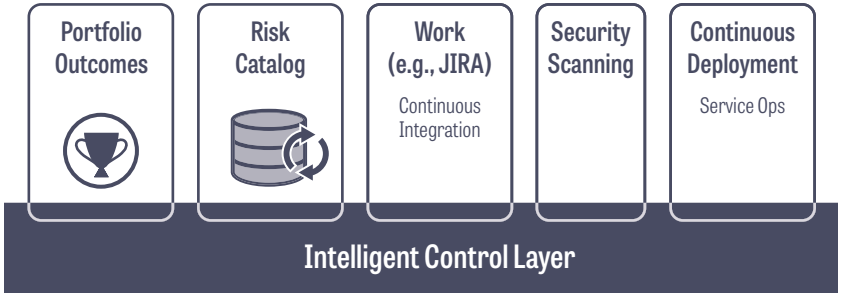

Figure 6.12: Intelligent Control Layer

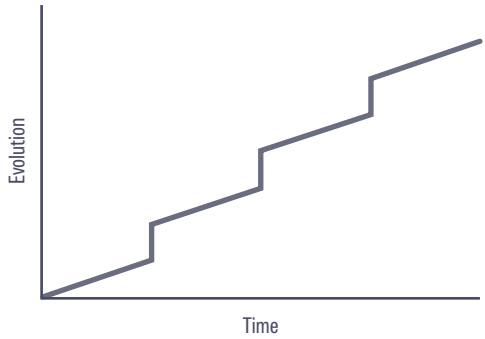

Figure 7.1: Punctuated Gradualism

Figure 7.2: Technical Debt's Vicious Cycle

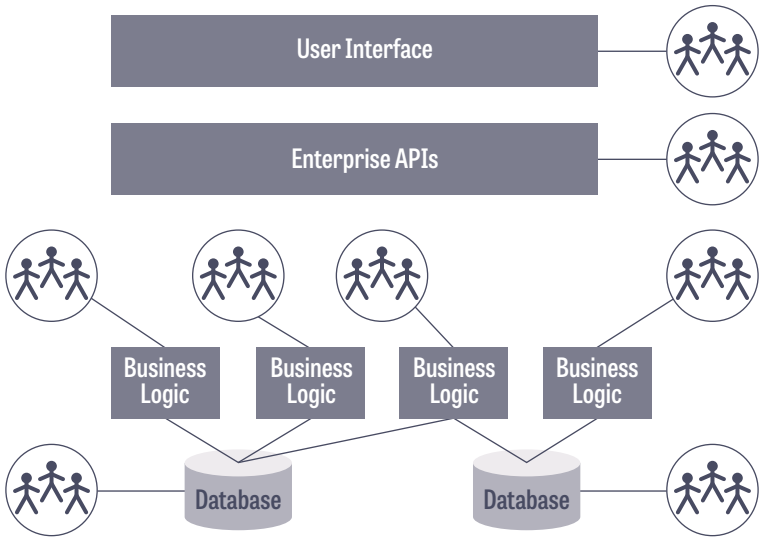

Figure 7.3: Organization by Technology Layer

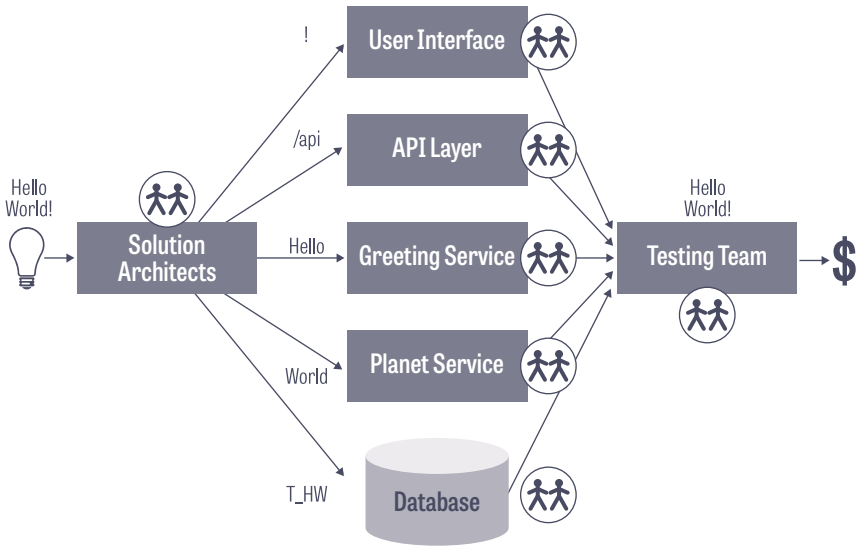

Figure 7.4: Solution Architecture Funnel and Organization by Layer

Technical Practice	Impediment in Organization by Technology Layer
Test automation/ continuous testing	Tight coupling means teams are unable to gain confidence without significant numbers of integrated tests, which often require waiting for other teams.
Deployment automation	Automated deployments of individual components require team or sophisticated automated orchestration in which many teams' contributions come together to implement a business feature.
Loosely coupled architecture	Loose coupling is challenging, if not impossible, when multiple layers come together to implement a single business feature. Feature changes typically require coordinated changes across multiple teams.
Continuous integration	Continuous integration across teams is challenging but possible, e.g., using a "monorepo" (one code repository) approach, but requires significant investment in non-standard tooling and processes.
Frequent or continuous refactoring	Refactoring across team boundaries is a significant challenge, again requiring tooling and process changes.

Table 7.1: Technical Excellence Practices and Organization by Technology Layer

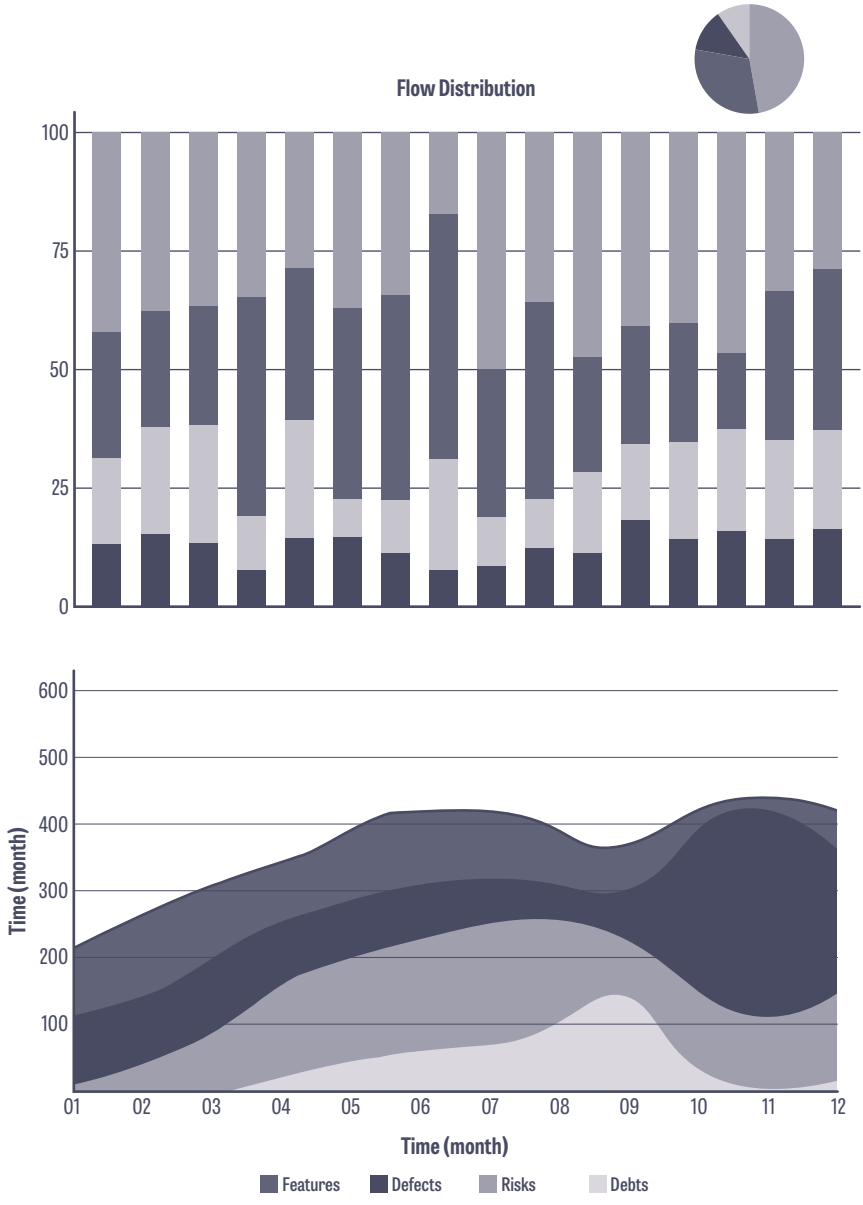

Figure 7.5: Flow Distribution Examples

Adapted from DeGrandis, *Making Work Visible*, and Kersten, *Project to Product*

Technical Practice	Tooling Supported?	Human Element	Tooling Element
Test-Driven (or Behavior-Driven, or Example-Guided) Design/ Development	Supported	Understanding the interplay between testing, modularity, and judicious use of test doubles. Understanding the nested levels of behavior and example—from customer or user behavior at feature injection level down to method or function behavior. Using BDD without any automation to explore scenarios augmented with feature injection.	Testing/BDD and mocking frameworks. Mutation testing frameworks to check the quality of tests themselves.
Domain-Driven Design	No	Appropriate application of DDD social and design patterns such as Ubiquitous Language or Bounded Context.	n/a
Simple Design; Clean Coding	No	YAGNI (You Aren't Gonna Need It); deciding on simplicity; good naming; right sized classes and methods.	n/a

Table 7.2: Technical Practices Require Human Coaching, Not Tool-Only Outsourcing

(continued on next page)

Technical Practice	Tooling Supported?	Human Element	Tooling Element
Collective Code Ownership & Coding Standards	Supported	A high degree of cultural change from individuals owning areas of code.	Modern source code control supports collective code ownership strongly. Modern coding standards are typically highly automated.
SOLID principles	Slightly	Appropriate application.	Dependency injection frameworks for statically typed languages, if appropriate. (Though only if appropriate.)
Refactoring	Heavily supported	Refactoring's purpose is to aid human-to-human communication.	Most modern IDEs support a significant number of refactorings.
Continuous Delivery	Slightly supported	Involves the judgement of multiple stakeholders in a delivery team on continuous confidence in delivery quality through the pipeline.	Requires CI/TBD capabilities as above, extended to one-click deployment through to production systems.

Table 7.2: Technical Practices Require Human Coaching, Not Tool-Only Outsourcing

(continued on next page)

Technical Practice	Tooling Supported?	Human Element	Tooling Element
Trunk-Based Development (TBD)/Continuous Integration	Supported	Continuous integration/TBDs aim for a fully integrated and working codebase on master/trunk available continuously to aid collaboration. Stop and fix practices—e.g., everyone focuses on fixing a broken build—as well as use of either pair programming or rapid review of small pull requests to ensure smooth flow are often significant cultural changes.	Requires a combination of source code control system, build server, and test automation. Some tooling can help with broken build fixes.
Observability	Heavily supported	Requires Development/Operations teams to prioritize the information they need to rapidly diagnose production issues.	Modern structured logging, monitoring, visualization, querying, and alerting capabilities.

Table 7.2: Technical Practices Require Human Coaching, Not Tool-Only Outsourcing

(continued on next page)

Technical Practice	Tooling Supported?	Human Element	Tooling Element
Testing in Production	Heavily supported	Testing in production requires deep stakeholder confidence in a limited and highly controlled impact radius of novel features. It is *in addition* to all usual forms of testing, not instead of; therefore, it is **Safer**. It reduces risk significantly by acknowledging the real difference between pre-production and production environments and allows small incremental steps of production release rather than big bang.	Infrastructure to support blue/green deployment, canary/ring deployment, feature flagging, etc.

Table 7.2: Technical Practices Require Human Coaching, Not Tool-Only Outsourcing
(continued from previous page)

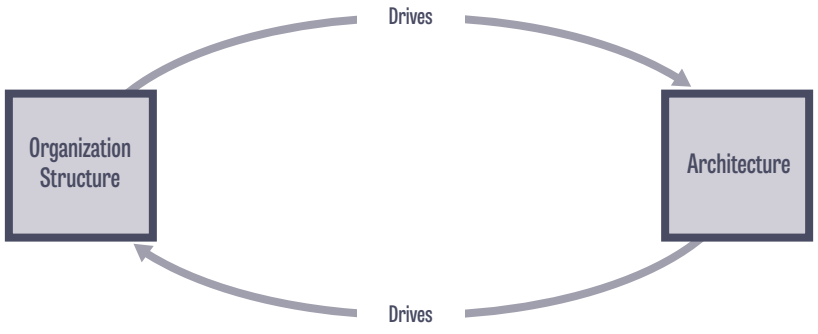

Figure 7.6: Organization structure drives architecture drives organization structure

Figure 8.1: Information Loss on Handoffs

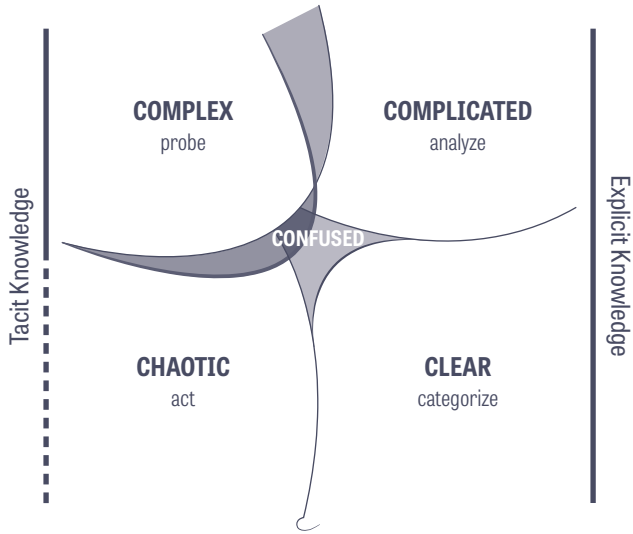

Figure 8.2: The Cynefin Knowledge Map

Adapted from Dave Snowden

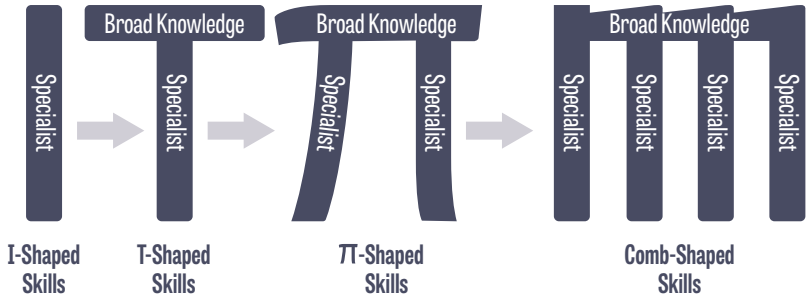

Figure 8.3: Skills Have Shapes

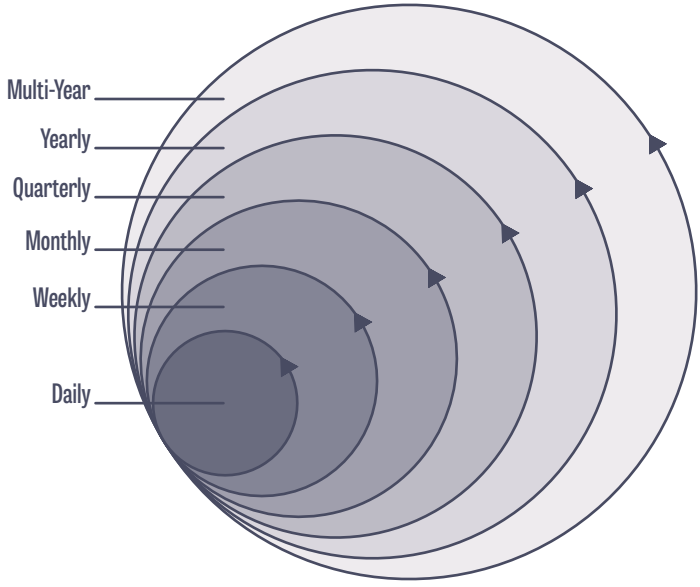

Figure 8.4: Nested Learning Loops

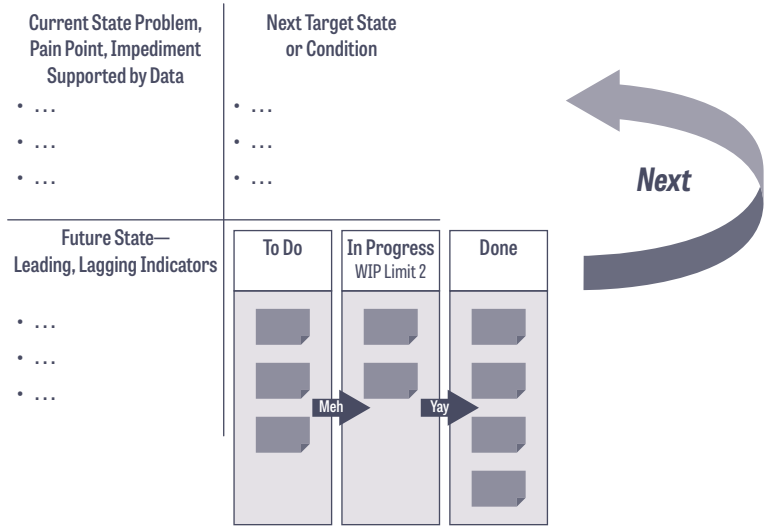

Figure 8.5: Toyota Improvement Kata Canvas

Adapted from Janlen, "Improvement Theme."

	Room 1	Corner	Room 2
10:00 – 10:30	Internal Open Source	Leadership Coaching	Agility in HR
Break			
10:45 – 11:15	Agility in Accounting for OpEx, CapEx	What to Measure?	Internal Agility Awards

Figure 8.6: Open Space Timetable Example

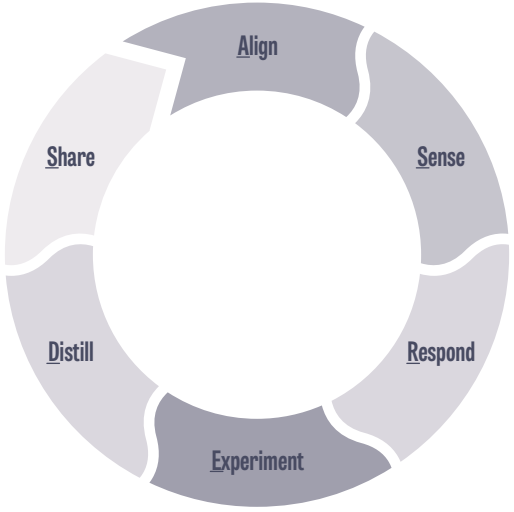

Figure 8.7: The ASREDS Learning Loop

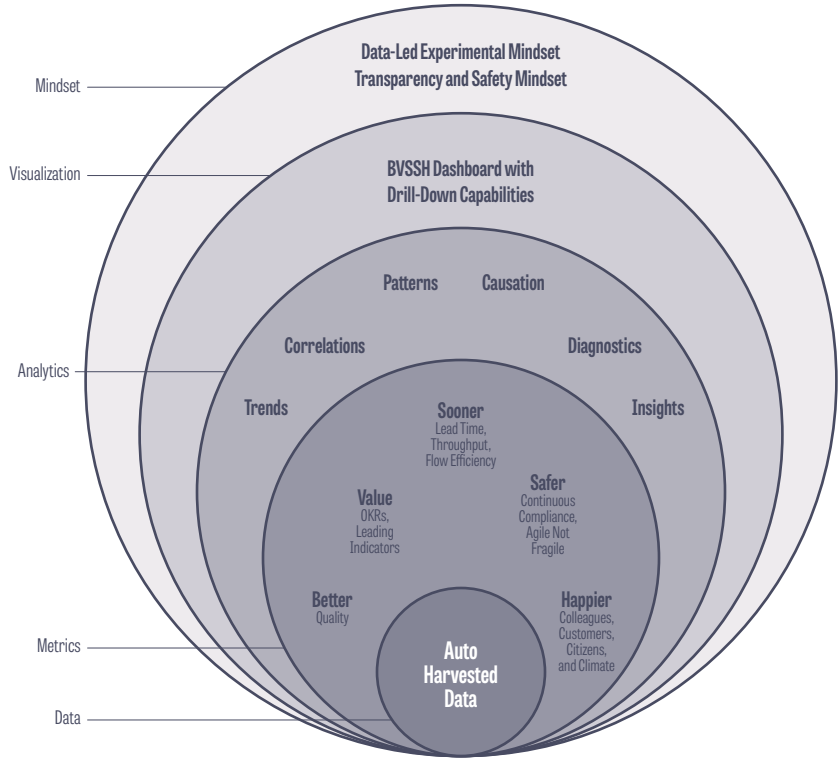

Figure 8.8: Measure for Learning Onion

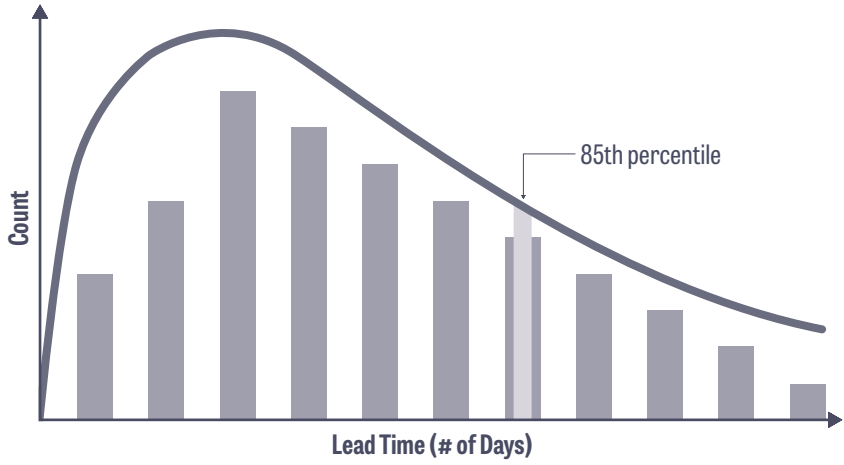

Figure 8.9: Lead Time Distribution

PRINCIPLES

CHAPTER 1

Focus on Outcomes

Better Value Sooner Safer Happier

Better Value Sooner Safer Happier

Agile in IT only is a local optimisation

Everything is in scope

CHAPTER 2

Achieve Big Through Small

Think Big, Start Small, Learn Fast. Apply agility to agility

S-Curve Approach to Change

People have a limited velocity to unlearn. People adopt change in an S-curve

Descale Before You Scale

Scaling agility *is* descaling the work and the system of work

Scale Agility Vertically Then Sideways

Join up top down and bottom up.

CHAPTER 3

One Size Does Not Fit All

Organizations are complex adaptive systems. You have a unique VOICE.

If the path ahead is clear, you're on someone else's path

Invite over Inflict

Invite participation with intrinsic motivation and empowerment; the words "resist" or "convince" should not enter the vocabulary

CHAPTER 4

Leaders Go First

Leaders lead. Role model desired behaviours. Exhibit courage and vulnerability

Tell stories. Reward desired behaviours in others.

Foster Psychological Safety

Invite participation. Foster an open culture of learning through intelligent failure.

Listen and act. Blame-free culture

Leverage Emergence

Leverage emergence to maximise outcomes. Adopt an emergent mindset.

Move authority to the information, with transparency

Coach and support. Supporting lines over reporting lines

PRINCIPLES

CHAPTER 5

Optimize for Sustainable Fast Flow of Safe Value

Long lived multi-disciplinary teams, on long lived products, on long lived value streams, aligned to the customer

Tribal Identity by Value Stream

Humans are tribal. Primary identity should be to the value stream and the customer over job role specialism

Outcome Hypotheses over Solution Milestones

Outcome hypotheses and experimentation to leverage emergence to your advantage

Nested outcomes for strategic alignment

Stop Starting, Start Finishing

Limit WIP at every level. The fewer cars on the road, they faster they go

Pull work, don't Push it

Pulling work shines a light on the natural capacity of the system and impediments to flow

Impediments are not in the path, impediments ARE the path

CHAPTER 6

Safety within Safety

Foster psychological safety.

Seek the presence of positives, not only the absence of negatives

Safety Teams Aligned to Value Streams

Long-lived Safety teams on long-lived value streams.

Optimize for the sustainably fast flow of safe value.

Shared ownership of Safety. Keep the discussion on risk alive.

Minimal Viable Compliance (MVC)

Right size risk mitigation taking context and risk appetite into account

People, Process, Tooling, In That Order

PRINCIPLES

CHAPTER 7

Continuous Attention to Technical Excellence

Technical excellence, operational excellence, good design, and good designers are key to sustainable business agility

If you're living with legacy, allocate more time to pay off the debt.

Architect For Flow

Sustainably fast flow of value is the primary goal of software delivery

Punctuated Gradualism (Multiple Speeds in Parallel)

Evolution and periodic revolution in order to realize most value

From daily continuous attention to periodic revolutionary architectural change

Autonomation: People and Machines In Harmony

DevOps doesn't mean automating smart people out of a job

Use automation and tooling judiciously to make good people even better

Culture is the biggest lever, sometimes tools won't improve outcomes

CHAPTER 8

Optimize for Fast Learning

Intentionally optimize for collaboration and sharing of tacit knowledge

Pop the learning bubbles

Create Nested Learning Loops

Establish nested learning loops, daily, weekly, monthly, quarterly, yearly, multi-year

Enable learning at the individual, team and organizational level

Communicate, communicate, communicate

Communicate three more times than you think you need to and you're a third of the way there

Dissolve the disconnected bubbles through practices like ASREDS, CoPs and awards.

Learn to be Comfortable with Uncertainty

Maintain options, encourage experimentation, have a growth mindset, adapt

Measure For Learning

Have data-driven feedback loops. Create the dials on the dashboard.

Support data led experimental mindset, and unlock measurability of Better Value Sooner Safer Happier

#BVSSH

GLOSSARY

Agentic State: A concept from Stanley Milgram's Agency Theory. An *agentic state* is a state of mind in which a person will allow other people to direct their behaviors and pass responsibility for the consequences of the behaviors to the person giving the orders.

Agile: (1) A state of being, exhibiting agility, being nimble, able to learn fast and pivot fast in order to optimize for desired outcomes. (2) A body of knowledge for ways of working suited to *unique* change, where the work and or the environment are *emergent* and there are *unknown-unknowns*. Origins in Japan in the 1970s and 1980s, for product development in manufacturing (e.g., Xerox and Honda). Learnings from manufacturing transferred to software development in the early 1990s. Originally called "lightweight processes" ("heavyweight" referring to sequential, big-batch waterfall processes). Articulated as a set of Values and Principles in the Agile Manifesto in 2001. Now being applied more broadly for whole business agility. There are many practices that are best applied in context in order to optimize for outcomes rather than as one size fits all.

Antipattern: An antipattern is a response to a situation that, more often than not, is ineffective and risks being counterproductive; acting as a headwind rather than a tailwind. Antipatterns are behaviors and approaches that can make a hard job harder, setting an organization back many years, creating organizational scar tissue and an organizational memory, and strengthening antibodies to repel any future desired change. As there is no "best practice" in an emergent domain of work, very occasionally an antipattern for the majority of organizations might be a pattern for one organization. For example, a scenario where cashflow is about to run out and it's a high-risk, do-or-die strategy for an organization.

Architecture Outcome Lead: One of the triumvirate of roles, along with the Value Outcome Lead and Team Outcome Lead. These three roles exist as equal partners at each nested value stream level. This role has primary accountability for the technical "how", the technical excellence, ensuring that the technology is enabling the delivery of Better Value Sooner Safer Happier. There is a capability-based reporting line up the nested value streams, ultimately to the CTO for a business. For example, this role should ensure that the technical architecture enables agility and resilience, meets broader architectural principles, and will engage in business risk based conversations around technical debt, safety, and business value.

BVSSH: Better Value Sooner Safer Happier. *Better* is quality. *Value* is unique and why you are doing what you are doing. *Sooner* is lead time, throughput, and flow efficiency. *Safer* is continuous compliance, "Governance, Risk and Compliance (GRC)", agile not fragile, trust. *Happier* covers colleagues, customers, citizens, and climate. They are outcomes to be continuously improved (you're never done improving). Agile, lean, and other bodies of knowledge are learnings to help improve these outcomes.

Cynefin: A conceptual framework used to aid decision making with five domains: Clear, Complicated, Complex, Chaos, and Confusion.

Deterministic: Behavior is entirely determined by initial state and input and can be predicted. The outcome and output is predetermined. Repeating the behavior will result in the same outcome and output each time, such as a machine mass producing widgets. A belief that a complex system is no more

than the sum of its parts and that the parts are interchangeable. There is an inevitability of causation. Everything that happens is the only possible thing that could happen. The domain is "knowable", now and in the future, there is nothing new to learn.

DevOps: DevOps is a portmanteau that combines development and operations. DevOps focuses on flow. That is, on breaking down the historical barriers between siloed teams responsible for developing a product and teams responsible for deploying and operating the product. DevOps can have a narrow IT Dev plus IT Ops meaning or a broader enterprise DevOps meaning. The broader enterprise meaning of DevOps is delivering Better Value Sooner Safer Happier, organization-wide. It is the application of better ways of working, end to end, to deliver business and customer value, leveraging many bodies of knowledge, including agile and lean.

Domain: A domain of work is the context within which you are operating. For example the domain of work could be emergent (see Complex and Chaos in Cynefin) or deterministic (see Complicated and Clear in Cynefin). Work can move around domains. For example, the agile creation of a new model of car (an emergent domain) and then identical mass production of that model of car (a deterministic domain of work).

Emergent: Behavior, outcomes and output cannot be predetermined. The domain is "unknowable". The only way to learn is by doing and seeking a feedback loop. Acting in the space changes the space. Individual and collective behavior mutates and self-organizes in response to change. Repeating an action will result in different outcomes. A perfect understanding of the individual parts does not automatically convey a perfect understanding of the whole system's behavior. The whole is more complex than its parts.

Flow: The flow of value, end-to-end, from *concept* to *cash*, from *need identified* to *need met*. Optimizing for flow is optimizing for the shortest time, to a sliver of hypothesised value, with the least effort, in order to learn fast and pivot and to maximize desired outcomes. See also Flow Efficiency, Lead Time, Throughput, and Outcomes.

Flow Efficiency: The percentage of value-add time within the elapsed end-to-end Lead Time. For example, a Flow Efficiency of 10% means that work is waiting 90% of the time (i.e., doing too much work in parallel, having role-based handoffs, bureaucratic one-size-fits-all processes and big-batch, stage-gate processes, all lead to work waiting).

GRC: The acronym refers to supervisory Governance, Risk, and Compliance functions of an organization. See Safety Teams.

Lead time: The end-to-end time to value, from concept to cash, from *need identified* to *need met*.

Lean: "Lean production" is a term coined by John Krafcick, the first American engineer hired at the Toyota-General Motors joint venture, NUMMI, referring to the Toyota Production System. "Lean production is lean, because it uses less of everything compared with mass production, half the human effort in the factory, half the manufacturing space, half the investment in tools, half the engineering hours, in half the time."[1] As lean production has evolved in the context of mass production, it is suited to repetitive, knowable activities. Lean includes concepts such as a focus on flow, specifying value from the perspective of the customer, identifying the value stream and all steps in it, a pull-based system of work (enabling smaller inventories to be held), continuous improvement (which includes eliminating waste), respect for people, servant leadership, building quality in rather than inspecting it in later (stopping the line), and "autonomation" (machine and person in harmony). Lean and agile have a common root in post–World War II Japan, influenced by the work of W. Edwards Deming; Lean being suited to mass production, agile being suited to unique product development (such as designing a new model of car before mass producing it).

OKR: Objectives and Key Results. See Outcome.

Outcome: In the context of unique change, an outcome is articulated as a *hypothesis* of a desired future state, which is to be tested to try to achieve or to prove wrong. It is a hypothesis as the domain of work is emergent and the future cannot be predicted. The outcome hypothesis is informed by data-led insights or by a belief. An outcome is articulated as a desired *business outcome*,

not as an activity, a predetermined solution, or an IT-only task. Outcomes are all "our business" in scope, not "the business" and IT as separate entities. Outcomes have leading and lagging value measures (the "KR" in OKR). Leading value measures provide an early feedback loop on the hypothesis (e.g., downloads of an app, clicks on a website, customer enquiries), lagging measures indicate a change in behavior and value (e.g., more mortgages sold, increased customer satisfaction, diversity, carbon emissions, revenue, profitability, and so on). Outcomes exist at multiple cadences and are nested, providing strategy alignment. For example, quarterly, annual, and multi-year. The quarterly outcomes are comprised of monthly experiments, weekly iterations, and daily stories (requirements), providing a fast feedback loop on strategic intent. The cadences provide dates (with an outcome rather than output focus) and regular cadences to inspect and adapt. There is continuous planning, with a rolling twelve month roadmap of quarterly outcomes.

Pattern: A pattern is a response to a situation that, more often than not, is effective and improves desired outcomes, acting as a tailwind. Patterns come with their own ups and downs, back and forths, swings and roundabouts, as change is social and it's all about people. Patterns can lead to change being more "sticky". As with antipatterns, there is no such thing as "best practice" in this domain of work. Your mileage may vary. In some contexts, based on culture and history, a pattern might be an antipattern at a given point in time. Timing and pace is important. People have a limited velocity to unlearn and relearn. In most cases, start with the patterns, experiment, and pivot based on fast learning. Think Big, Start Small, Learn Fast.

Product: A product is long lived, is produced by and aligned to a long lived value stream, is of value to one or more customers, and is worked on by one or more long lived multidisciplinary teams. A product has a corresponding service level. Experimenting on desired *outcome hypotheses* leads to work being done on long-lived products. Products are long lived, with evolutionary revolution. That is, they evolve over time, such as continuously upgrading a plane mid-flight, similar to evolutionary biology. Products might not include IT at all, might partially include IT, or might be entirely an IT product. Examples of products include internal audit report, mortgage, credit card, helicopter engine, car, movie, generation of renewable energy, shipping goods from A to B, cloud computing, operating system, protecting law and order and so on. Some products

are clearly aligned to customers and one value stream. Other products may be used within an organization, aligned to a shared service value stream, or used by the many customer aligned value streams (e.g., general ledger and sub ledgers (Finance), recruitment (HR), physical environment (Real Estate), desktop compute (Infrastructure) and so on).

Project: A project is temporal, with a start date and an end date. A project involves people who don't usually work together, who come together temporarily into a project team and then disband. Projects are typically sequential in nature, with stages such as Initiate, Plan, Execute, Monitor and Control, and Close, often with work passing between role-based silos with role-based incentivization. Typically a project plan is put together early on (at the point of knowing the least), which lays out a predetermined output and set of actions, along with a corresponding prediction of time, cost, quality, and scope. Usually, there is a focus on the plan rather than on the desired outcome, with change being tightly controlled and inhibited. Typically there is a long lead time from starting to realizing value, resulting in late learning and making causality of action, leading to value being hard to measure. Typically, projects are deterministic, treating the future as knowable. Projects originate from two technological revolutions ago, in the context of manual labor in factories in the early 1900s. Projects do not optimize for outcomes in an emergent domain of work. See Outcomes, Product, Value Stream.

Risk Appetite: Risk appetite is the level of risk that an organization is prepared to accept in pursuit of its objectives before action is deemed necessary to reduce the risk. It represents a balance between the potential benefits of innovation and the threats that change inevitably brings. The ISO 31000 risk management standard refers to risk appetite as the "Amount and type of risk that an organization is prepared to pursue, retain, or take."

Safety Team: A Safety Team is a long-lived multi-disciplinary team providing governance, risk, and compliance (GRC) subject matter expert (SME) support with a long-lived alignment to one or more value streams. For example the Safety Team will include SMEs for Information Security, Data Privacy, Fraud, Compliance, and so on. The Safety Team shares the goals and objectives of the value stream(s) and is accountable to the value stream and GRC leadership for judgements about appropriate risk mitigation with a Minimal Viable Compli-

ance approach in order to right size the compliance requirements to the context (rather than a one-size-fits-all, lowest-common-denominator approach). The members of the Safety Team are accountable for determining which regulatory requirements and organizational controls are mandatory for the unique context of the work within their value stream. As the teams are long-lived, there are long lived working relationships and the Safety SMEs get to understand the unarticulated needs of the customer, allowing for safety innovation (e.g., biometrics) leading to better outcomes. There is early and often interaction with the value stream aligned teams and a continuous compliance approach, keeping the conversation on risk alive.

Throughput: Throughput is a count of the number of items of value produced over a given period of time. In the context of unique change, this could be a count of Stories (i.e., a sliver of value). As Lead Time comes down, it is possible for Throughput to increase.

Team Outcome Lead: One of the triumvirate of roles, along with the Value Outcome Lead and Architecture Outcome Lead. These three roles exist as equal partners at each nested value stream level. This role has primary accountability for the "how", in particular the people and processes. This role supports the long-lived multi-disciplinary team as a servant leader, helps to improve the system of work aligned to desired outcomes (such as Better Value Sooner Safer Happier), coaches the team in continuous improvement, supports the removal of impediments, mitigates people and process risks, and facilitates regular shared learning and retrospective activities. The focus is on continuously and sustainably experimenting to optimally achieve the desired nested outcomes or to pivot quickly. This role is also known as "Delivery Lead", "Team Lead", or "Scrum Master" if a team has adopted Scrum. At the team-of-teams value stream level, this role is the "Value Stream Outcome Lead" or "VS Delivery Lead". At higher level value streams, this role is the "Business Unit Head of Change" or the "Business Unit CIO" (particularly for organizations where change is predominately IT change, with multi-disciplinary teams).

Technical Debt: Technical debt is the implied increased cost and time of adding new features caused by choosing to make design or implementation shortcuts during software development (i.e., "I'll fix that later"). Technical debt is sometimes consciously taken on for short periods as a business risk versus value

decision (e.g., first mover advantage in order to capture market share). This form of debt is invisible and often poorly understood. It creates drag, inertia, and fragility for subsequent changes and often results in a significantly higher long-term cost (effectively paying compound interest on the debt) rather than the lower cost of paying down debt early and often. In large traditional enterprises it is much easier for project-oriented teams with short-term incentives to accept (invisible) technical debt during their work in order to meet fixed milestones for (visible) functional delivery then ending the project with the debt left unpaid. When multiplied across years and thousands of projects, the technical debt load of an enterprise can be significant and presents a high risk. In some cases, a high level of technical debt (e.g., unsupported technologies and a hard-to-maintain change system) results in a high cost, high risk, complete system rewrite, often repeating the cycle. It leads to increased cost of "change" and "run," squeezing out discretionary innovation spending and leading to slower realization of less value. This contrasts with a Value Stream organizational construct, with long-lived continuously evolving Products with a focus on Flow, where the incentives of long-lived teams align more closely to the long-term goals of the enterprise, technical debt repayment is a continuous business risk conversation and goes hand in hand with optimizing for outcomes.

Value Curve: A pictorial representation of value over time.

Value Outcome Lead: One of the triumvirate of roles, along with Team Outcome Lead and Architecture Outcome Lead. These three roles exit as equal partners at each nested value stream level. This role has primary accountability for the "what," for Value, prioritizing the backlog of outcomes and experiments. This role, crucially, has accountability for what is not done in order to limit work in progress and reduce lead time. This role engages in risk-based conversations with the two peer roles to balance new features with process improvement and technical improvements, enabling ongoing pace, efficiency, and agility. Also known as "Product Owner." This role is often the leader for the business value stream. At higher level value streams, this role is the "Business Head" or "CEO".

Value Stream: A value stream is long-lived, with long-lived multi-disciplinary teams who produce one or more long-lived Products that are of value to customers. The value stream covers all the steps end to end, from *concept* to *cash*,

from *need identified* to *need met*, and are usually represented horizontally as the flow of value from left to right. The term originates from Lean. Value streams are nested. For example, Bank ➞ Investment Bank ➞ Markets ➞ Equity Trading. Value streams should have high cohesion (do one job well, avoid duplication, aim for simplicity) and low coupling (ability to exhibit agility within minimal viable guardrails). The long-lived teams work on Outcomes that are aligned to the Value Stream. The majority of Value Streams are aligned to customers; some are internal Shared Service Value Streams, such as HR, Finance, Real Estate, and Legal. Value streams are not customer journeys (which may span Value Streams) nor are they aligned to customer personas (e.g., retired couple, young student).

Value Stream Network: The network formed by the connections between Value Streams. To enable agility, there should be minimal coupling between Value Streams with dependencies eliminated or minimized over time where possible.

Valuetivity: Amount of value realized over a time period with minimal output and effort. Productivity is the number of units of output per unit of input. In an emergent domain, we don't want to maximize output. We want to maximize for most value in the quickest time with the least output.

VOICE: Values and principles, Outcomes and purpose, Intent-based leadership, Coaching and support, Experimentation. An approach to outcome-oriented continuous transformation.

Ways of Working: Approaches to work using many bodies of knowledge. For example, agile, lean, waterfall, design thinking, systems thinking, theory of constraints, Self Managing Organizations (SMOs), Teal organizations, and so on. The way of working should be suited to the unique context of an organization and aligned to desired outcomes such as Better Value Sooner Safer Happier.

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