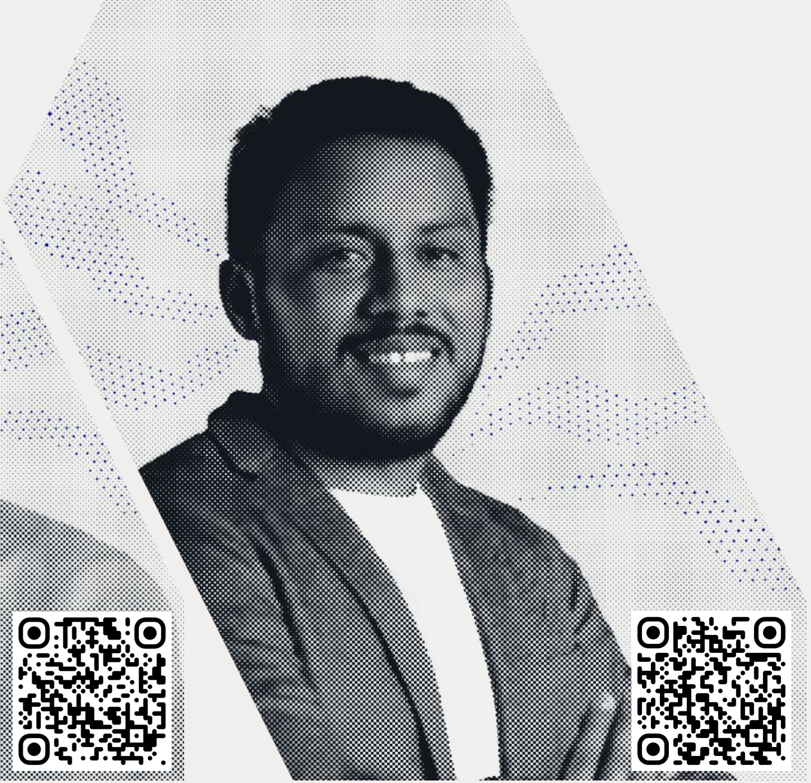
ELEVATE SECURITY AND OBSERVABILITY WITH CILIUM

ELEVATE SECURITY AND OBSERVABILITY WITH CILIUM

Agenda



→ Fabrizio Sgura
Chief Engineer

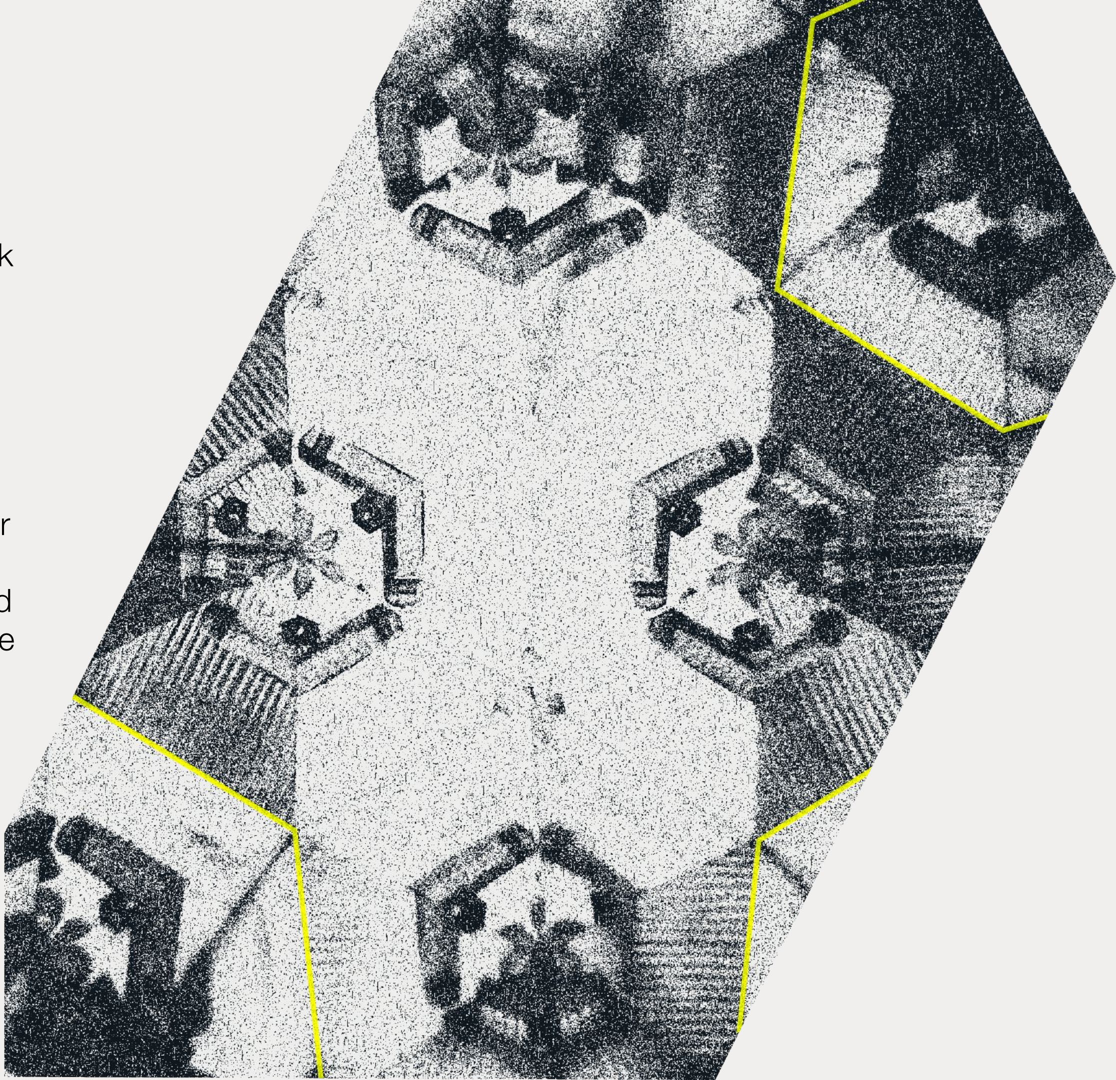
Enjoying life in all its aspects

→ Gerardo López
Principal Engineer

Soccer and Movie Enthusiast; BBQ lover

CONTEXT

In today's landscape, focusing on security and network observability in Kubernetes is paramount due to the exponential growth in container and microservices adoption in production environments. The inherent complexity of distributed architectures makes it crucial to safeguard critical assets and ensure visibility and control over communications between components. Enhanced security and improved observability allow for identifying and mitigating potential vulnerabilities, as well as proactively detecting and resolving network and performance issues. This contributes to maintaining the integrity, reliability, and availability of applications deployed on Kubernetes.



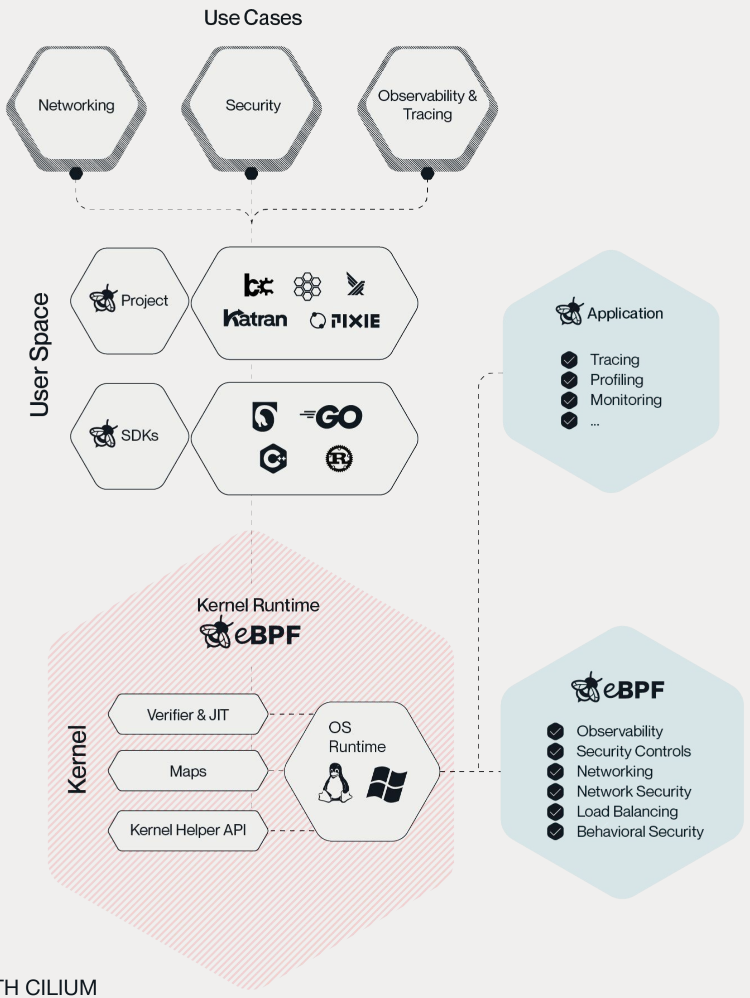
WHAT eBPF IS?

eBPF, or extended Berkeley Packet Filter, is a powerful and flexible framework within the Linux kernel that allows for efficient and safe execution of custom code snippets within the kernel space. Originally designed for network packet filtering, eBPF has evolved into a versatile tool for various tasks such as tracing, monitoring, and security enforcement.

Overall, eBPF is a versatile technology that empowers developers and administrators to extend and enhance the capabilities of the Linux kernel in a safe and efficient manner, opening up new possibilities for performance optimization, observability, and security enforcement.

eBPF

eBPF is a revolutionary technology with origins in the Linux kernel that can run sandboxed programs in a privileged context such as the operating system kernel. It is used to safely and efficiently extend the capabilities of the kernel without requiring to change kernel source code or load kernel modules.



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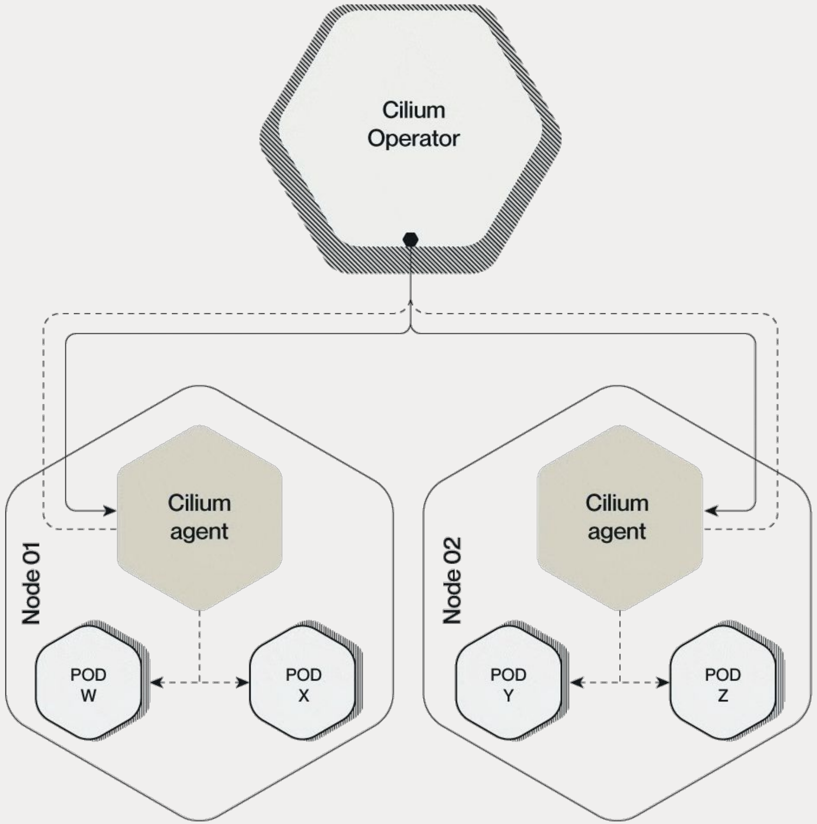
CILIUM

Cilium is a powerful networking and security solution for Kubernetes environments. It offers advanced features such as Layer 7 visibility, security policy enforcement, and network load balancing. By leveraging eBPF technology, Cilium provides efficient packet processing and scalability while ensuring robust network security and observability. It enhances Kubernetes networking capabilities, enabling seamless communication between microservices while enforcing security policies at scale.

CILIUM HIGH LEVEL COMPONENTS



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Cilium enhances observability in Kubernetes environments by providing comprehensive insights into network traffic, security, and application behavior, thereby enabling operators to efficiently monitor, troubleshoot, and optimize their deployments.

→ **Network visibility**

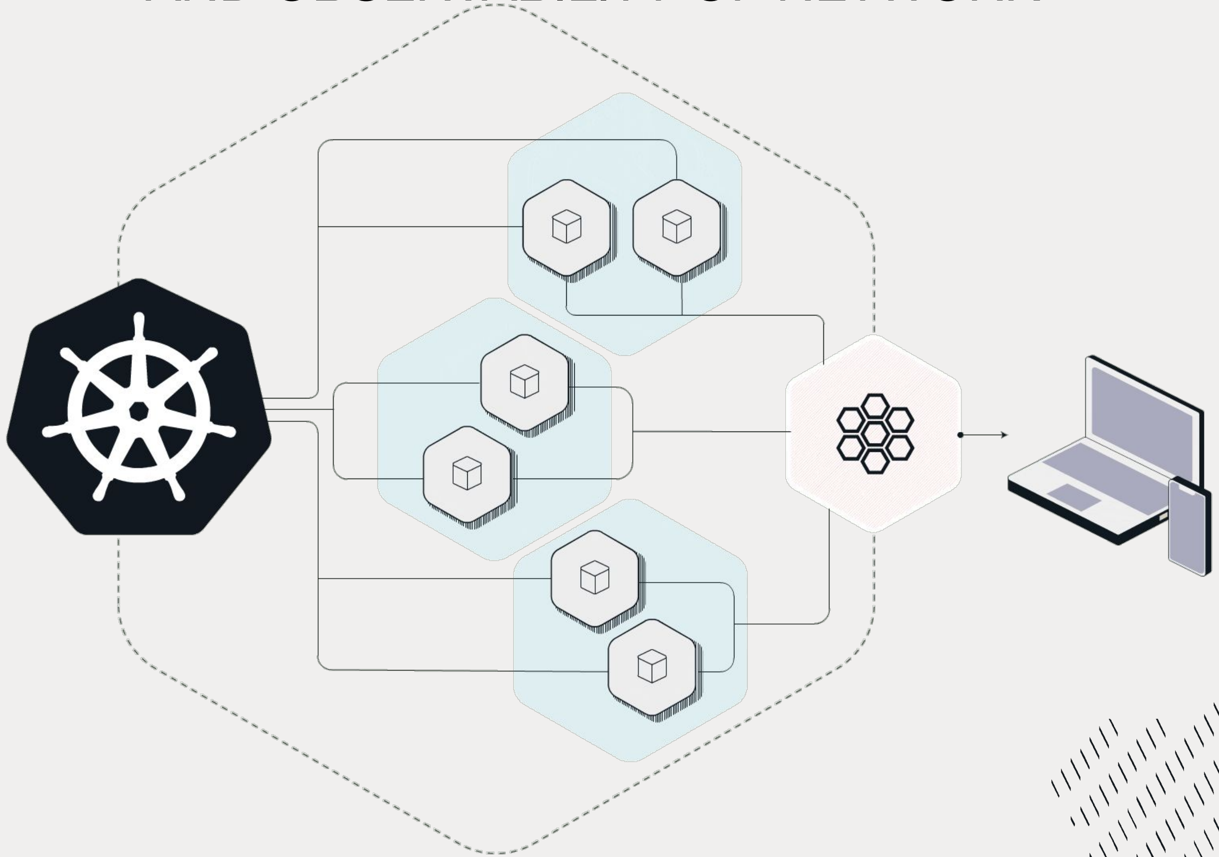
→ **Service discovery**

→ **Rich metrics**

→ **Layer 7 visibility**

→ **Flow visualization**

CILIUM ENFORCES THE SECURITY AND OBSERVABILITY OF NETWORK



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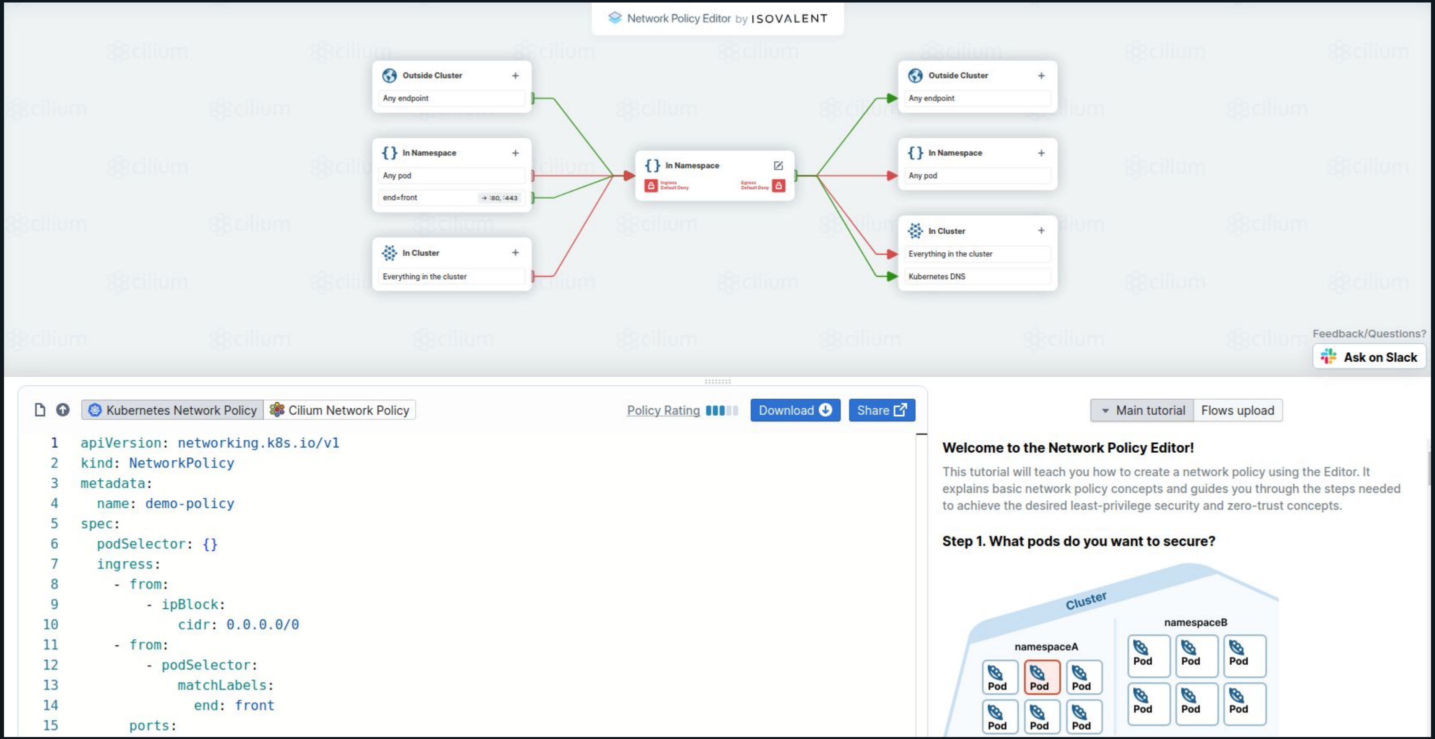
SETTING UP THE ENVIRONMENT

CILIUM OBSERVABILITY

CILIUM SECURITY

CILIUM SECURITY



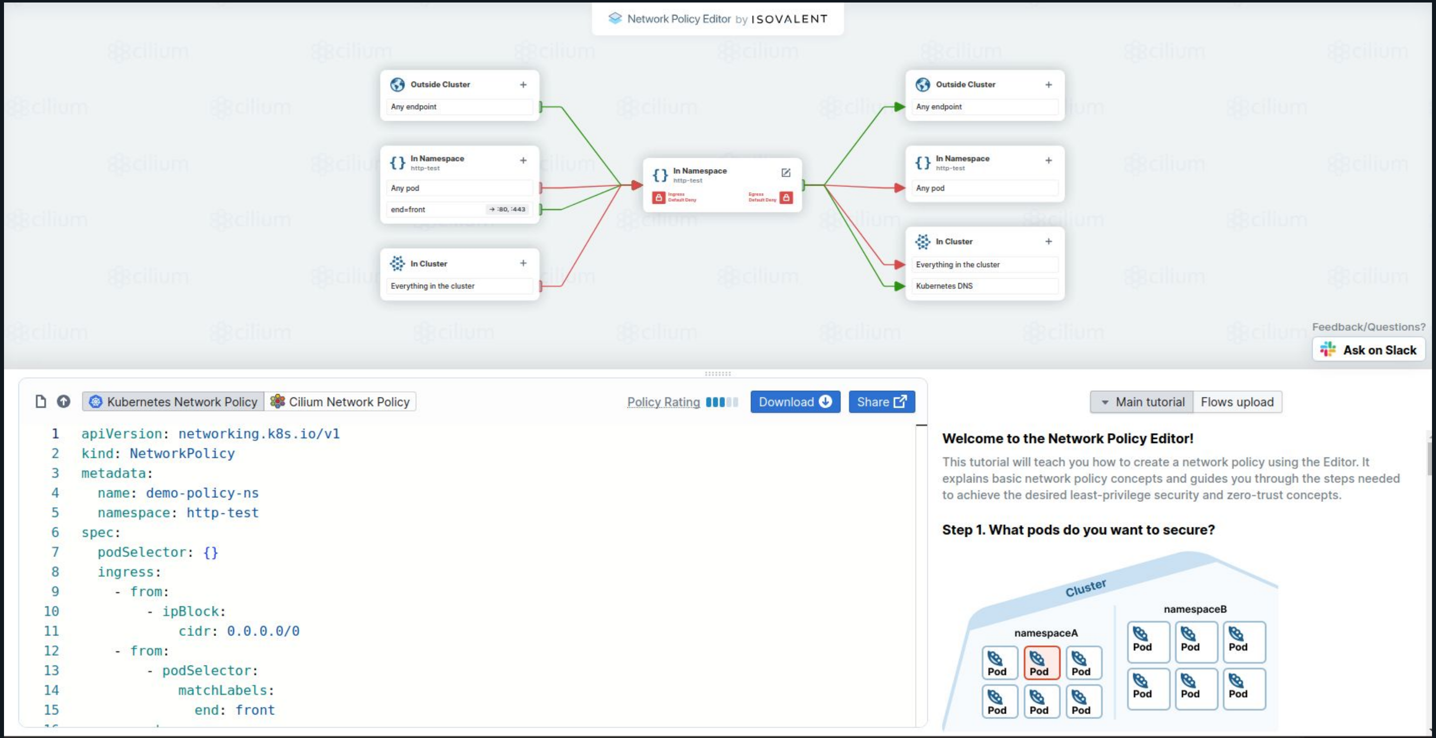
```yaml
apiVersion: networking.k8s.io/v1
kind: NetworkPolicy
metadata:
  name: demo-policy
spec:
  podSelector: {}
  ingress:
    - from:
        - ipBlock:
            cidr: 0.0.0.0/0
    - from:
        - podSelector:
            matchLabels:
              end: front
      ports:
```

Welcome to the Network Policy Editor!

This tutorial will teach you how to create a network policy using the Editor. It explains basic network policy concepts and guides you through the steps needed to achieve the desired least-privilege security and zero-trust concepts.

Step 1. What pods do you want to secure?

CILIUM SECURITY



```yaml
apiVersion: networking.k8s.io/v1
kind: NetworkPolicy
metadata:
  name: demo-policy-ns
  namespace: http-test
spec:
  podSelector: {}
  ingress:
    - from:
        - ipBlock:
            cidr: 0.0.0.0/0
    - from:
        - podSelector:
            matchLabels:
              end: front
```

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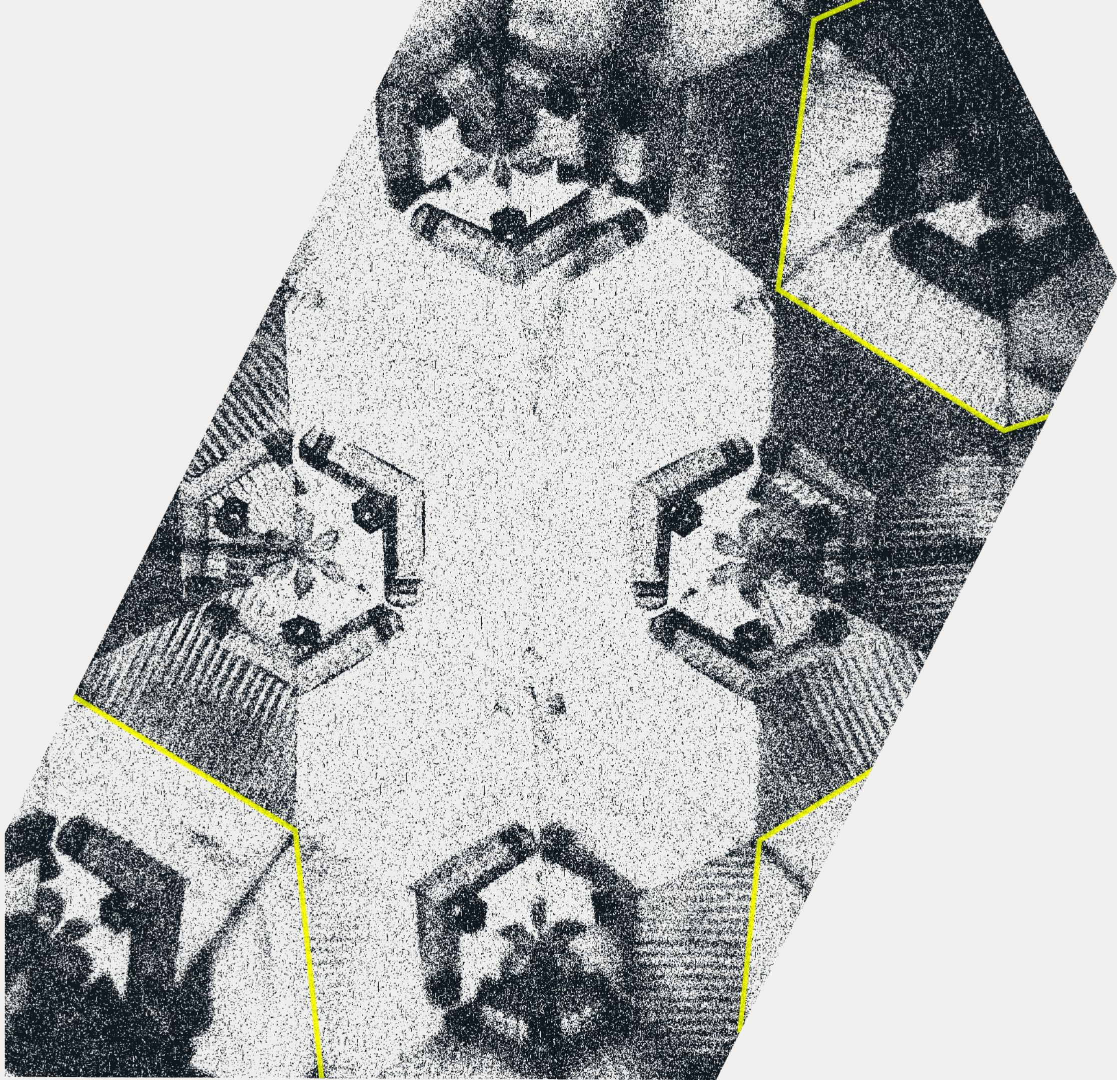
QA



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THANK YOU

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