ca technologies

API ACADEMY

Microservices Migration Roadmap

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August 14, 2017


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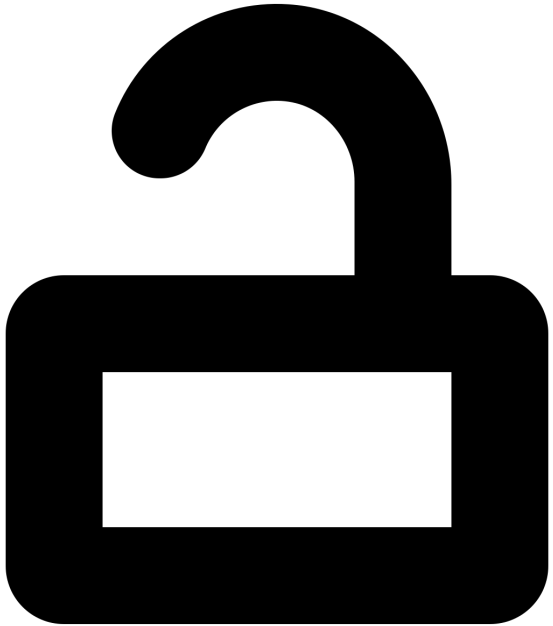
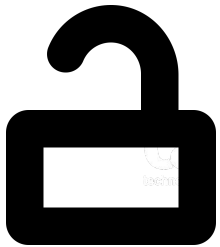
A Look Ahead

- Unlocking Business Value
- Basic Principles
- Stabilizing Interfaces
- Transforming Implementations
- Adding Functionality
- Rinse and Repeat




Unlocking Business Value

Where is everything?



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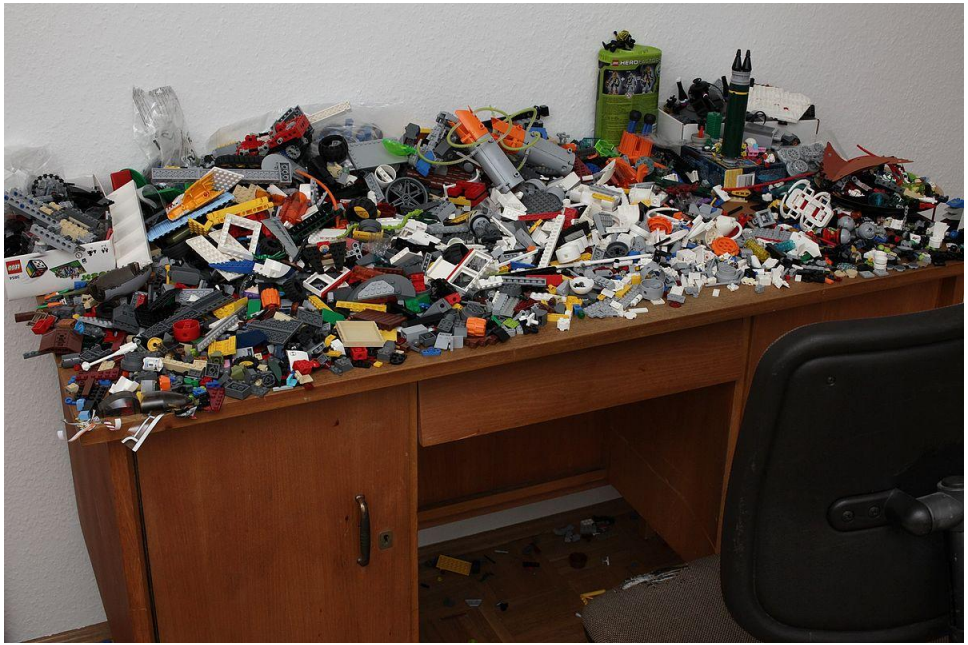
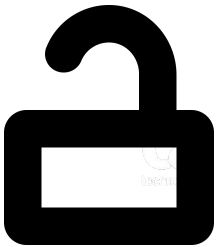


Where is everything?

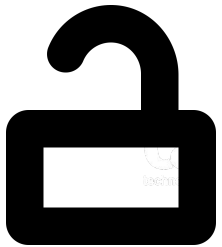
"Data and services are stuck inside isolated applications within the enterprise."

-- Tung and Biltz, Accenture

http://www.computerweekly.com/feature/APIs-can-be-strategic-tools-to-unlock-business-value

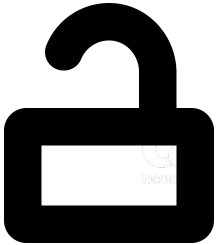


Why does it cost so much to get at it?



Why does it cost so much to get at it?

By DOJ - US Department of Justice photo, Public Domain, https://commons.wikimedia.org/w/index.php?curid=6419733

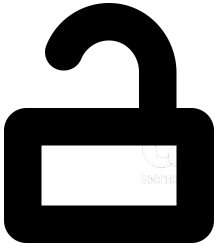


Why does it cost so much to get at it?

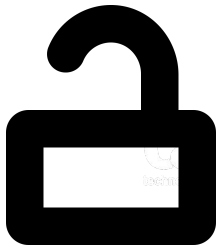
"It is about renovating at the core, as opposed to getting rid of the core."

-- Hung LeHong, Gartner

http://www.zdnet.com/article/eight-obstacles-to-overcome-in-your-digital-transformation-journey/



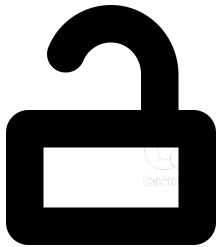
How can I reduce cost/risk?



How can I reduce cost/risk?

		COMPLEXITY				
		C1	C2	C3	C4	C5
SIZE	S1	100	250	400	550	700
	S2	175	325	475	625	775
	S3	250	400	550	700	850
	S4	325	475	625	775	625
	S5	400	550	700	850	1000

https://www.infoq.com/articles/standish-chaos-2015

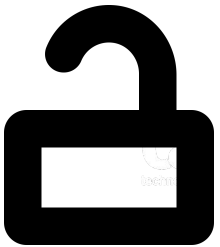


How can I reduce cost/risk?

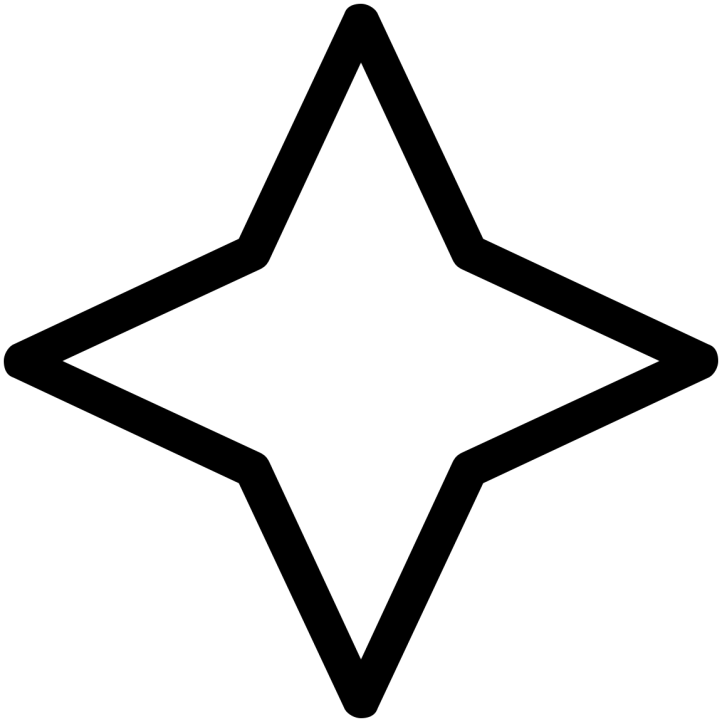
"Lower the risk of change through tools and culture."

-- John Allspaw, Etsy

https://www.slideshare.net/jallspaw/10-deploys-per-day-dev-and-ops-cooperation-at-flickr/16-Dev_and_Ops/16

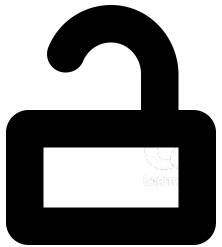


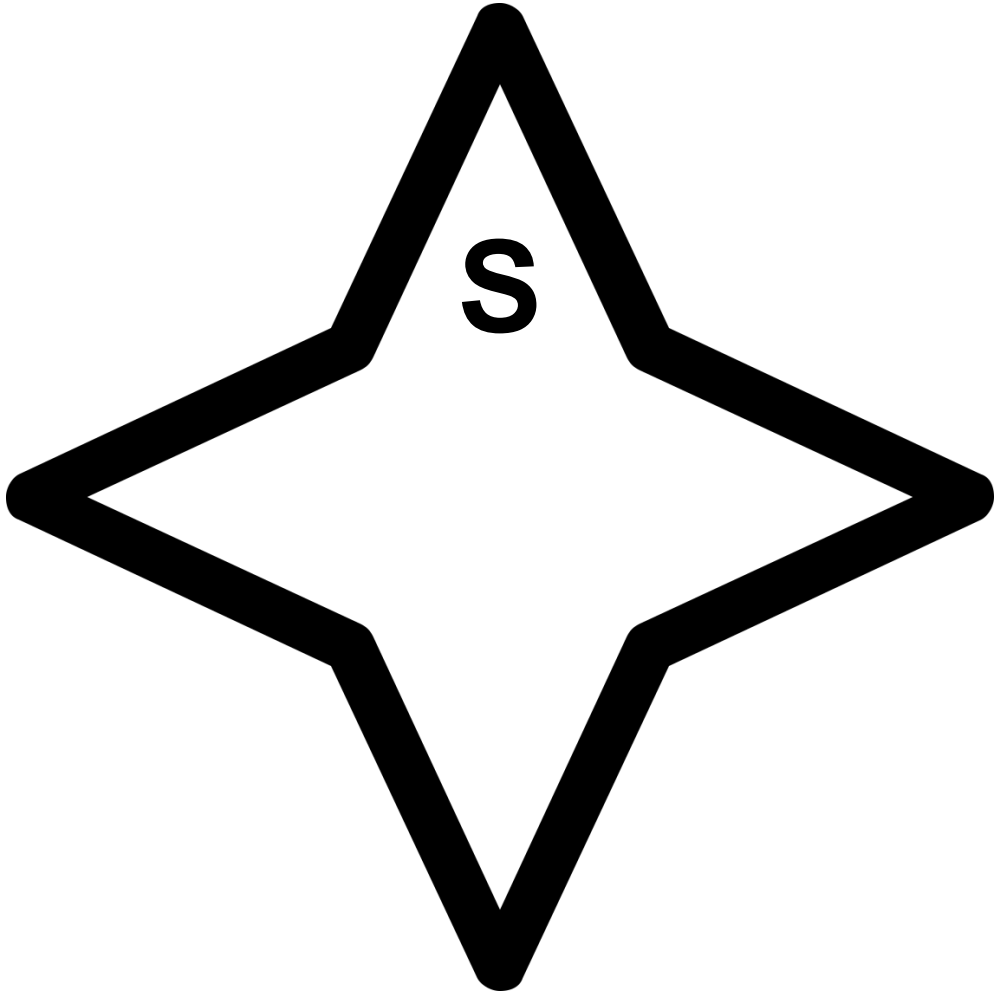
What do we do then?



Give your system the STAR treatment

- **S**tabilize
- **T**ransform
- **A**dd
- **R**epeat

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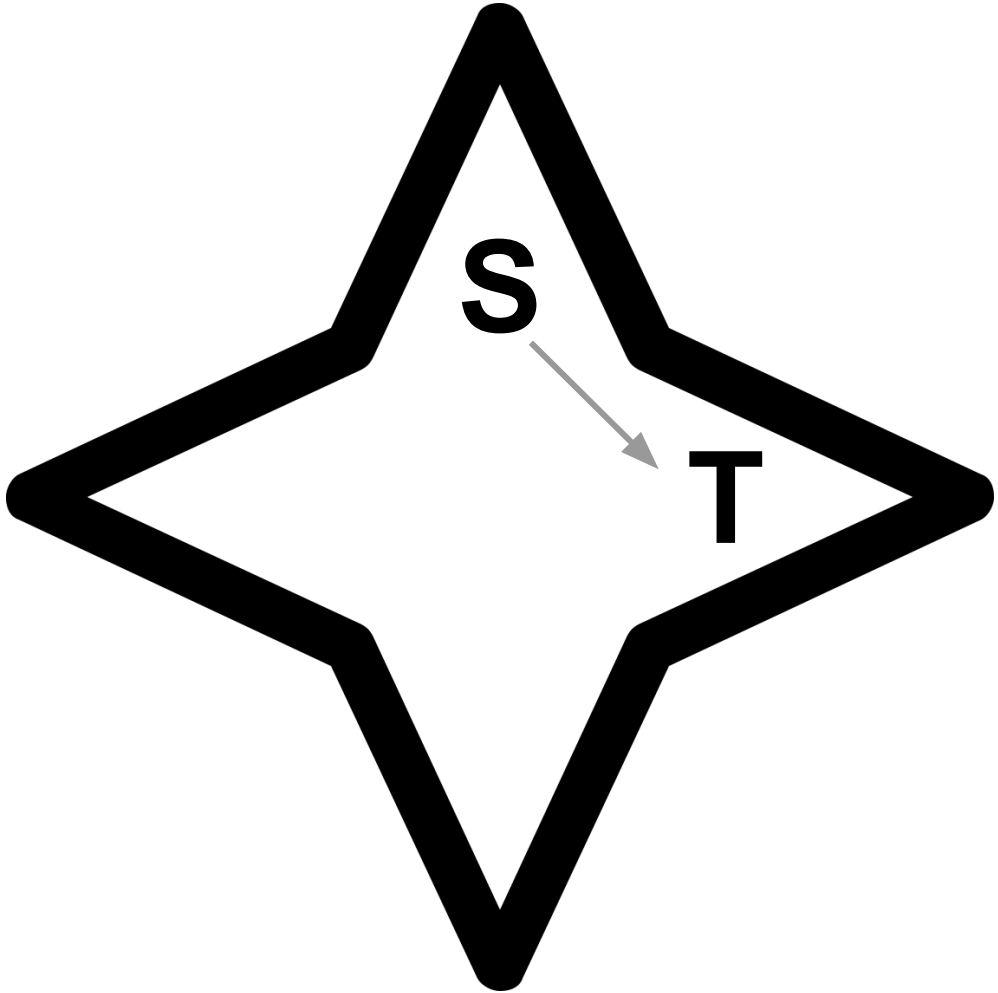
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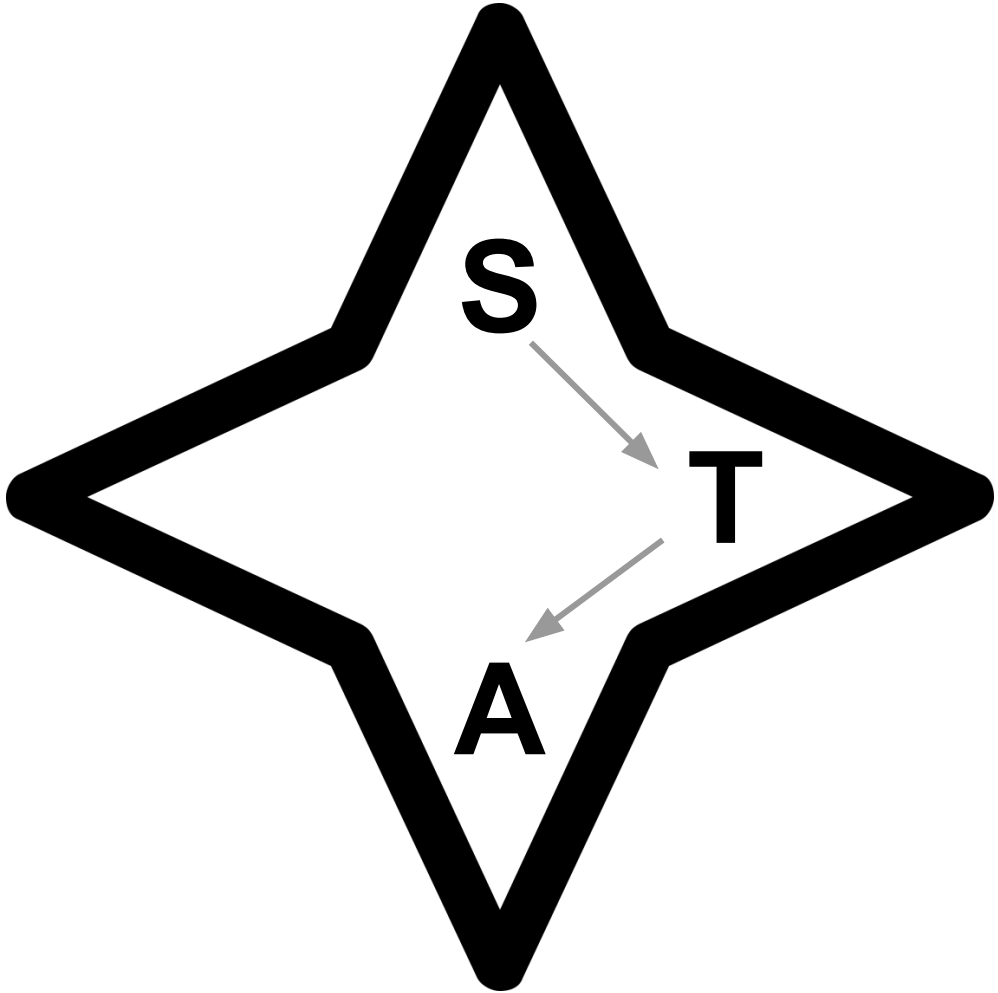
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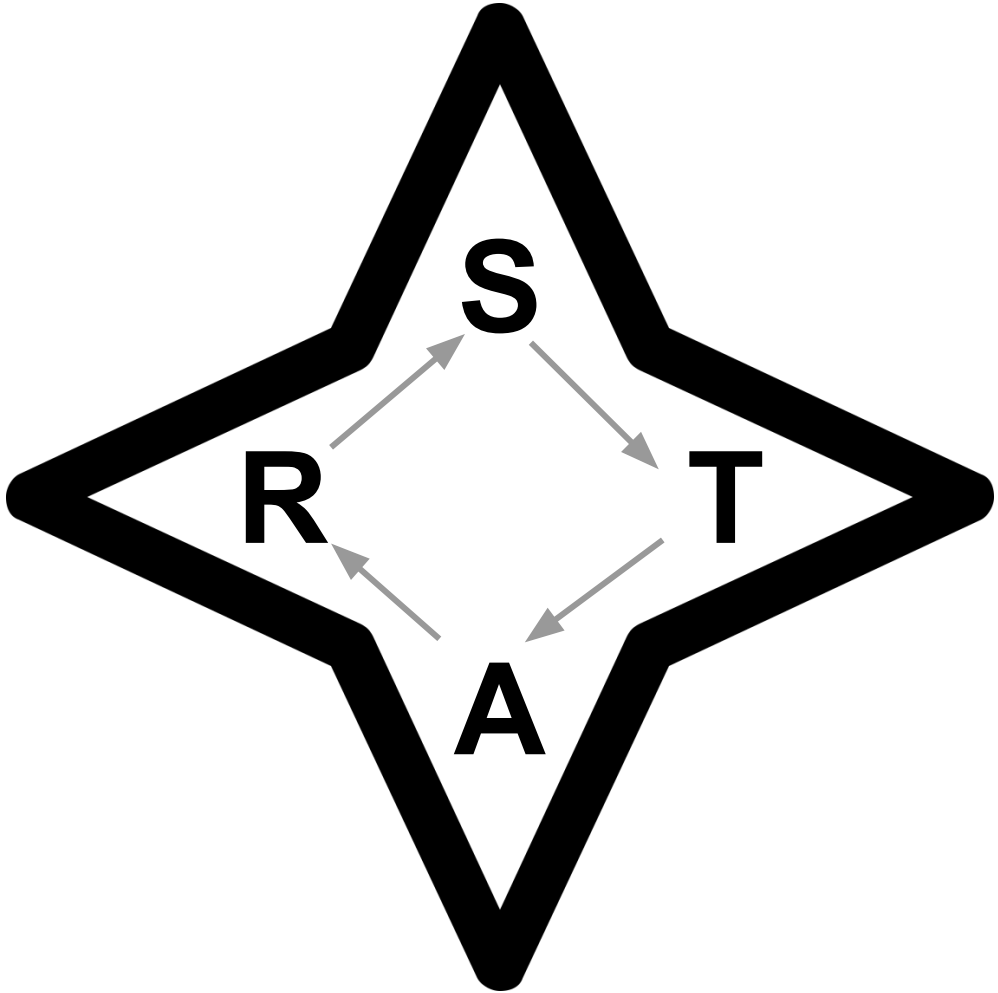
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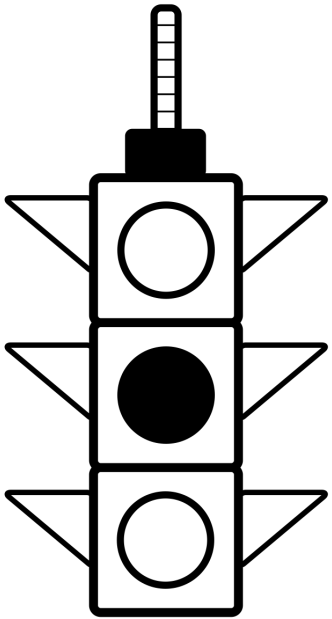
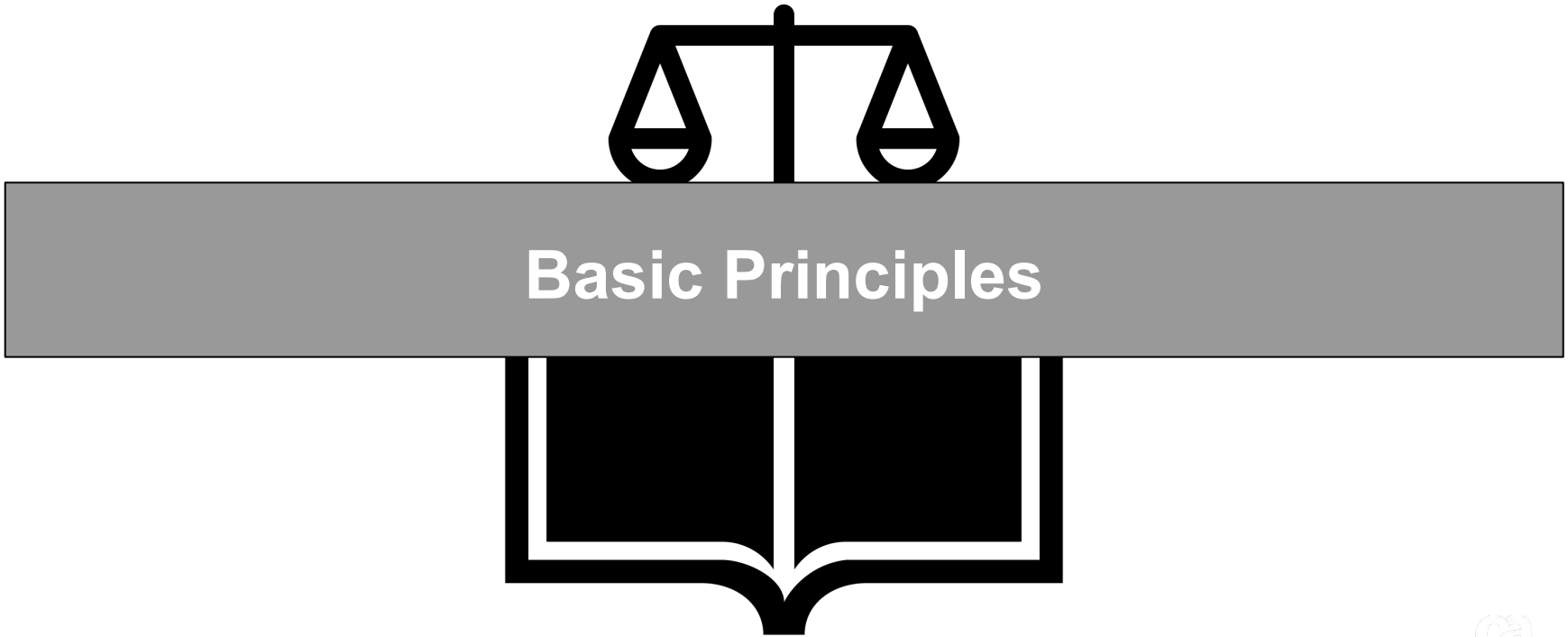
But first...





Basic Principles

The elephant in the room: one bite at a time.

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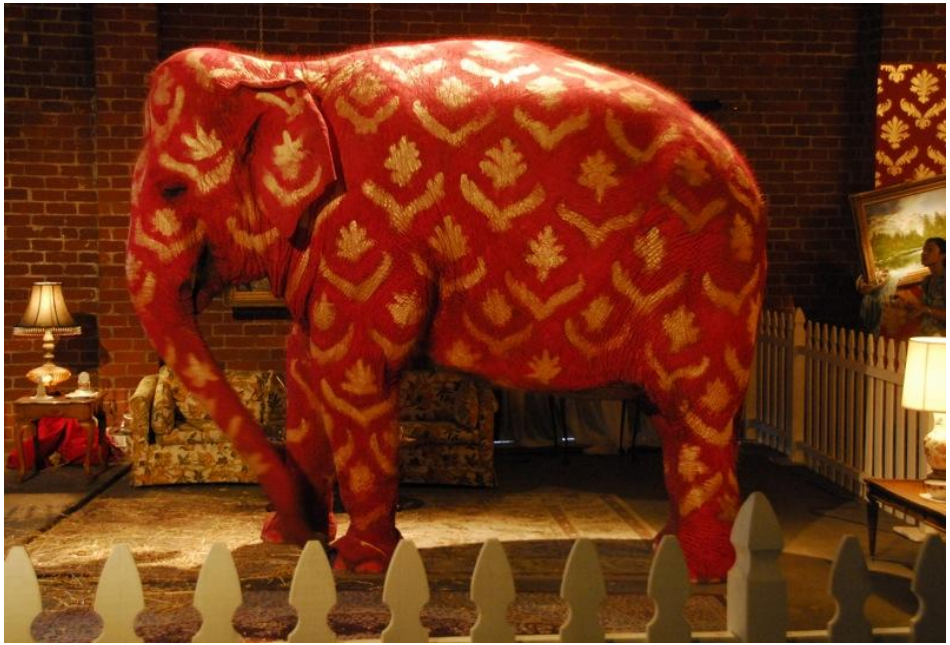
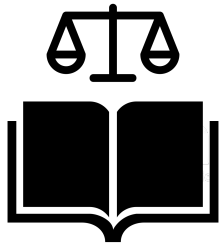


The elephant in the room: one bite at a time.

"Whenever you do a transition, do the smallest thing that teaches you the most and do that over and over again."

-- Adrian Cockcroft, Netflix

https://medium.com/s-c-a-l-e/talking-microservices-with-the-man-who-made-netflix-s-cloud-famous-1032689afed3



Employ facades, stranglers, and refactoring

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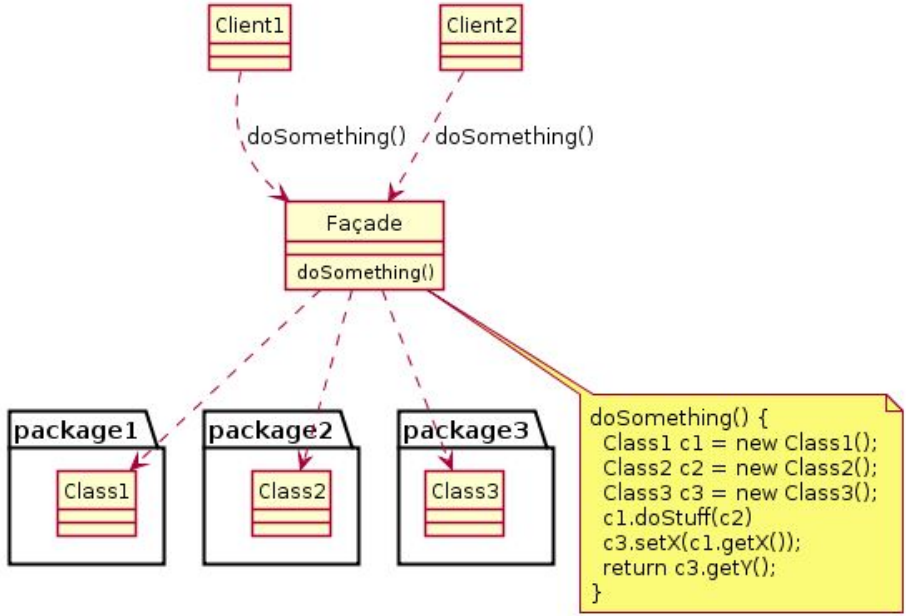
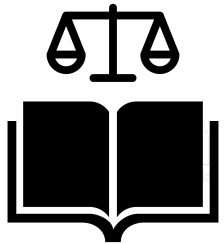


https://upload.wikimedia.org/wikipedia/en/5/57/Example_of_Facade_design_pattern_in_UML.png

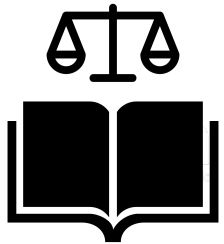


Employ facades, stranglers, and refactoring

*"The **facade** design pattern is used to define a simplified interface to a more complex subsystem."*

-- Richard Carr, BlackWasp

http://www.blackwasp.co.uk/facade.aspx



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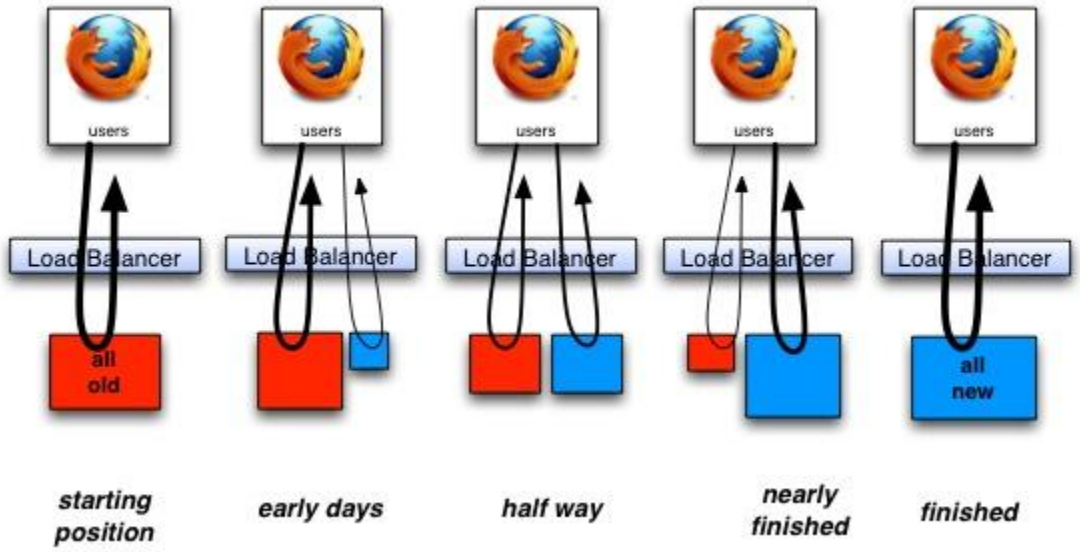


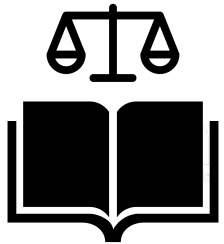
https://paulhammant.com/2013/07/14/legacy-application-strangulation-case-studies/

Employ facades, stranglers, and refactoring

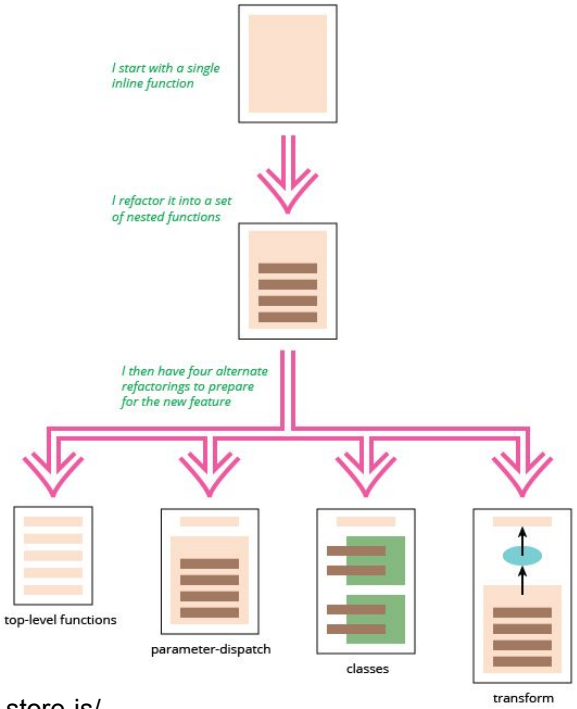
*"**Strangulation** of a legacy solution is a safe way to phase one thing out for something better."*

-- Paul Hammant, Thoughtworks

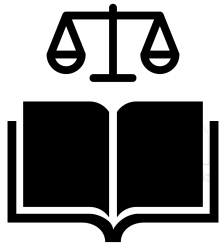
https://paulhammant.com/2013/07/14/legacy-application-strangulation-case-studies/



Employ facades, stranglers, and refactoring



https://martinfowler.com/articles/refactoring-video-store-js/

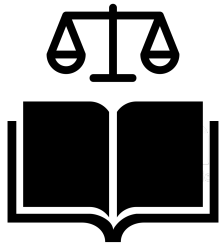


Employ facades, stranglers, and refactoring

*"When you **refactor** you are improving the design of the code after it has been written."*

-- Martin Fowler, Thoughtworks

https://martinfowler.com/books/refactoring.html



APIs are forever, code is not.

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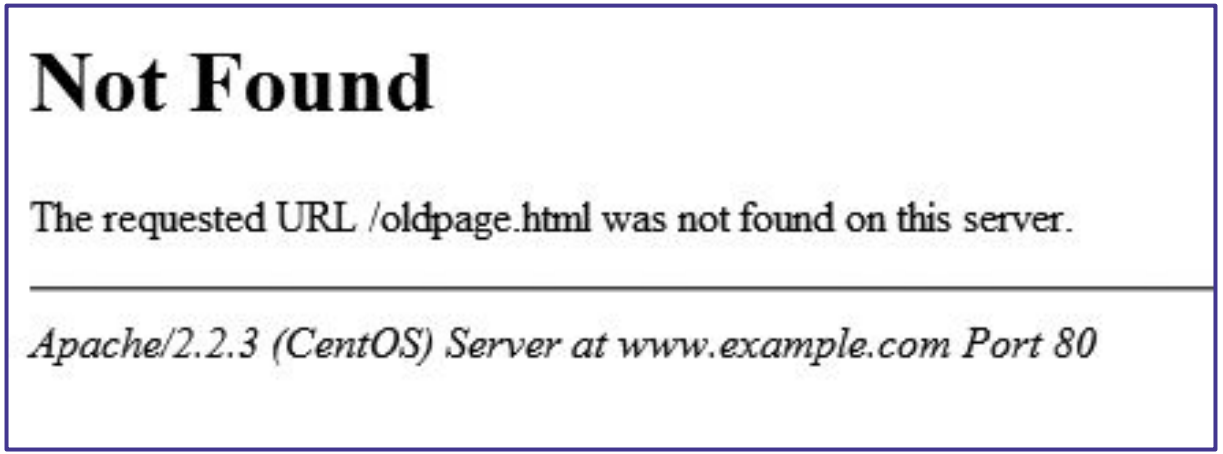
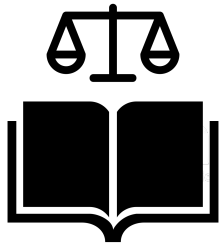


https://upload.wikimedia.org/wikipedia/commons/5/5f/404_not_found.png

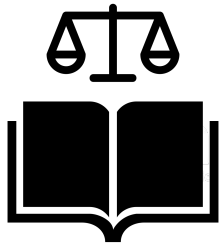


APIs are forever, code is not.

"We knew that designing APIs was a very important task as we'd only have one chance to get it right."

-- Werner Vogels, Amazon

http://www.allthingsdistributed.com/2016/03/10-lessons-from-10-years-of-aws.html



Continuous change and instant reversibility

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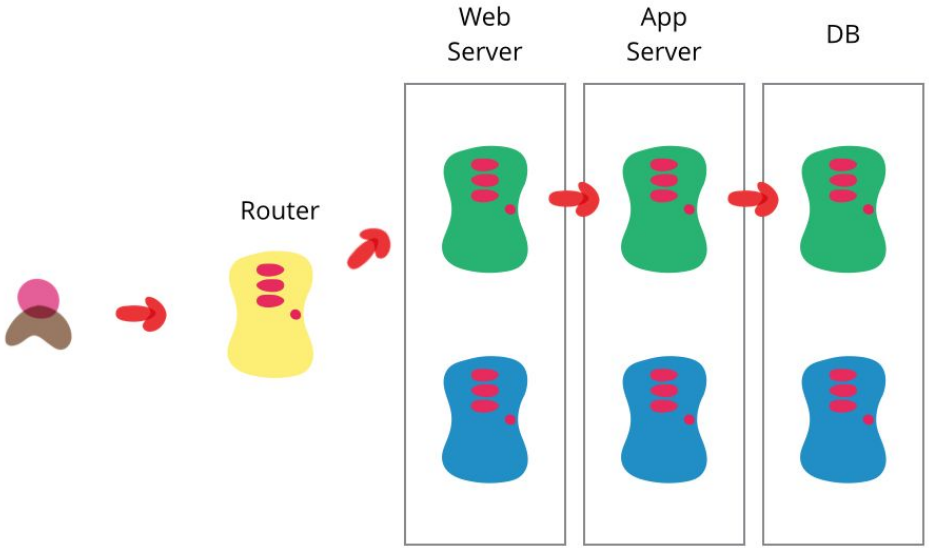
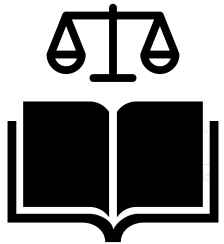


https://martinfowler.com/bliki/BlueGreenDeployment.html

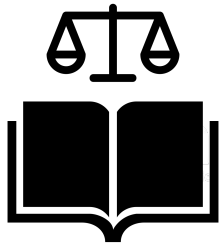


Continuous change and instant reversibility

"Blue-green deployment gives you a rapid way to rollback - if anything goes wrong."

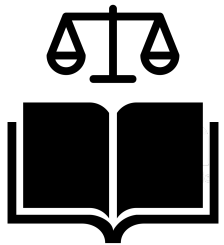
-- Martin Fowler, Thoughtworks

https://martinfowler.com/bliki/BlueGreenDeployment.html

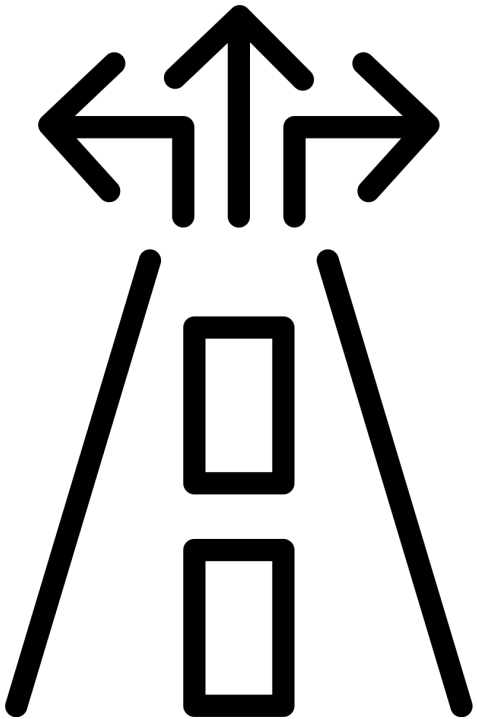


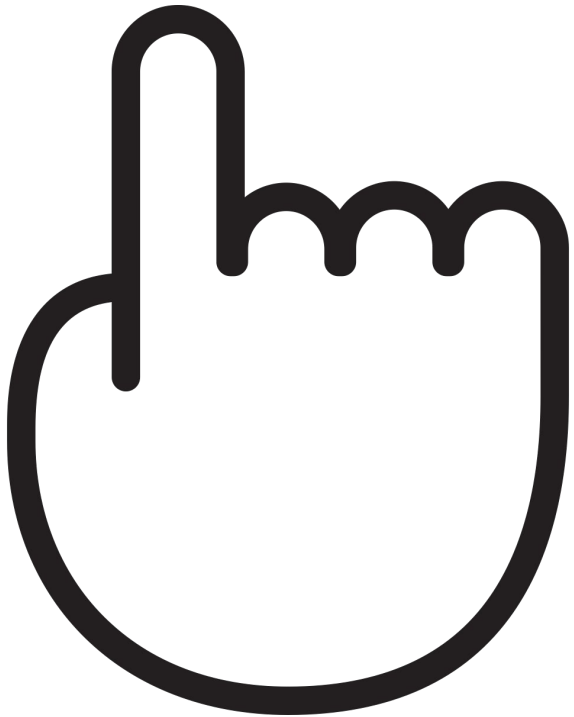
Basic Principles

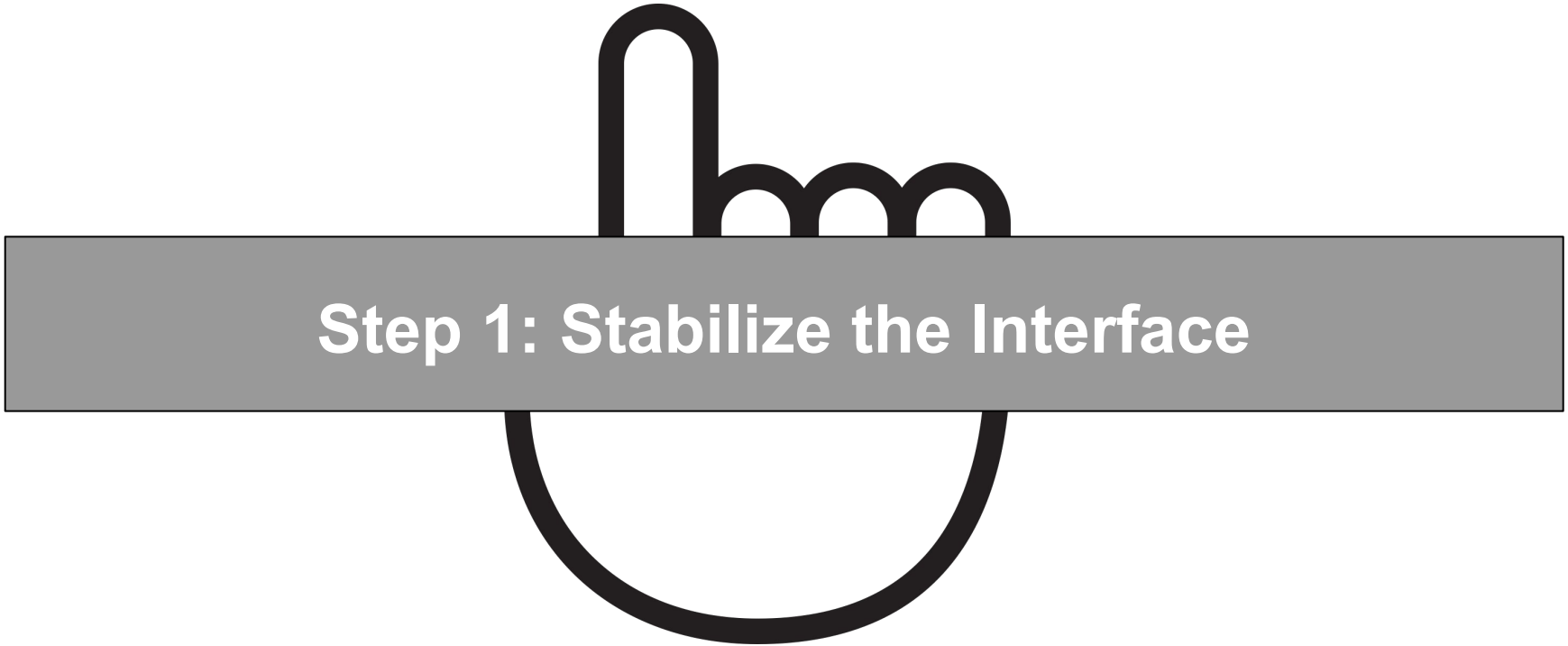
- Take one bite at a time.
- Employ facades, stranglers, and refactoring
- APIs are forever, code is not
- Continuous change and instant reversibility



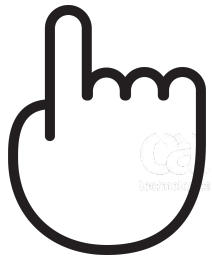
So, what's the roadmap?






Step 1: Stabilize the Interface

All API consumers talk to a proxy



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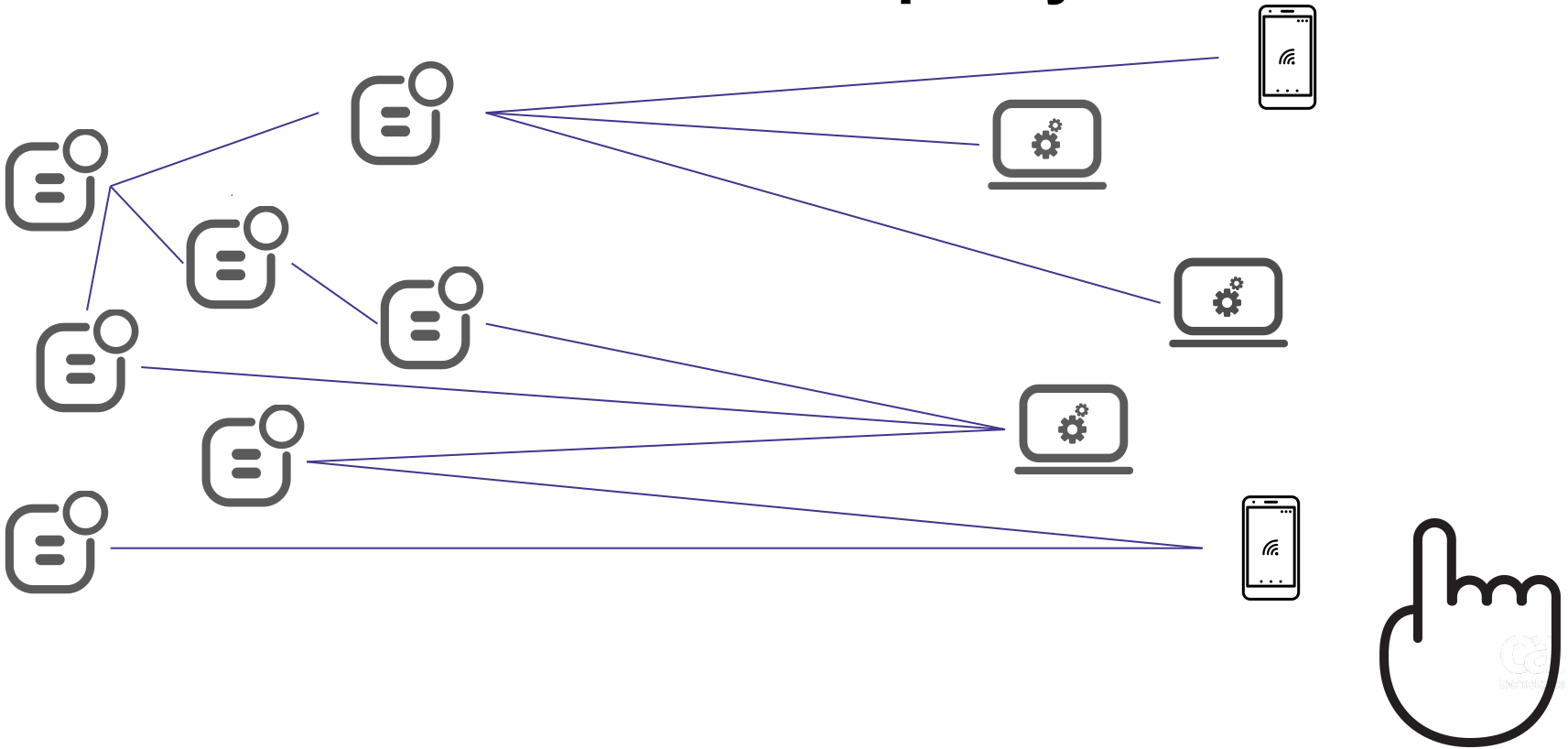

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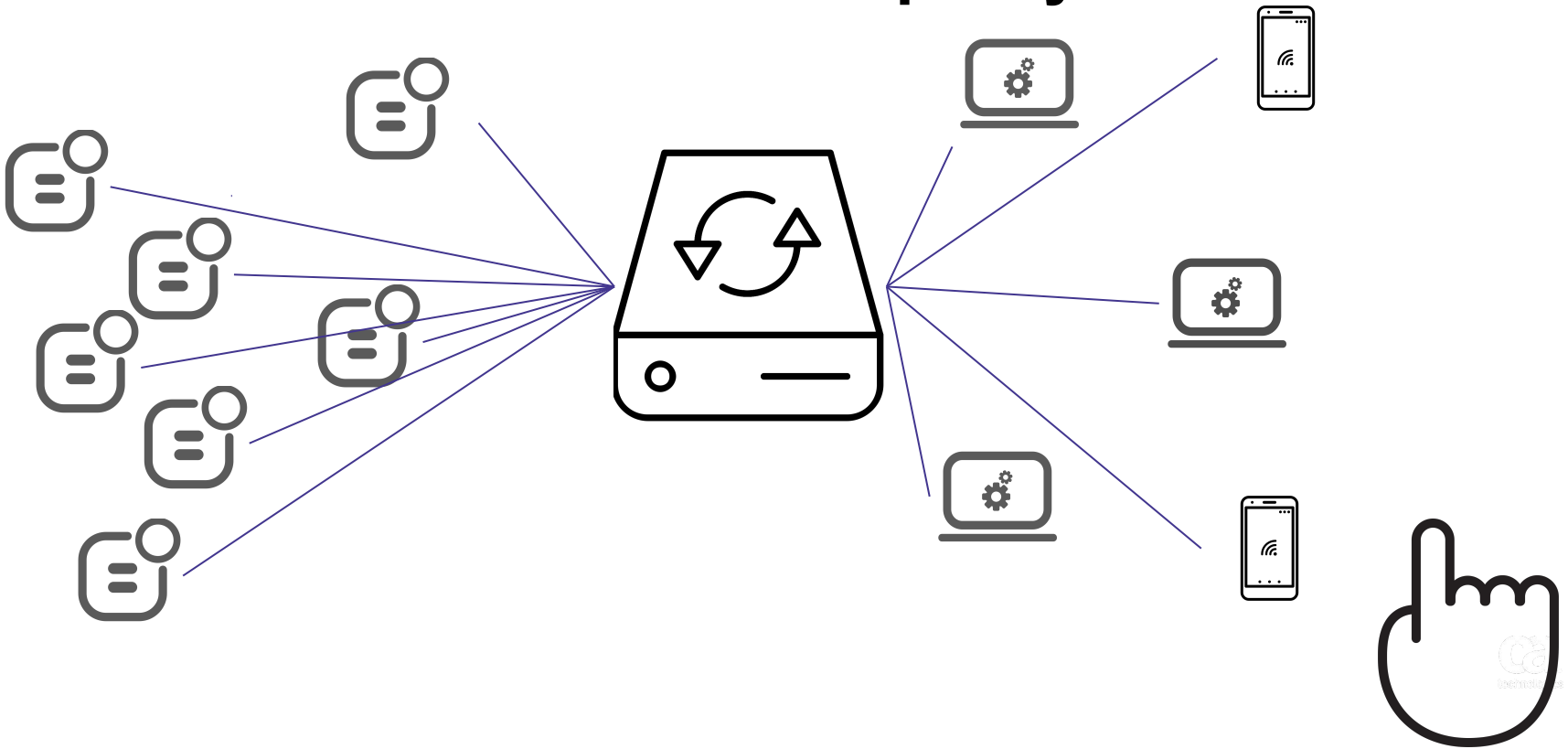
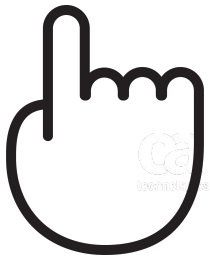


The proxy MUST be pass-through only



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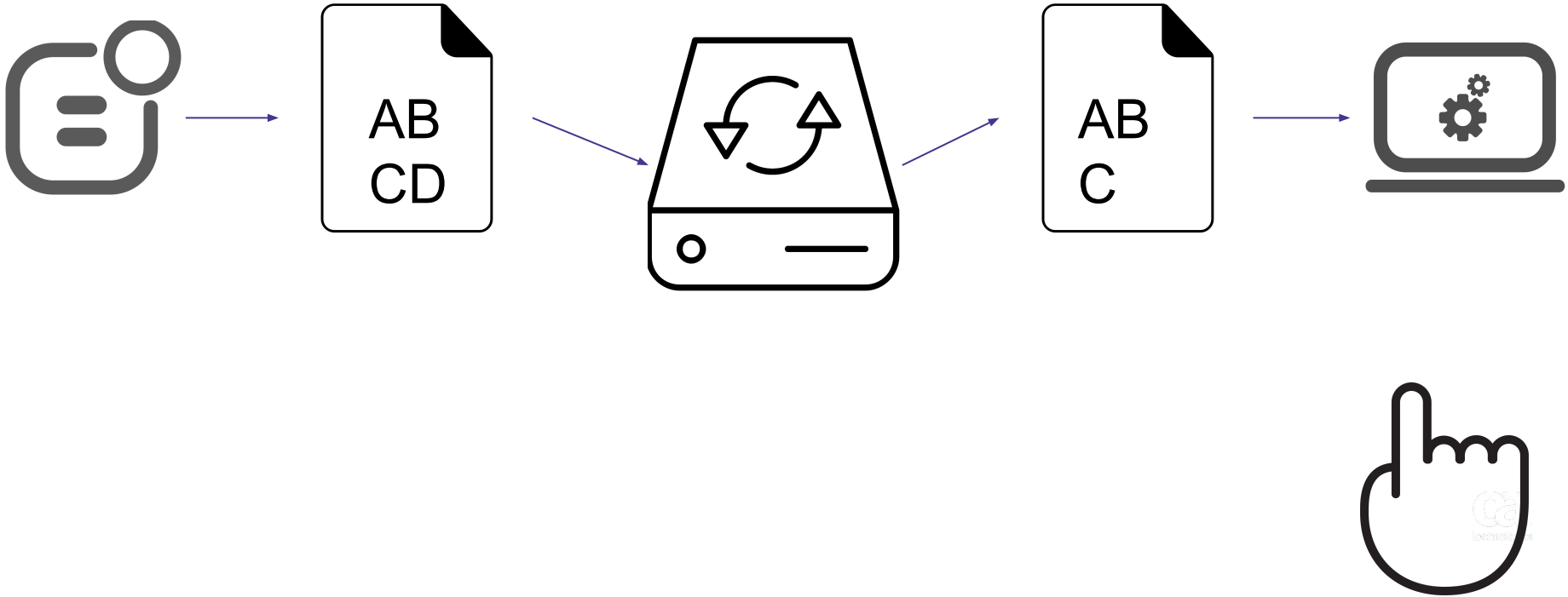

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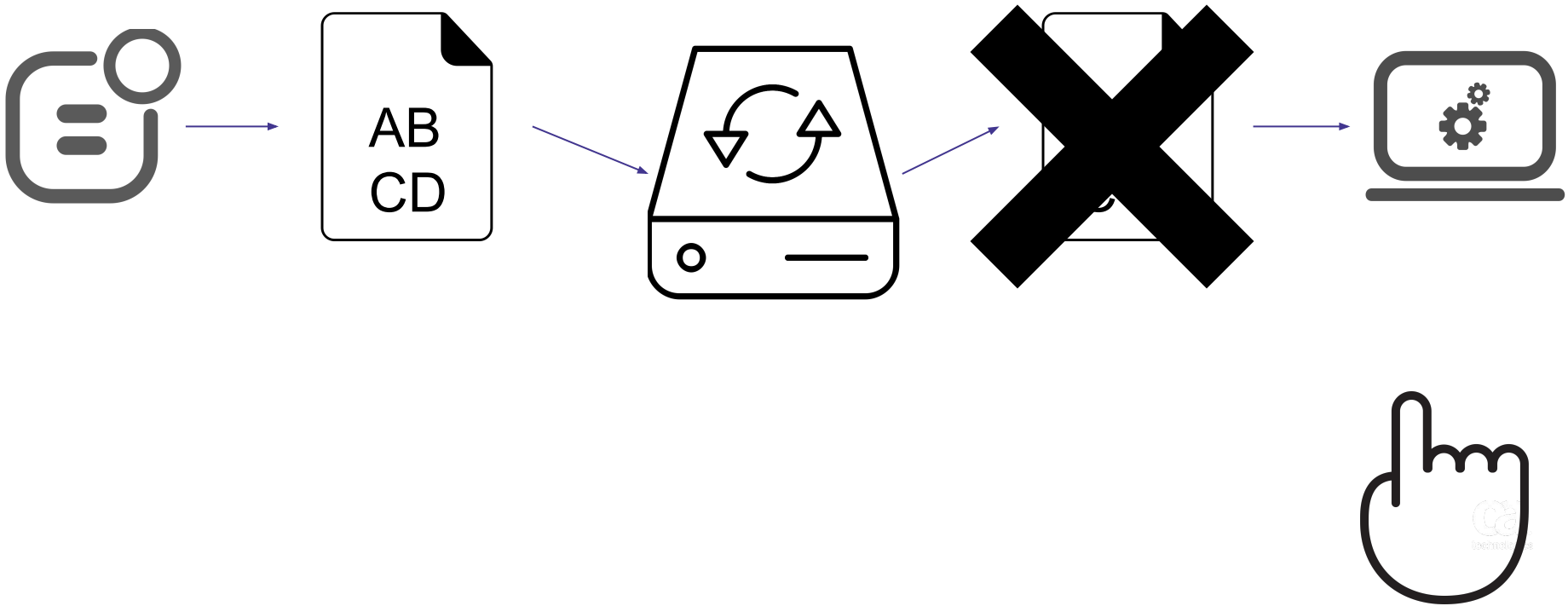

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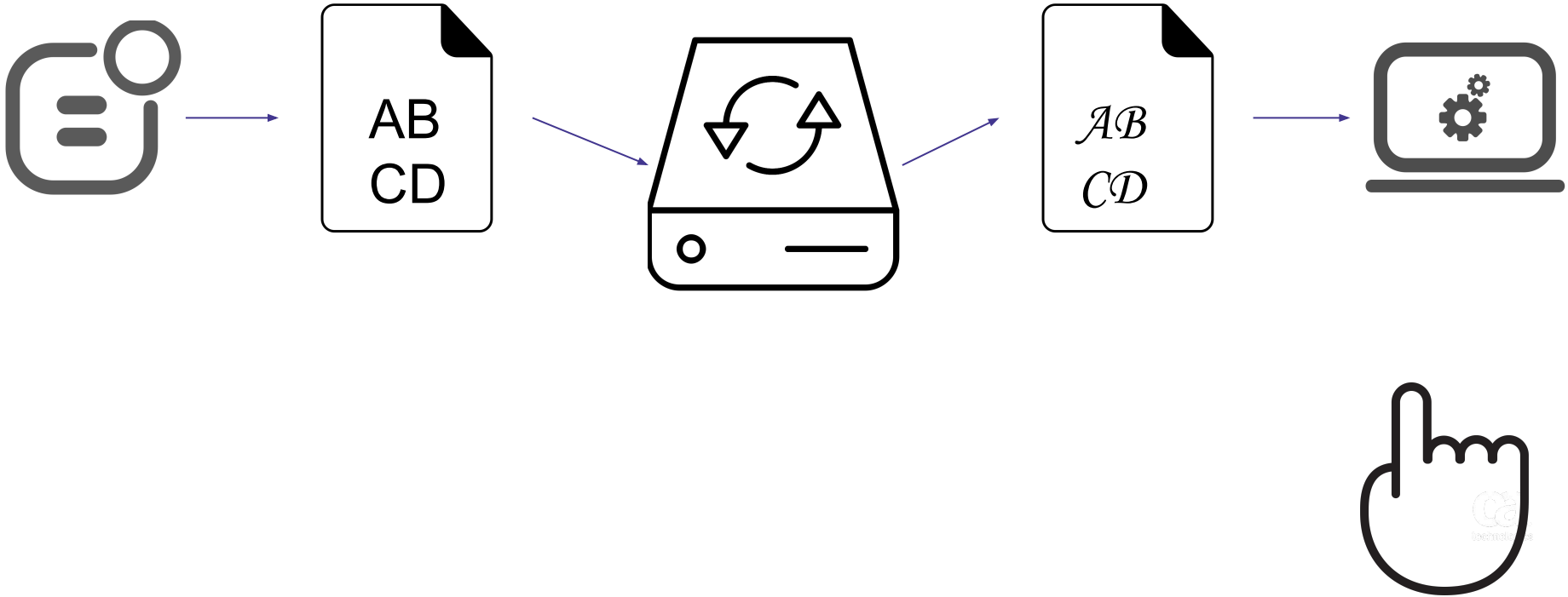

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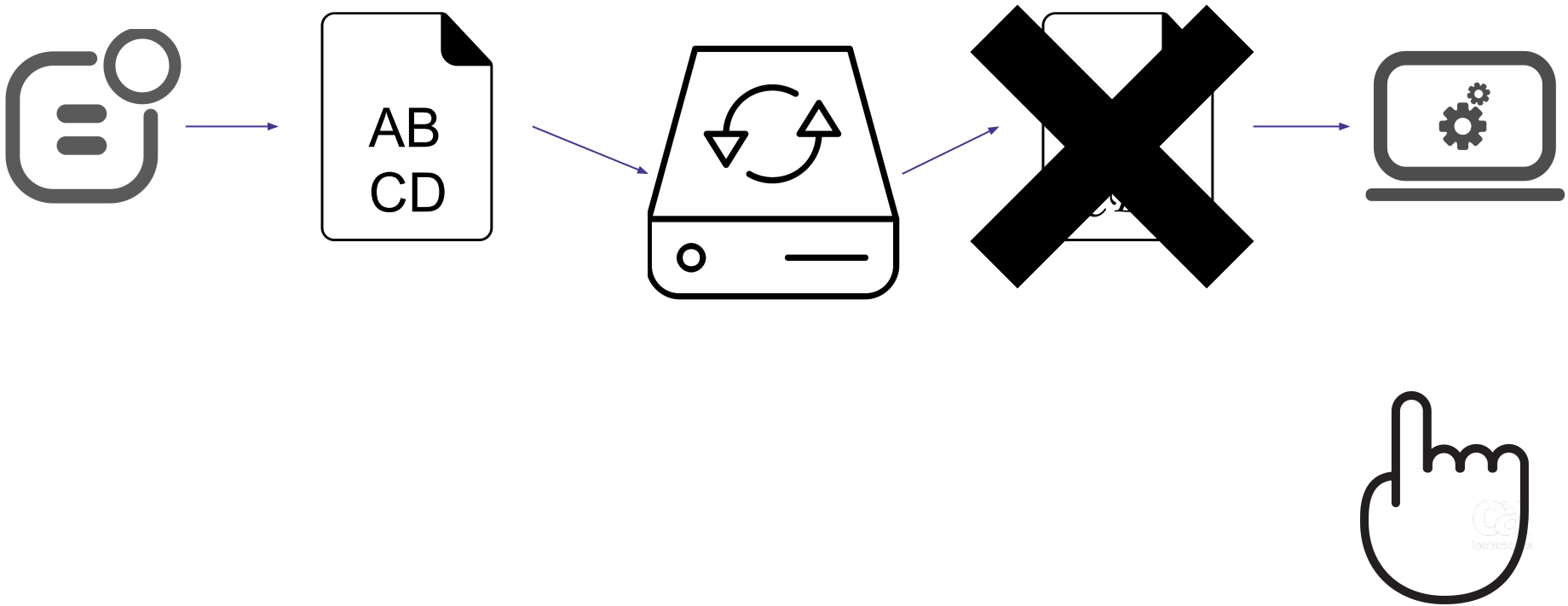

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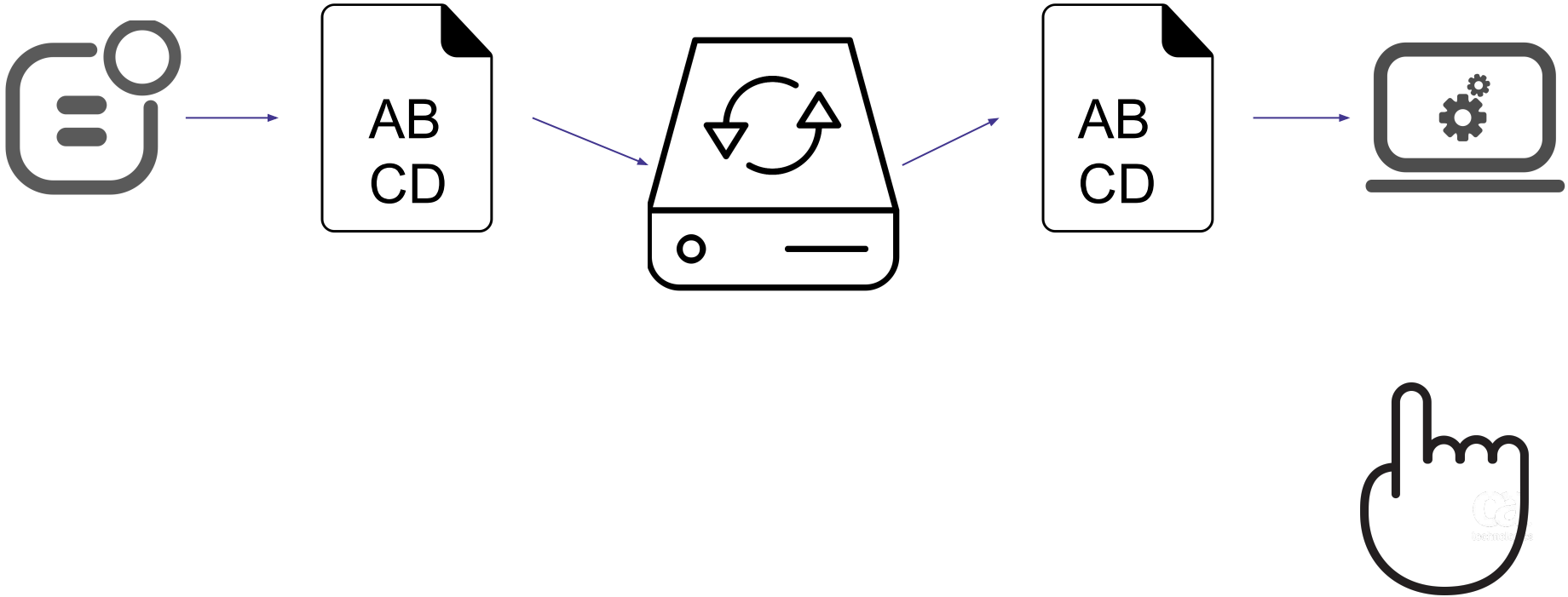
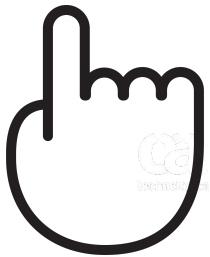


ESBs, external services stay behind the Proxy



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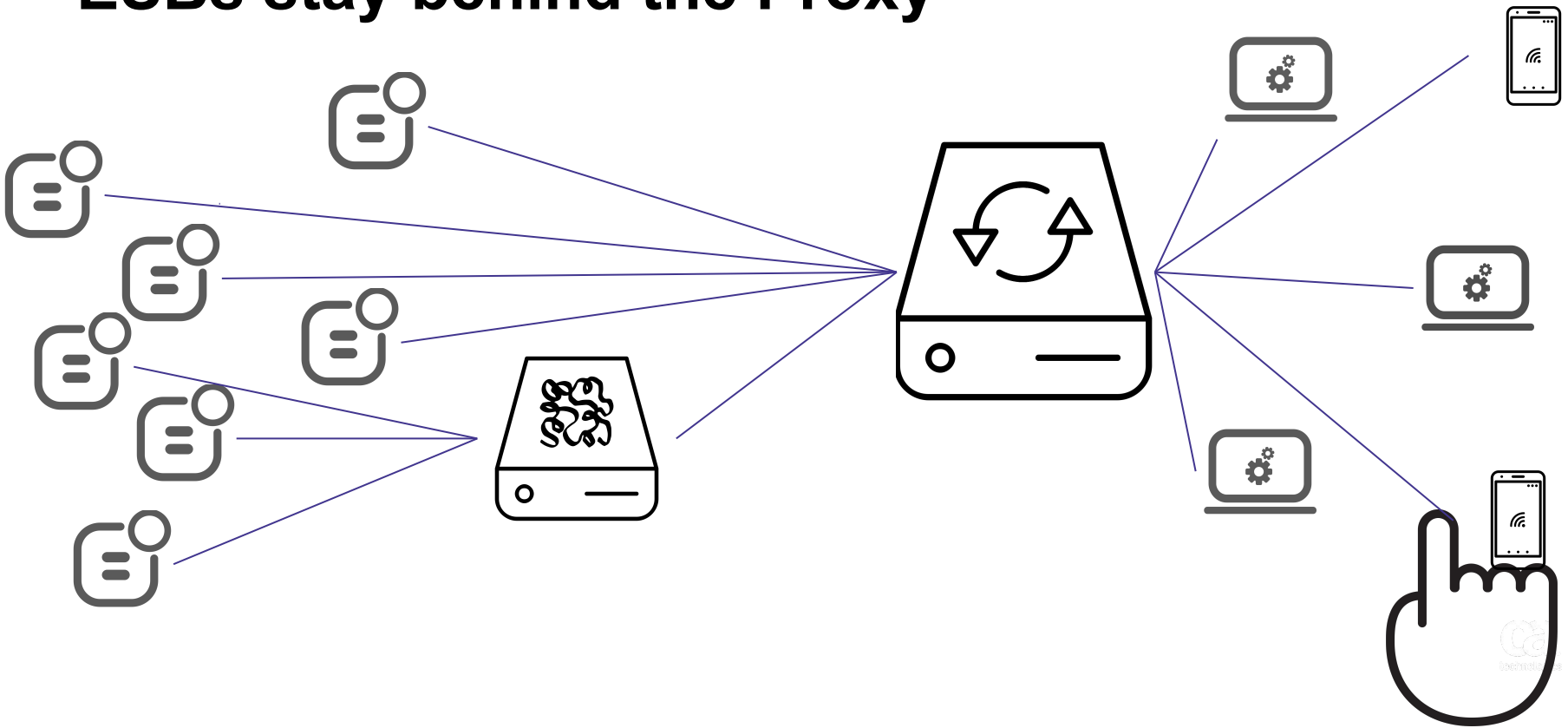

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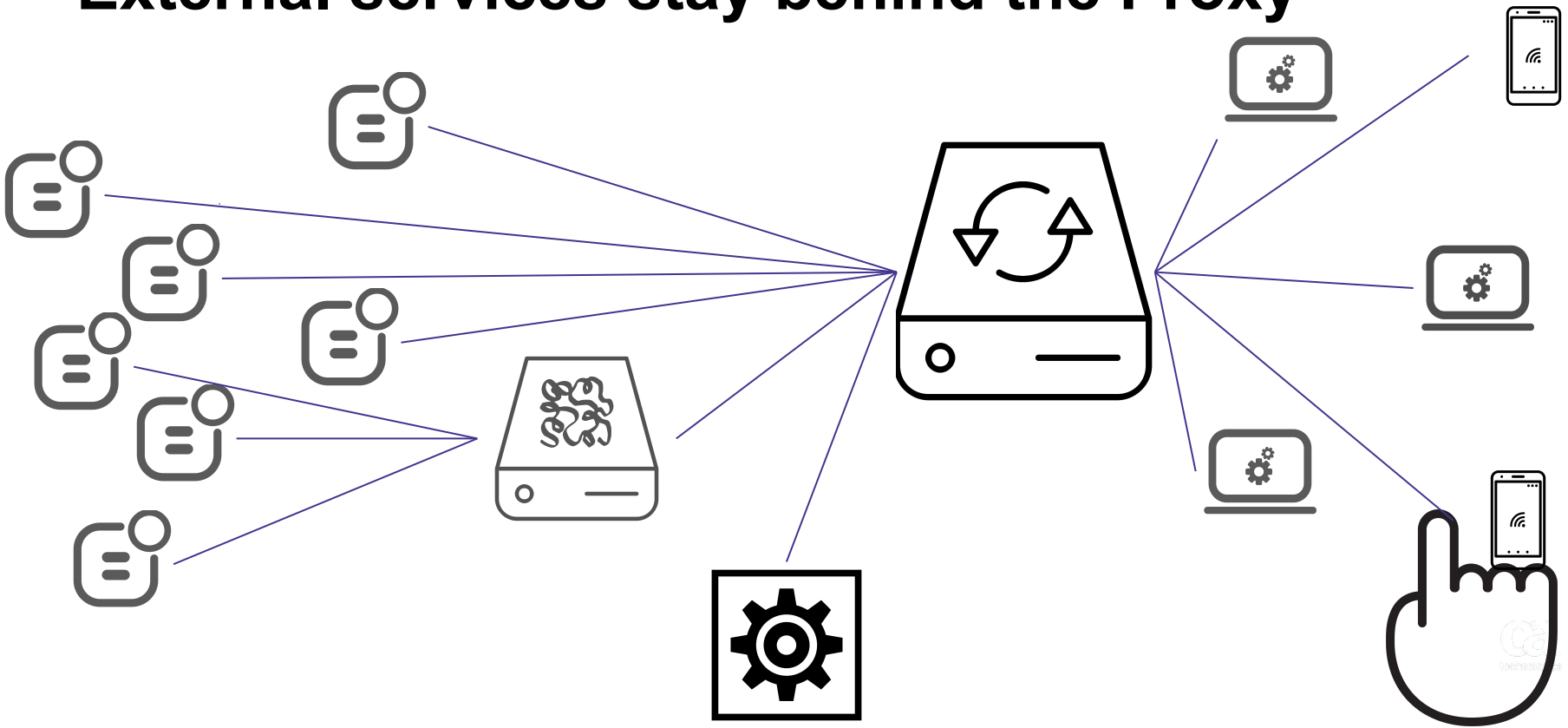
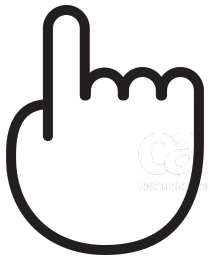
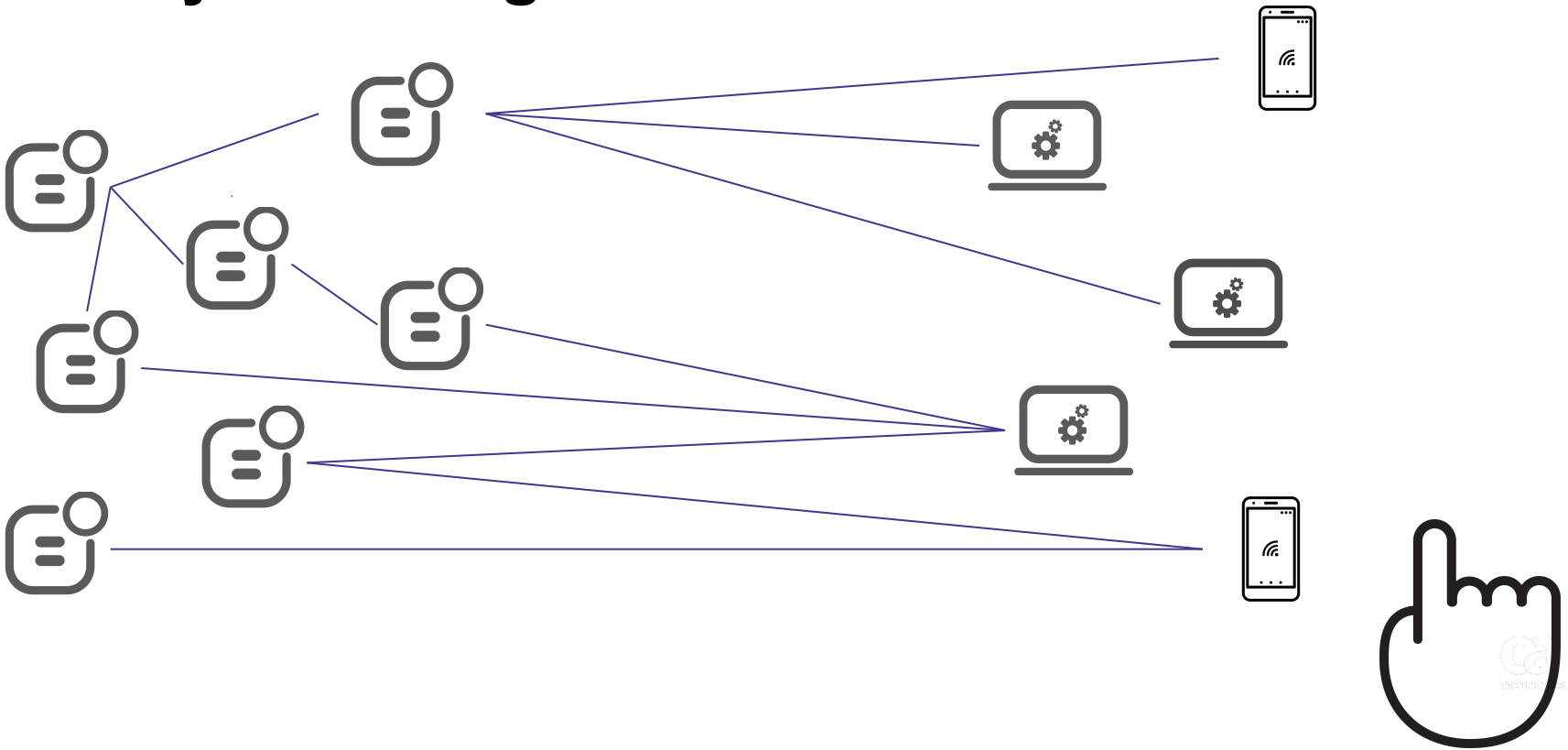


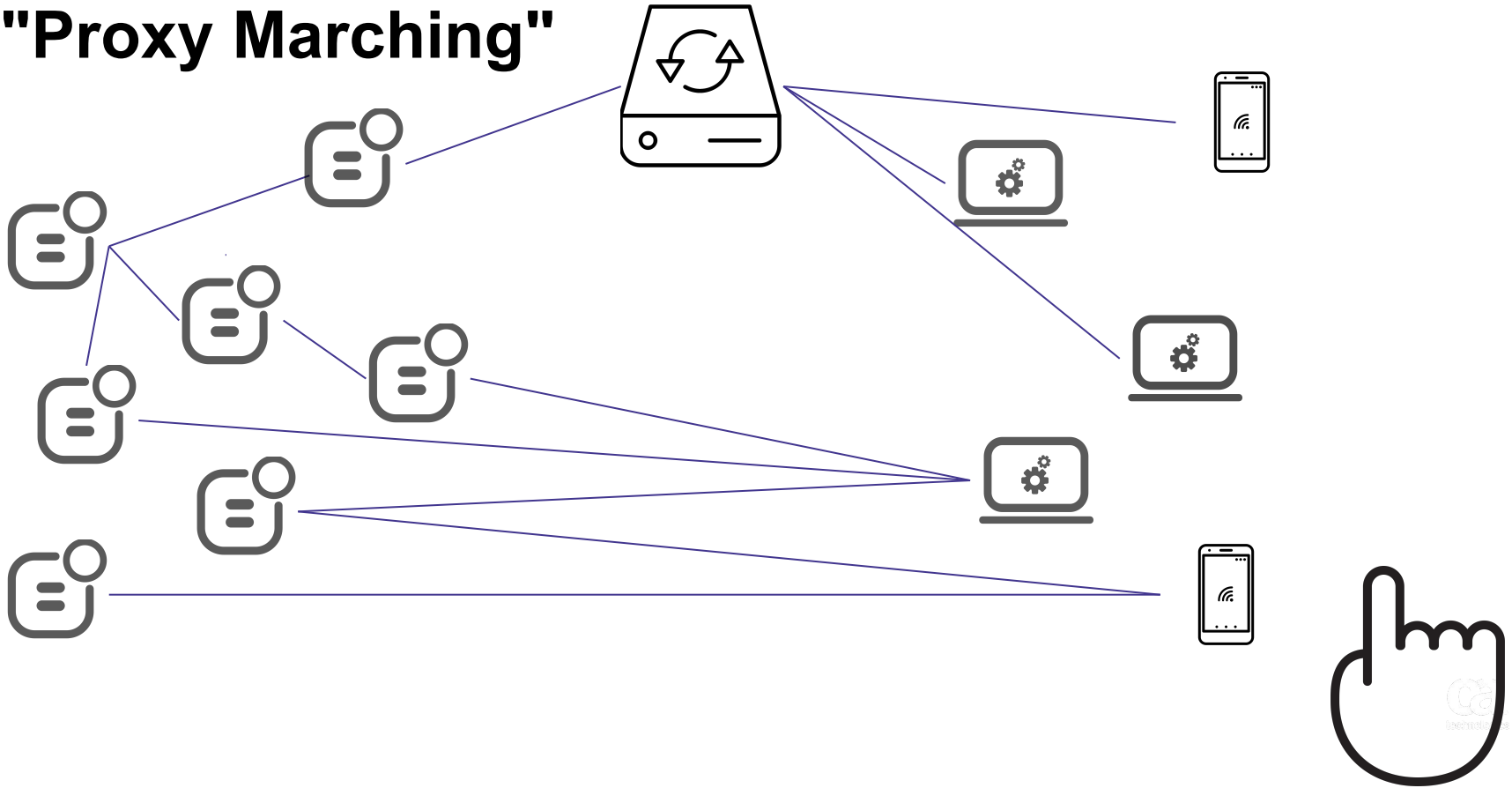
"Proxy Marching"



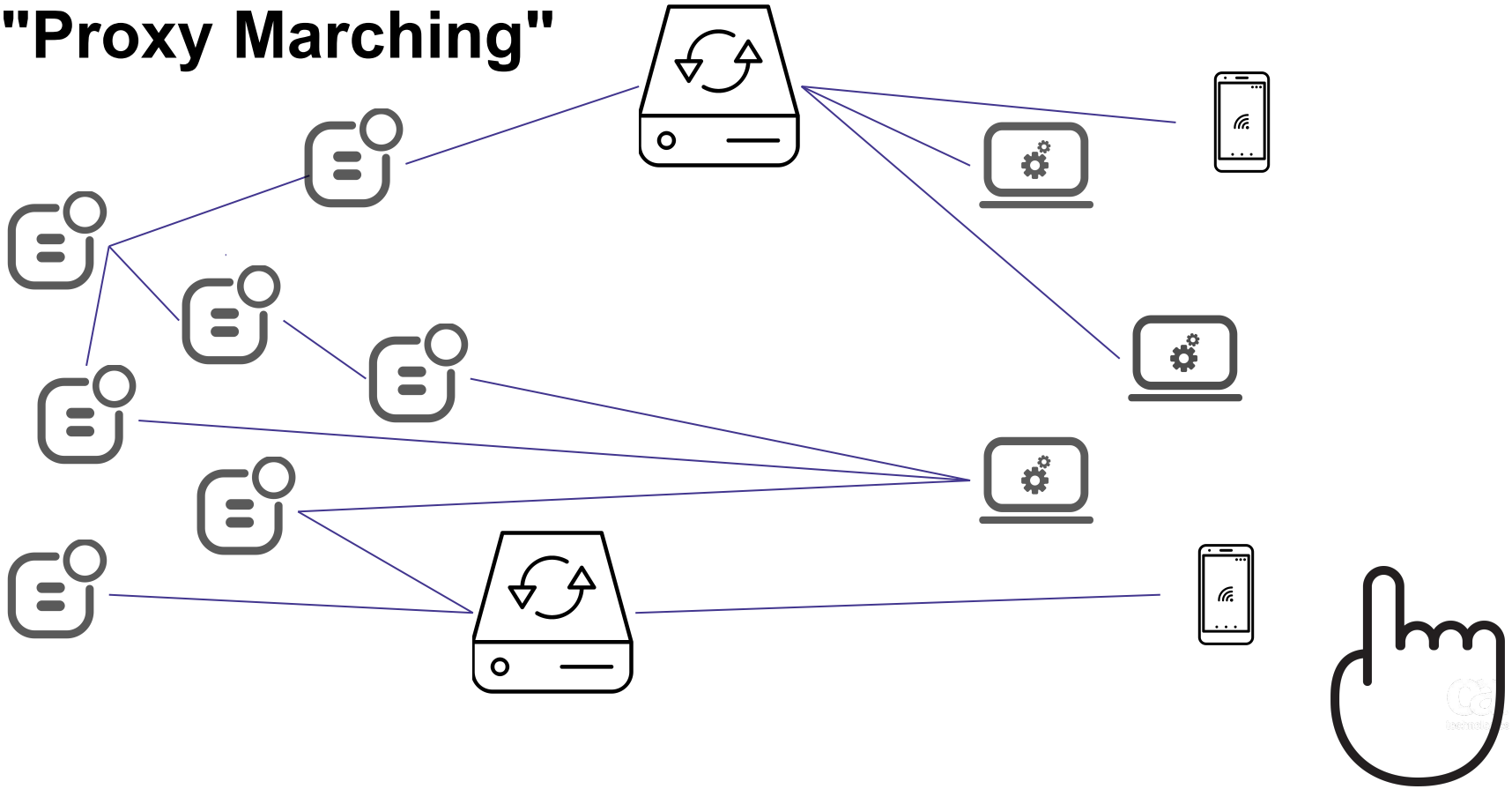
"Proxy Marching"



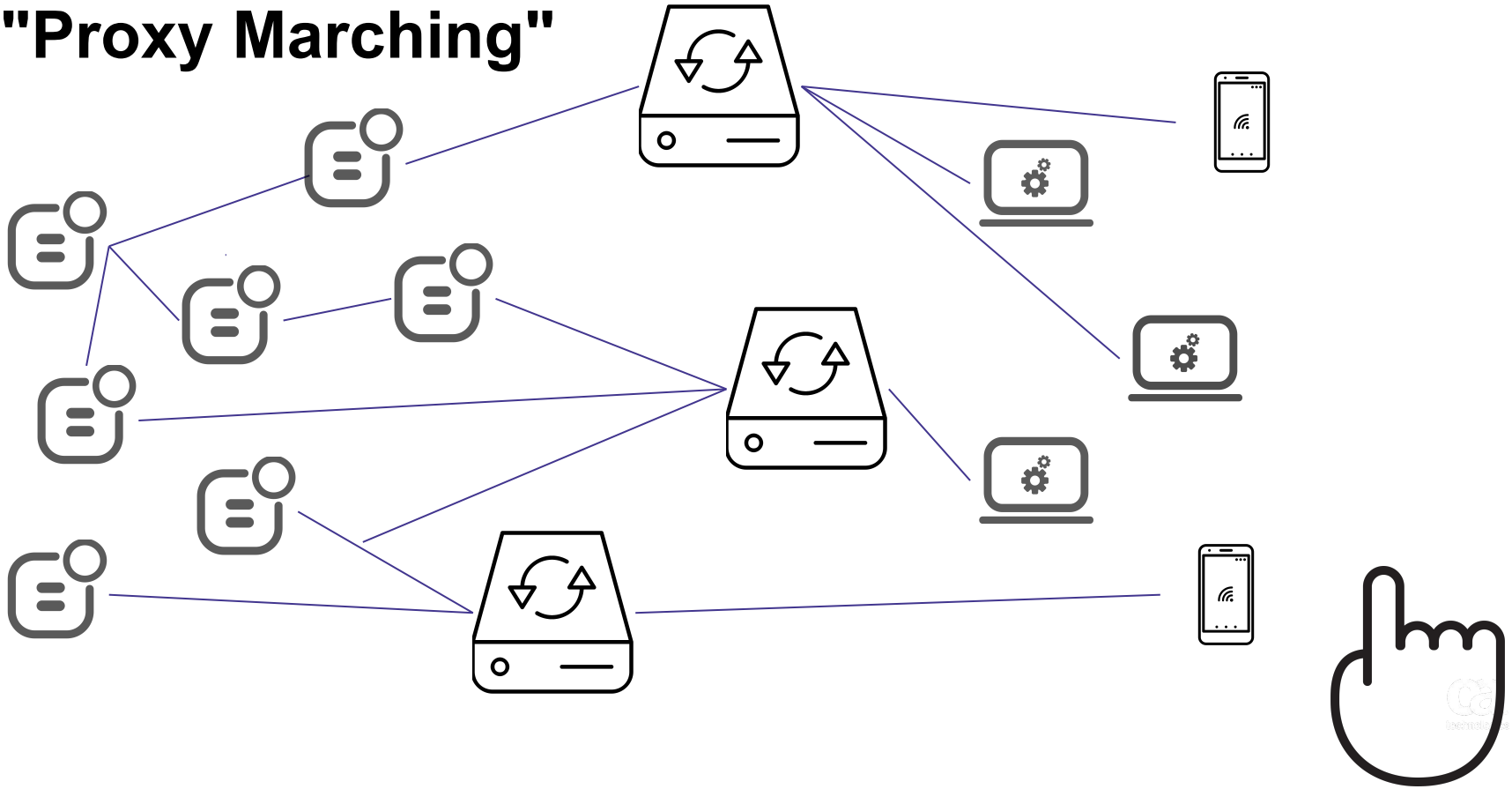
"Proxy Marching"



"Proxy Marching"

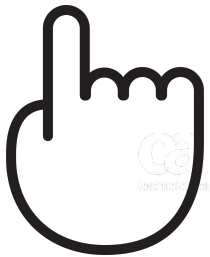


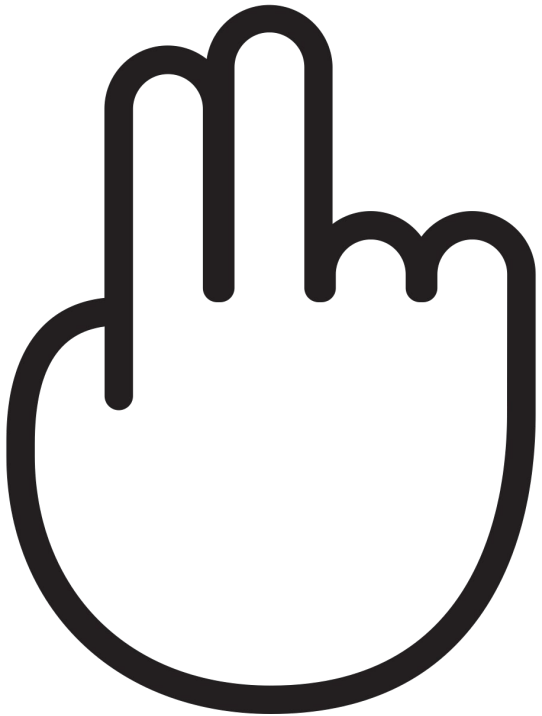
"Proxy Marching"

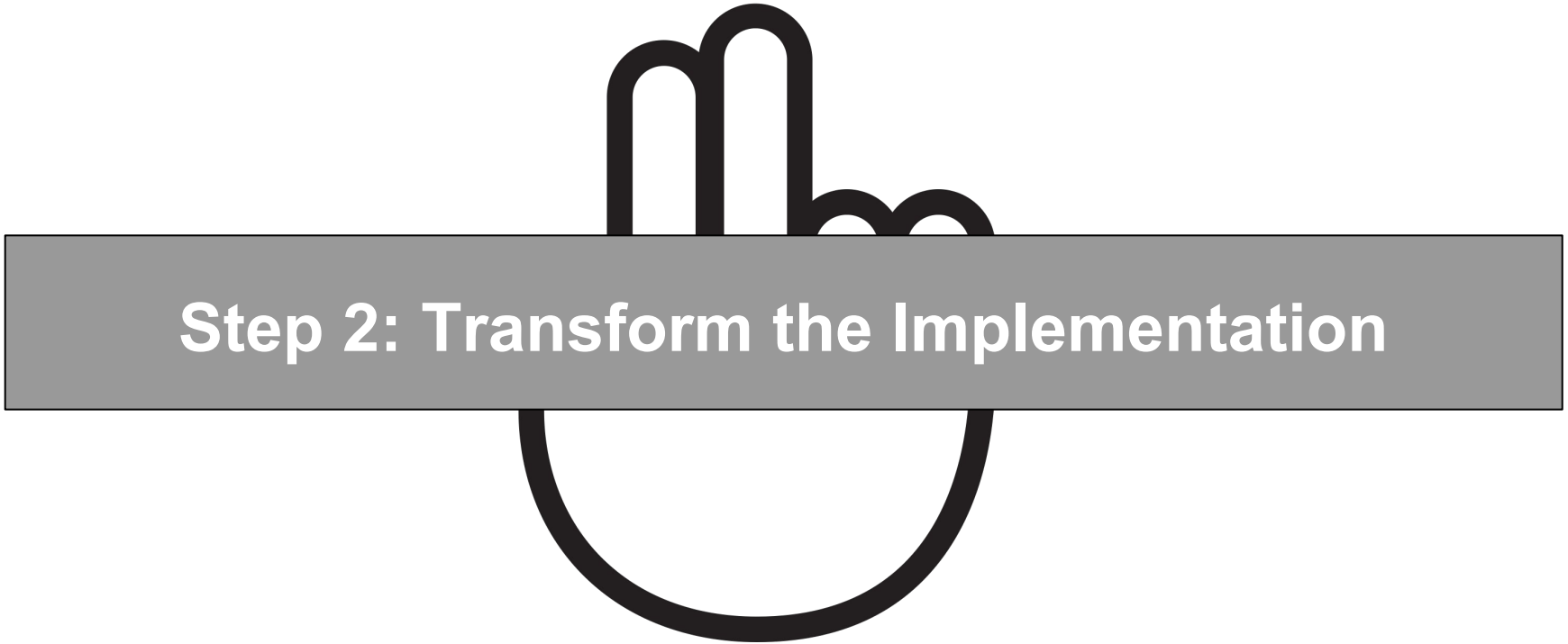


Stabilize the Interface

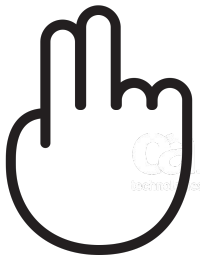
- All API consumers talk to a proxy
- The proxy MUST be pass-through only
- Keep ESBs & external services *behind* the proxy
- Employ a "Proxy March"



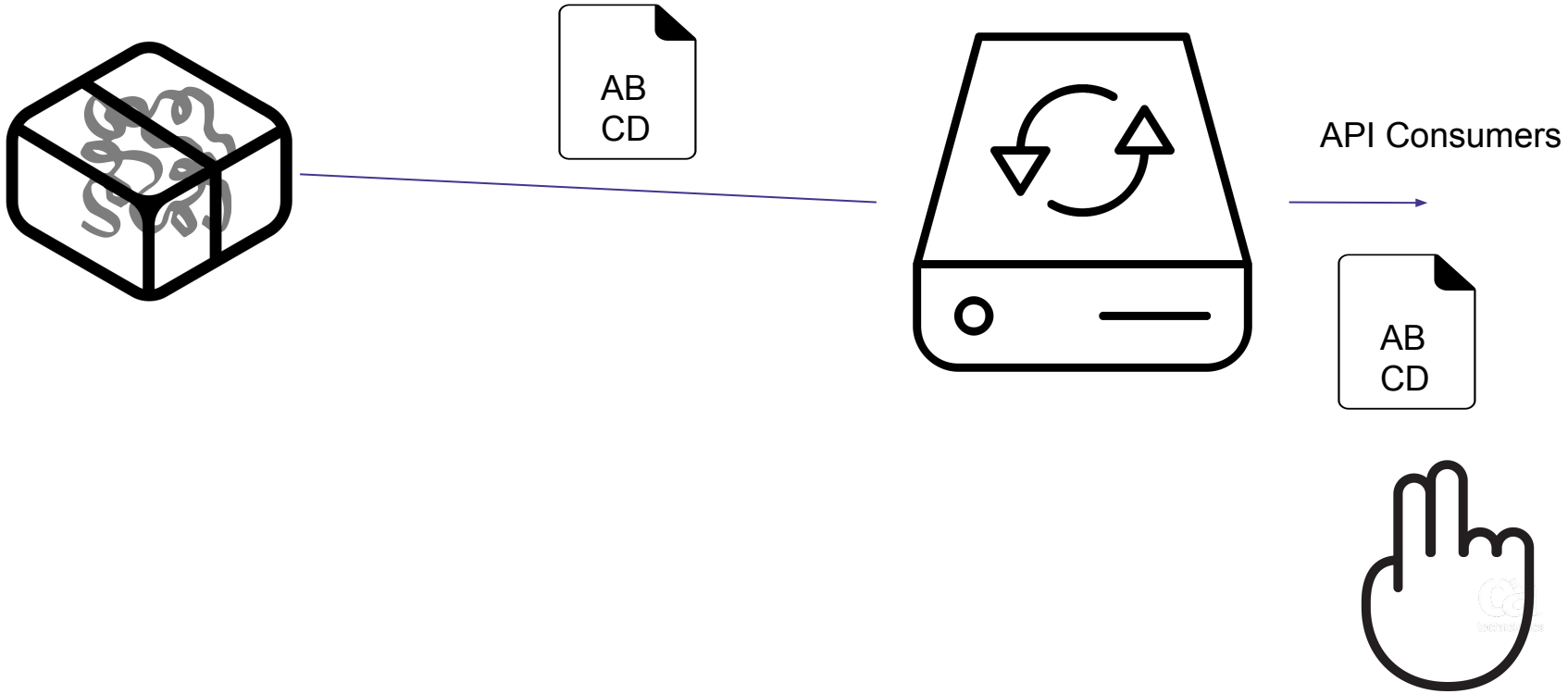



Step 2: Transform the Implementation

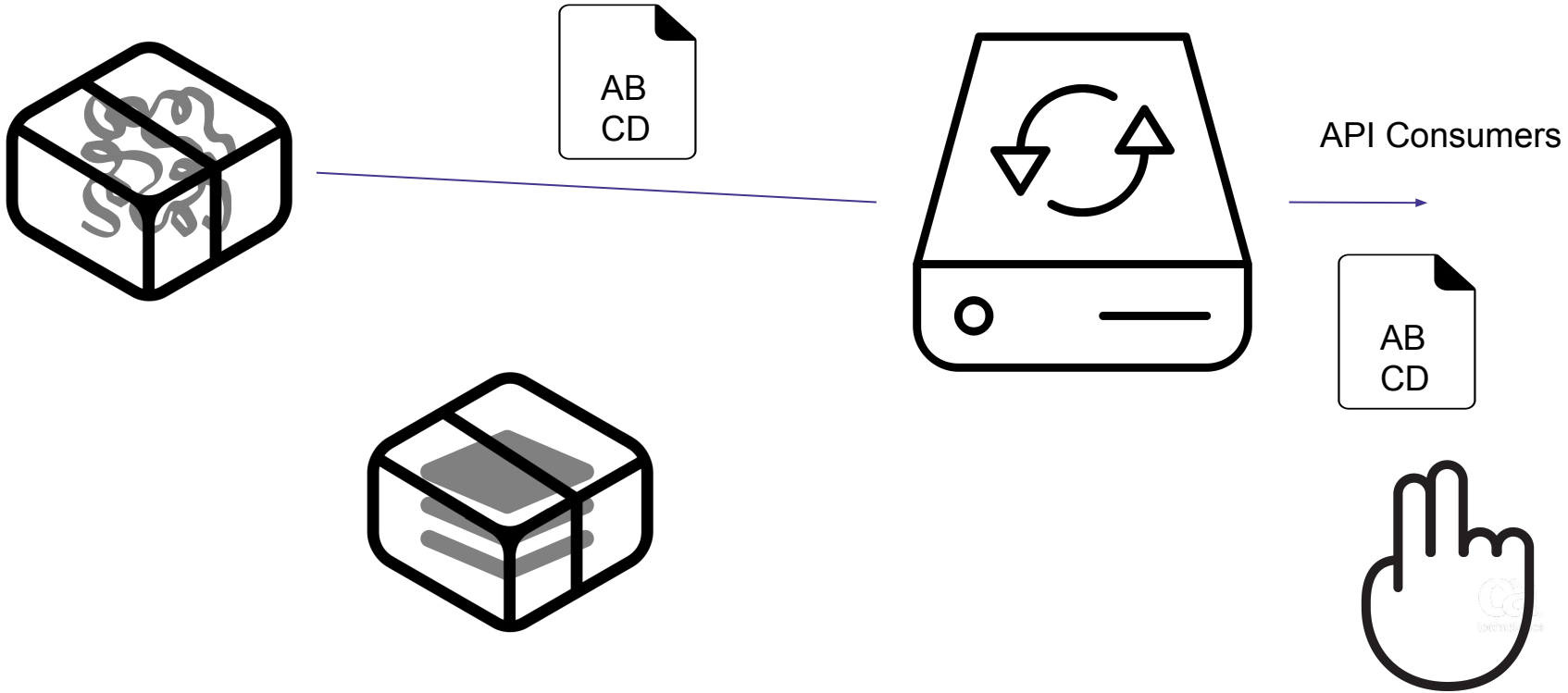
Refactor existing components



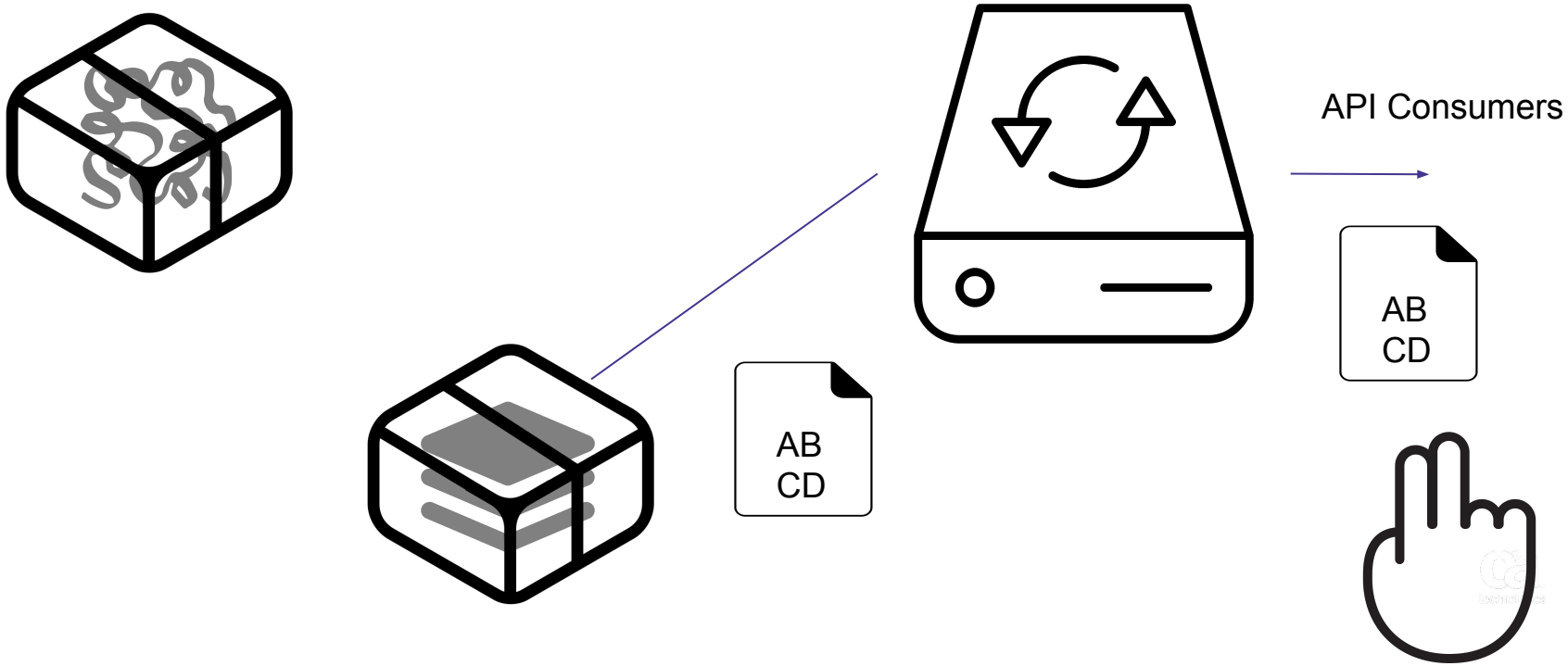
Refactor existing components



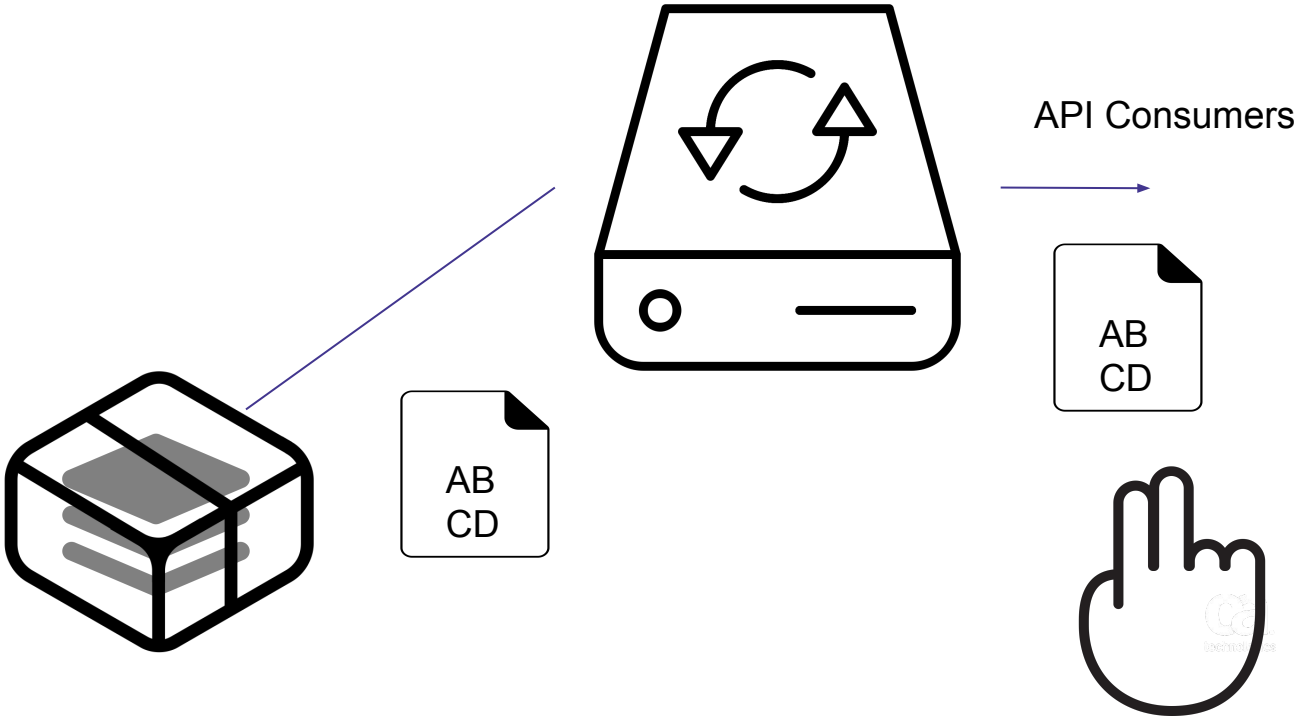
Refactor existing components



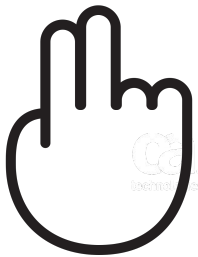
Refactor existing components



Refactor existing components

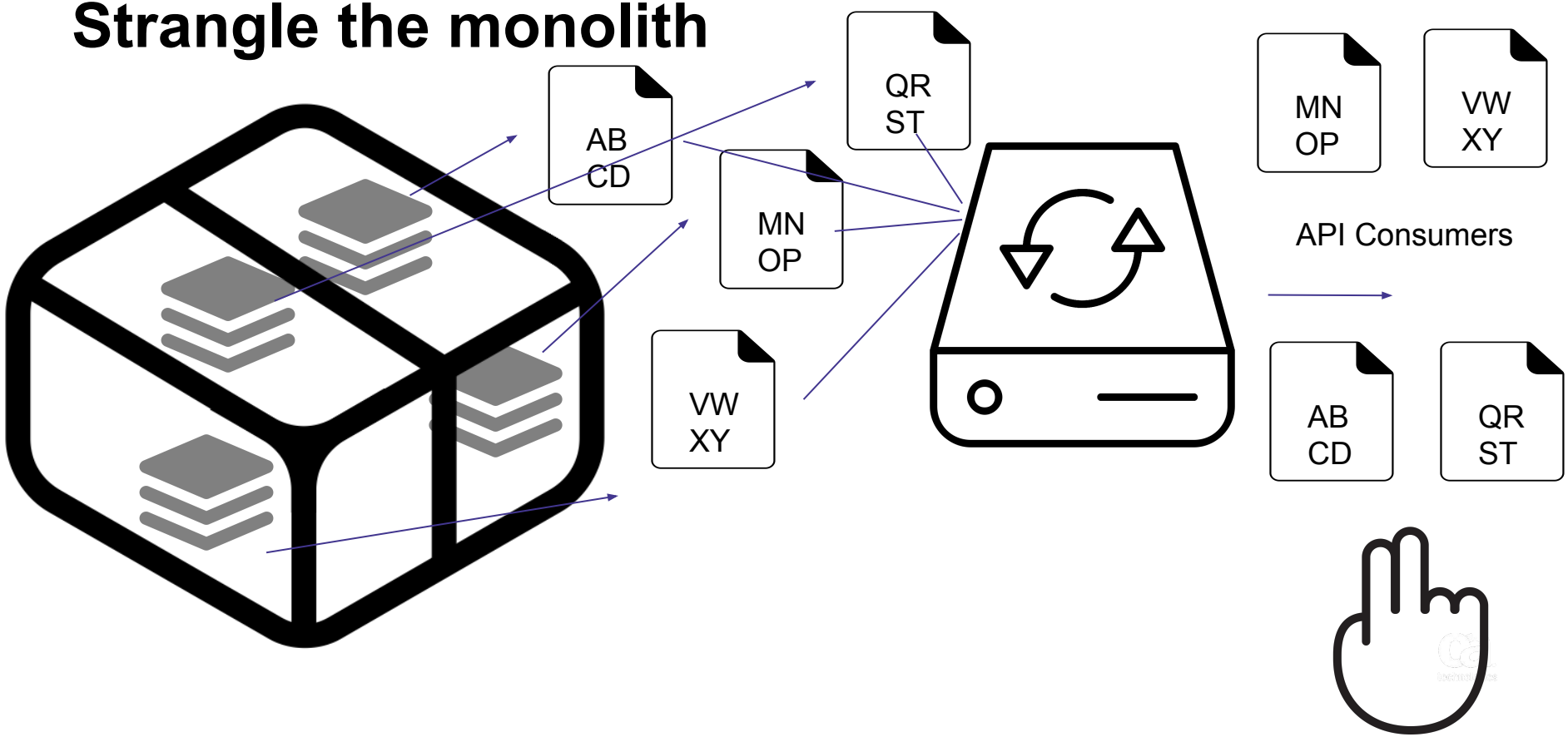


Strangle the monolith

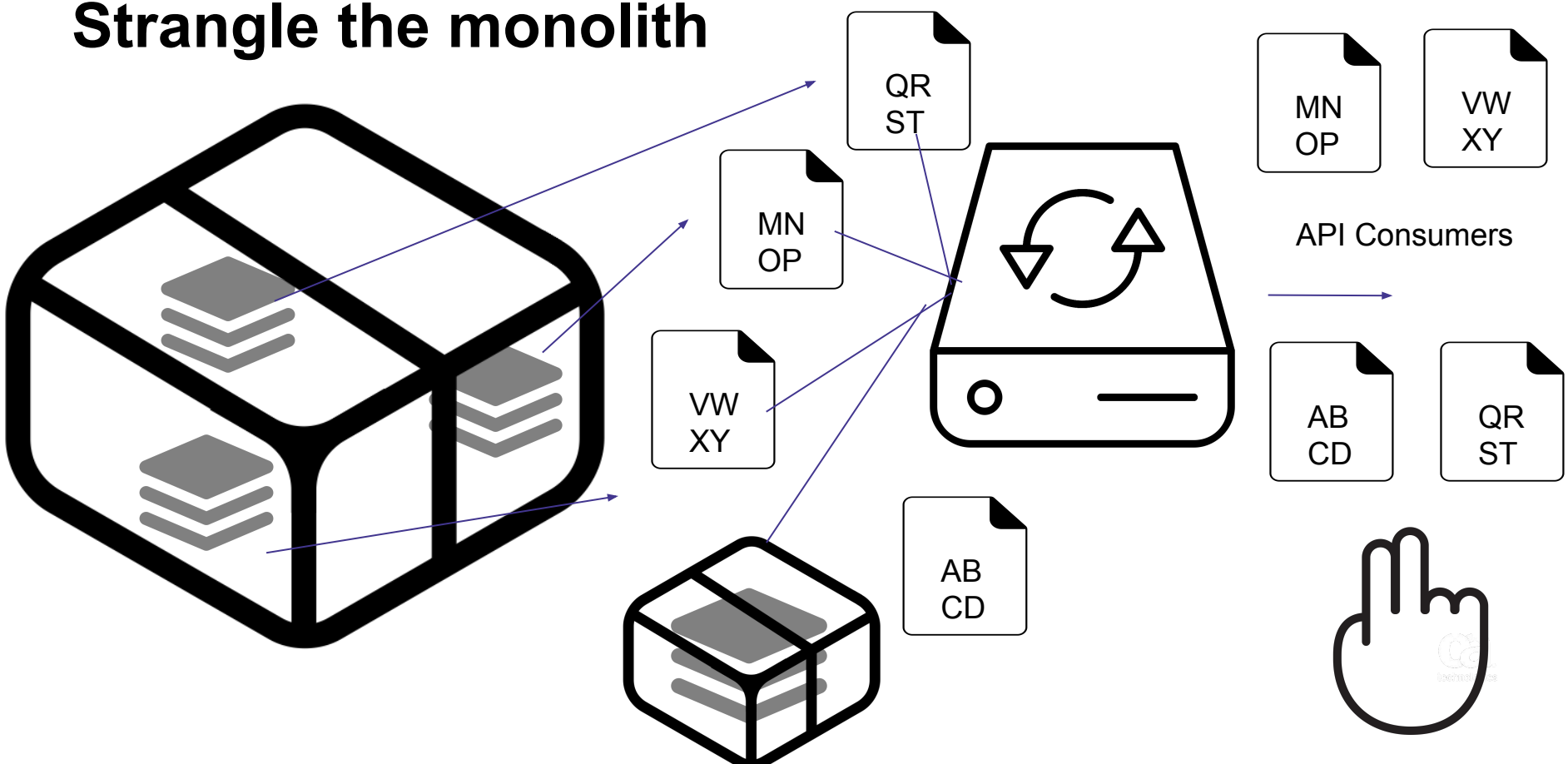


Step 2: Transform the Implementation

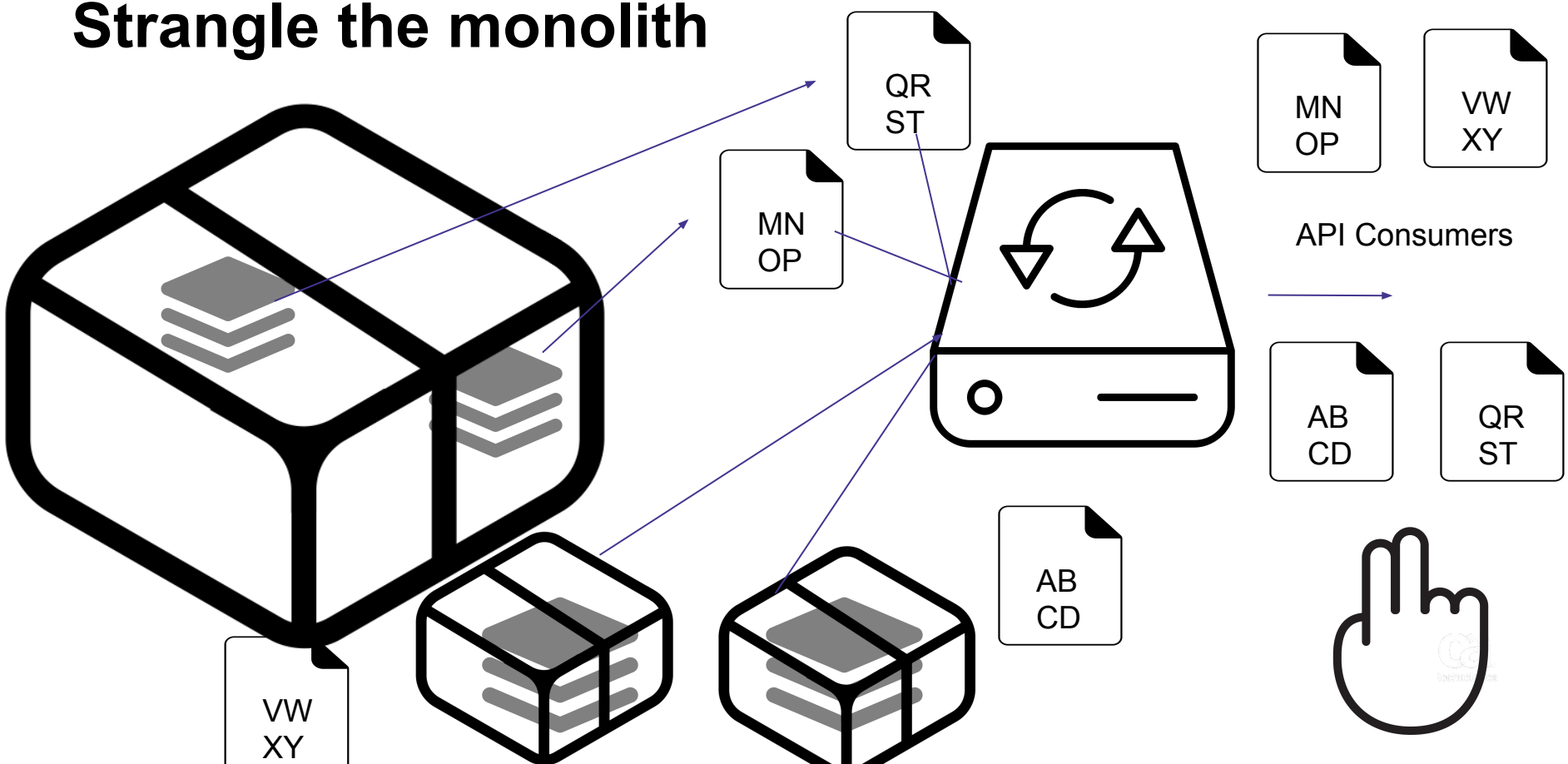
Strangle the monolith



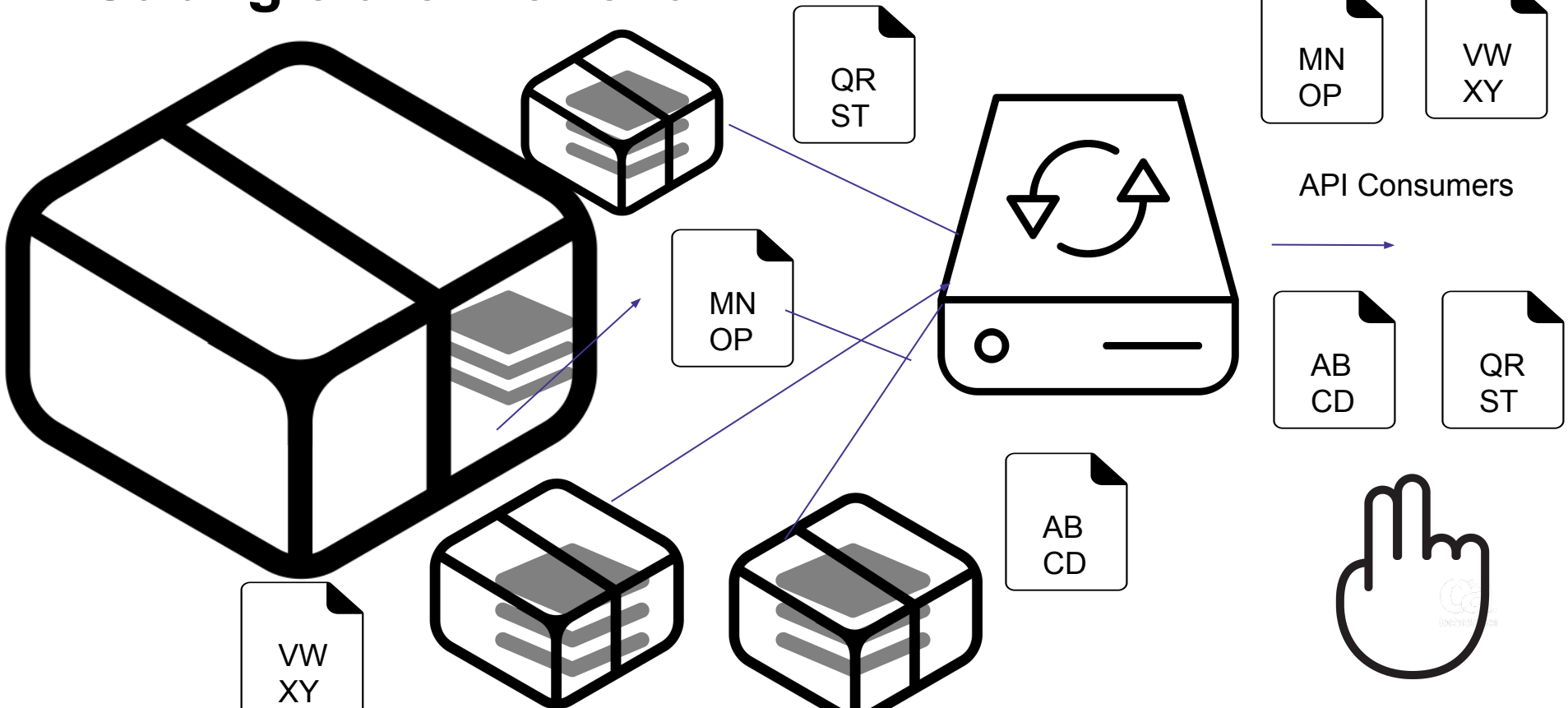
Strangle the monolith



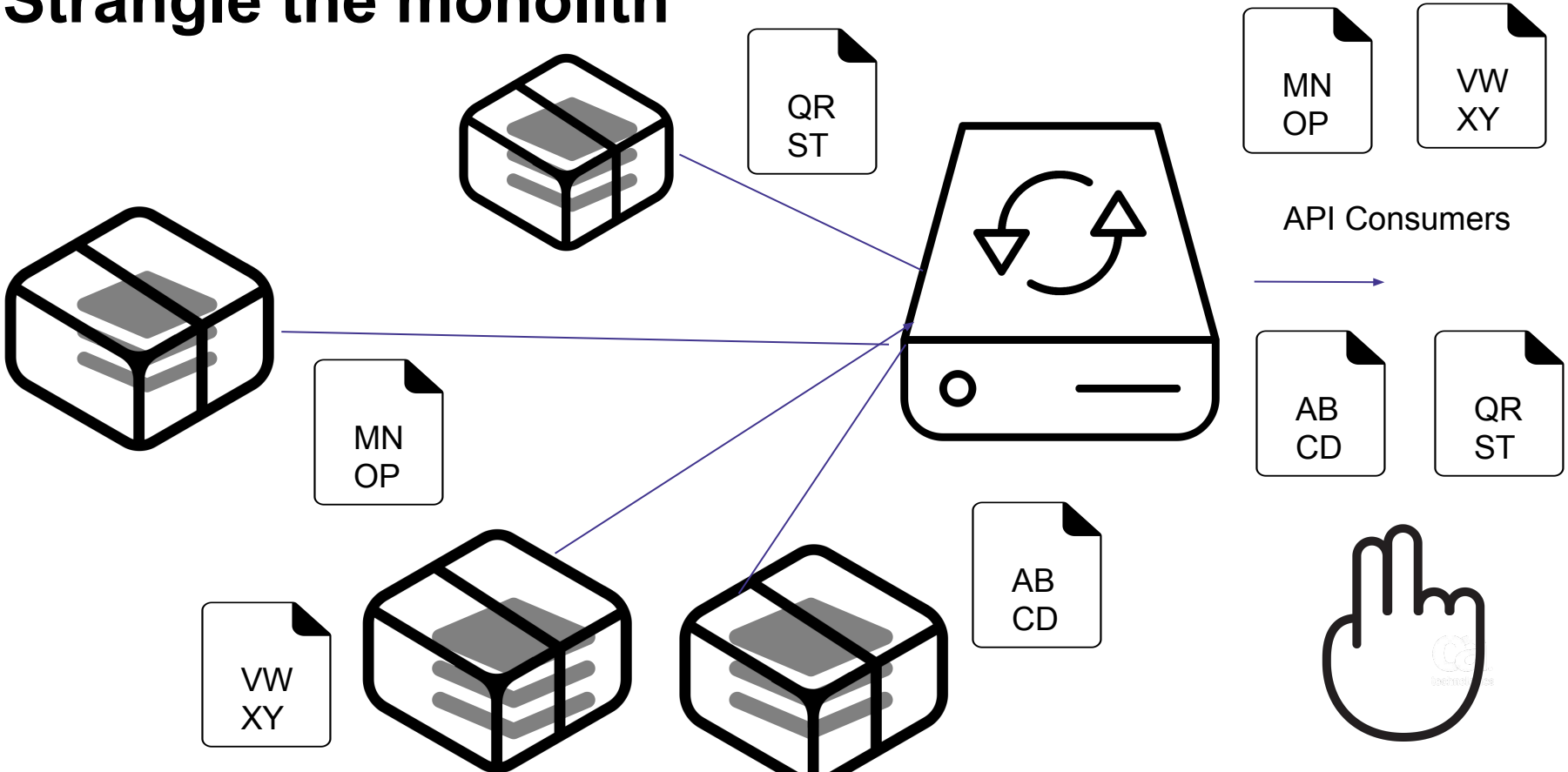
Strangle the monolith



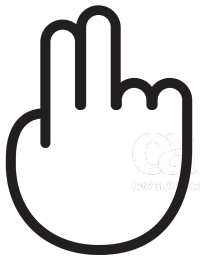
Strangle the monolith



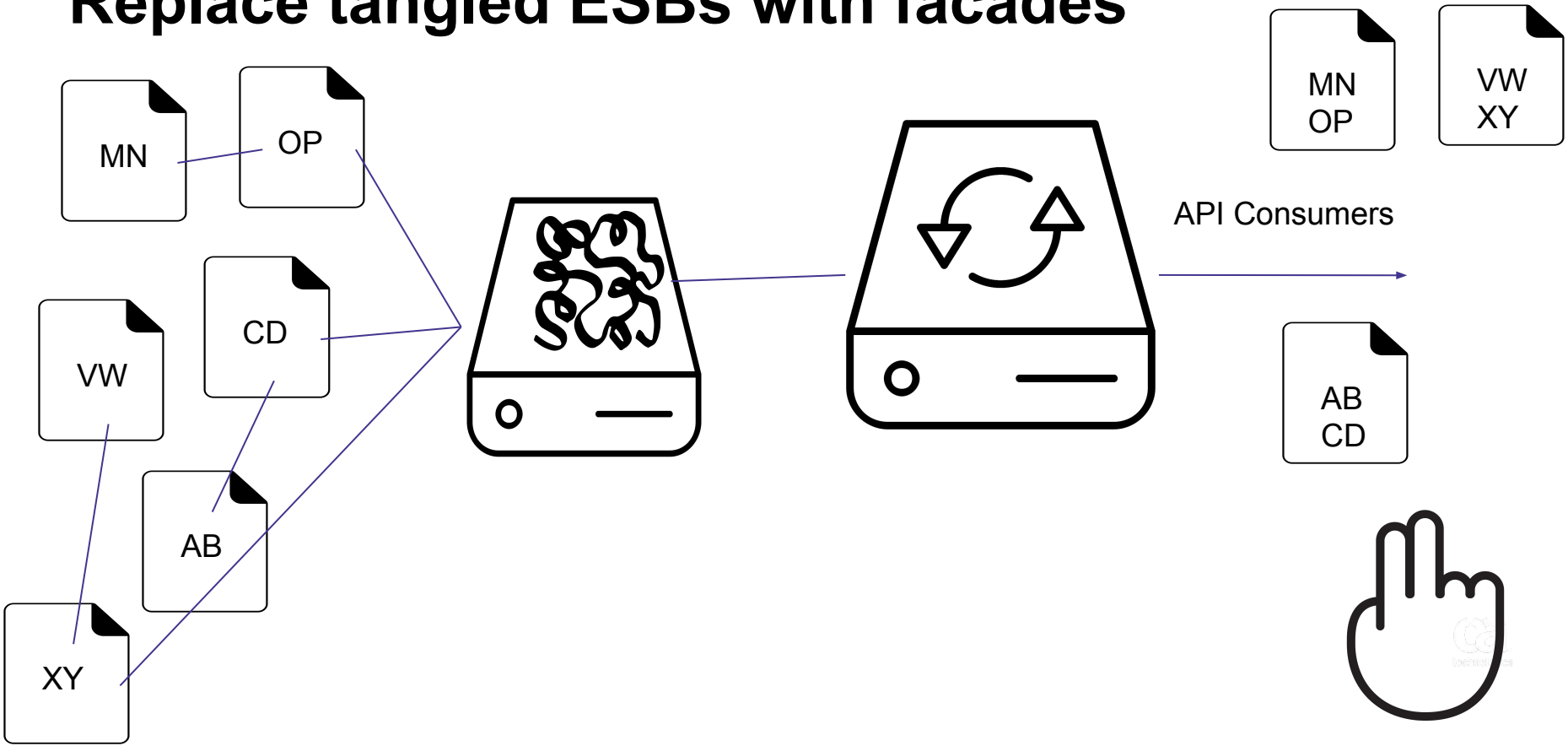
Strangle the monolith



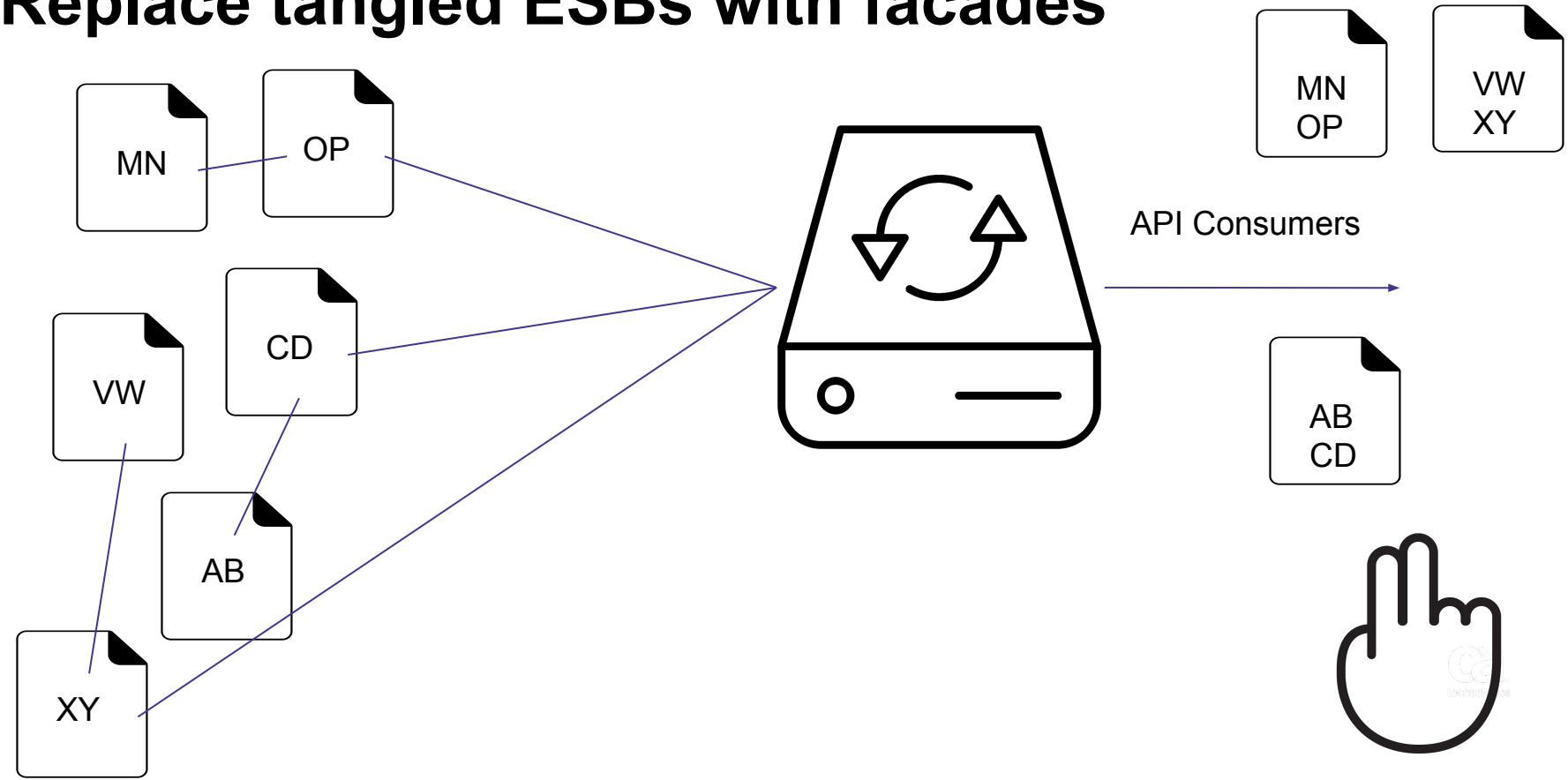
Replace tangled ESBs with facades



Replace tangled ESBs with facades

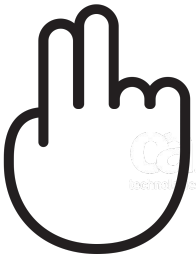


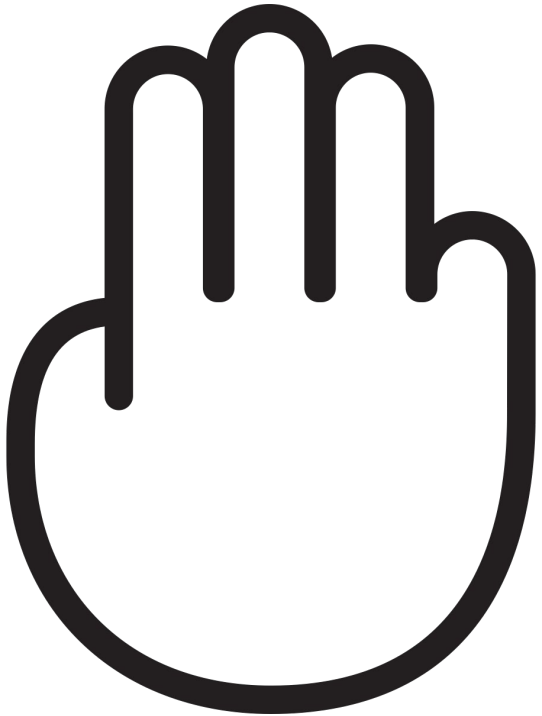
Replace tangled ESBs with facades

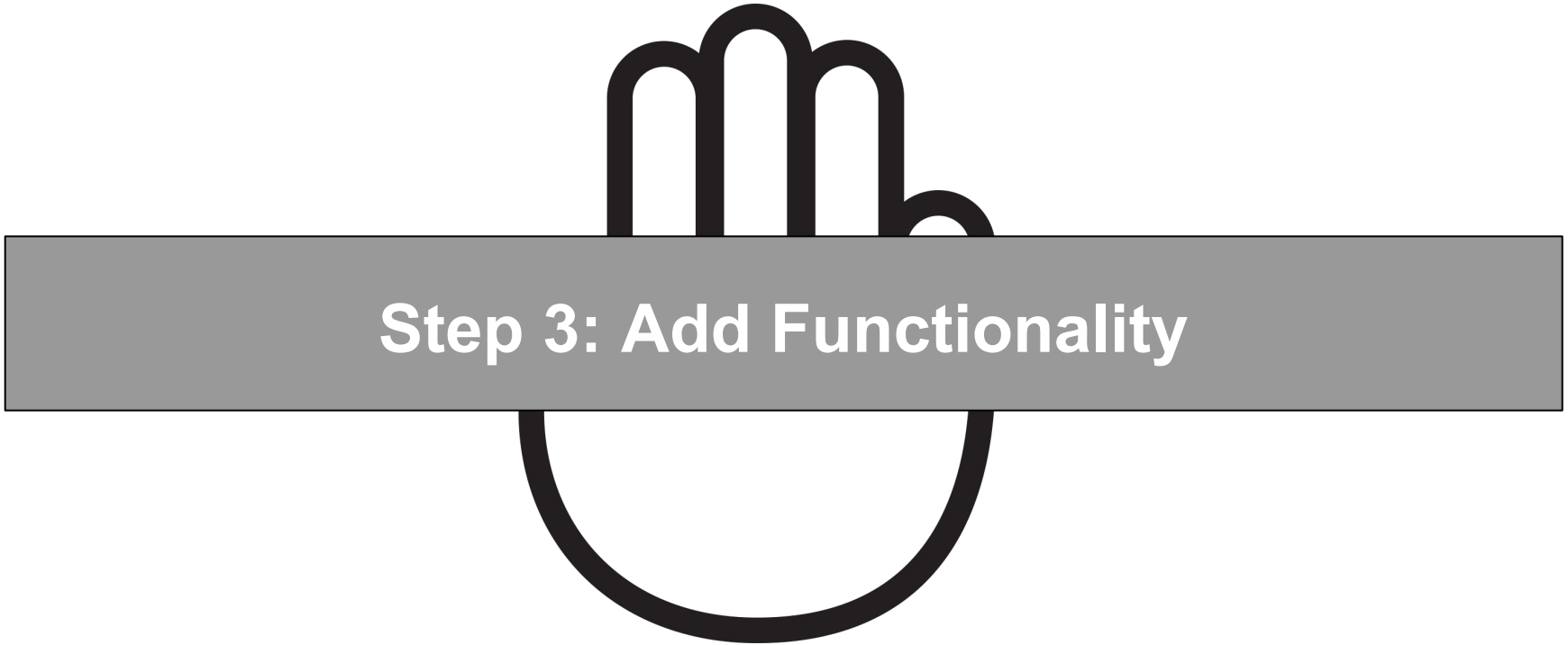


Transform the Implementation

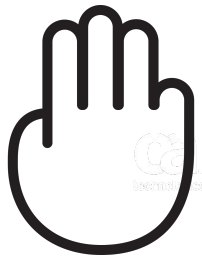
- Refactor existing components
- Strangle the monolith
- Replace tangled ESBs



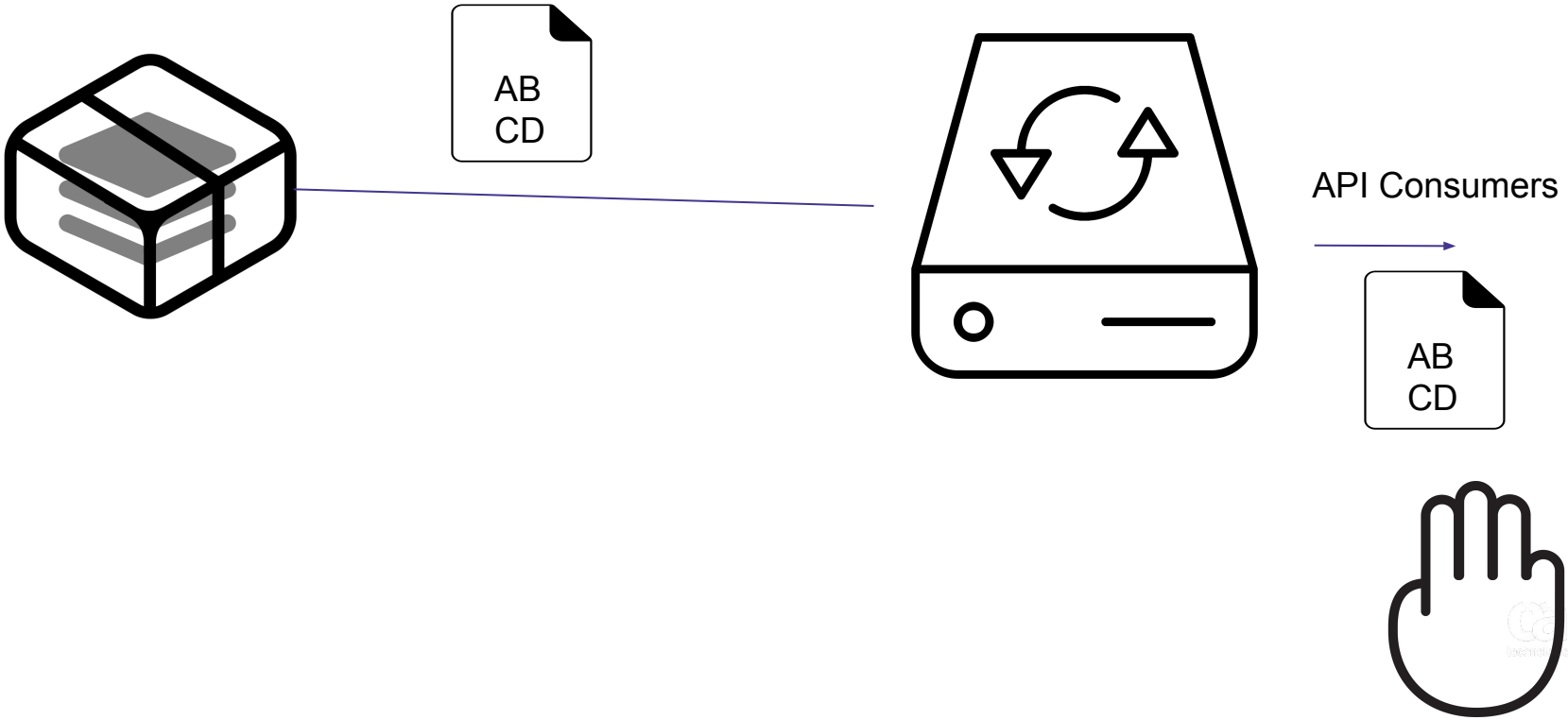



Step 3: Add Functionality

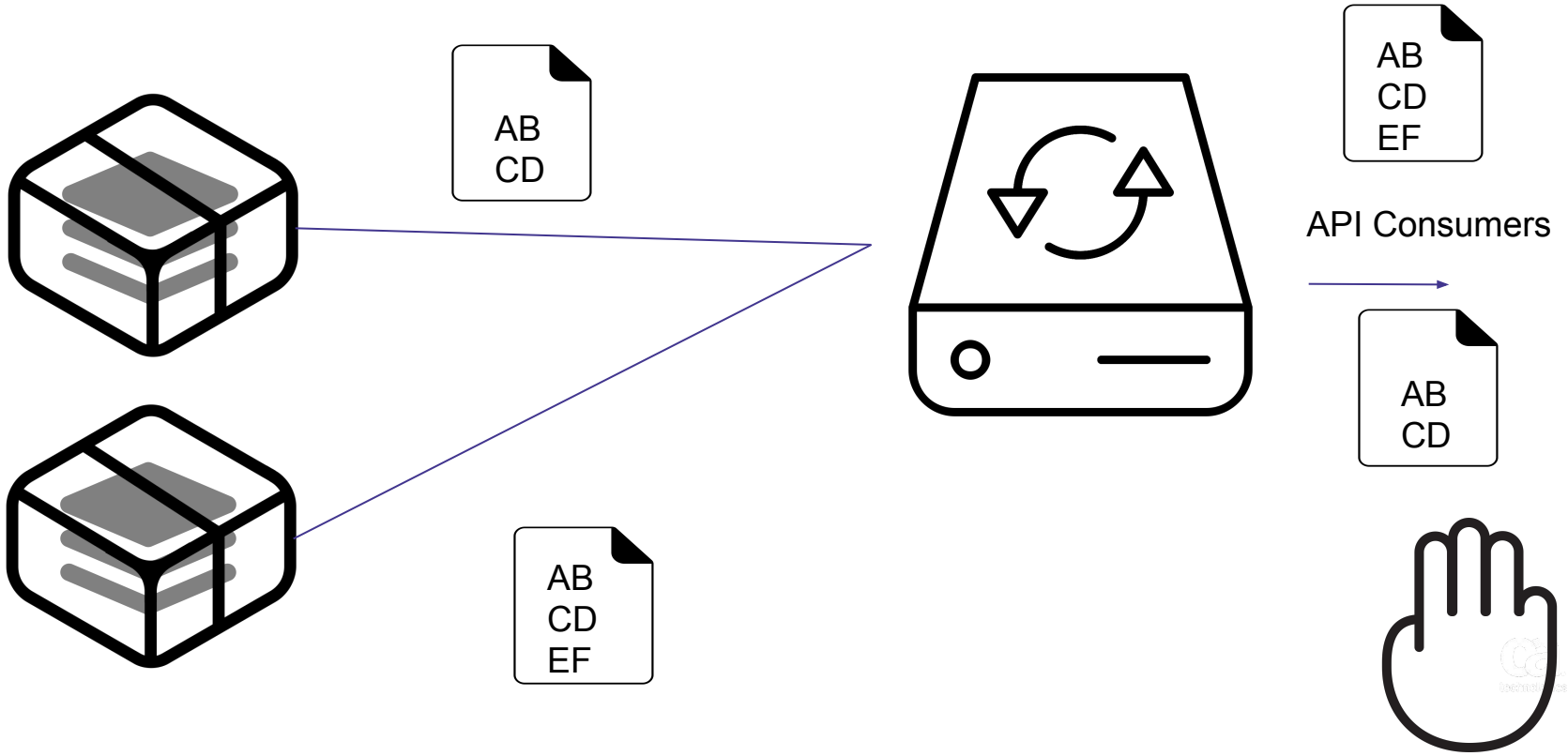
Update functionality via side-by-side components



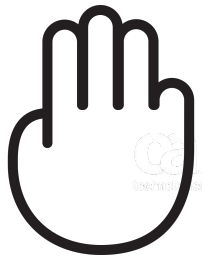
Update functionality via side-by-side components



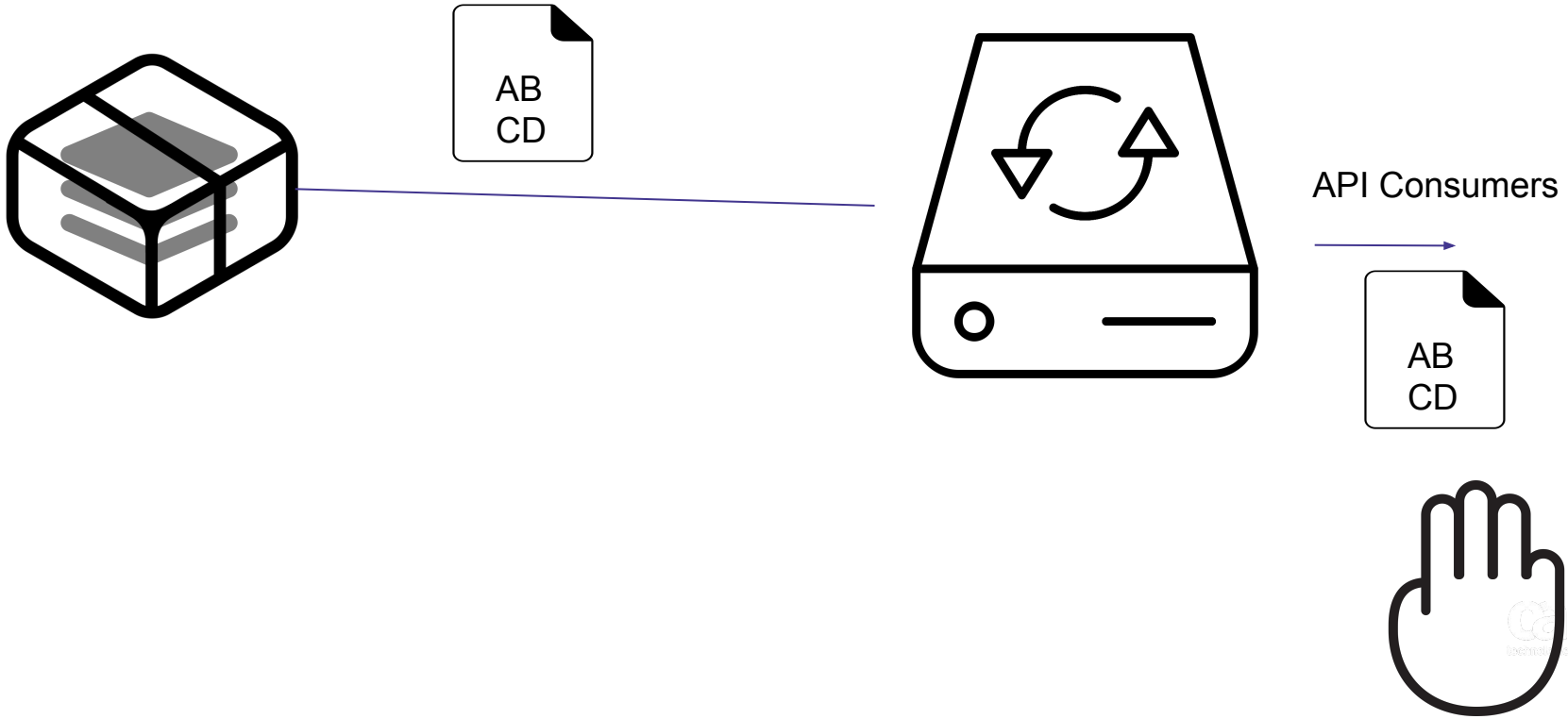
Update functionality via side-by-side components



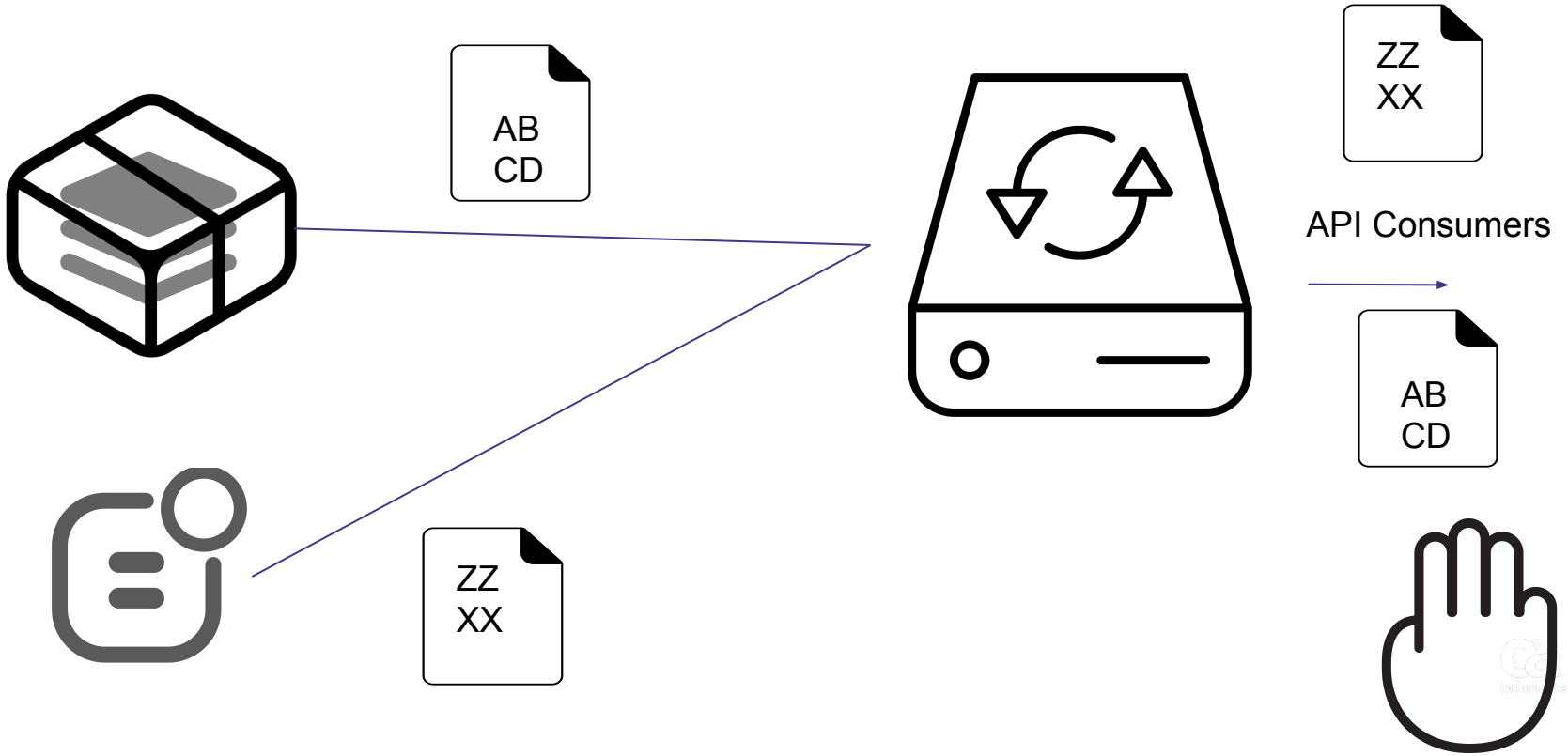
Introduce new functionality via new components



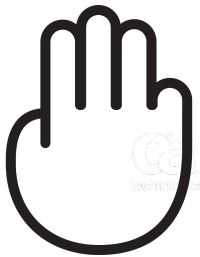
Introduce new functionality via new components



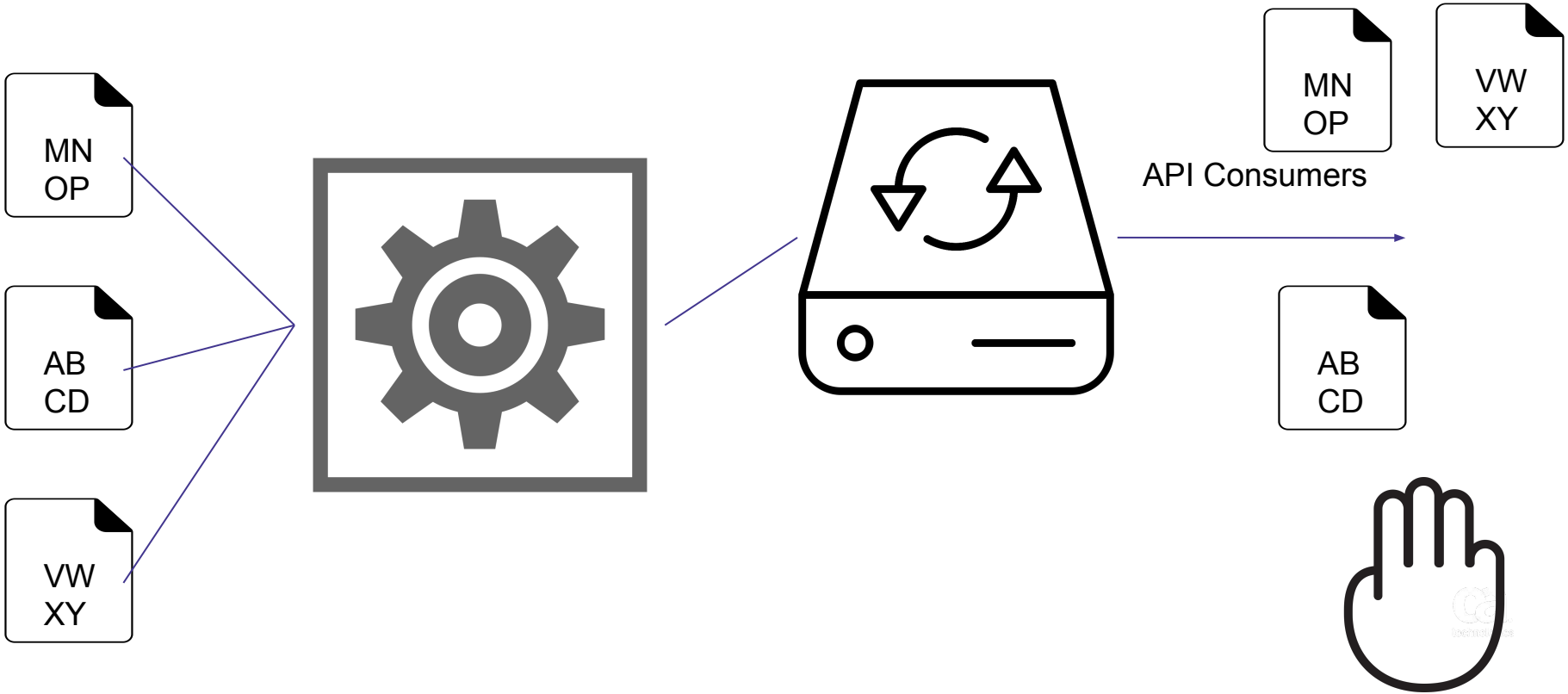
Introduce new functionality via new components



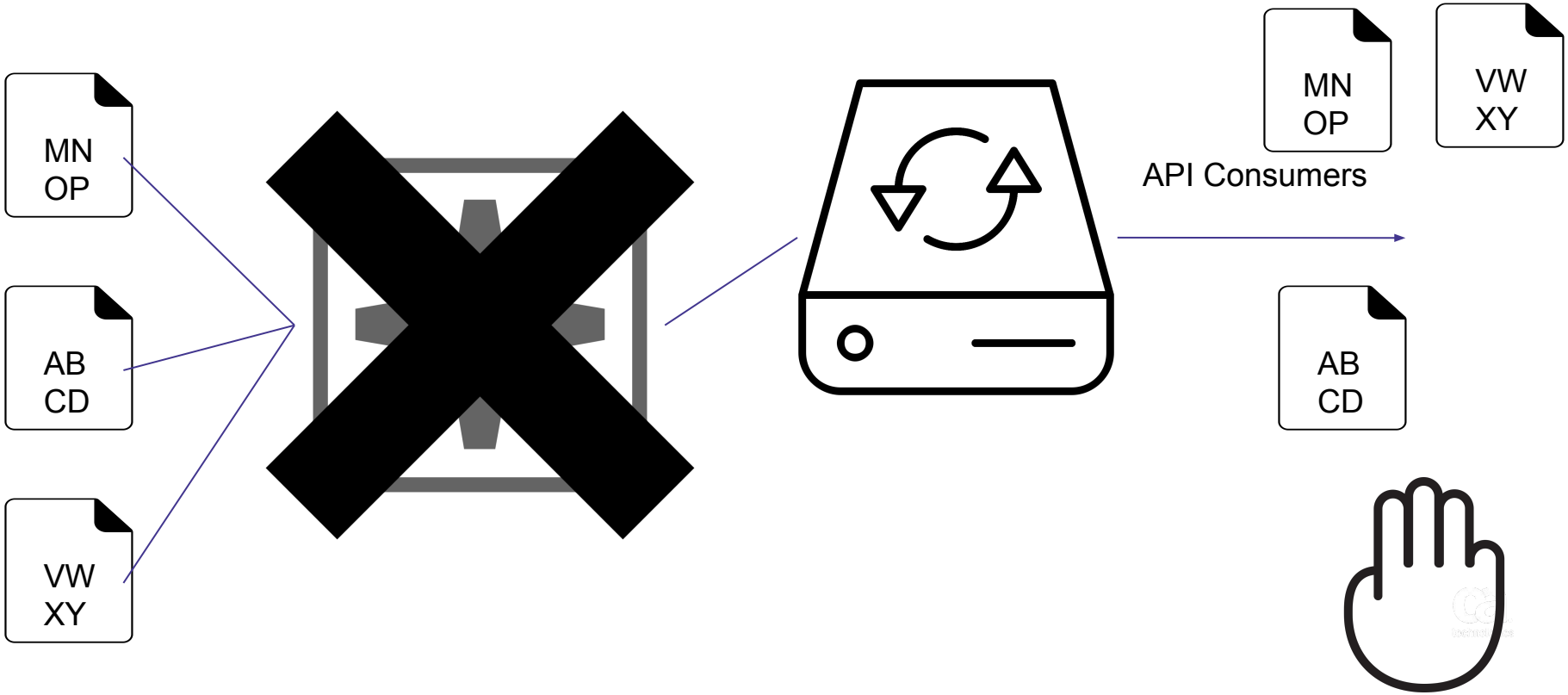
Acquire new functionality via 3rd party facades



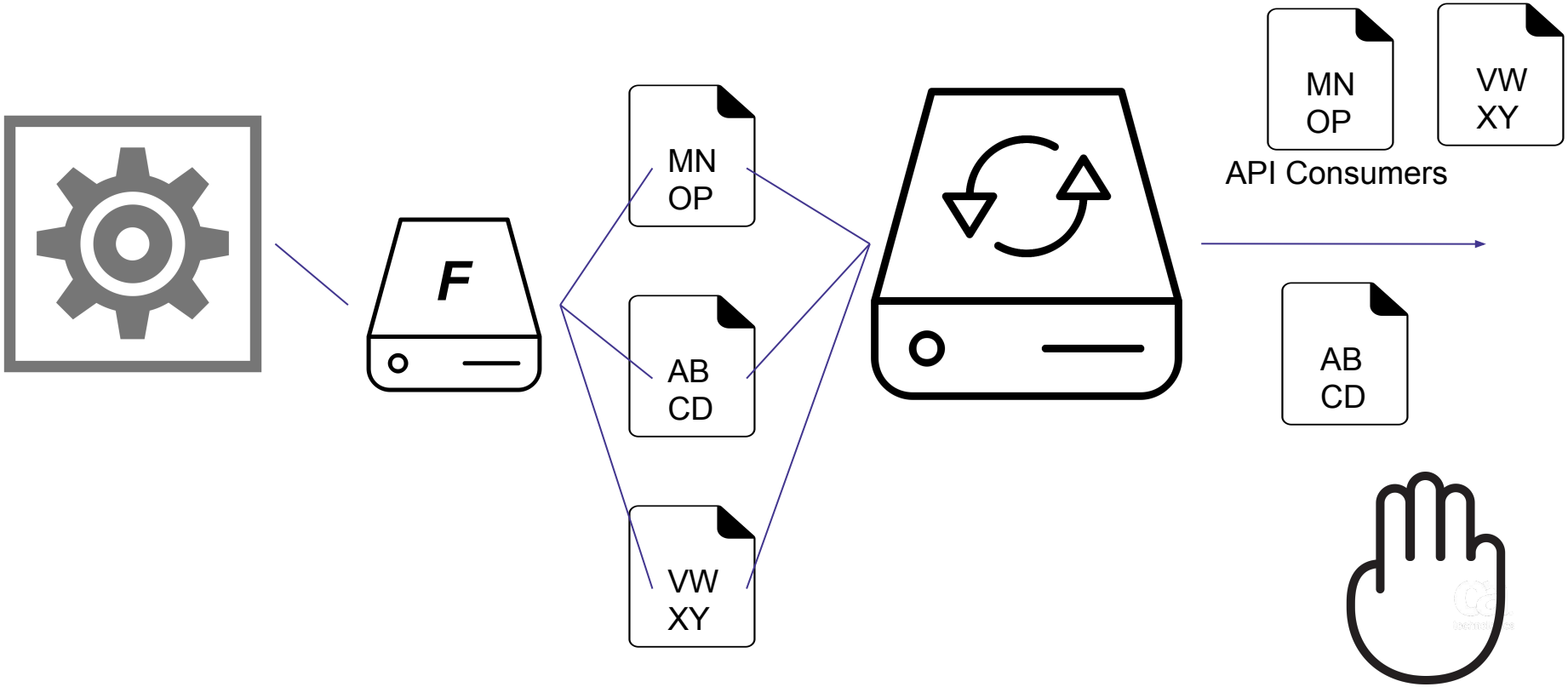
Acquire new functionality via 3rd party facades



Acquire new functionality via 3rd party facades

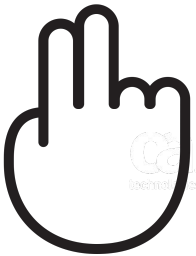


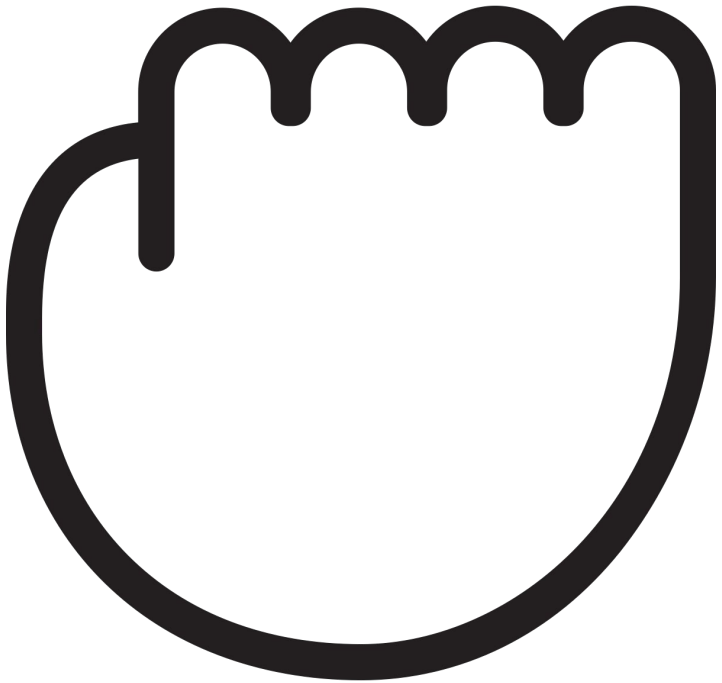
Acquire new functionality via 3rd party facades

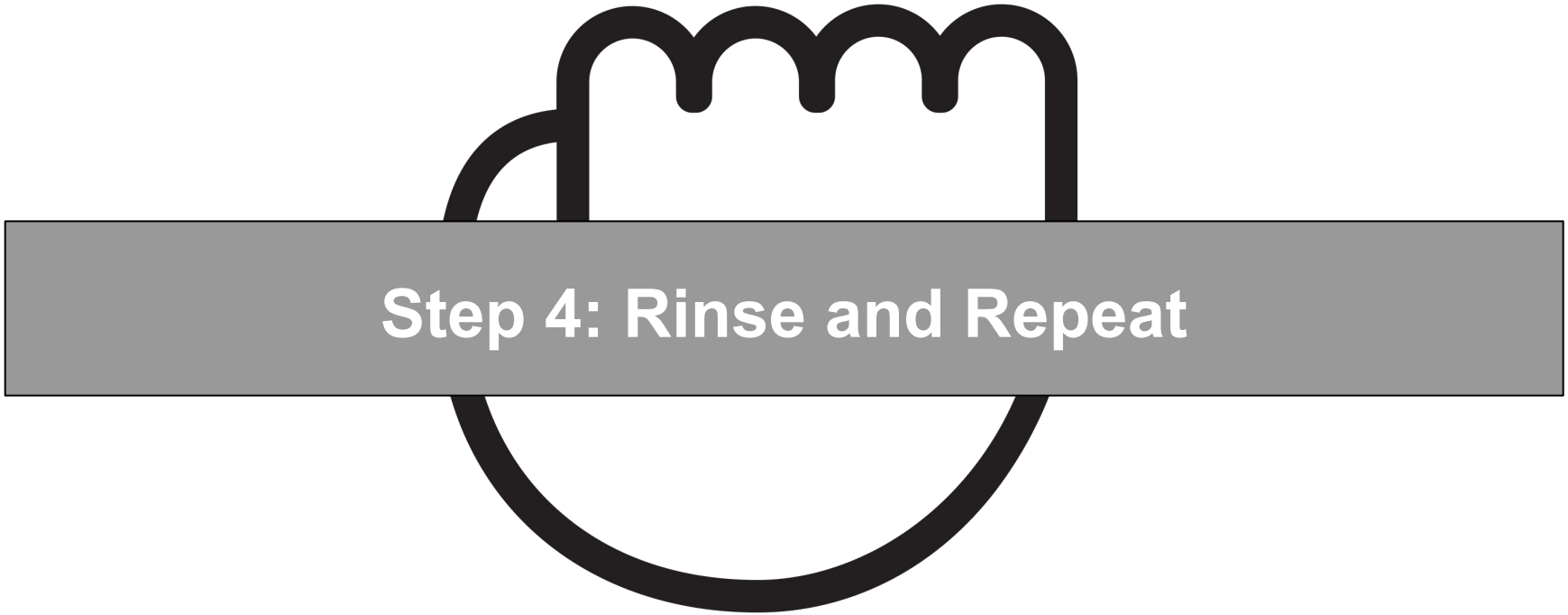


Add Functionality

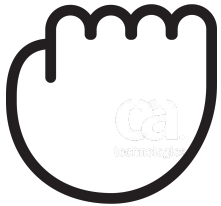
- Side-by-side updates
- New components
- External services facades



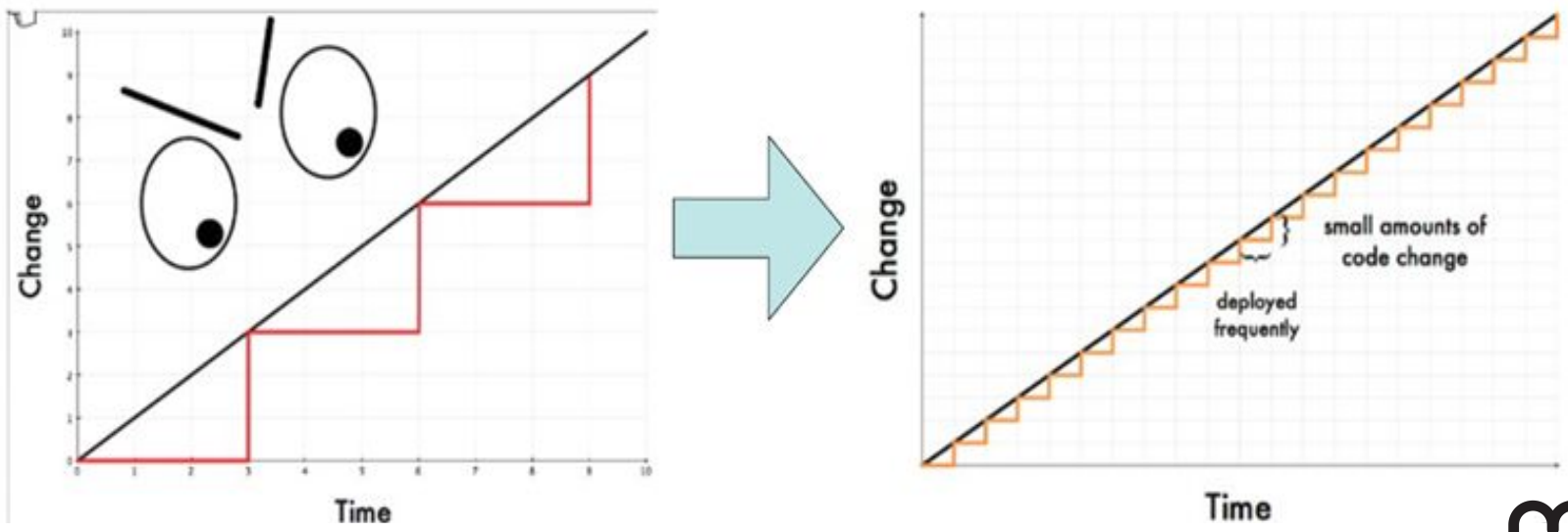



Step 4: Rinse and Repeat

All changes are incremental



All changes are incremental



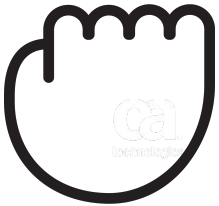
https://www.slideshare.net/jallspaw/ops-metametrics-the-currency-you-pay-for-change-4608108

All changes are incremental

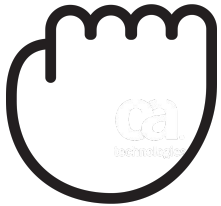
*"Incremental change may just be **the next big thing** this decade."*

-- Sandeep Kishore, HCL Technologies

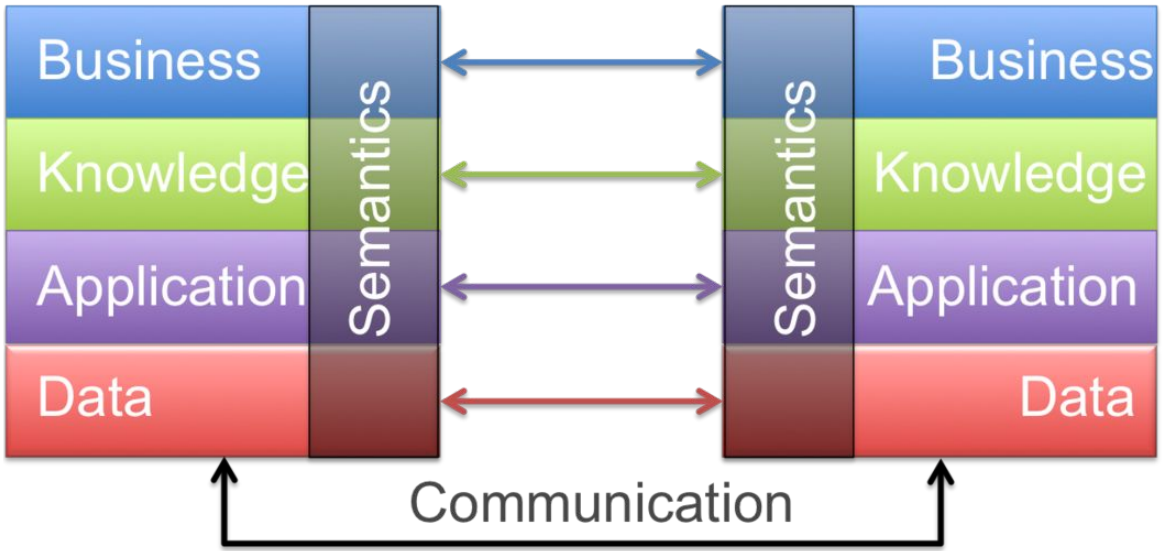
https://www.wired.com/insights/2013/11/the-power-of-incremental-innovation/

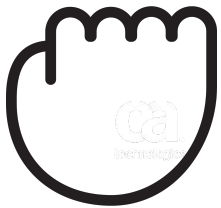


Aim for loose interop, not tight integration



Aim for loose interop, not tight integration



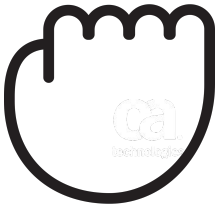


Aim for loose interop, not tight integration

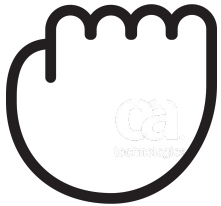
"Interoperation is peer to peer. Integration is where a system is subsumed within another."

-- Michael Platt, Microsoft

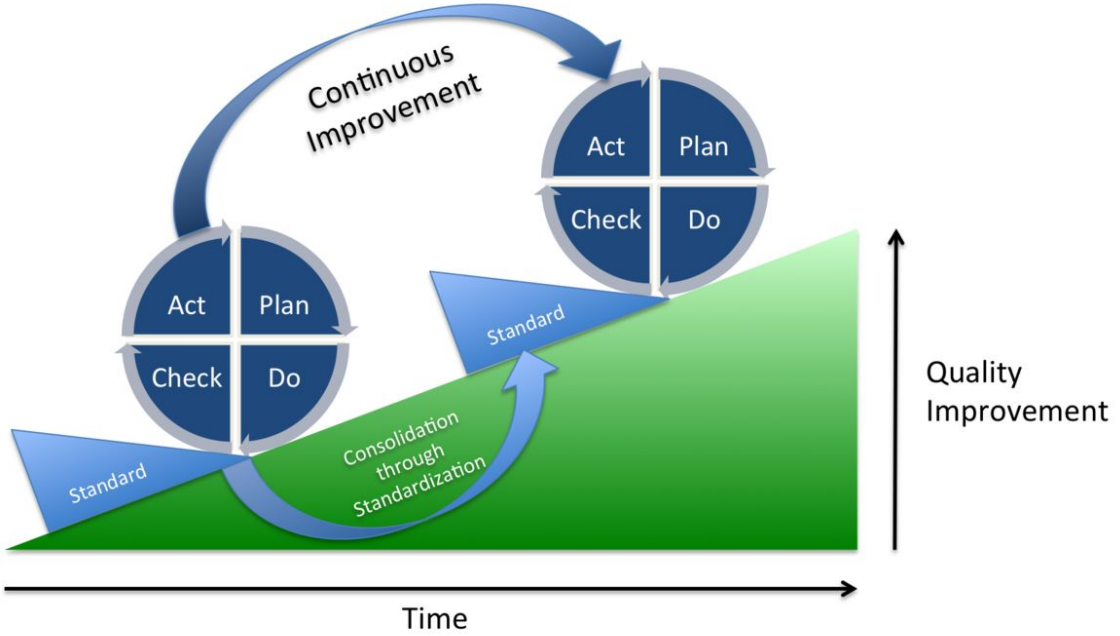
https://blogs.technet.microsoft.com/michael_platt/2005/08/30/integration-and-interoperability/



Support continuous improvement



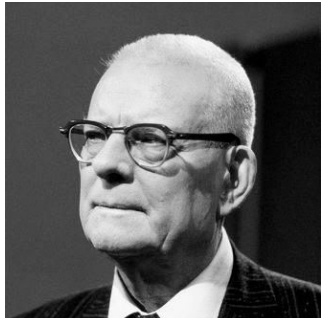
Support continuous improvement



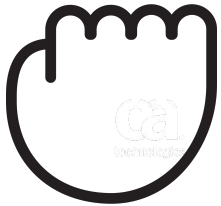
Support continuous improvement

"Management's job is to improve the system."

-- W. Edwards Deming

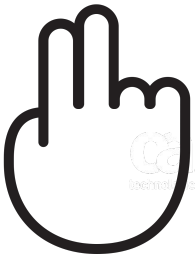


https://deming.org/management-system/pdsacycle



Rinse and Repeat

- Make only incremental changes
- Aim for peer-to-peer interoperability
- Support continuous improvement



So...

The Quick Summary

- Focus on Unlocking Value
- Change One Thing
- Stabilize the Interface
- Transform the Implementation
- Add Functionality
- Rinse and Repeat

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