Healthcare is in dire need of digital transformation

+48%

year by year **growth** in healthcare **data**[1]

....

+25%

of IoT devices per year but
90% of healthcare data is lost.[2]

...

1 in 3

hospitals in US were **able to electronically find, send, receive, and integrate patient information** from another provider.[3]

1 Health IT Analytics: Big Data to See Explosive Growth, Challenging Healthcare Organizations (2018);
2 Statista Research Department. (2016, May 26). Healthcare IoT device installations: global estimates 2020. Retrieved April 19, 2020, from https://www.statista.com/statistics/ 735810/healthcare-iot-installations-global-estimate;
3 Pronovost, P. J. (Ed.). (2018). Procuring interoperability: achieving high quality, connected, and person-centered care. NAM. EDU.
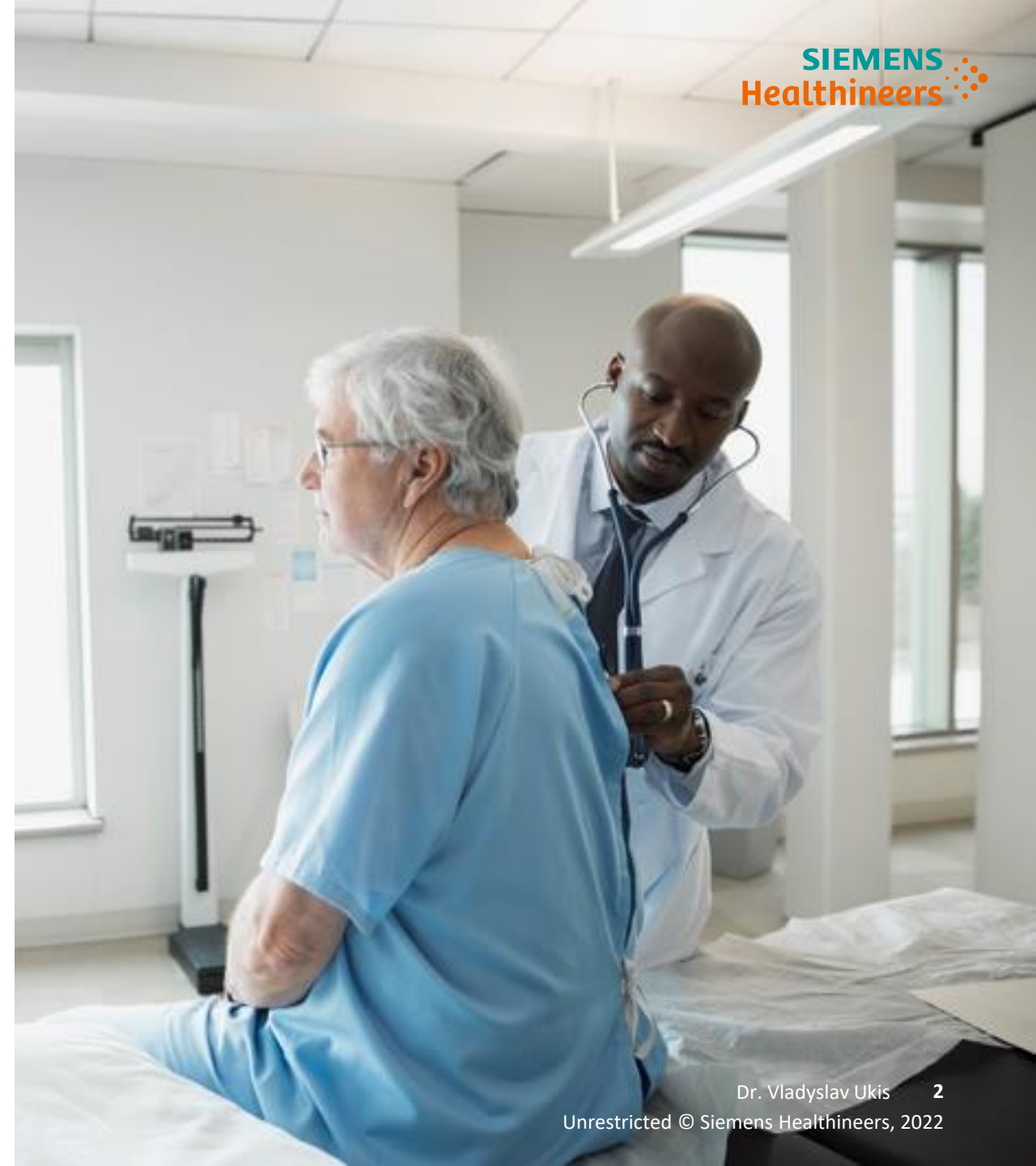
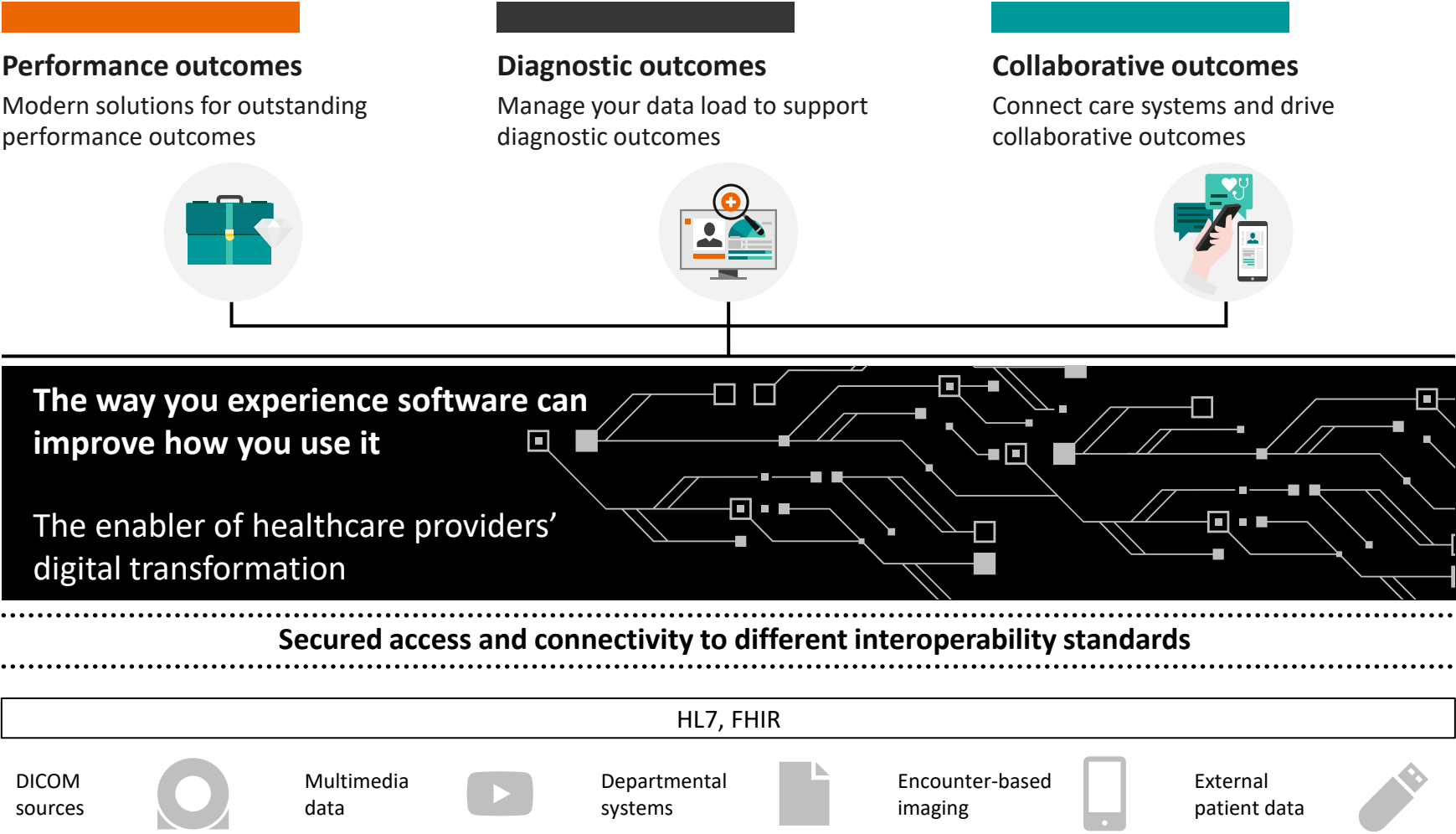# Being platform-enabled is the entry point to healthcare digital transformation by empowering connectedness

Outcomes Layer

Solutions from Siemens Healthineers and curated partners in three areas

Performance outcomes

Modern solutions for outstanding performance outcomes

Diagnostic outcomes

Manage your data load to support diagnostic outcomes

Collaborative outcomes

Connect care systems and drive collaborative outcomes

Platform Enabled

More than **6,500** connected institutions in more than **≥90** countries

The way you experience software can improve how you use it

The enabler of healthcare providers' digital transformation

Secured access and connectivity to different interoperability standards

Data Layer

HL7, FHIR

DICOM sources

Multimedia data

Departmental systems

Encounter-based imaging

External patient data

Siemens Healthineers teamplay digital health platform

Access to 75+ applications

developed by Siemens Healthineers and curated partners – with apps for **clinical use** or dedicated to **performance management**

One platform to integrate digital solutions

for operational, clinical, and shared decision support into clinical routines

3 innovative and flexible software deployments

via **cloud, on-edge, or hybrid** to serve specific use cases and grow with your needs

A growing network of 6,500+ institutions

in more than **90 countries** connected to our teamplay digital health platform
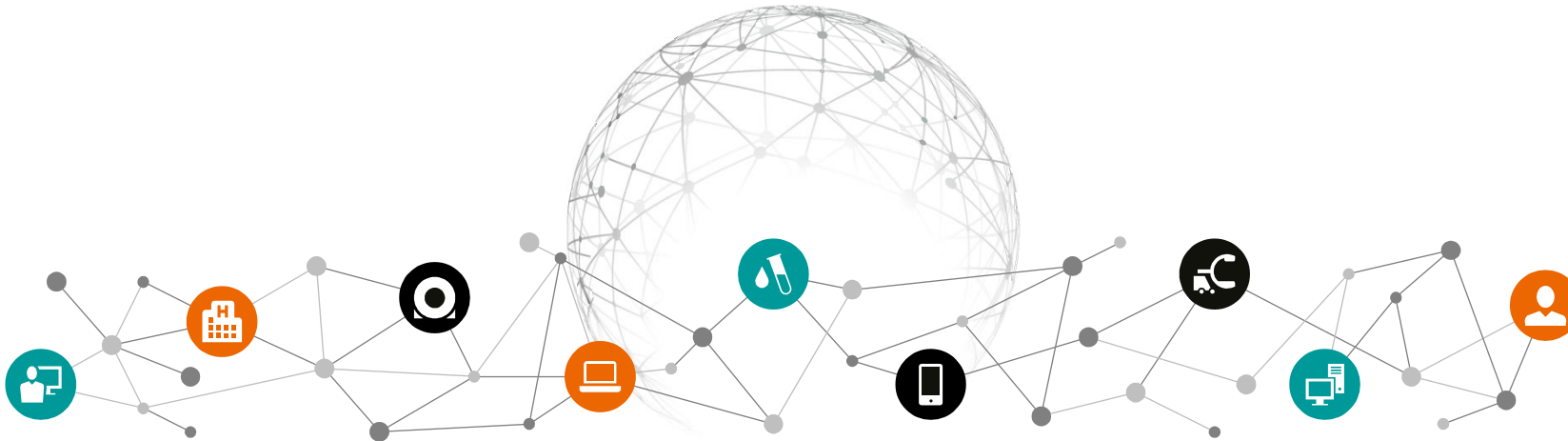
How to operate the platform?

A way suggested by Google

SRE Principles
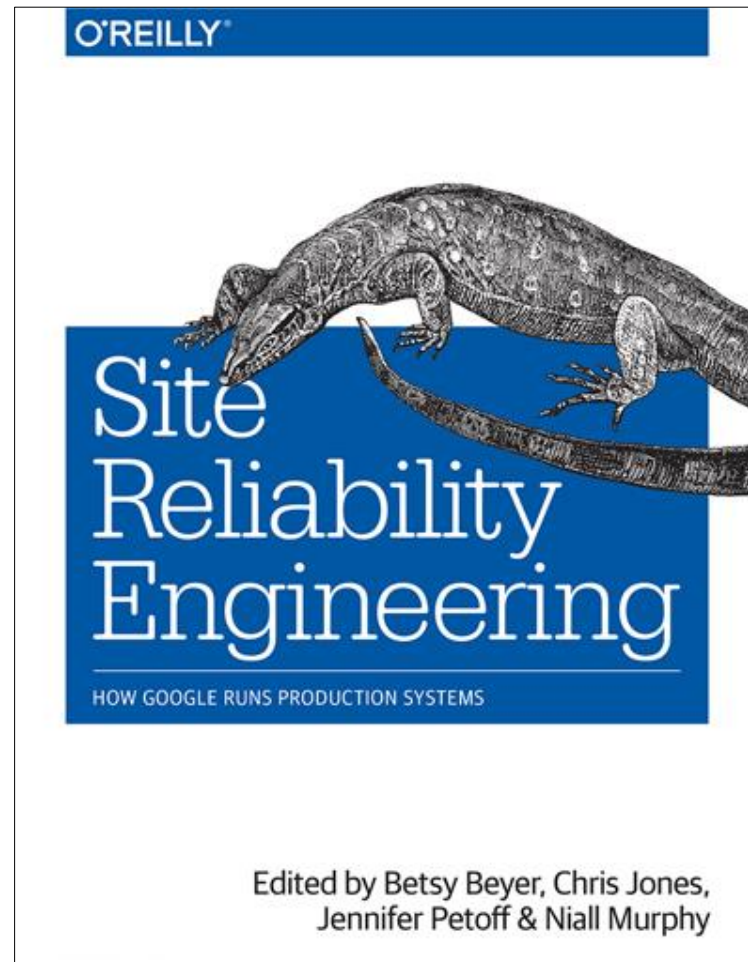
1. Operations is a software problem
2. Manage by Service Level Objectives (SLOs)
3. Work to minimize toil
4. Automate this year's job away
5. Move fast by reducing the cost of failure
6. Share ownership with developers
7. Use the same tooling, regardless of function or job title

How to organize to fulfill the principles?
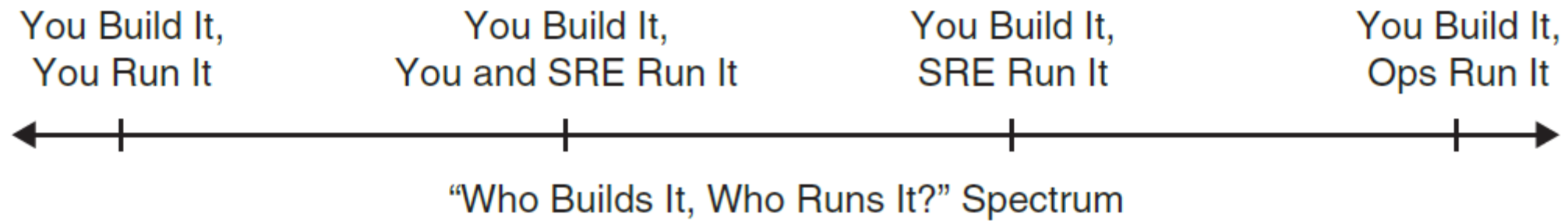
SRE Myth:
SRE can only be done with a central SRE team

What are the options?

What are the options?
Let us explore step-by-step

1. Clarify:
Who Builds It, Who Runs It?

Who Builds It, Who Runs It?

You Build It,
You Run It
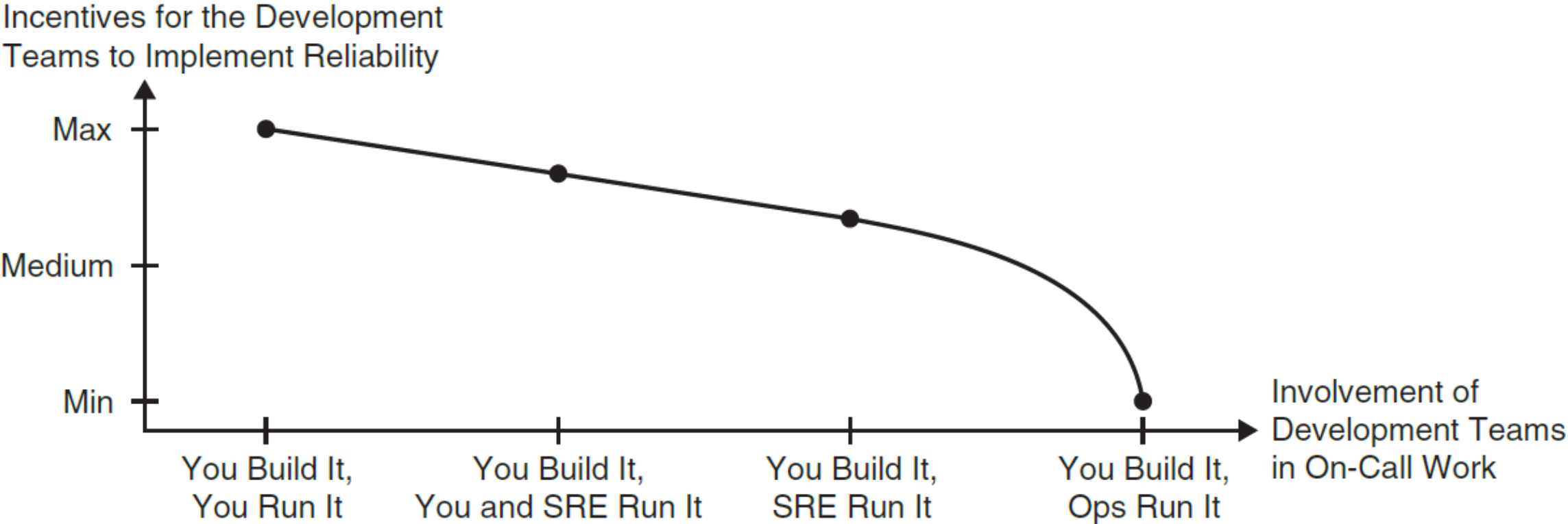
You Build It,
You and SRE Run It

You Build It,
SRE Run It

You Build It,
Ops Run It

"Who Builds It, Who Runs It?" Spectrum

2. Consider: Reliability Incentives

Reliability Incentives

Skin in the game of running services for developers
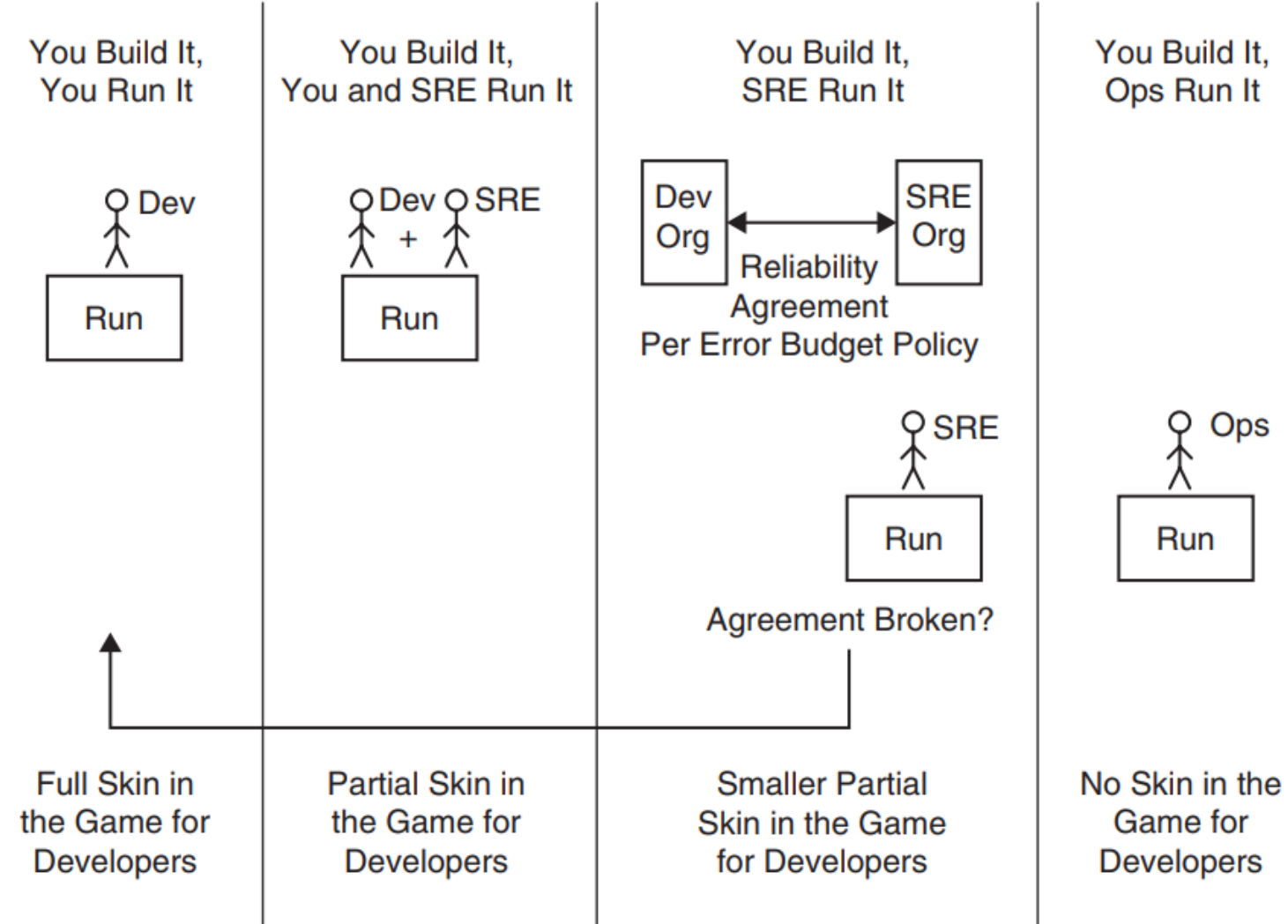
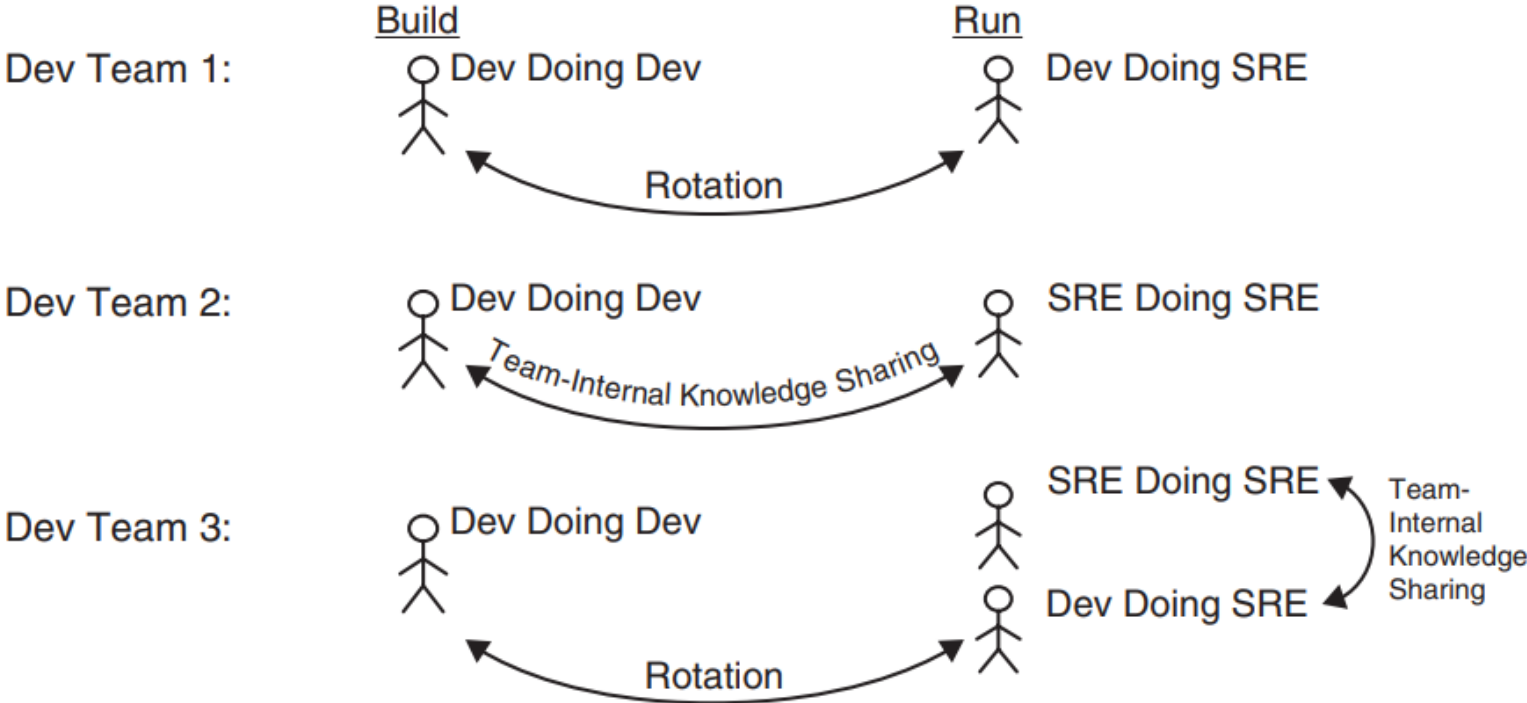| You Build It, You Run It	You Build It, You and SRE Run It	You Build It, SRE Run It	You Build It, Ops Run It
Dev — Run	Dev + SRE — Run	Dev Org ↔ SRE Org — Reliability Agreement Per Error Budget Policy — SRE — Run — Agreement Broken?	Ops — Run
Full Skin in the Game for Developers	Partial Skin in the Game for Developers	Smaller Partial Skin in the Game for Developers	No Skin in the Game for Developers

3. Compare:
The models from the spectrum

Model comparison from "Who Builds It, Who Runs It" spectrum

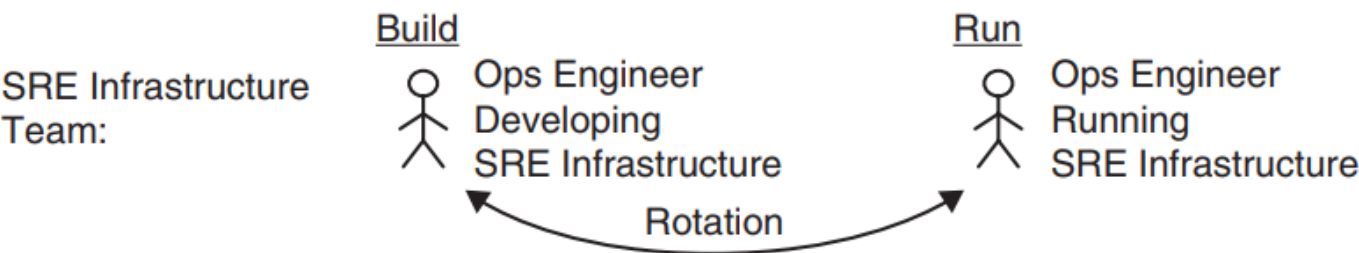| Criterion	You Build It, You Run It	You Build It, You and SRE Run It	You Build It, SRE Run It	You Build It, Ops Run It
Involvement of the development teams in the on-call work	Max	Continuous	None if services within error budgets	None
Knowledge synchronization between teams	None	Partially required	Required	Not practical
Incident resolution times	Min	Short	Short	Max
Service handover for operations	Not applicable	Partially required	Required	Required
Establishment of a distinct SRE organization	Not applicable	May be an option	May be an option	Not applicable
Ownership of the SRE infrastructure	Ops org	Either SRE or ops org	Either SRE or ops org	Ops org
Availability targets and product demand	Highest targets and demand	Highest targets and demand	Highest targets and demand	Lower targets and demand
Funding	CAPEX	CAPEX	CAPEX	OPEX
Cost	High	High	High	Low

Image courtesy of *Establishing SRE Foundations: A Step-by-Step Guide to Introducing Site Reliability Engineering in Software Delivery Organizations* (Ukis, Vladyslav)

4. Analyze:
SRE Team Topologies

You build it, you run it

Image courtesy of *Establishing SRE Foundations: A Step-by-Step Guide to Introducing Site Reliability Engineering in Software Delivery Organizations* (Ukis, Vladyslav)

Image courtesy of *Establishing SRE Foundations: A Step-by-Step Guide to Introducing Site Reliability Engineering in Software Delivery Organizations* (Ukis, Vladyslav)

Dr. Vladyslav Ukis   **22**
Unrestricted © Siemens Healthineers, 2022
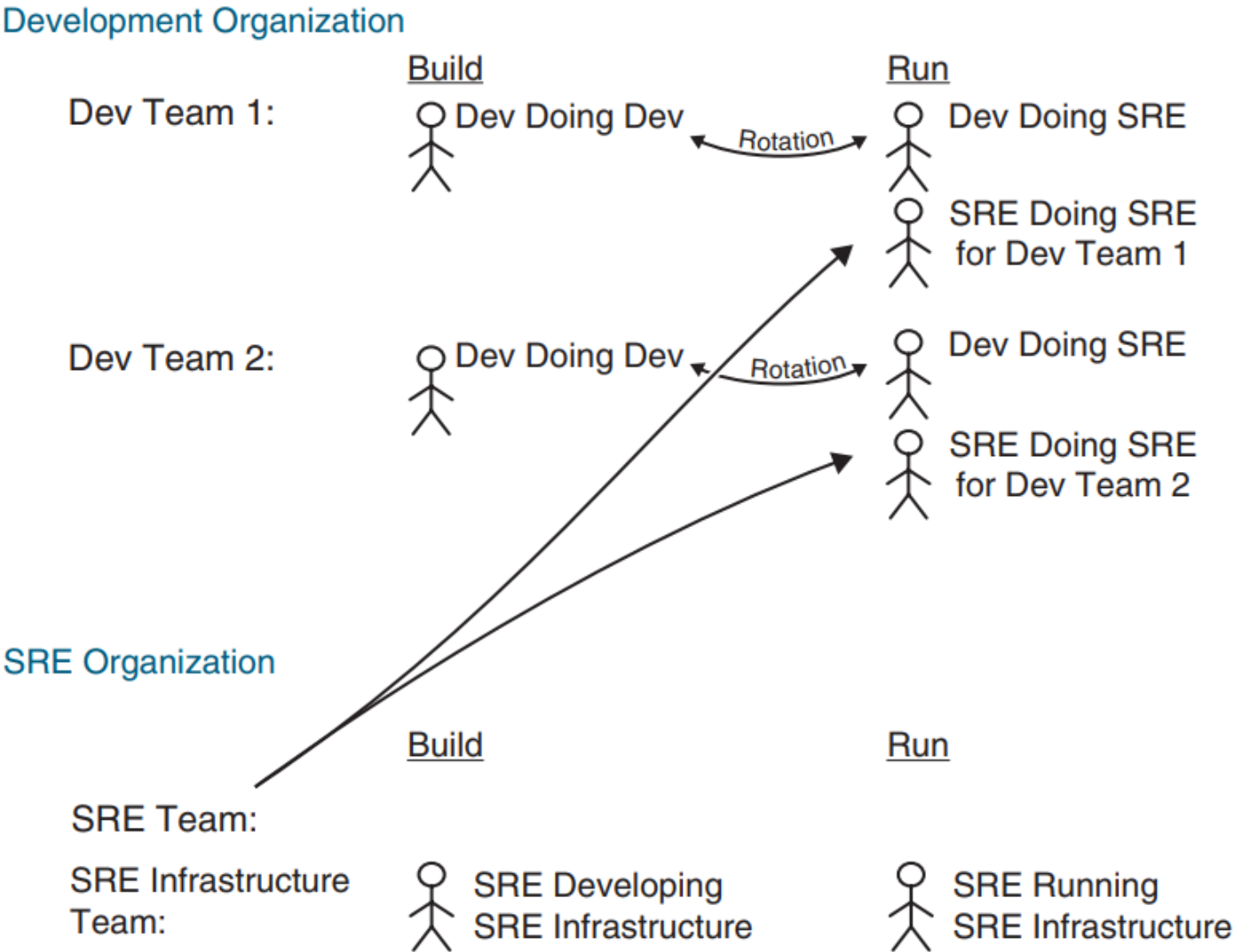
You build it, you and SRE run it: SRE team within Ops Org

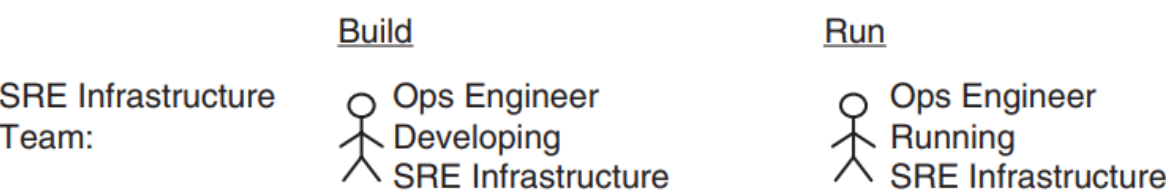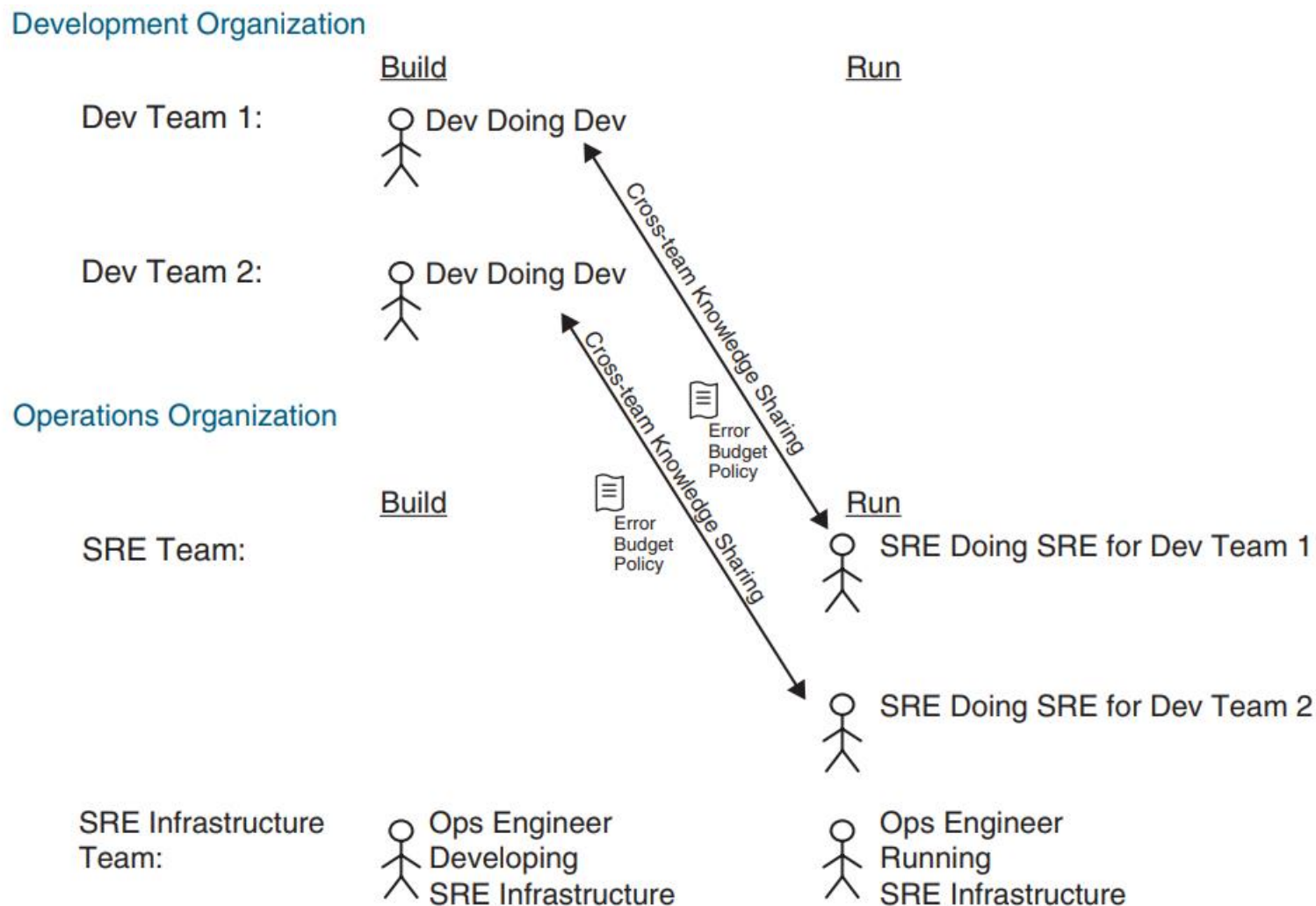# You build it, you and SRE run it: SRE team in a dedicated SRE Org

Image courtesy of *Establishing SRE Foundations: A Step-by-Step Guide to Introducing Site Reliability Engineering in Software Delivery Organizations* (Ukis, Vladyslav)

You build it, SRE run it: SRE team within Dev Org

You build it, SRE run it: SRE team within Ops Org

You build it, SRE run it: SRE team in a dedicated SRE Org
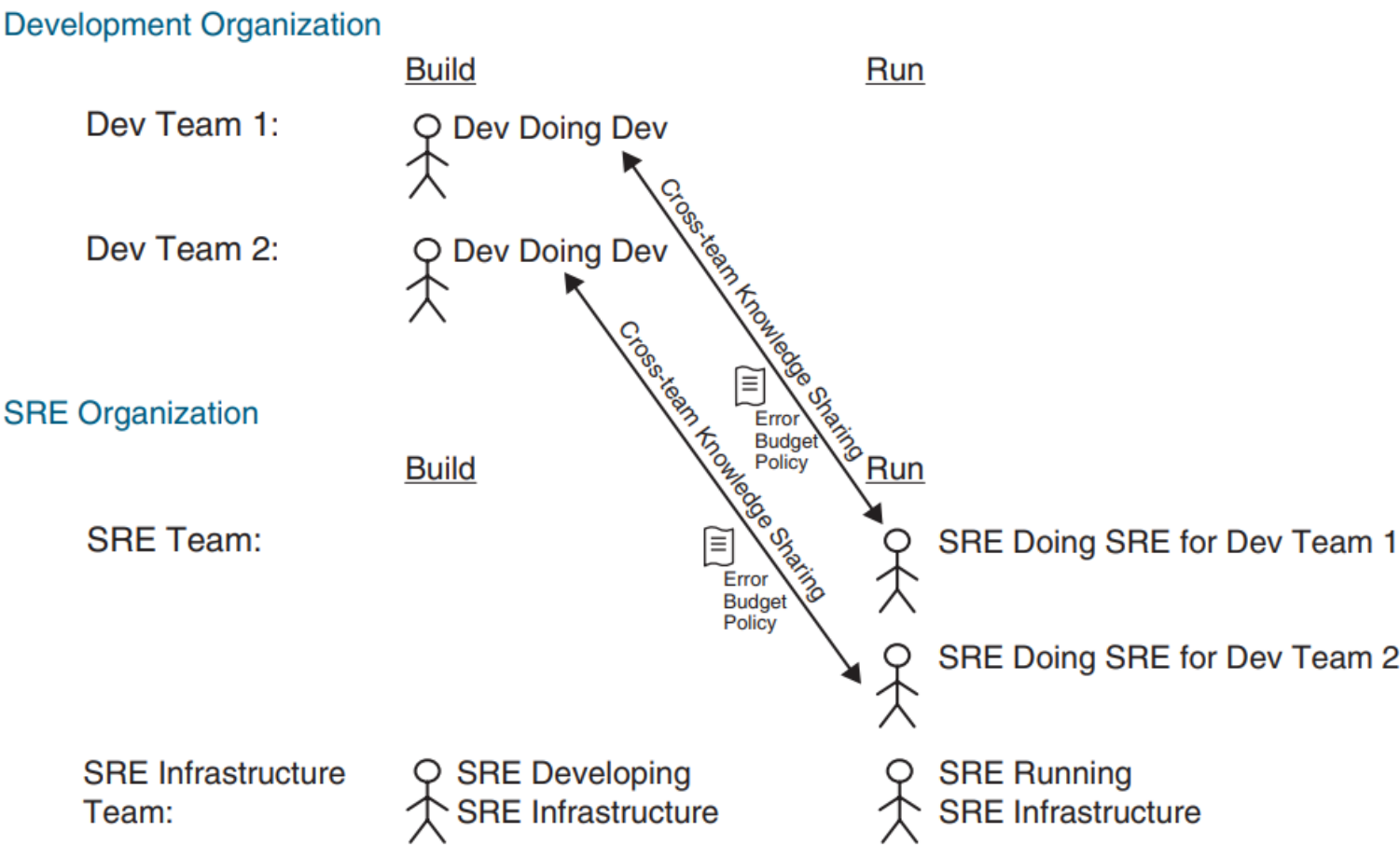
5. Inspire: SRE Identity

SRE identity triangle

Product – Centric Identity

Incident – Centric Identity

Reliability User Experience – Centric Identity
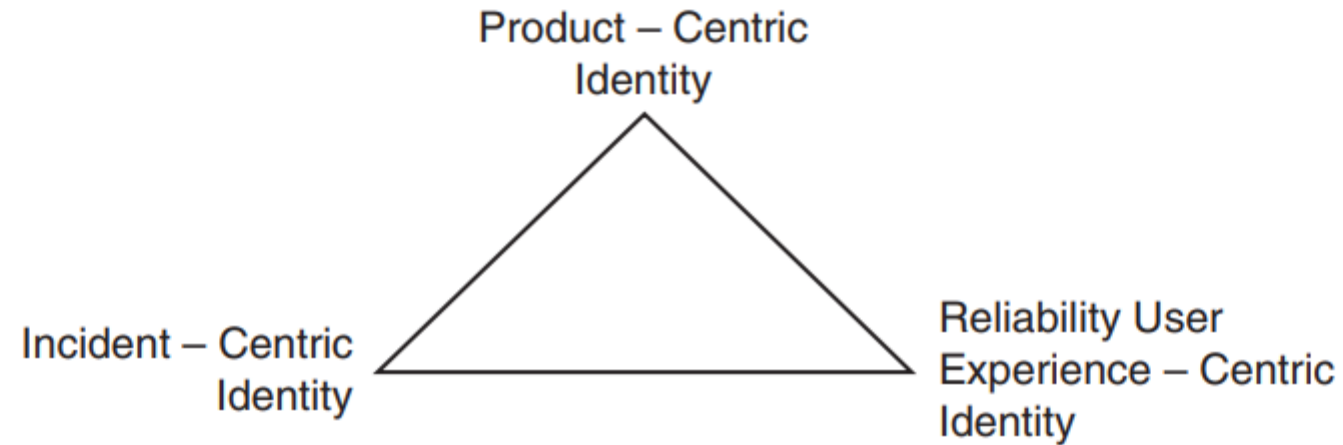
Product-centric SRE identity within Dev Org
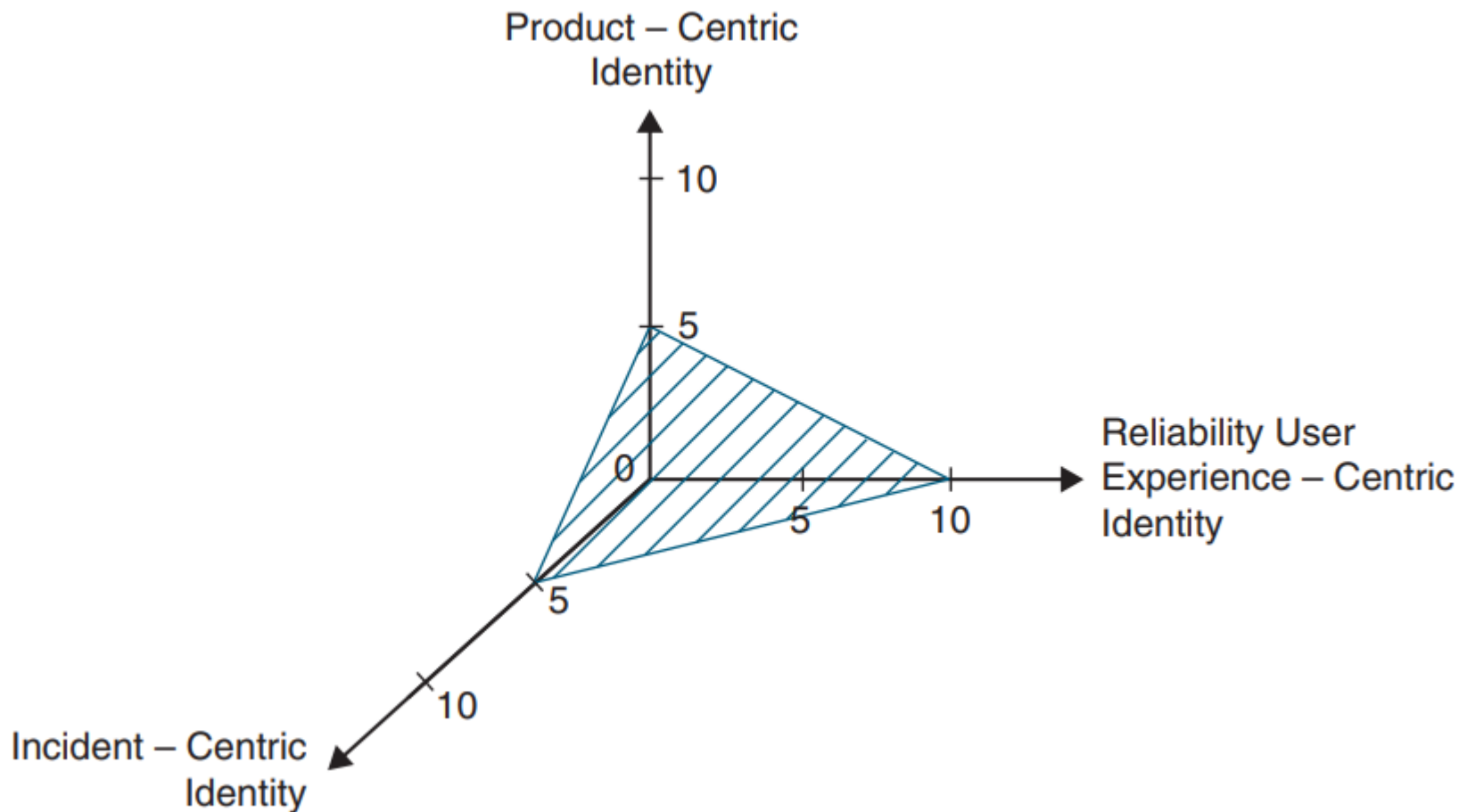
SRE team identity and pride

SRE Team Placement in the Product Delivery Organization	SRE team within the development organization	SRE team within the operations organization	SRE team in a dedicated SRE organization
Team Identity and Pride	Might be product-specific	Might be incident-specific	Might be specific to user experience in terms of reliability

SRE team KPIs

SRE Team Placement in the Product Delivery Organization	SRE Team Within the Development Organization	SRE Team Within the Operations Organization	SRE Team in a Dedicated SRE Organization
SRE team KPIs	Rooted in products under development	Rooted in incidents	Rooted in reliability user experience
Example KPI 1	97% of customer complaints about product A are not related to reliability.	Mean time between failures (MTBF) is less than two weeks.	90% of supported services are within error budgets.
Example KPI 2	NPS score of at least 75 for product B	Mean time to recovery (MTTR) from an incident is less than a day.	95% of incidents with supported services consume less than 30% of the monthly error budget.
Example KPI 3	Reliability engineering implemented in new product C from the outset	Number of incidents is on a decline quarterly,	95% of customer complaints for supported services are not related to reliability.

Image courtesy of *Establishing SRE Foundations: A Step-by-Step Guide to Introducing Site Reliability Engineering in Software Delivery Organizations* (Ukis, Vladyslav)
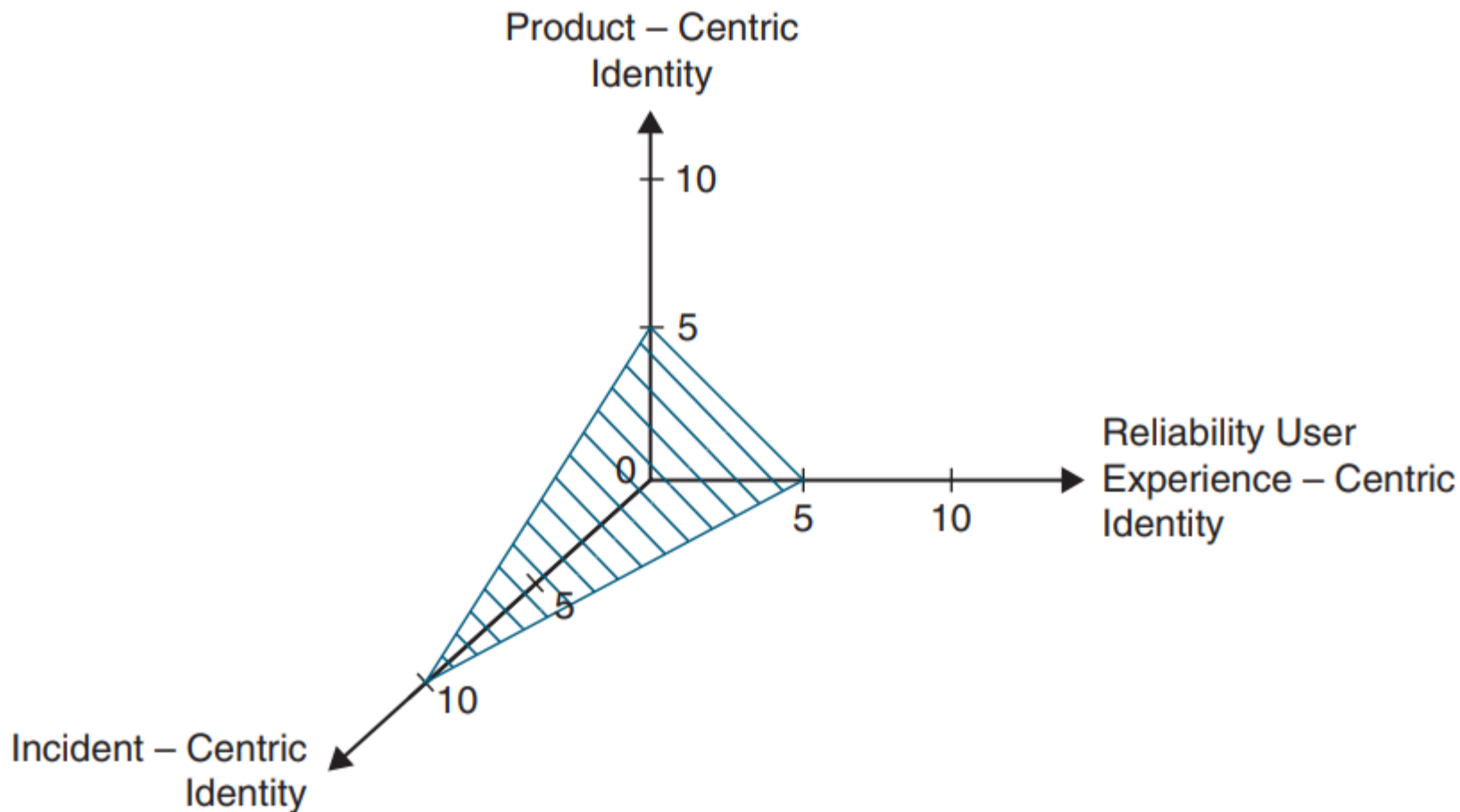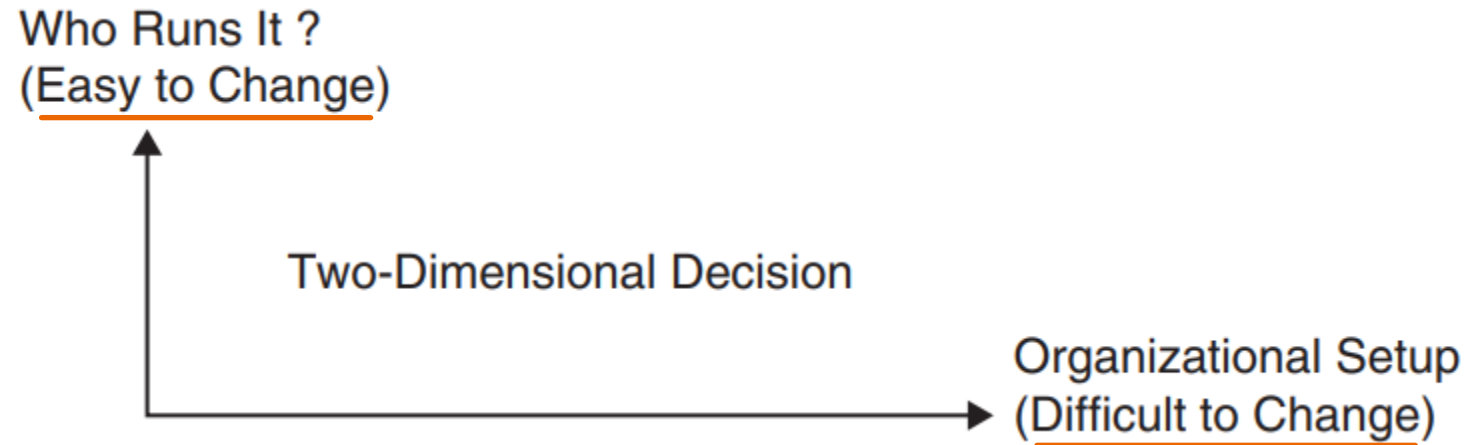
6. Decide:
Select a model, transit and set up the org

Model Transition Options

		Transition TO				
		Unorganized	*"You build it, ops run it"*	*"You build it, SRE run it"*	*"You build it, you and SRE run it"*	*"You build it, you run it"*
Transition FROM	Unorganized	-	Possible	Possible	Possible	Possible
	"You build it, ops run it"	No reason	-	Possible	Possible	Possible
	"You build it, SRE run it"	No reason	Unlikely	-	Possible	Possible
	"You build it, you and SRE run it"	No reason	Unlikely	Possible	-	Possible
	"You build it, you run it"	No reason	Unlikely	Possible	Possible	-

Decision changeability

Who Runs It ?
(Easy to Change)

Two-Dimensional Decision

Organizational Setup
(Difficult to Change)

Image courtesy of *Establishing SRE Foundations: A Step-by-Step Guide to Introducing
Site Reliability Engineering in Software Delivery Organizations* (Ukis, Vladyslav)

Position a newly created SRE Org if any

	SRE as a Cost Center	SRE as an Asset	SRE as a Partner	SRE as an Enabler
Focus on	Cost reduction	Reliability asset	Reliability business value	Enabling business through reliability
Strategy	Reduce cost	Optimize the asset	Exploit revenue	Nurture

Image courtesy of *Establishing SRE Foundations: A Step-by-Step Guide to Introducing Site Reliability Engineering in Software Delivery Organizations* (Ukis, Vladyslav)

Position a newly created "SRE" role if any

Image courtesy of *Establishing SRE Foundations: A Step-by-Step Guide to Introducing Site Reliability Engineering in Software Delivery Organizations* (Ukis, Vladyslav)
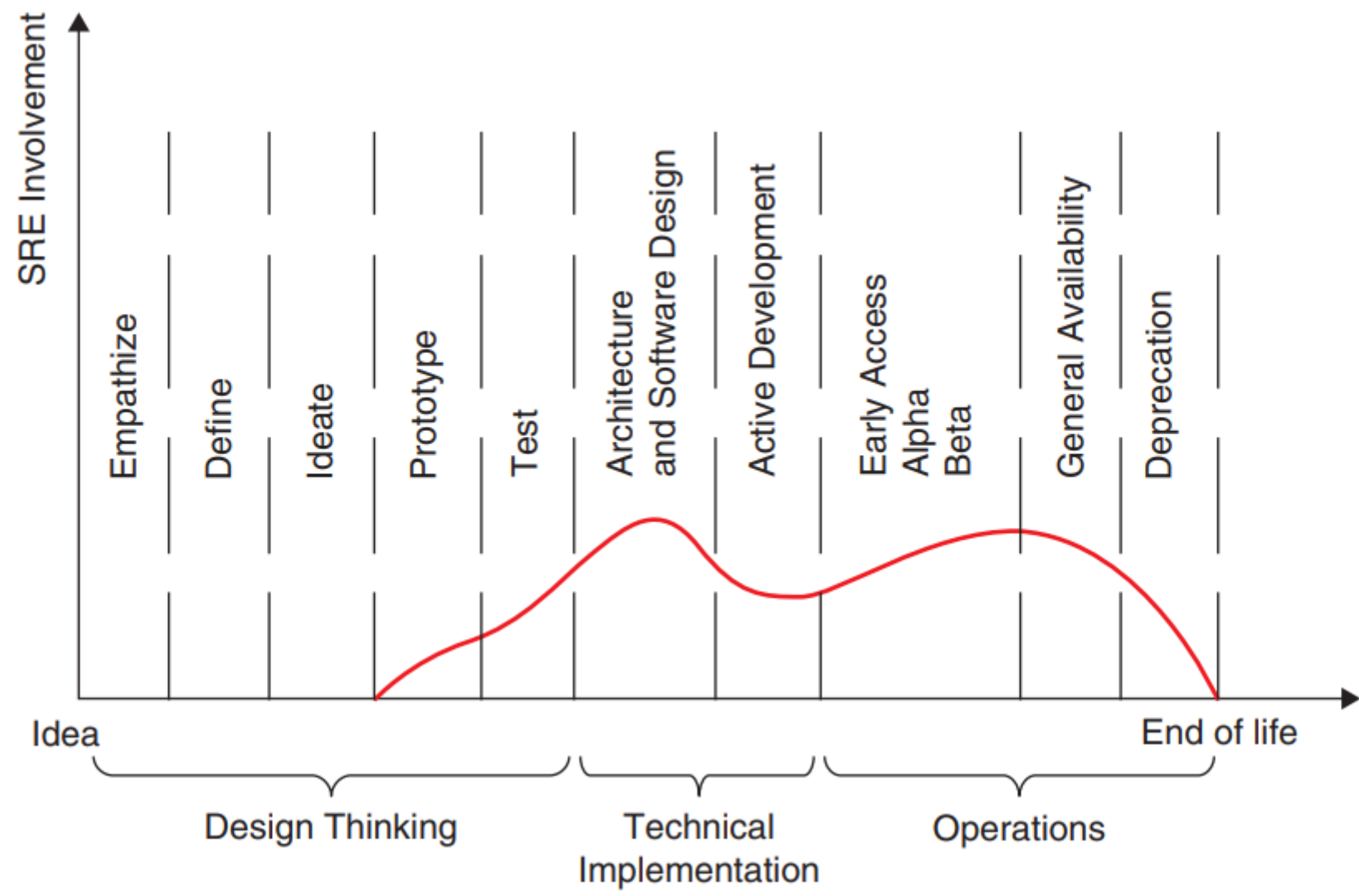
SRE at Siemens Healthineers teamplay digital health platform

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We sell subscriptions to digital products

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6 data centers, 130 countries, 6500 hospitals

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Growing customer base and feature deployment frequency

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Incident response process

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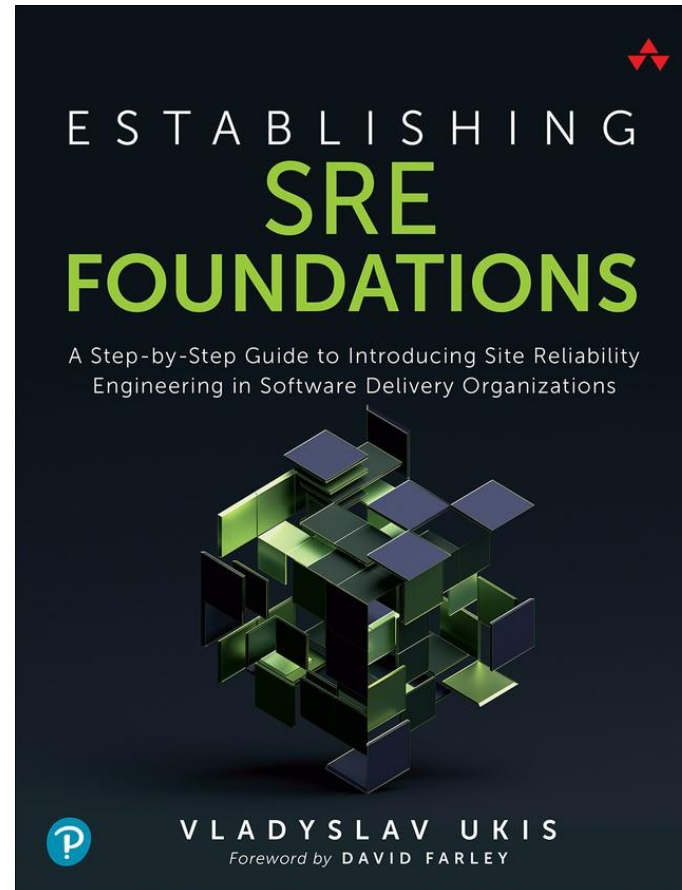Growing customer base and feature deployment frequency

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Incident response process

You build it, you run it

Contact

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