

Enterprise Management Associates

EMA Top 3 Enterprise Decision Guide 2020

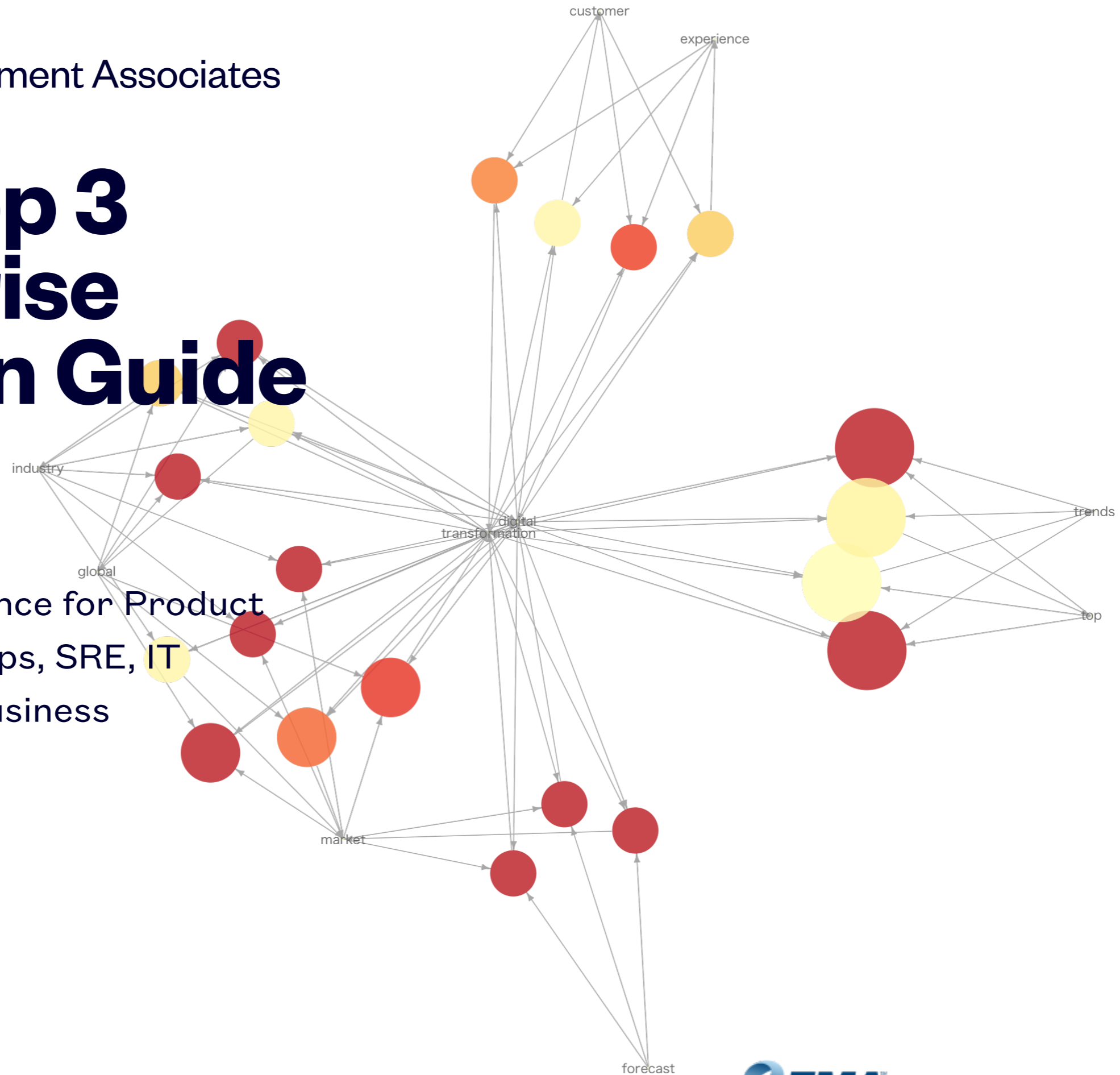
Data-Driven Guidance for Product Evaluation in DevOps, SRE, IT Operations, and Business

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Personas

This EMA Top 3 product guide views, identifies, and categorizes the key pain points for today's essential personas in business, software development, and corporate IT.

DEV

DEVOPS

SRE

ITOPS

**DATA
SCIENTIST**

BUSINESS

EMA Top 3 Product Categories

The four EMA Top 3 product categories directly address the key obstacles of developers, DevOps teams, SREs, IT operators, data scientists, and business professionals.



1. Hybrid Cloud Management

Hybrid cloud management platforms exist to provide the governance, orchestration, automation, management, and infrastructure required for the rapid, flexible, scalable, secure, continuous, and cost-efficient delivery of products to the marketplace.

2. DevOps and Site Reliability Engineering

DevOps and site reliability engineering (SRE) both share the same goal of enabling developers and operators to jointly and continuously deliver reliable products.

3. Application Modernization

Application modernization solutions aim to provide a clear path to get from traditional enterprise applications to cloud-native microservices-based apps.

4. Automation

The automation category focuses on products that enable organizations to achieve optimal scalability. At the same time, automation platforms eliminate “toiling” as one of the key problems in software development and IT.

Digital Transformation Success

Success

Each one of the four EMA Top 3 product categories directly aims to address key enterprise pain points that are currently preventing digital transformation success.

QUALITY

SPEED

COST

INNOVATION

EMA Top 3 Awards

Goal

EMA presents its EMA Top 3 awards to software products that help enterprises reach their digital transformation goals by optimizing product quality, time to market, production cost, and ability to innovate.

Perspectives

EMA derives its Top 3 product categories based on today's critical pain points experienced by developers, DevOps professionals, site reliability engineers (SRE), IT operators, data scientists, and business staff belonging to enterprises of any size and industry.

You should read this report if...

...you want to learn from the successes and failures of your peers

...you require hard data on market trends in DevOps, IT operations, and business technology

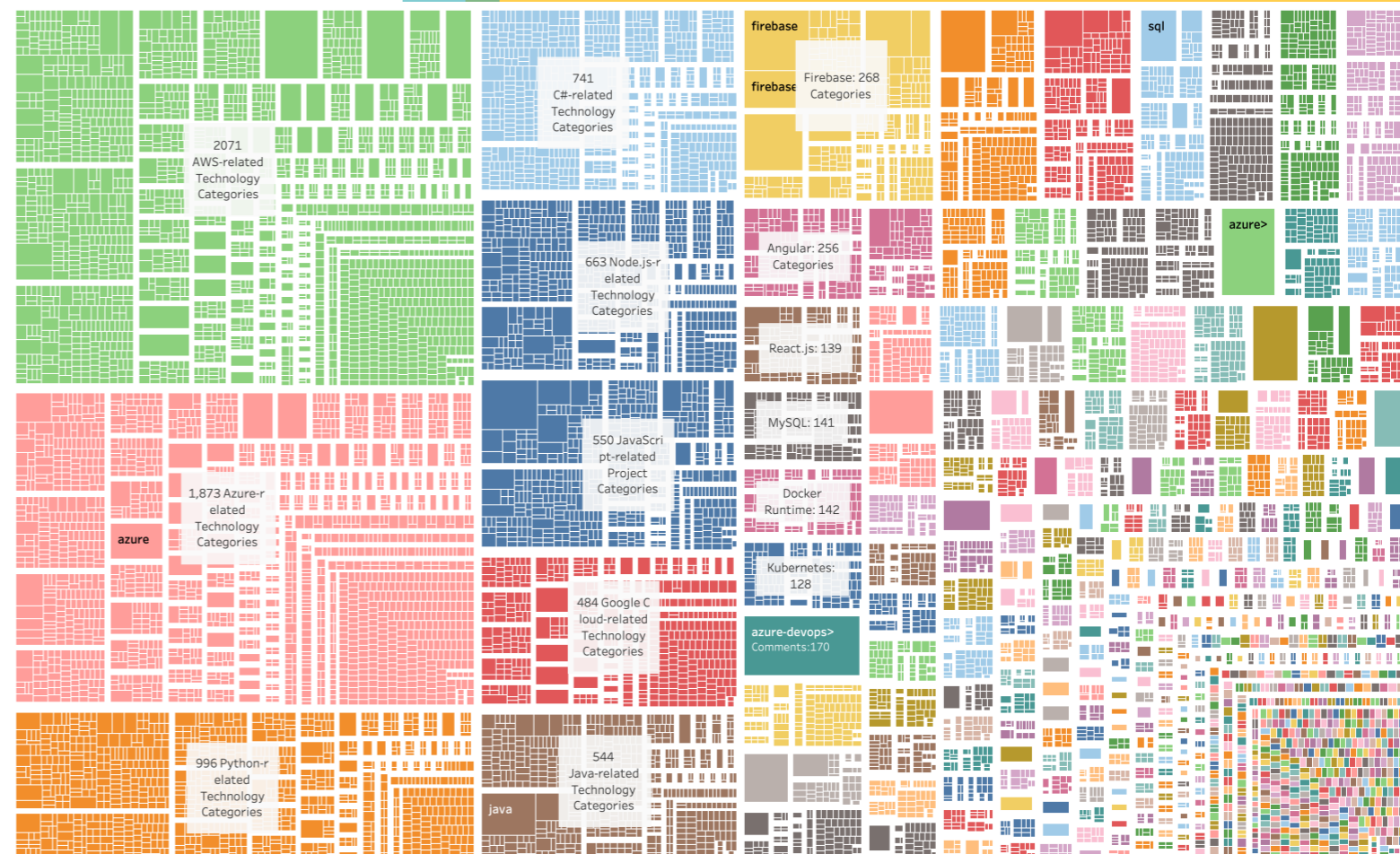
The Four Success Factors for Digital Transformation

(speed, quality, cost, innovation) = digital transformation success

Harnessing the Value of Technology by Mastering Complexity

The four EMA Top 3 product categories enable enterprises to better harness today's broad range of existing and new software technologies in a controlled, flexible, and compliant manner. Policy-driven management, scalability, and unified operations of application infrastructure across data centers and public clouds are the key requirements for achieving this goal.

To illustrate the extent of today's complexity challenge, EMA created a fully comprehensive tree map (see below) that shows all 20,115 categories of hybrid cloud-related questions that were asked by software developers on stackoverflow.com in Q1 2020. Note that technology categories on this chart are clustered together by overarching themes, such as "AWS-related Technology Categories" (see top left section of the tree map in green).

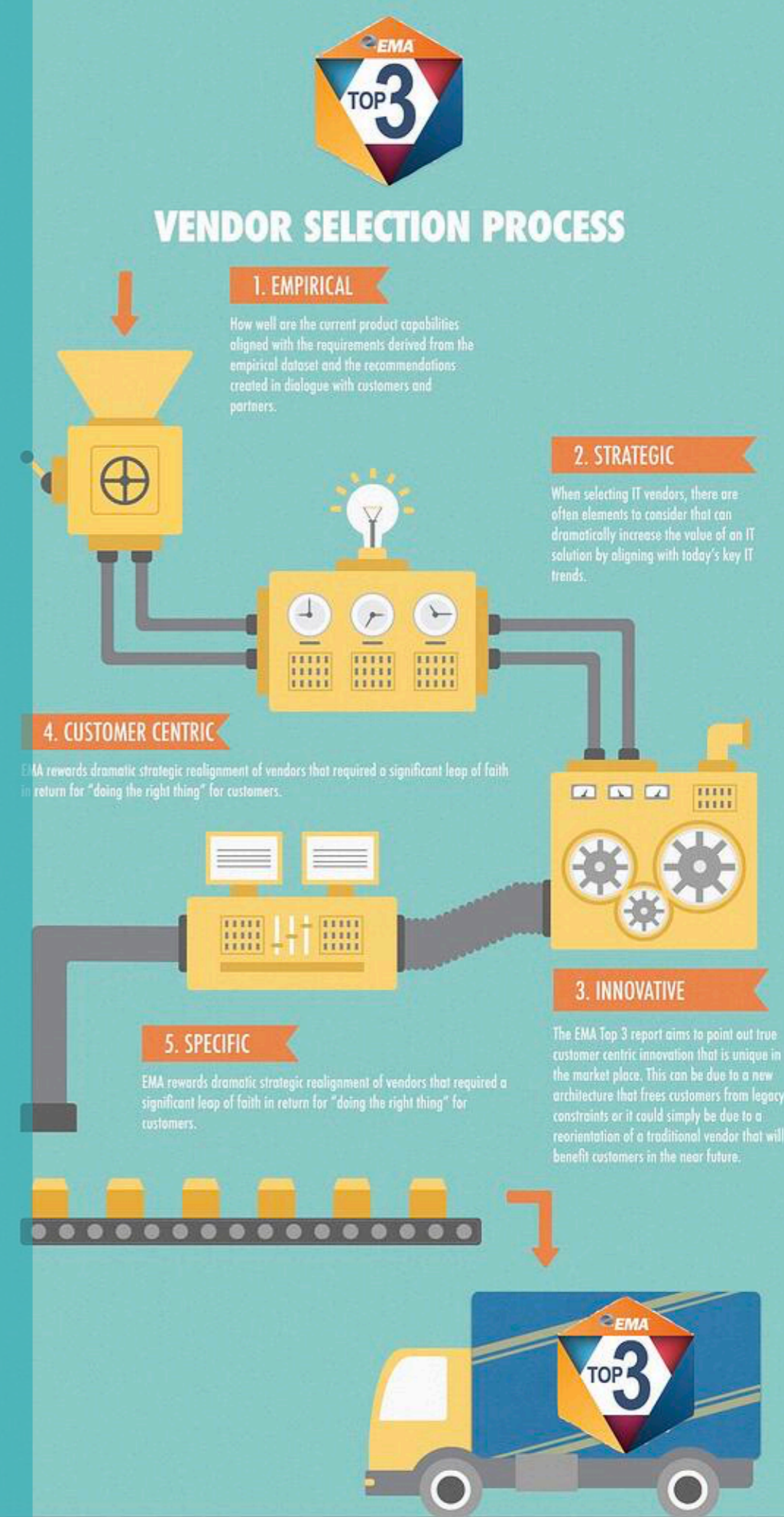


The Five-Step Product Selection Process

The purpose of the EMA Top 3 decision guide is to present the reader with products that address the key business requirements and pain points in 2020. The EMA selection process follows these five key steps.

- 1. Empirical:** EMA identified the specific key customer pain points for each one of the top challenges in DevOps, SREs, IT operations, and businesses in 2020.
- 2. Strategic:** EMA evaluated how each product addresses the key pain points identified in step 1 and how it aligns with today's most relevant technology trends.
- 3. Innovative:** This criteria rewards products for breaking with legacy constraints in order to provide customers with truly innovative solutions.
- 4. Customer-centric:** EMA Top 3 awards reward a product vendor's radical focus on customer requirements instead of marketing an existing product as something new.
- 5. Specific:** EMA Top 3 award-winning products address quantifiable customer pain points.

Please treat these EMA Top 3 vendor recommendations as a starting point to inform your product selection process and overall digital transformation strategy. While this report can provide valuable data-driven insights, it aims to inform, not replace, your own due diligence process.



Product Selection Criteria

Real-life use cases are the crucial link between PowerPoint and how products work in the wild. This report relentlessly focuses on identifying and clustering use cases based on direct customer observations and on the analysis of quantitative project data. While EMA aggregates and anonymizes all customer-specific data points, the EMA Top 3 evaluation process is based on real-life customer problems.

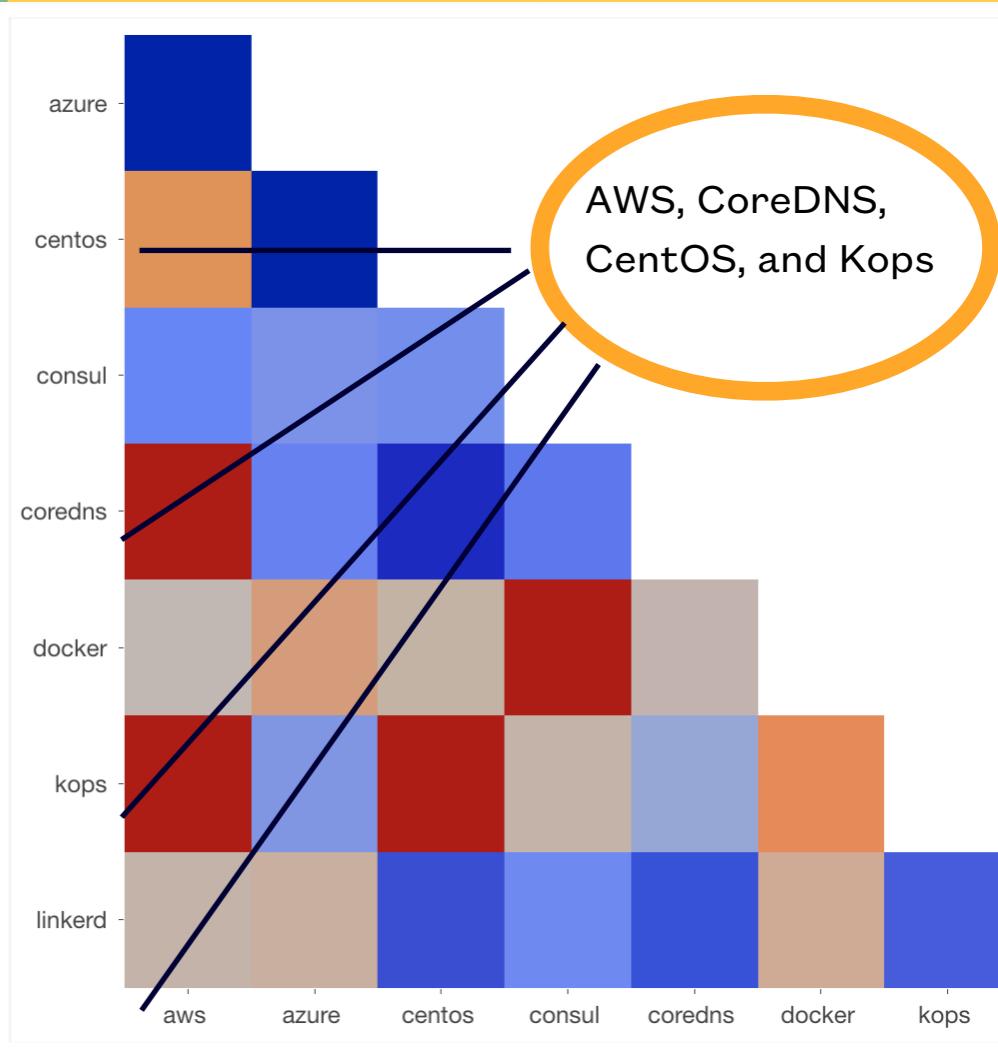
Instead of exclusively relying on EMA survey data, EMA created a data framework that enables EMA analysts to directly analyze project bottlenecks and enterprise pain points by looking at real-life project artifacts. The example shows an extract of the analysis of a collection of large-sized project failures that resulted in system outages and lost revenue. From this specific evaluation, EMA received a series of technology clusters with a high probability of being involved in a production outage. By no means does this result reveal that these technology combinations should be avoided in your next project. Instead, it helps EMA define problem areas that require further examination and deserve some additional questioning by enterprises selecting product vendors.

EMA Top 3 Product Awards - Reward for Addressing the Difficult Problems

Each EMA Top 3 award-winning product has demonstrated its direct focus on addressing today's key pain points for software developers, DevOps teams, SREs, IT operators, and business professionals.

Example: Learning From Production Failures

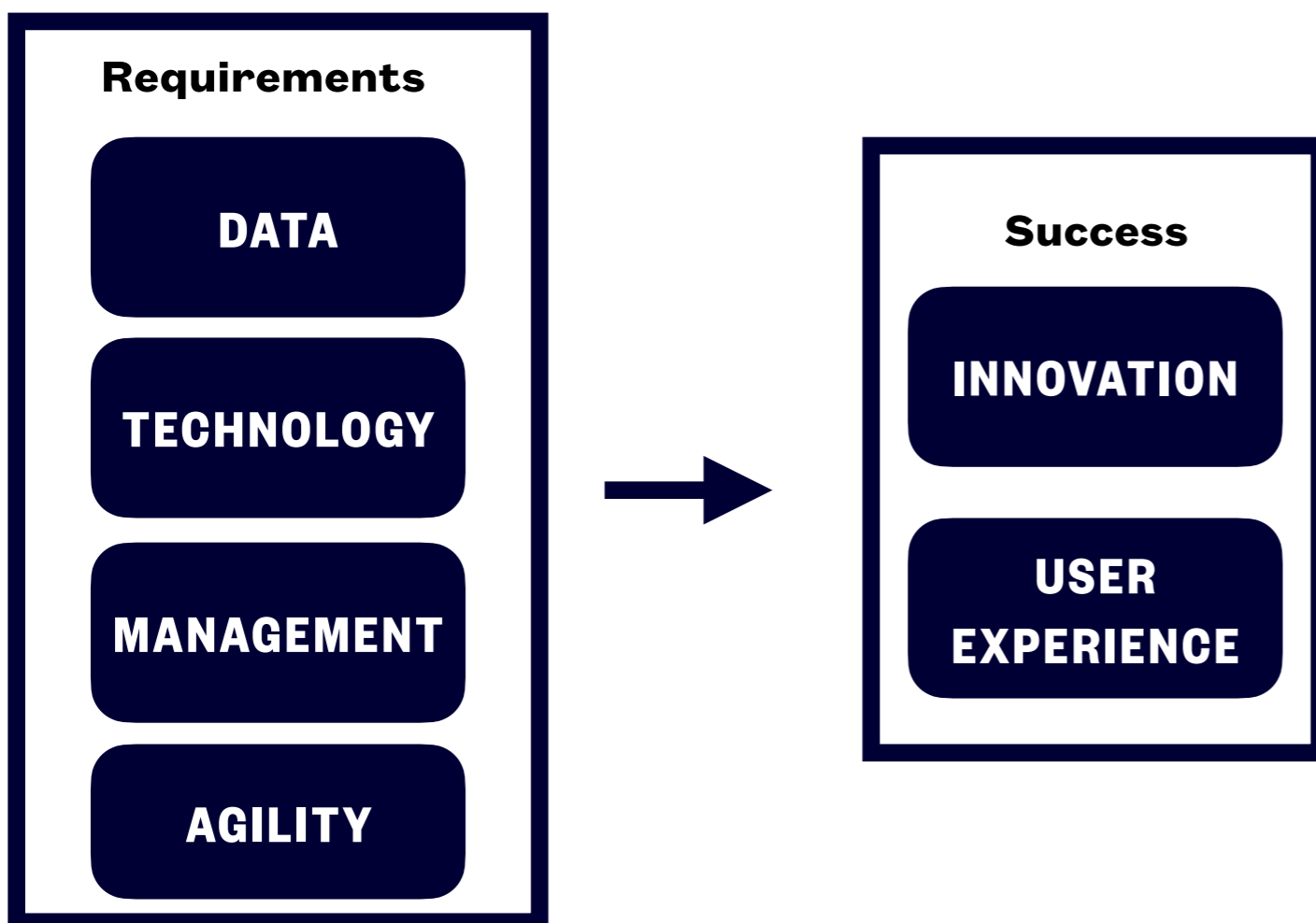
The red squares on each line or column of the technology heat map reveal technology combinations that frequently occurred within the context of the failure of cloud-native applications.



The chart is based on a correlation algorithm applied to the "Kubernetes Failure Stories" collected on GitHub (<https://github.com/hjacobs/kubernetes-failure-stories>, query run on May 28, 2020, 9:44AM MT).

Accelerating Digital Transformation

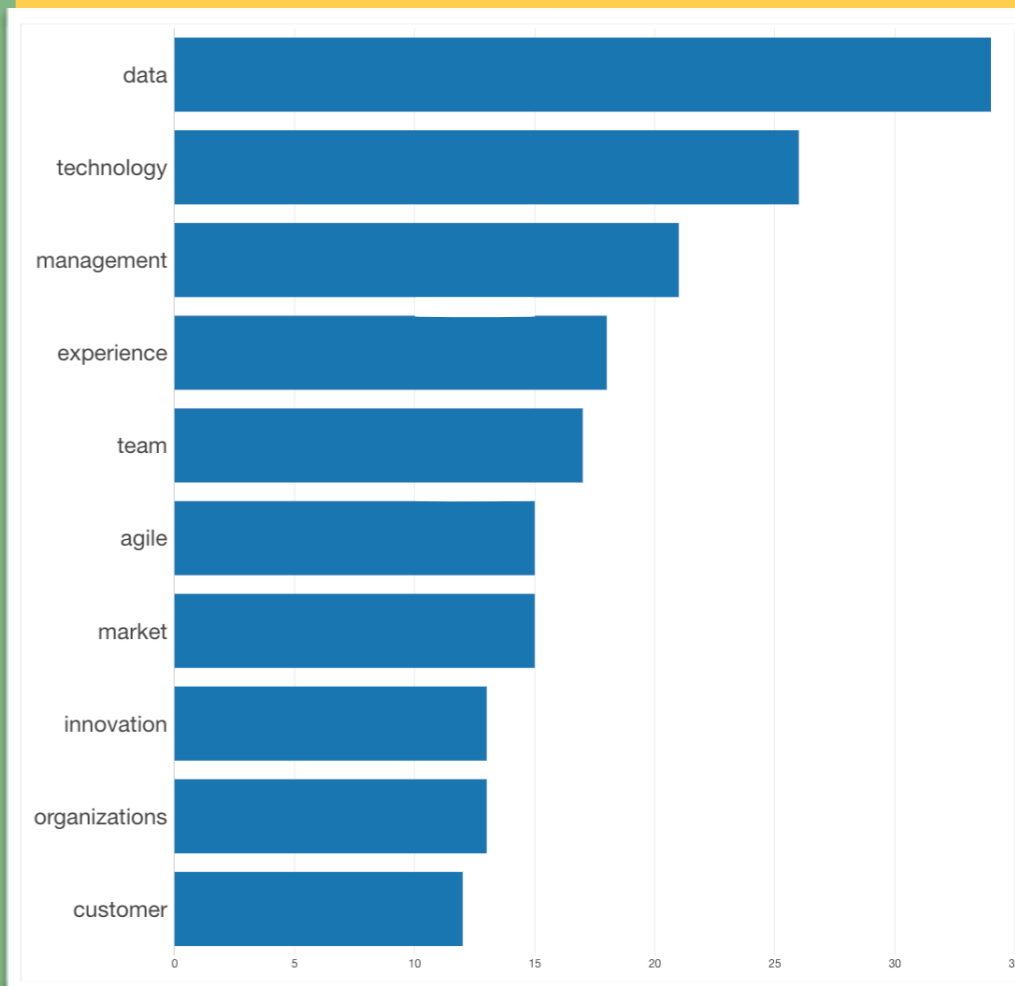
Data, technology, management, agility, innovation, and user experience are the six most prevalent themes discussed within the context of digital transformation. While the first four themes describe the core requirements for digital transformation, the final two represent the critical success metrics of the digital transformation process.



Top 10 Digital Transformation

Topics in 2020

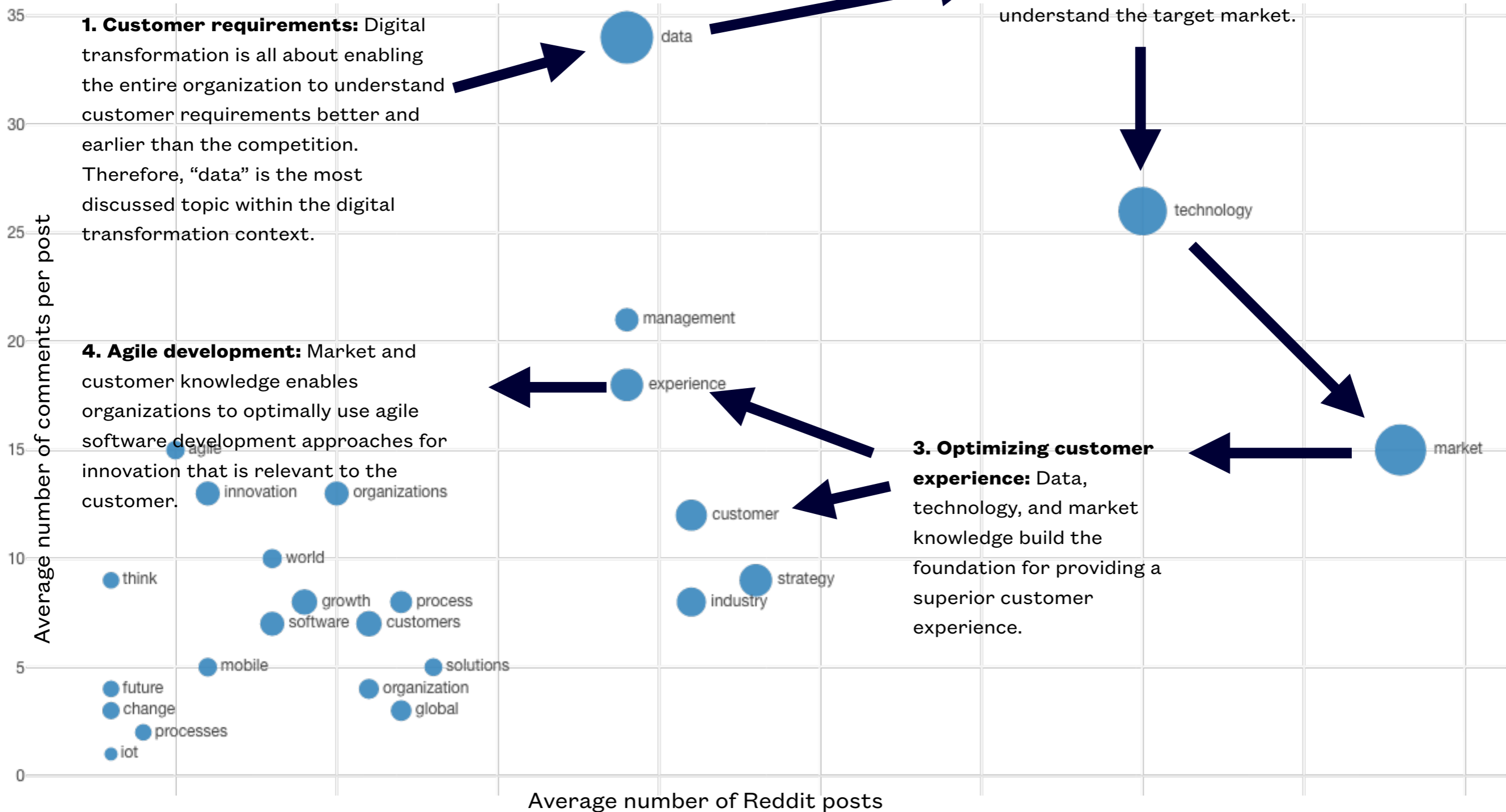
This bar chart is based on the semantic analysis of all 973 discussion threads of the subreddit on digital transformation on Reddit.com (r/digitaltransformation) scheduler.



Source: r/digitaltransformation (May 27, 2020, 9:12 AM MT); X-axis = percent of threads including the respective topic named on the Y-axis.

Accelerating Digital Transformation

This chart walks through the most discussed topics within a digital transformation context in 2020. The x-axis shows the quantity of the overall discussion threads occurring in the reddit.com forum (subreddit) for digital transformation, while the y-axis measures the degree of public interactions with each topic.



Source: [r/digitaltransformation](https://www.reddit.com/r/digitaltransformation) (May 27, 2020, 9:12 AM MT)

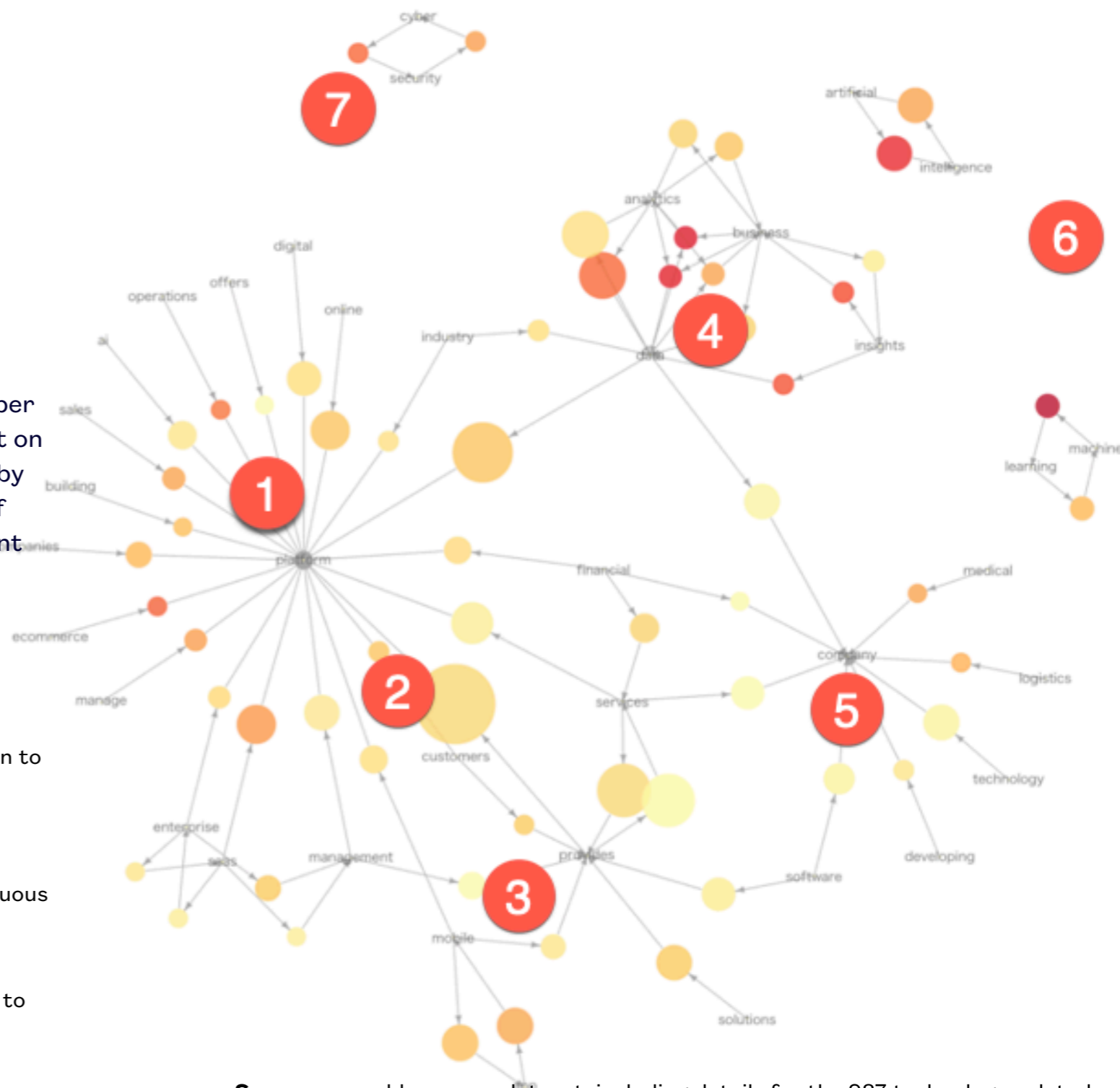
Venture Capital

The 987 rounds of venture capital and private equity investments into technology-related ventures over the previous 12 months amounted to \$13B and focused on two overarching themes: platforms and data.

The analysis of complete investment data for the past 12 months leads to the following seven key findings. The number of each key finding corresponds to the number of a red dot on the topic map, allowing readers to follow EMA's reasoning by looking at topic context distilled through the application of standard clustering algorithms to the set of 987 investment rounds.

Key Findings:

- 1. Platforms rule:** The platform concept is based on creating a centralized software system that enables the entire organization to seamlessly work toward the same set of business goals.
- 2. Platforms connect:** Platforms tie the organization and its customers together by facilitating direct interaction and continuous feedback loops.
- 3. Platforms as SaaS and mobile:** Enterprises require platforms to be delivered as SaaS and to provide staff and customers with a mobile frontend.
- 4. Situational context data:** In order for platforms to enable seamless collaboration, they need to provide each staff role with a continuous stream of situational context.
- 5. Vertical context:** Data-driven insights are often specific to individual verticals. Healthcare, logistics, and financial services-related solutions have received the most funding over the previous 12 months.



Source: crunchbase.com dataset, including details for the 987 technology-related venture capital and private equity investments over the previous 12 months.

- 6. Artificial intelligence and machine learning:** The overarching topics that continuously enhance the impact of platforms and data.
- 7. Cybersecurity:** When enterprises are connected directly to customers via data-driven platforms intuitively, cybersecurity becomes a critical topic.

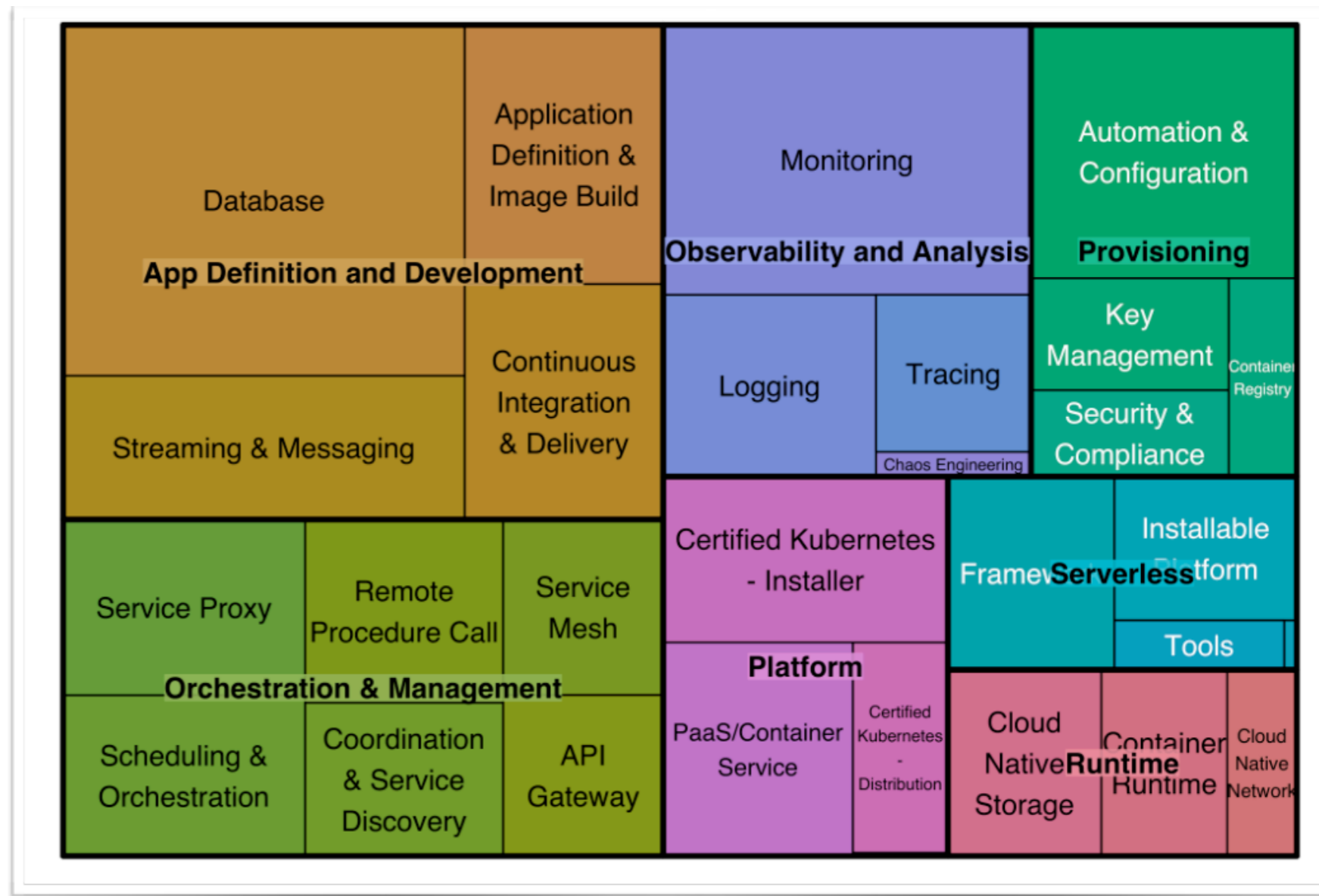
Open-Source Metrics

Harnessing the capabilities of open-source projects is critical for commercial software offerings. Currently, the CNCF landscape includes 738 vendors (and supporting organizations) that offer a total of 1,395 products in 9 categories and 38 subcategories.

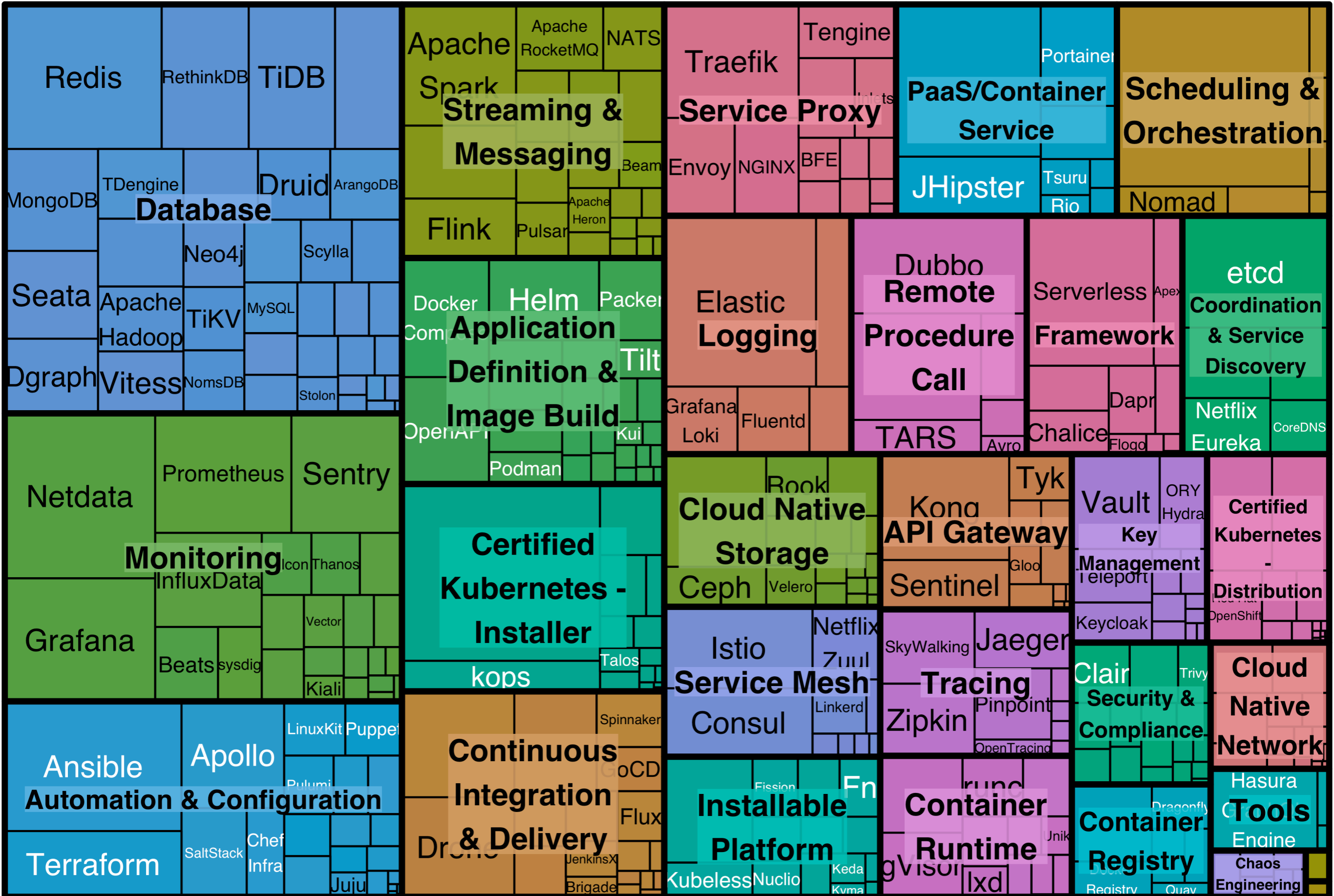
The joint metrics for these products and projects demonstrate the potential value for enterprises to tap into when leveraging open-source software.

2,208,453 stars on GitHub
 \$82B in funding
 71,361 individual contributors

Flexibility and choice are great advantages of today's cloud-native universe, but at the same time, they can become a curse for enterprises looking for unified and consistent operations management for their infrastructure, data services, and applications. Applying the same policies in terms of compliance, security, performance, cost, and availability to these heterogeneous environments has proven difficult for many organizations, leading them to look for a better handle on SLAs and SLOs within their modernized environments.



The tree chart shows the CNCF product categories (bold) and subcategories. EMA sized the squares based on the number of products contained within each category and subcategory.



This tree chart groups together the CNCF subcategories of projects and sizes each individual project proportional to the number of GitHub stars received.

4 EMA Top 3 Product Categories

EMA research identified four key product categories for developers, DevOps, SRE, IT operations, data scientists, and business decision-makers in 2020. EMA created these categories based on the research approach outlined in the first part of this report.

Application Modernization



Application modernization solutions aim to provide a clear path to get from traditional enterprise applications to cloud-native, microservices-based apps while preserving the ability to run both types of applications side by side.

Automation



The automation category focuses on products that enable organizations to achieve optimal scalability, speed, and flexibility for their product offerings. All of these automation platforms aim to eliminate “toiling” as one of the key reasons for decreasing staff motivation.

Hybrid Cloud Management



Hybrid cloud management platforms provide the governance, orchestration, automation, management, and infrastructure services required for the rapid, flexible, scalable, secure, continuous, and cost-efficient shipment and operations of software products.

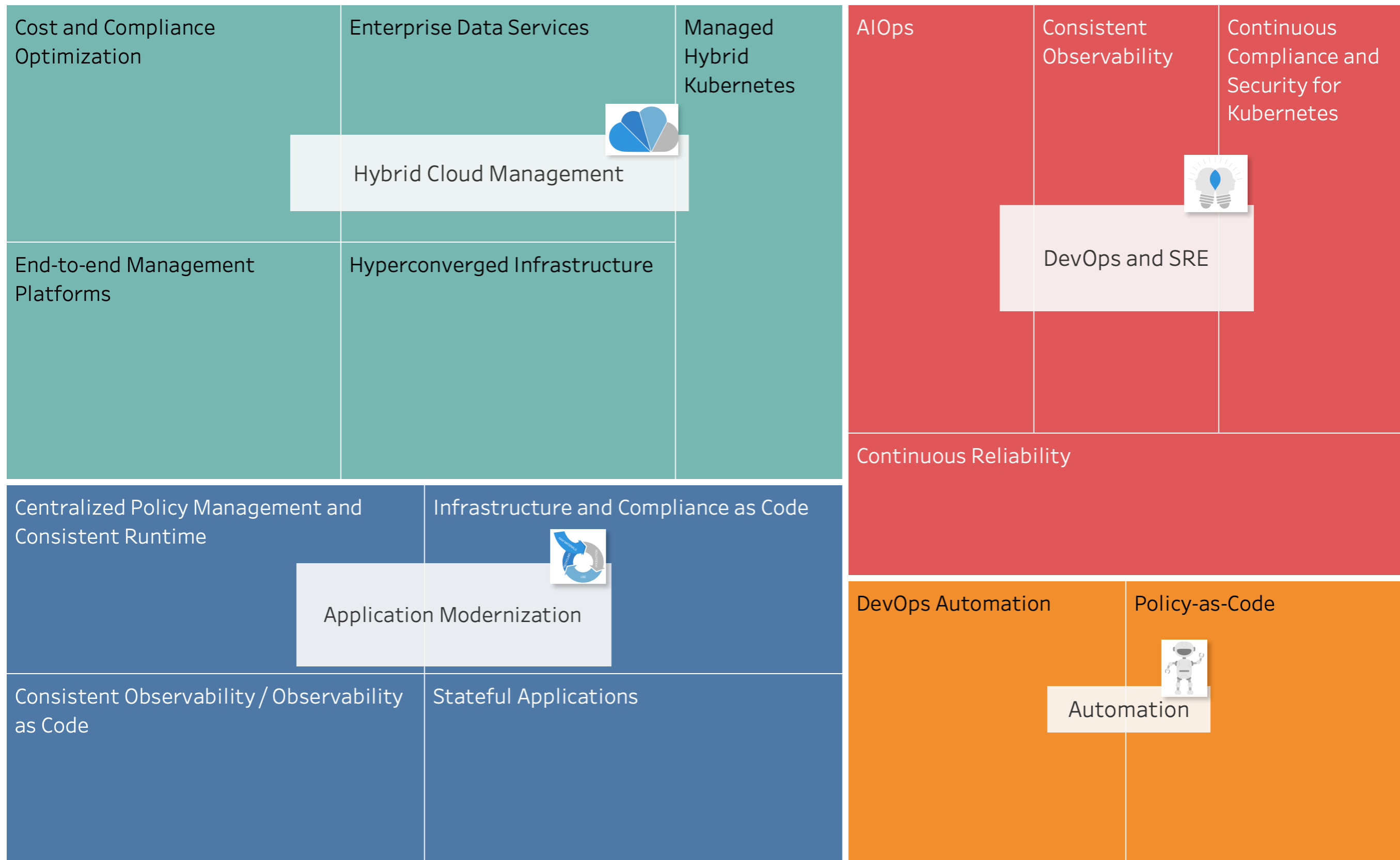
DevOps and Site Reliability Engineering



DevOps and site reliability engineering (SRE) both share the same goal of bringing together developers and operators to continuously and incrementally deliver reliable products to the customer.



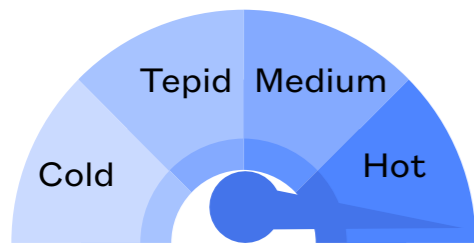
Top 3 Categories and Subcategories



EMA Top 3: Hybrid Cloud Management

The EMA Top 3 product categories in the Hybrid Cloud Management section of this report aim to enable enterprises to optimally take advantage of the different capabilities, cost structure, security characteristics, compliance frameworks, performance, and reliability of data center technologies and public cloud services.

EMA Market Rating



Market Metrics

Number of vendors: 428
Number of funding rounds: 506
Total funding amount: \$2.6B
Total number of jobs listed on...
...Indeed: 4,850
...LinkedIn: 5,461



Top 5 Google Search Queries

What is hybrid cloud?

1. What are the differences between private cloud, public cloud, community cloud, and hybrid cloud?
2. Why hybrid cloud?
3. What is hybrid cloud storage?
4. What is hybrid multi-cloud?
5. What role does private cloud play?

Top 5 Questions Received by EMA

1. What is the difference between hybrid cloud and multi-cloud?
2. What is the share of applications that are still in the data center?
3. How much adoption do you see for Google Anthos, Amazon Outposts, and Azure Stack?
4. Which workloads will always stay on-premises, if any?
5. What is the impact of hybrid cloud architecture on core storage services?

EMA Top 3 Product Categories

End-to-end management platforms: Policy-driven automation, orchestration, and governance platforms.

Managed hybrid Kubernetes: Managed hybrid Kubernetes clusters for data center and public clouds.

Cost and compliance optimization: Continuous application-centric rightsizing and configuration of cloud and data center infrastructure.

Hyperconverged infrastructure for hybrid cloud: Universal hybrid cloud infrastructure for optimal consistency across clouds.

Enterprise data services: Unified data services to simplify application use across clouds.

In a Nutshell

In 2020, an estimated 80% of enterprises have adopted a combination of data center infrastructure and public cloud services to run production applications. These same enterprises are now struggling to control the cost and risk that come with this rapid adoption of hybrid cloud technologies. EMA identified the five product categories enterprises need to look at when aiming to optimally deploy, govern, and operate their hybrid cloud.

Category

Hybrid Cloud Management:

Enterprise Data
Services



Business Value

Enterprises require a unified layer of data services such as backup/restore, data protection, deduplication, encryption, high availability, and snapshotting that works for traditional enterprise applications and for cloud native apps that are based on microservices running on top of Kubernetes on premises or in the public cloud.

EMA Top 3
Products

Clumio

Minio

SoftIron HyperDrive



Key Advantages

Unified control plane for consistent storage and data services across the data center, cloud, and edge locations.

Infrastructure-independent management of policies and SLAs for cloud-native and traditional enterprise apps.

Continuous compliance and auditability across application architectures and clouds.

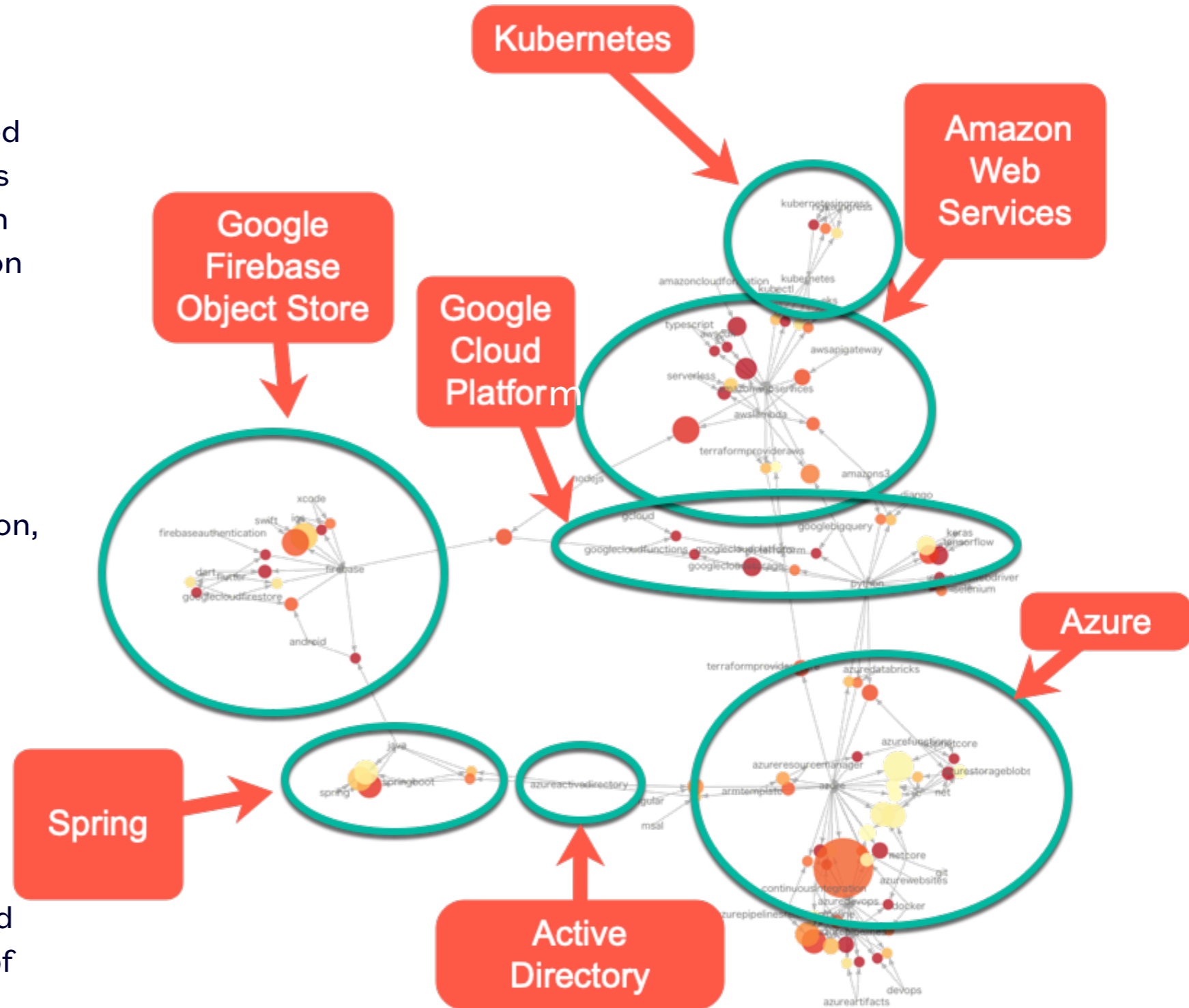
Self-service policy-driven provisioning of data and storage services.

Hybrid Cloud Management: The Need for Unified Operations



While most enterprises have started their digital transformation process by adopting cloud-native application architectures, digital transformation has often stalled when it comes to modernizing business-critical applications that cannot be easily containerized due to concerns in terms of compliance, security, availability, reliability, data protection, cost, and performance.

When selecting the EMA Top 3 products for hybrid cloud management, EMA focused on solutions that address this list of concerns by providing a unified platform to consistently deploy, manage, and operate traditional and distributed applications across all of the customer's favorite cloud technologies.



The chart shows how enterprises connect their favorite services from multiple clouds. This often creates a spiderweb of technology clusters that needs to be managed side by side (chart source: EMA; data source: stackoverflow.com, 50,000 posts related to AWS, Azure, and Google Cloud)

Hybrid Cloud Management: Quantifying Complexity



Number of total permutations: 5,695,316,011,810,870,000,000,000,000,000,000,000,000

Data source: CNCF interactive landscape (<https://landscape.cncf.io/>)

Hybrid Cloud Management: The Need for Unified Operations



There are currently 2,316 Python libraries related to AWS, Azure, and Google Cloud that developers download approximately 13M times per day to 112 different, mostly Linux-based, operating systems. When drilling into how these libraries are used, EMA found that developers are typically leveraging numerous different ones for each of their projects.

While individual projects typically stay within the boundaries of a single cloud, EMA also sees an increasing number (approximately 10%) of projects stretching across multiple clouds. The rapid growth of microservices increases this trend and at the same time emphasizes the urgent need for a unified governance and management layer for both developers and IT operators to contribute to optimizing release efficiency and operational reliability at the same time.



Data Source: pypi.com: data collected on May 30, 2020, 9:34AM. n=12,399,676M library downloads during a 24 hour period for the search terms “AWS”, “Azure”, “Google Cloud”. Word cloud showing the name of each library sized proportionally to the number of daily downloads.