Qualitative Data Analysis for Digital Transformation

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Global Transformation Office

Red Hat

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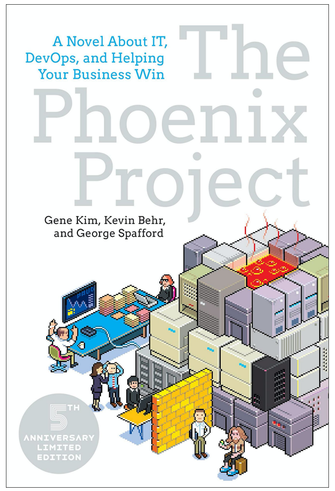
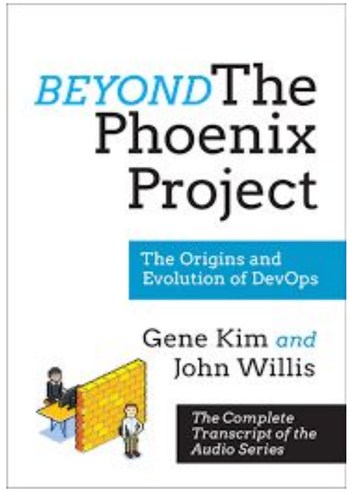
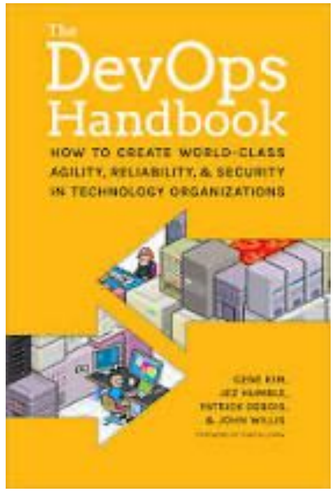
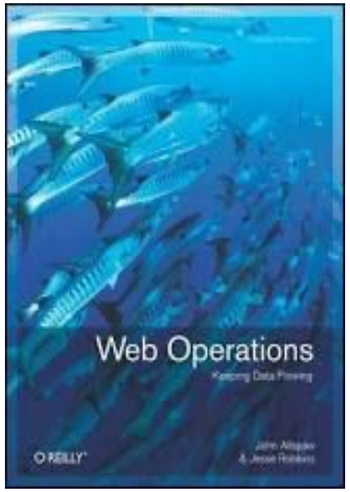
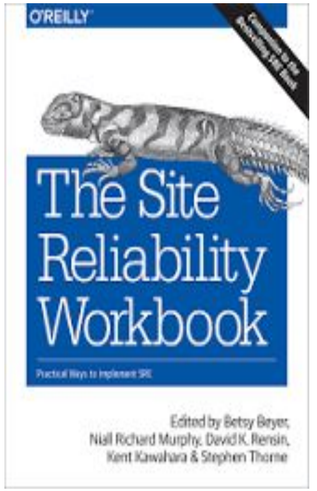
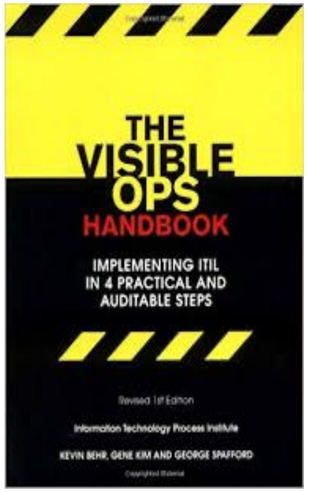




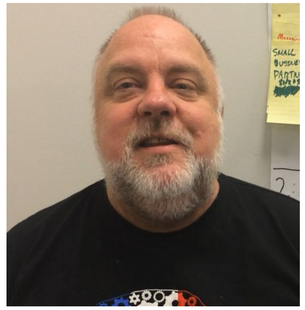








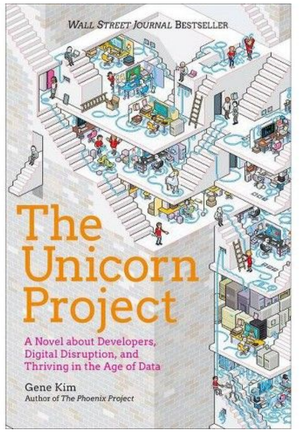
Kevin Behr
Co-Author 'The Phoenix Project', 'Visible Ops', CTO/CIO



John Willis
Author 'The DevOps Handbook', 'Beyond The Phoenix Project', Serial Entrepreneur (sold to Docker)

Andrew Clay Shafer
Co-Founder Puppet, Pivotal Leadership, Authored foreword for 'SRE Handbook'

Jabe Bloom
Co-Founder PraxisFlow, PhD Carnegie Mellon Transition Design



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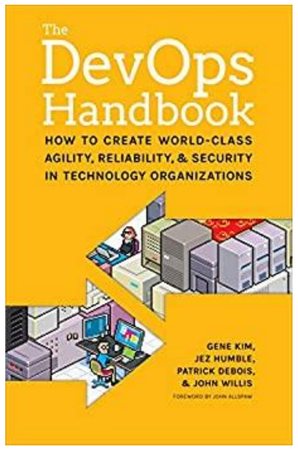
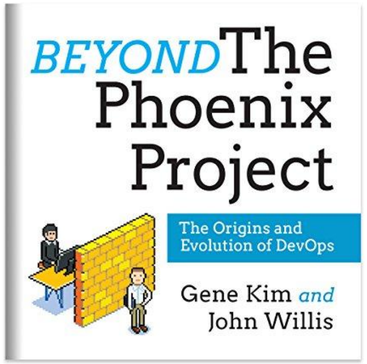
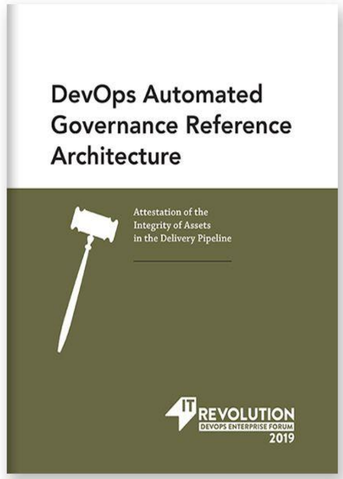
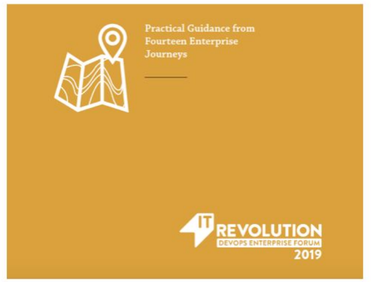
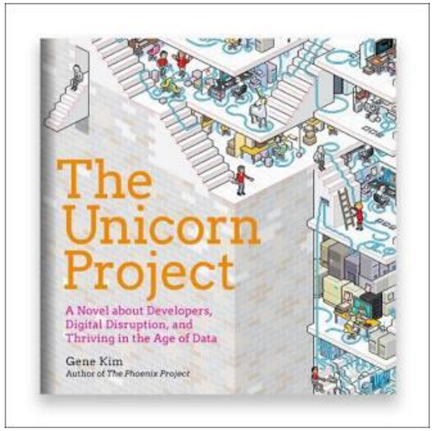






Four Frameworks for
Portfolio Management





docker

CANONICAL

DELL

DEVOPS
ENTERPRISE
SUMMIT

KeyBanc
Capital Markets

ExxonMobil

CHEF

DEVOPS
DAYS

Red Hat

Three Transformation Killers

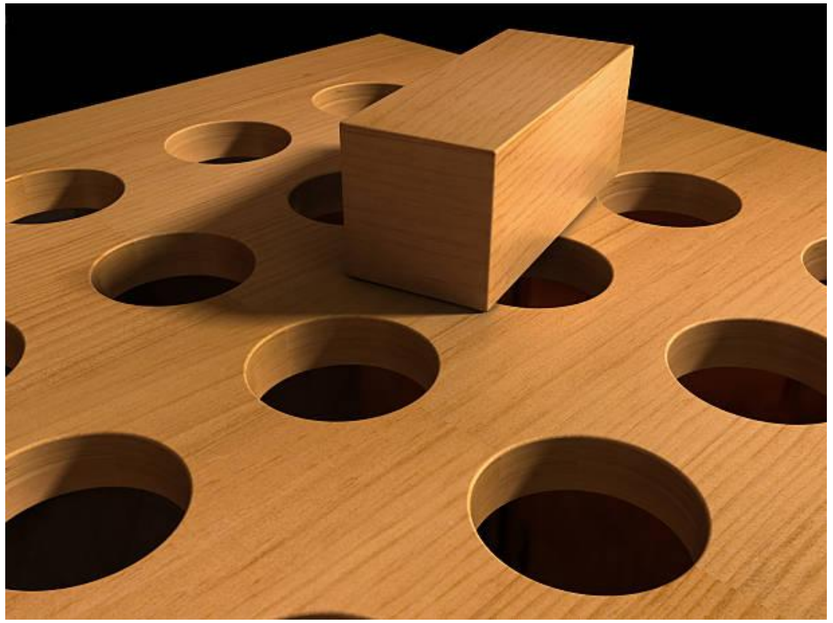
- Frameworks
- Impersonal
- Mental Models

Frameworks

You can't Lean, Agile, SAFE or Devops your way around a bad organizational culture.

Impersonal

Whenever we're talking about any kind of change or improvement you are counting on a bunch of human beings to change and make this happen. If they haven't been part of figuring out how to do it, the change efforts will be dead-on-arrival.

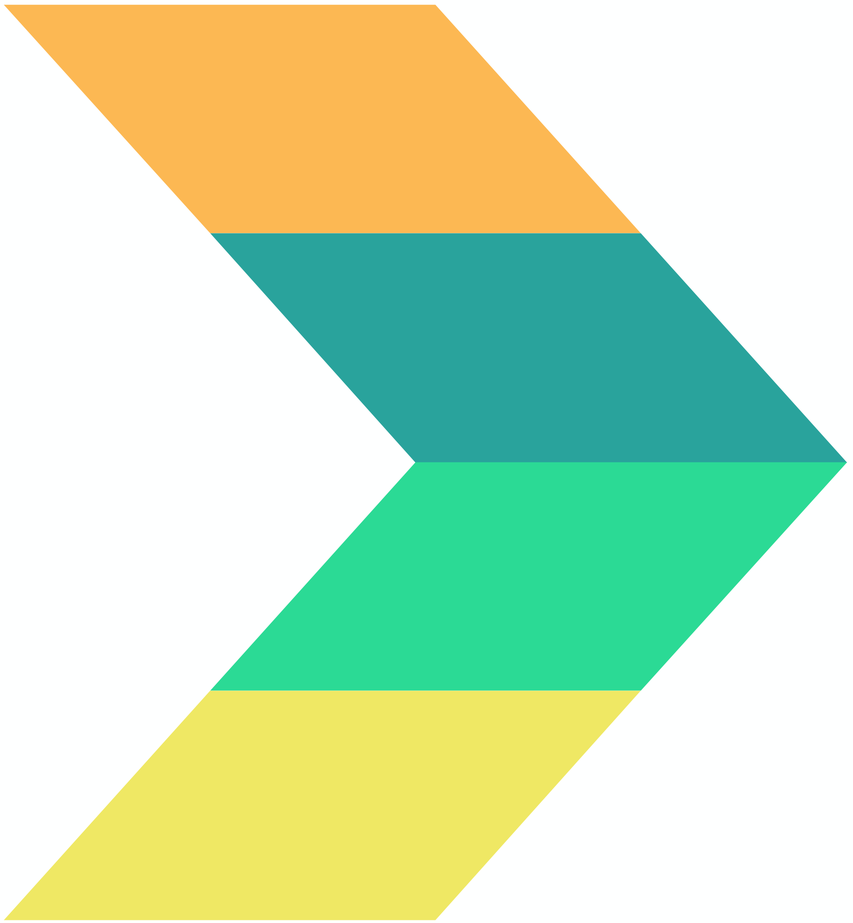


Mental Models

"Mental models are deeply held internal images of how the world works, images that limit us to familiar ways of thinking and acting. Very often, we are not consciously aware of our mental models or the effects they have on our behavior."

- Peter Senge

Approaches



Quantitative

Starts with a generalized theory and uses correlation to draw specific conclusions

Deductive

Draws specific conclusions from general principles or premises.

Impersonal

Non human interaction. Typically done by survey.

Numerical

Analyzed through math and statistical analysis

Closed-ended

Questions that are answered from a limited number of options

Industry Doctrine (Quantitative)

- Lead Time
- Deployment Frequency
- Change Fail Rate
- Time to Restore

How often do you deploy code?

- ❑ More than six months
- ❑ Between one per month and every six months
- ❑ Between once per week and once per month
- ❑ Between once per day and once per week
- ❑ Between once per hour and once per day
- ❑ On demand

Industry Doctrine (Quantitative)

- Pro’s
  - Easier to Administer
  - More Data
  - Objective
  - Scientific Method
- Con’s
  - Impersonal
  - Closed-ended
  - Theoretical
  - Context

Qualitative

Moves away from the theory driving the data to an approach where the data drives the theory.

Abductive

Draws general principles from specific instances.

Interpersonal

Human interaction. Typically by interviews.

Categorical

Analyzed by interpreting, summarizing and categorizing

Open-ended

Questions that require elaboration and aren't single answered.

Industry Doctrine (Qualitative)

- Visibility
- Consistency
- Capacity
- Toil

What is the audit process like in your organization?

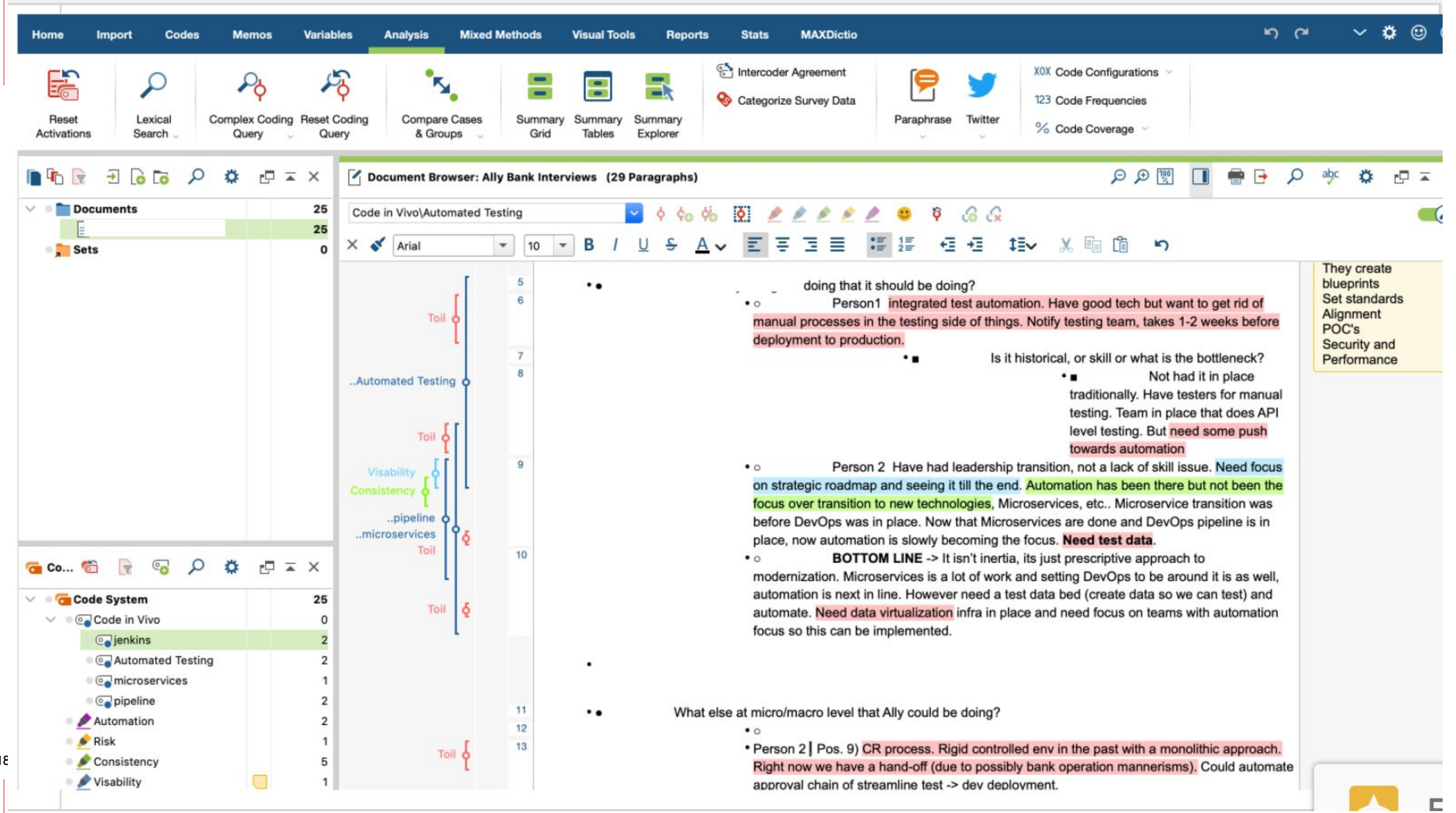
Person1: They are terrible because they waste a lot of time.

Person2: They waste around 30 days a year.

Person 3: We don't tell auditors things they don't already know because it will open up a number of new questions.

Industry Doctrine (Quantitative)

- Pro’s
  - Empirical
  - Open Ended
  - Combinatorial
- Con’s
  - Harder to Administer
  - Less Data
  - Subjective

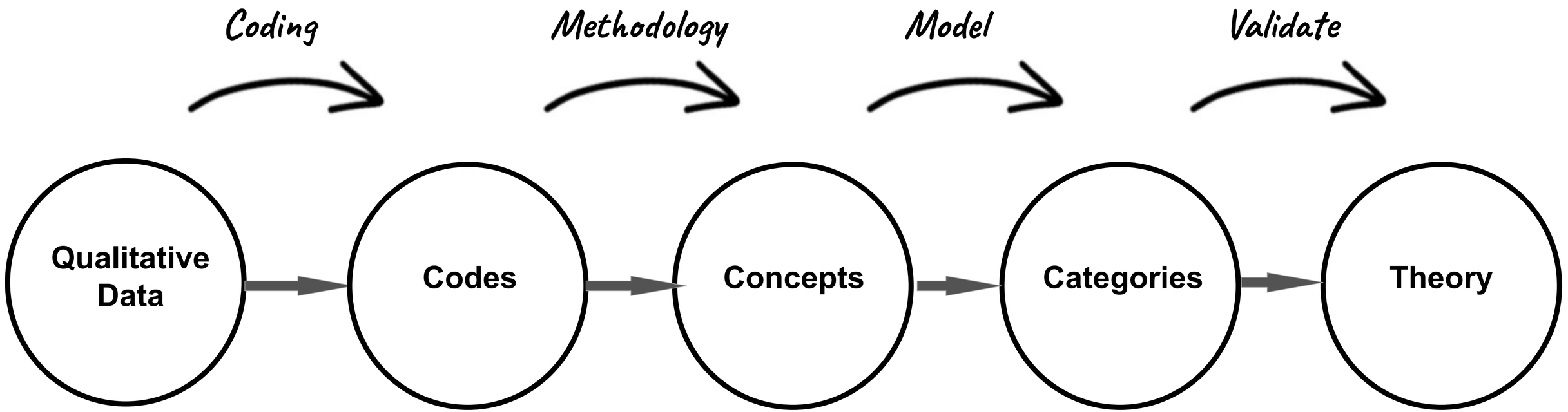

Home
Import
Codes
Memos
Variables
Analysis
Mixed Methods
Visual Tools
Reports
Stats
MAXDictio
Reset Activations
Lexical Search
Complex Coding Query
Reset Coding Query
Compare Cases & Groups
Summary Grid
Summary Tables
Summary Explorer
Intercoder Agreement
Categorize Survey Data
Paraphrase
Twitter
Code Configurations
Code Frequencies
Code Coverage
Documents 25
25
Sets 0
Document Browser: Ally Bank Interviews (29 Paragraphs)
Code in Vivo\Automated Testing
Arial
10
Toil
..Automated Testing
Toil
Visability
Consistency
..pipeline
..microservices
Toil
Toil
Toil
doing that it should be doing?
Person1 integrated test automation. Have good tech but want to get rid of manual processes in the testing side of things. Notify testing team, takes 1-2 weeks before deployment to production.
Is it historical, or skill or what is the bottleneck?
Not had it in place traditionally. Have testers for manual testing. Team in place that does API level testing. But need some push towards automation
Person 2 Have had leadership transition, not a lack of skill issue. Need focus on strategic roadmap and seeing it till the end. Automation has been there but not been the focus over transition to new technologies, Microservices, etc.. Microservice transition was before DevOps was in place. Now that Microservices are done and DevOps pipeline is in place, now automation is slowly becoming the focus. Need test data.
BOTTOM LINE -> It isn't inertia, its just prescriptive approach to modernization. Microservices is a lot of work and setting DevOps to be around it is as well, automation is next in line. However need a test data bed (create data so we can test) and automate. Need data virtualization infra in place and need focus on teams with automation focus so this can be implemented.
What else at micro/macro level that Ally could be doing?
Person 2 | Pos. 9) CR process. Rigid controlled env in the past with a monolithic approach. Right now we have a hand-off (due to possibly bank operation mannerisms). Could automate approval chain of streamline test -> dev deployment.
They create blueprints
Set standards
Alignment
POC's
Security and Performance
Co...
Code System 25
Code in Vivo 0
jenkins 2
Automated Testing 2
microservices 1
pipeline 2
Automation 2
Risk 1
Consistency 5
Visability 1

Qualitative Data Analysis Process

Grounded theory

A systematic methodology involving the construction of theories through methodical gathering and analysis of data. This research methodology uses inductive reasoning, in contrast to the deductive model of the scientific method.

Grounded Theory



Qualitative Data Analysis Process

Approach

- Codes - Key observations of the data to be gathered
- Concepts - A grouping of similar codes with field notes
- Categories - Concepts that make up the basis of a theory
- Theory - Collection of categories that make up a theory.

Grounded Theory Example

- **Code**
  - Audits typically take about 30 days a year and they consume a lot of wasted time.
- **Concept**
  - Audits are Inefficient
- **Category**
  - Risk
- **Theory**
  - Automated Governance

Industry Doctrine (7 Deadly Sins)

1. Visible Work
2. Management System Toil
3. Misaligned Incentives
4. Knowledge Alignment
5. Organizational Design
6. Complex Systems
7. Security and Compliance

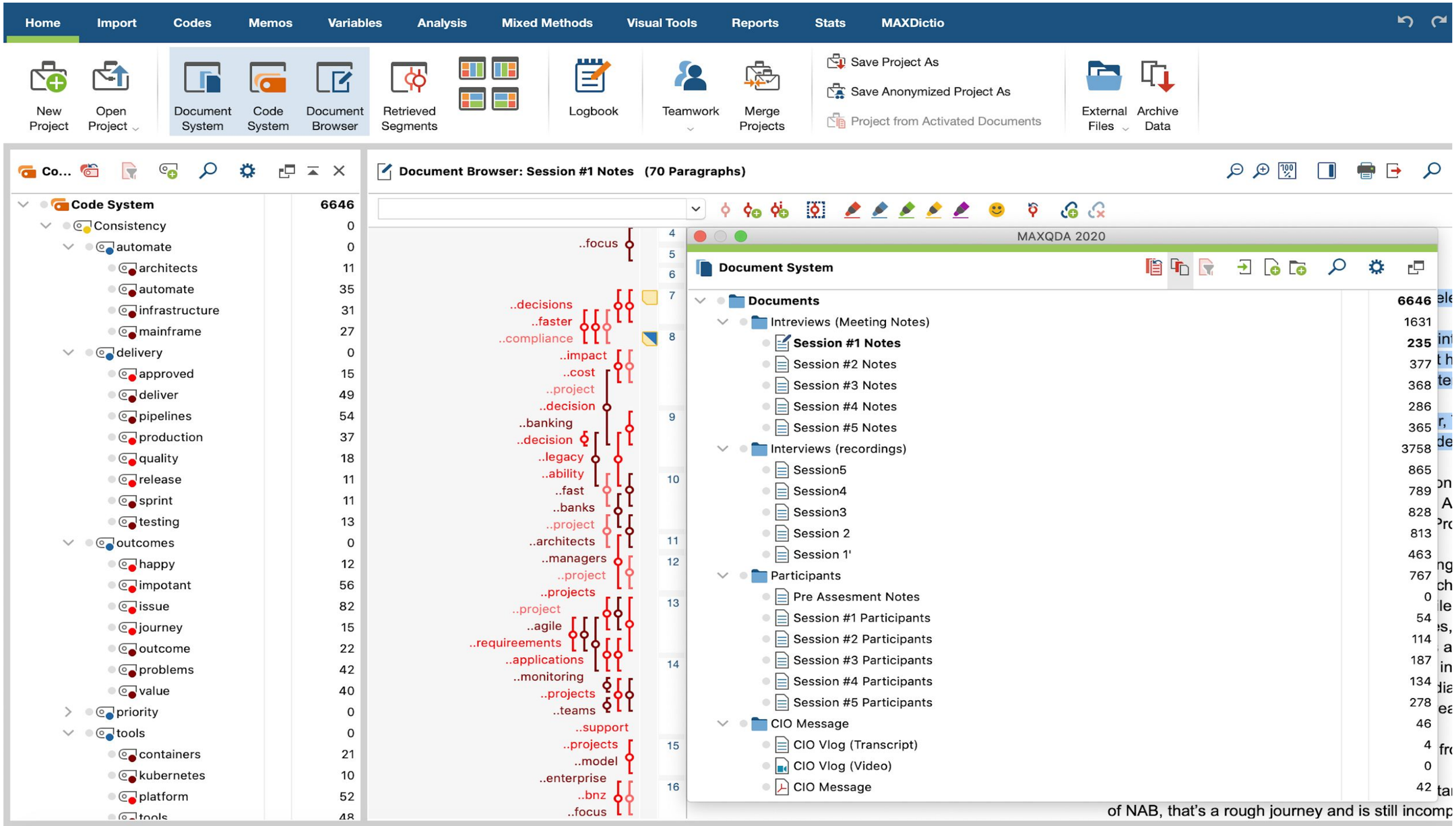
Assessment

Logistics (Assets)

- 10 to 30 Meetings
- 100 to 300 Attendees
- 1000 to 3000 Minutes
- 20 to 50 Documents

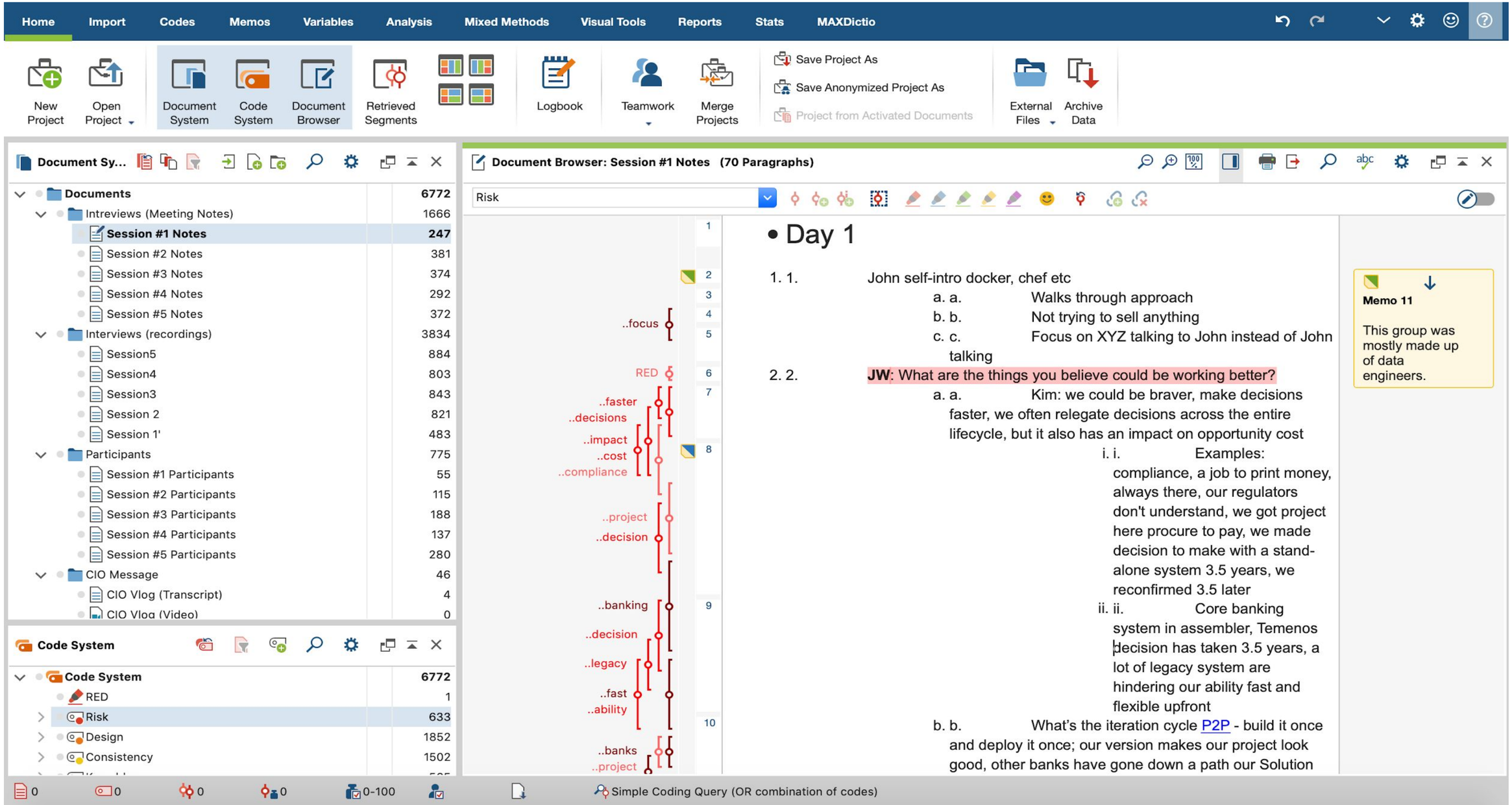
Analysis

Analyze Phase 1 - Artifacts



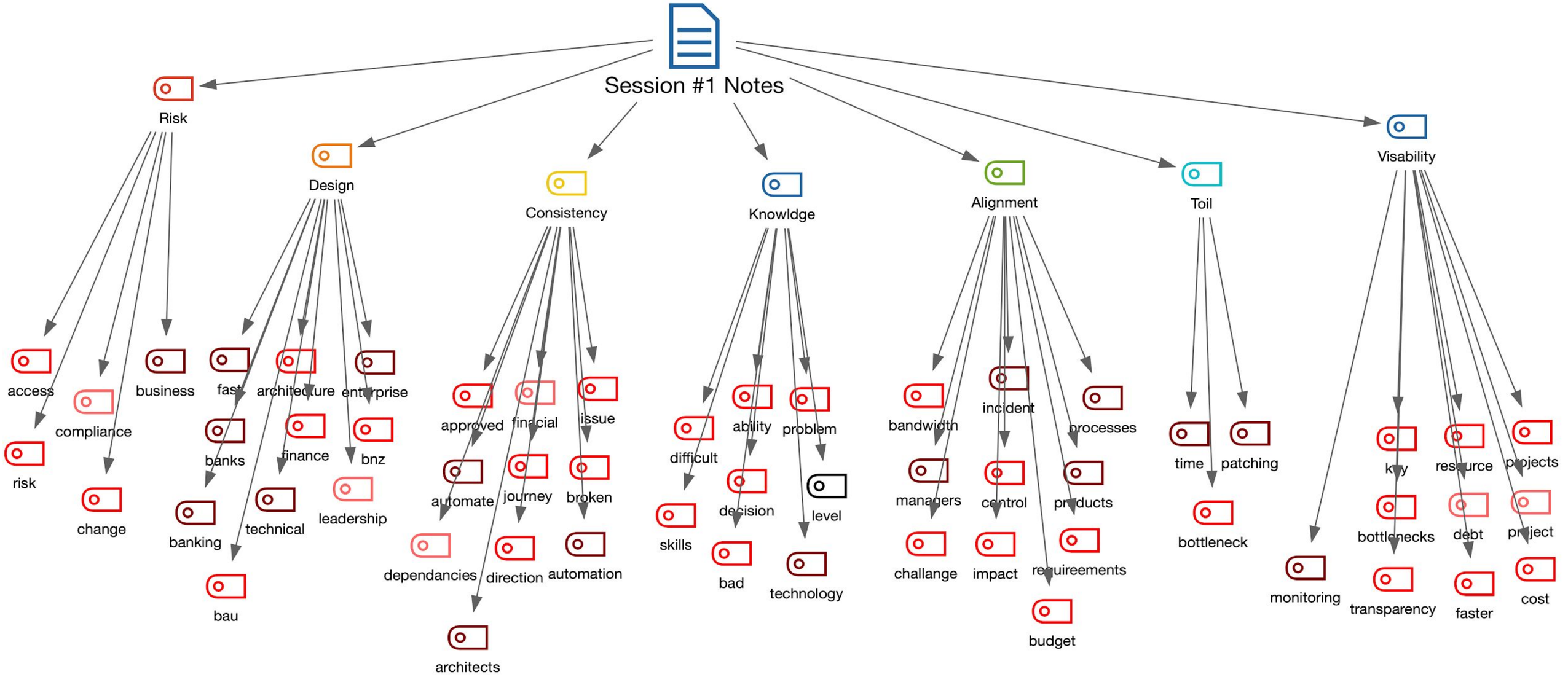
Analyze Phase 1

Analyze Phase 1 - Coding



Qualitative Data Analysis

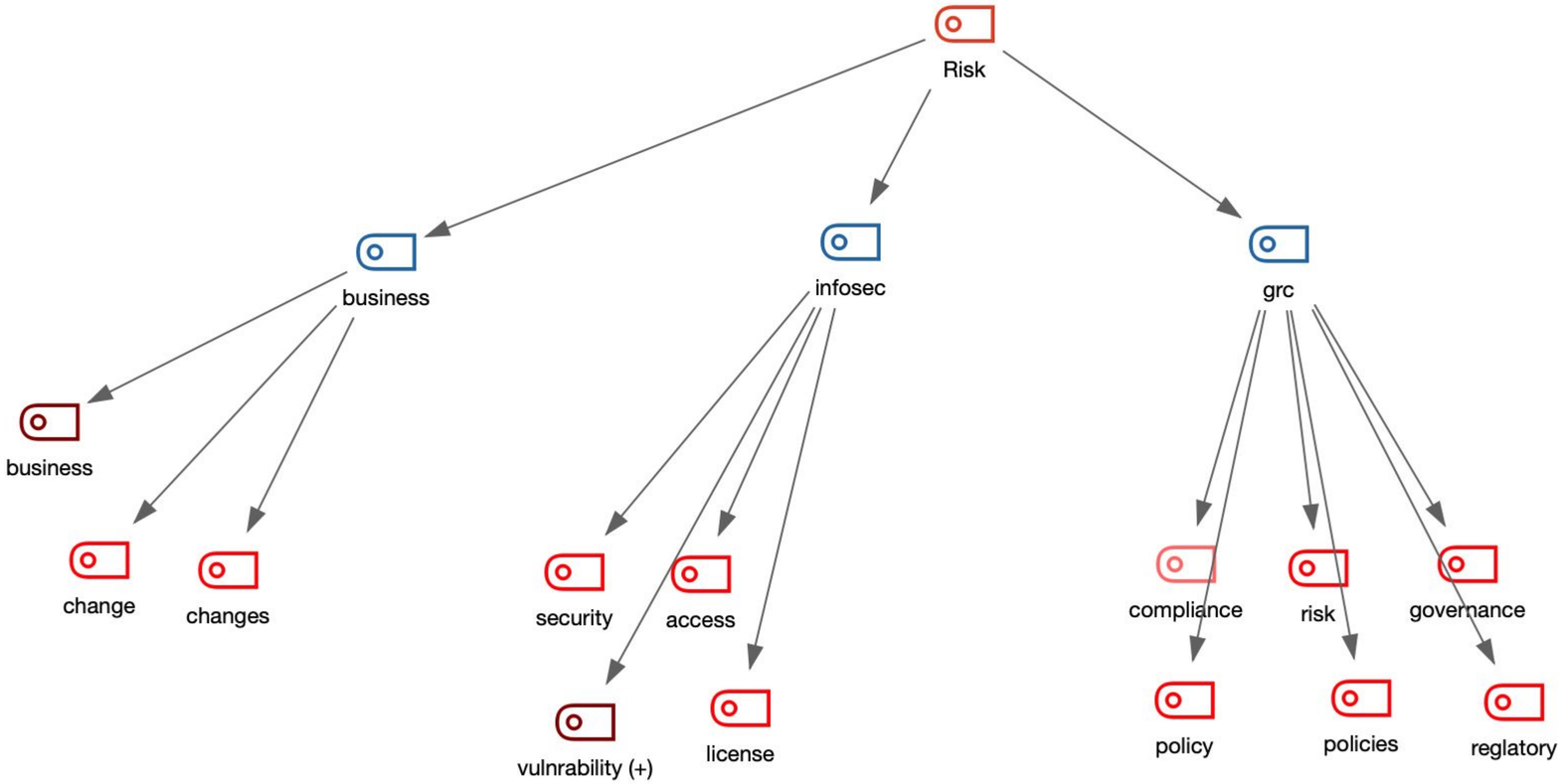
Single-Case Model (Code Hierarchy)



Analysis Phase 2 - Creative Coding

Code System

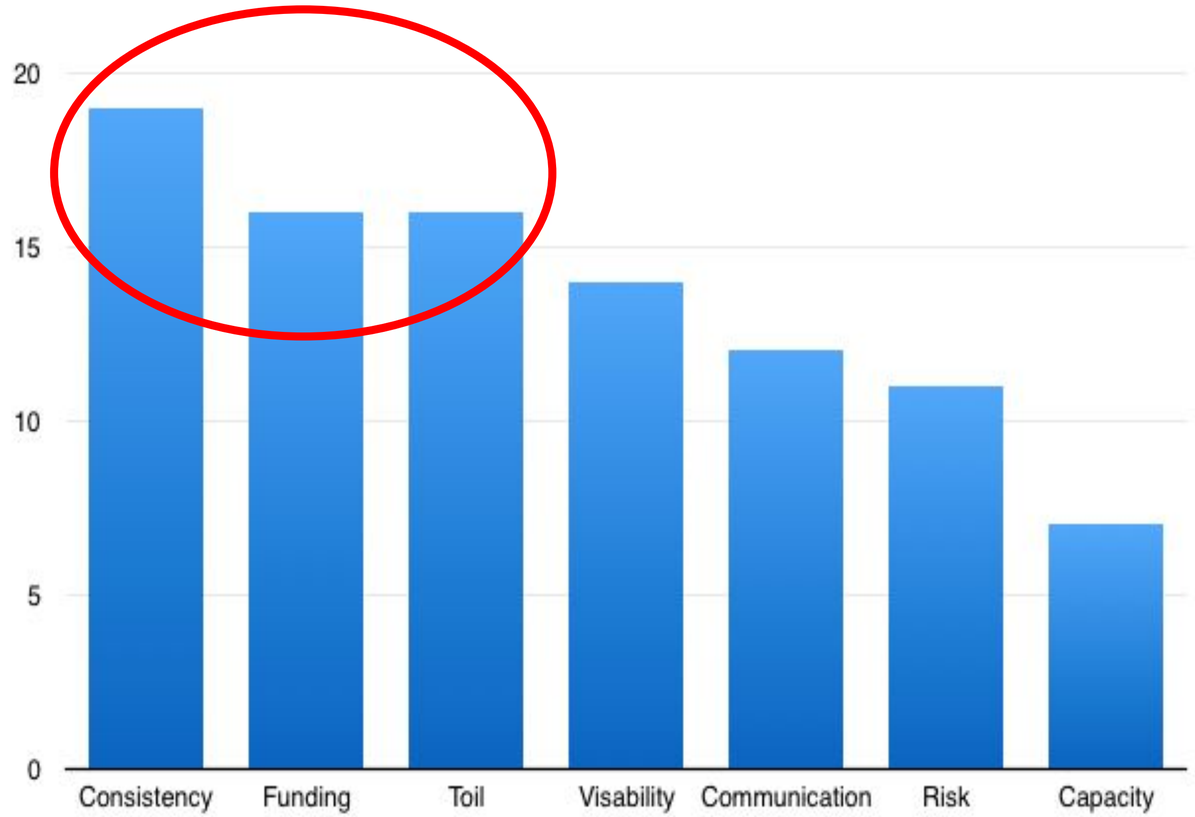
Code System	6772
Risk	0
business	0
business	120
change	93
changes	29
grc	0
compliance	86
governance	43
policies	15
policy	20
reglatory	10
risk	61
infosec	0
access	28
license	12
security	90
vulnrability (+)	26



Report

Theory - Top Three Areas of Concern

- Consistency
- Funding
- Toil



Thematic Observations

1. Trust
2. Lead Time
3. Active Projects
4. Clarity
5. Funding

Economic Impact

Waste:

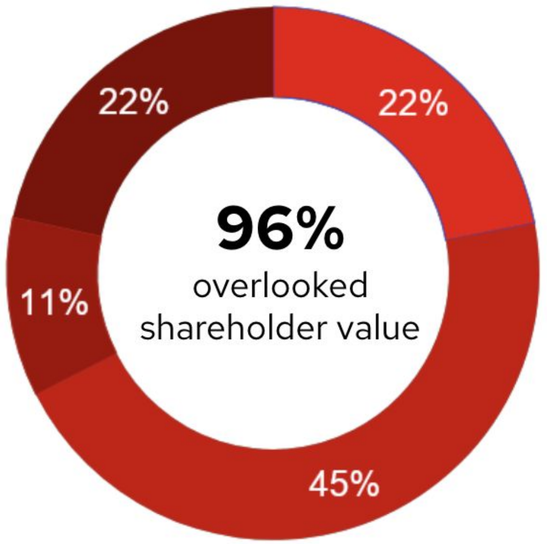
Possibly >30% (on a 500m budget) $150M wasted on general processing.

Consistency:

Another 10% to 15% on lost opportunity cost (low or no automation) $50m to $75M

Risk:

Negative Risk ROI.



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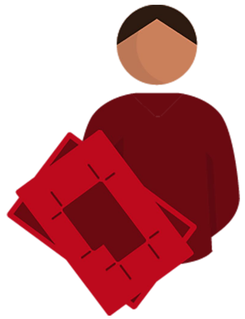
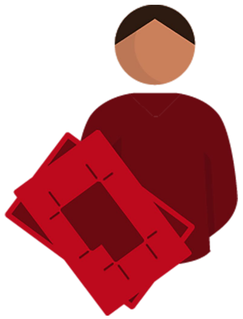
Modern Operations

- SRE
- Dojo
- Automation
- Platform Engineering
- Chaos Engineering
- Skills Liquidity



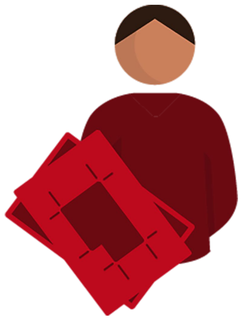
DevSecOps

- Trusted Software Supply Chain
- Automated Governance
- Automated Cloud Governance

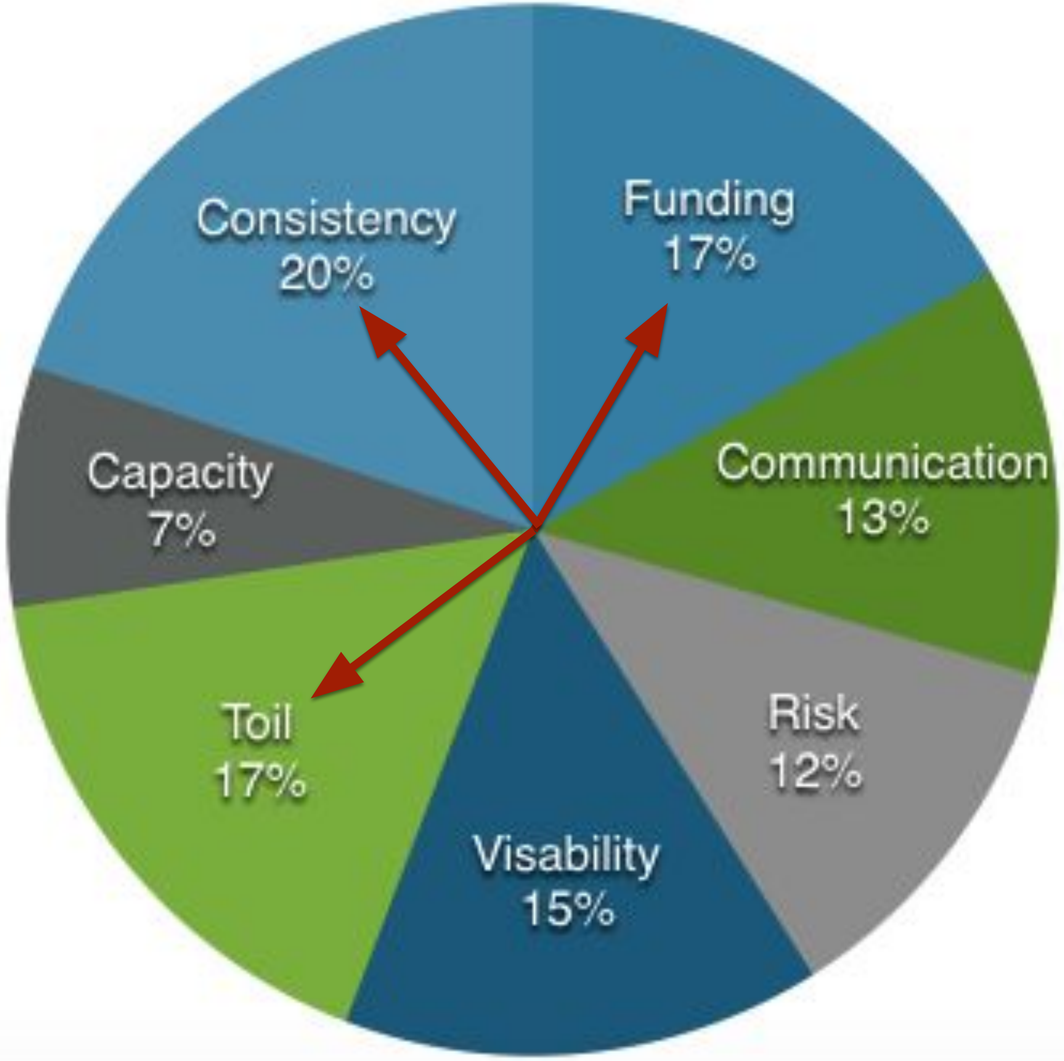


Design Leadership

- Five Elements Assessment
- Value Stream Mapping
- Value Chain Mapping
- Three Economies
- Team Topologies
- Safe to Fail



Areas of Concern (Categories)



Transformation

Transformation Opportunities

1. Taxonomy and Models
2. Roles and Responsibilities
3. Platform Transition
4. Metrics
5. Automation
6. Skills Liquidity
7. Safe to Fail

1 - Taxonomy and Models

- DevOps Taxonomy
- DevOps Models
- SRE Taxonomy
- SRE Models

2 - Roles and Responsibilities

- Development
- Product
- Operations
- Architecture
- Leadership

Five Elements

Engineering

Development

Operations

Differentiation

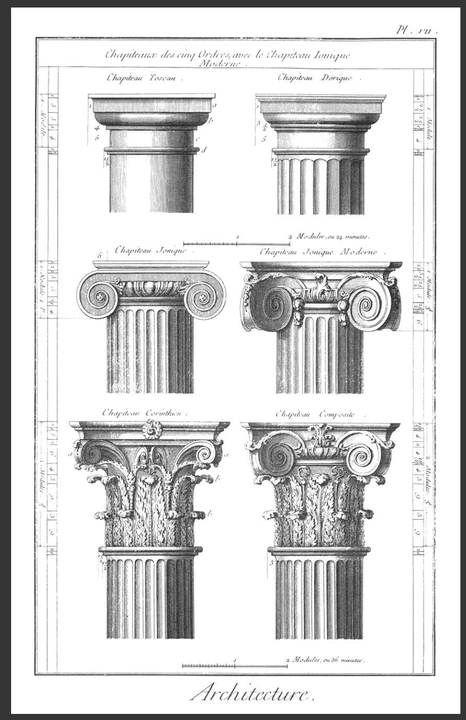
Scale

Leadership

Design

Product

Architecture



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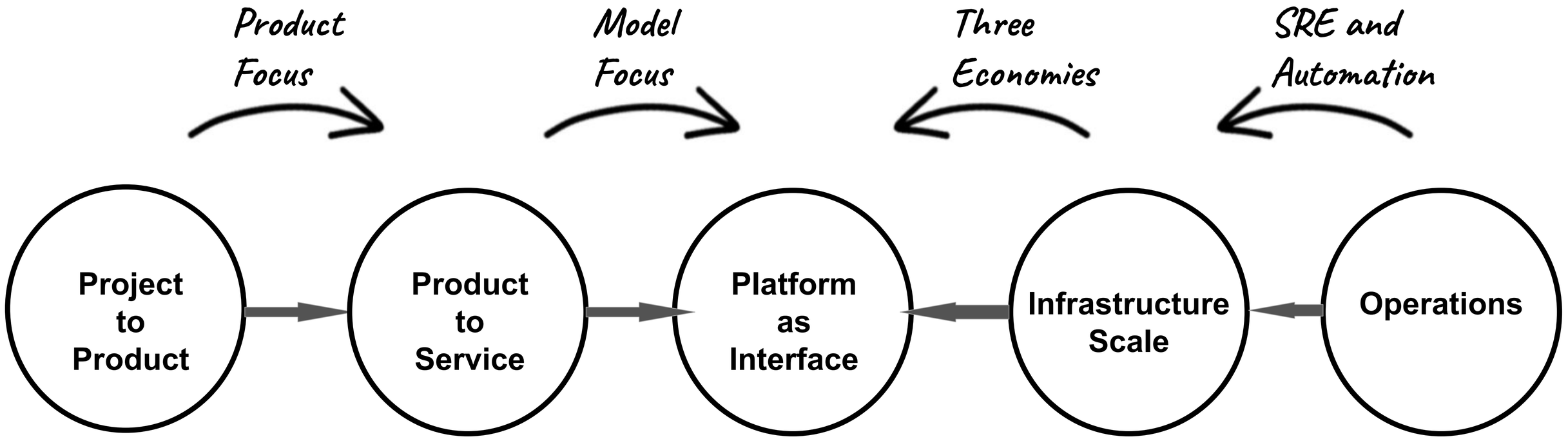
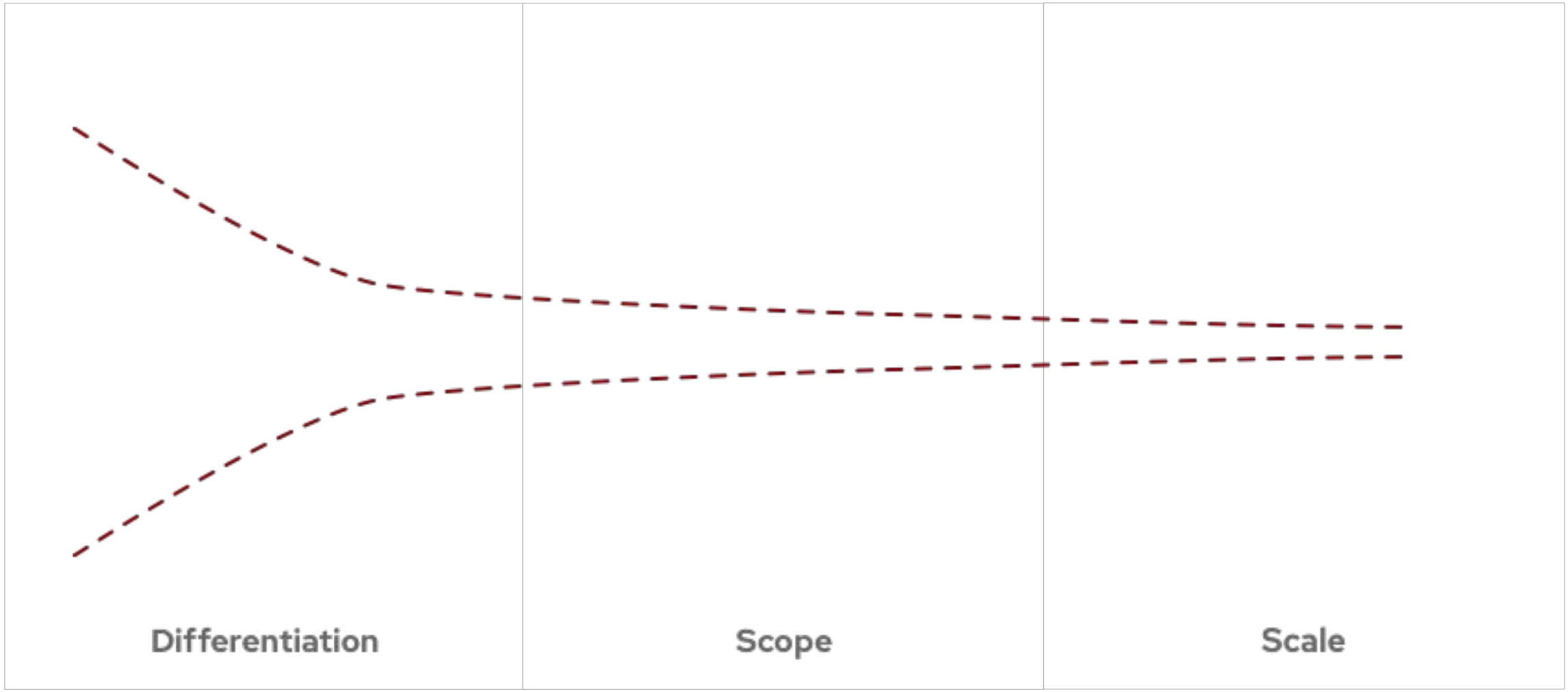
3 - Platform Transition

- **Project to Product**
- **Product to Service**
- **Service to Platform**
- **Change Management**

Platform Transformation



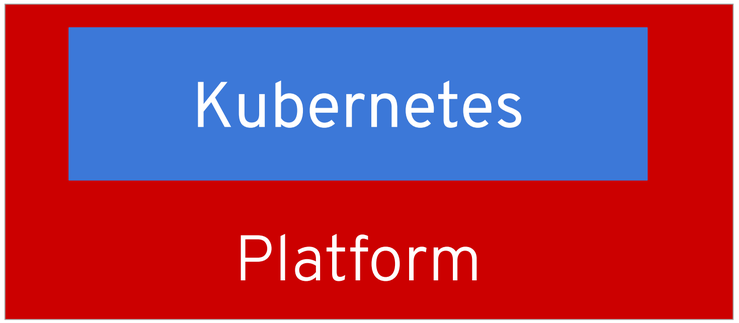
The Three Economies

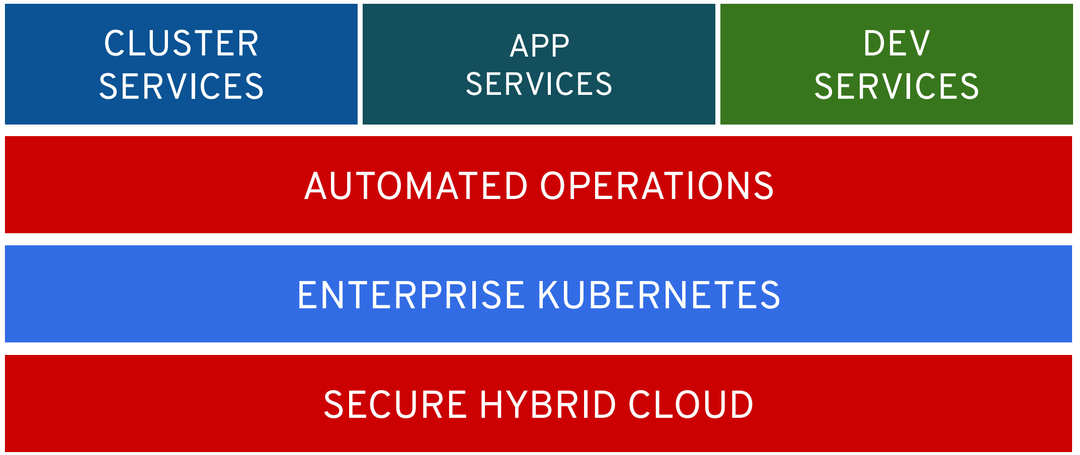


Platform by Design

Differentiation Economy
(Container Experience)
Platform as a Service

Scope Economy
(Service Experience)
Platform as an Interface





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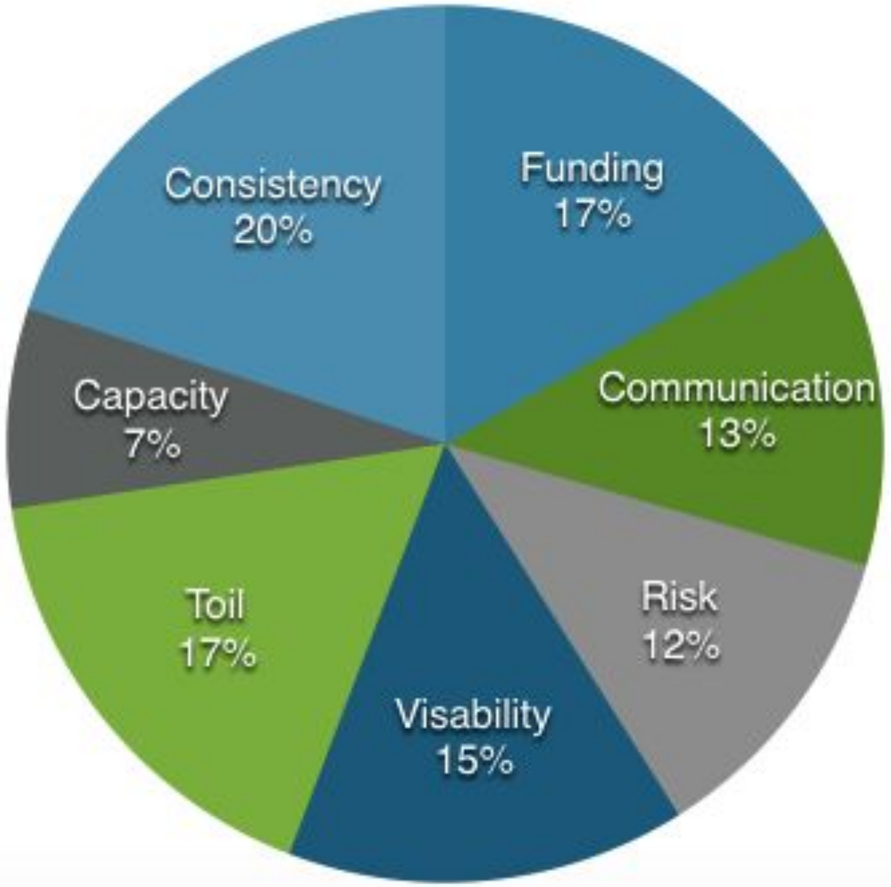
4 - Metrics

- Common Devops Metrics
  - Lead Time
  - Deploys
  - MTTR
  - Change Success
- Advanced Devops Metrics
  - Flow Metrics
  - Change failure rate by team
  - Change failure rate by work type (standard, normal, templated)

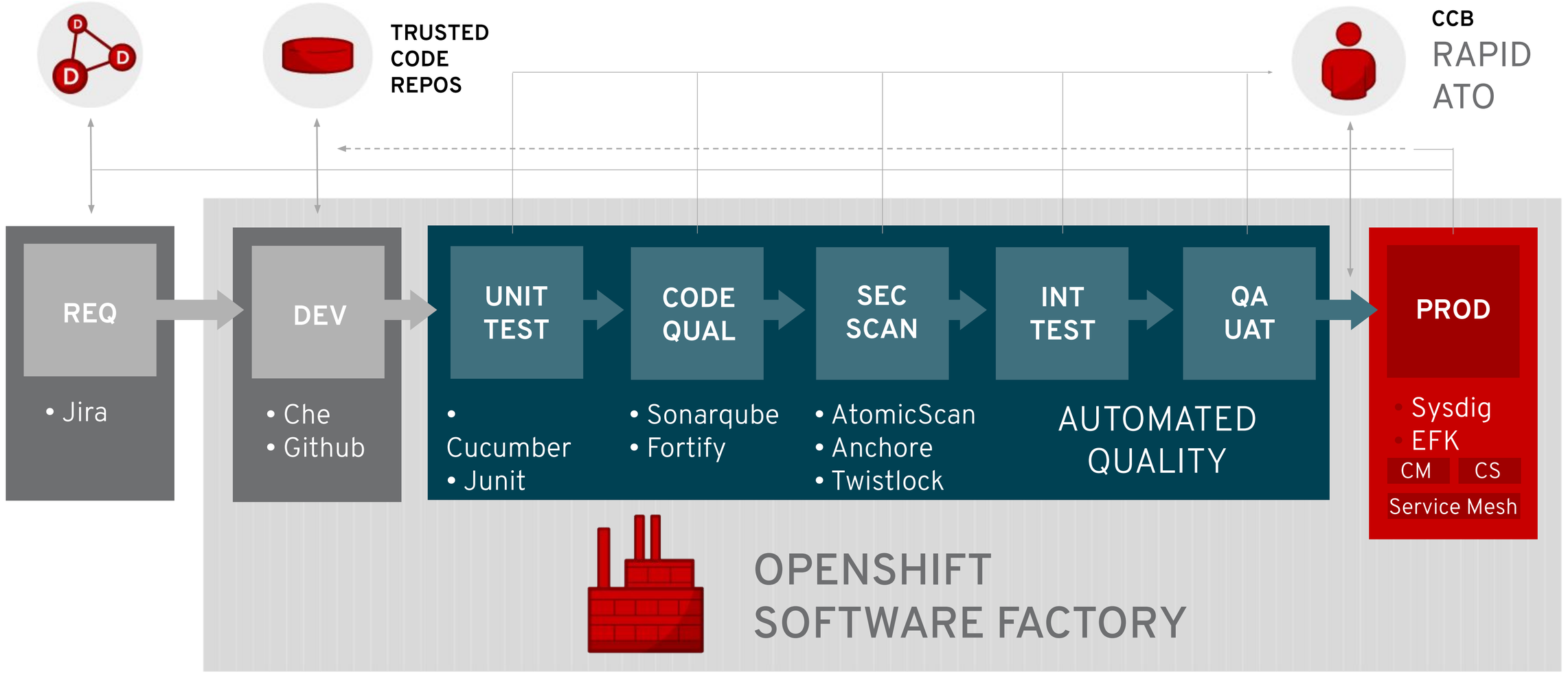


5 - Automation

- Infrastructure
- Deployment
- Containers
- Orchestration
- Security
- Test Automation
- Deployment Strategies

The Trusted Software Supply Chain

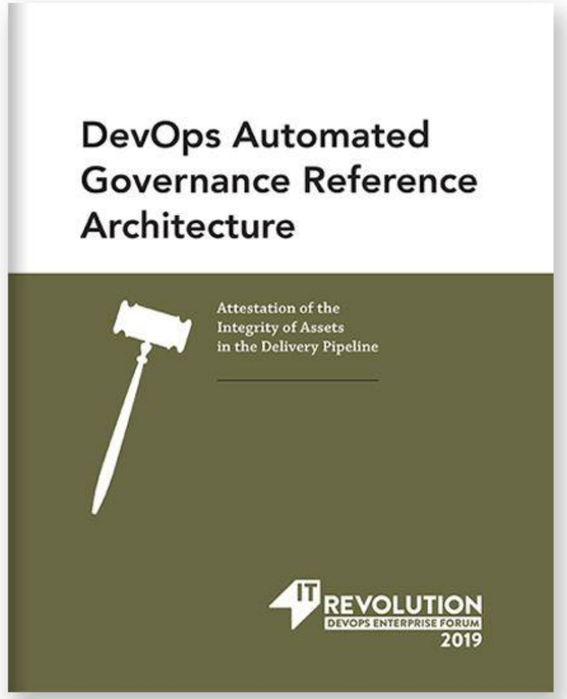
POWERED BY Red Hat OpenShift



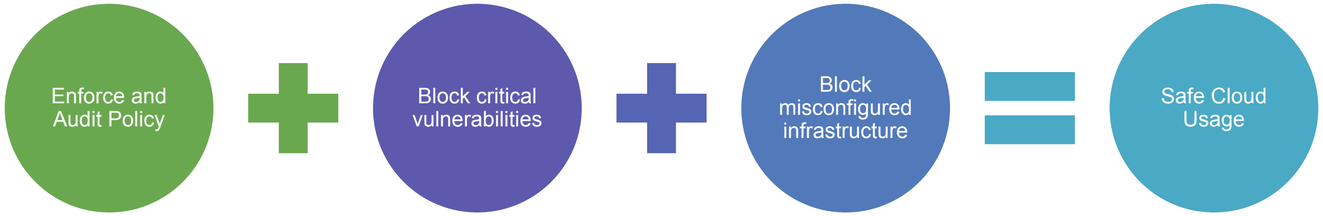
Devops Automated Goverance

- **Objectives**

- **Shorten Audit Time**
- **Increase Audit Efficacy**
- **Reduce CAB Activity**



DevOps Automated Governance



Reduce Audit Time

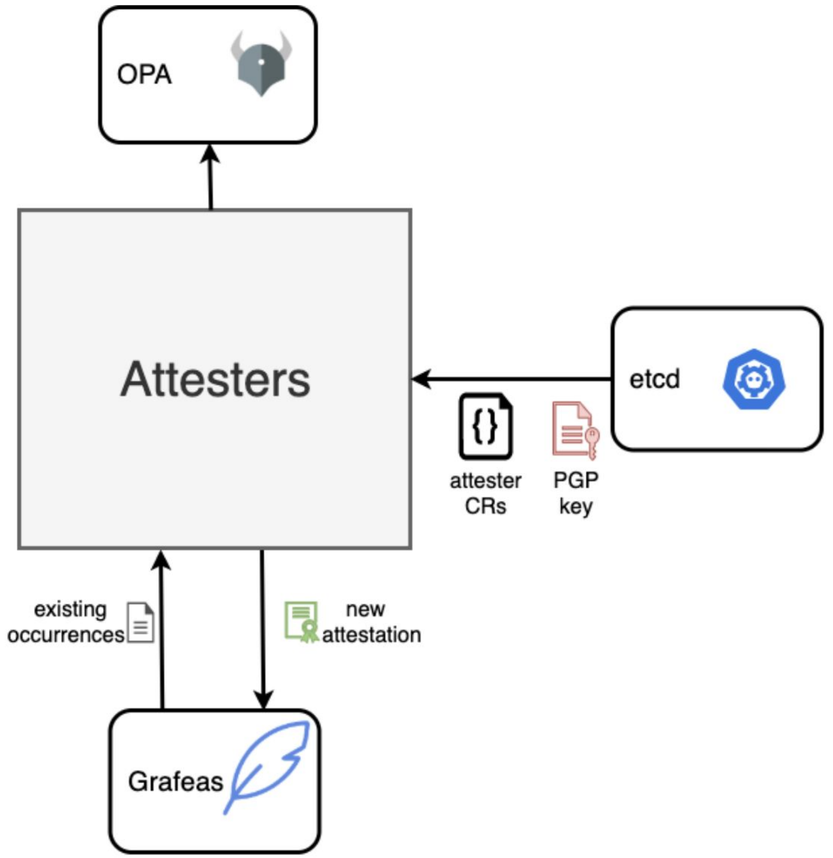
Increase Audit Efficacy

Shorten Feedback Loops

Local Authority

Minimize Handoffs

Enable Trust



6 - Skills Liquidity

- Induction
- Mentoring
- Badging
- UpSkilling Teams
- Dojo
- Hackathons
- Internal Devopsdays

7 - Safe to Fail

- Incident Analysis
- Psychological Safety
- Resilience Engineering
- Blameless Postmortems
- Continuous Verification

Thank You!

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