MODERNISATION EXAMPLES

Resilience testing

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Agenda

1. Introduction
2. Implementation ideas
3. Challenges
4. Conclusion
5. Questions

How we got here?

What is Resilience testing?

Why it is important?

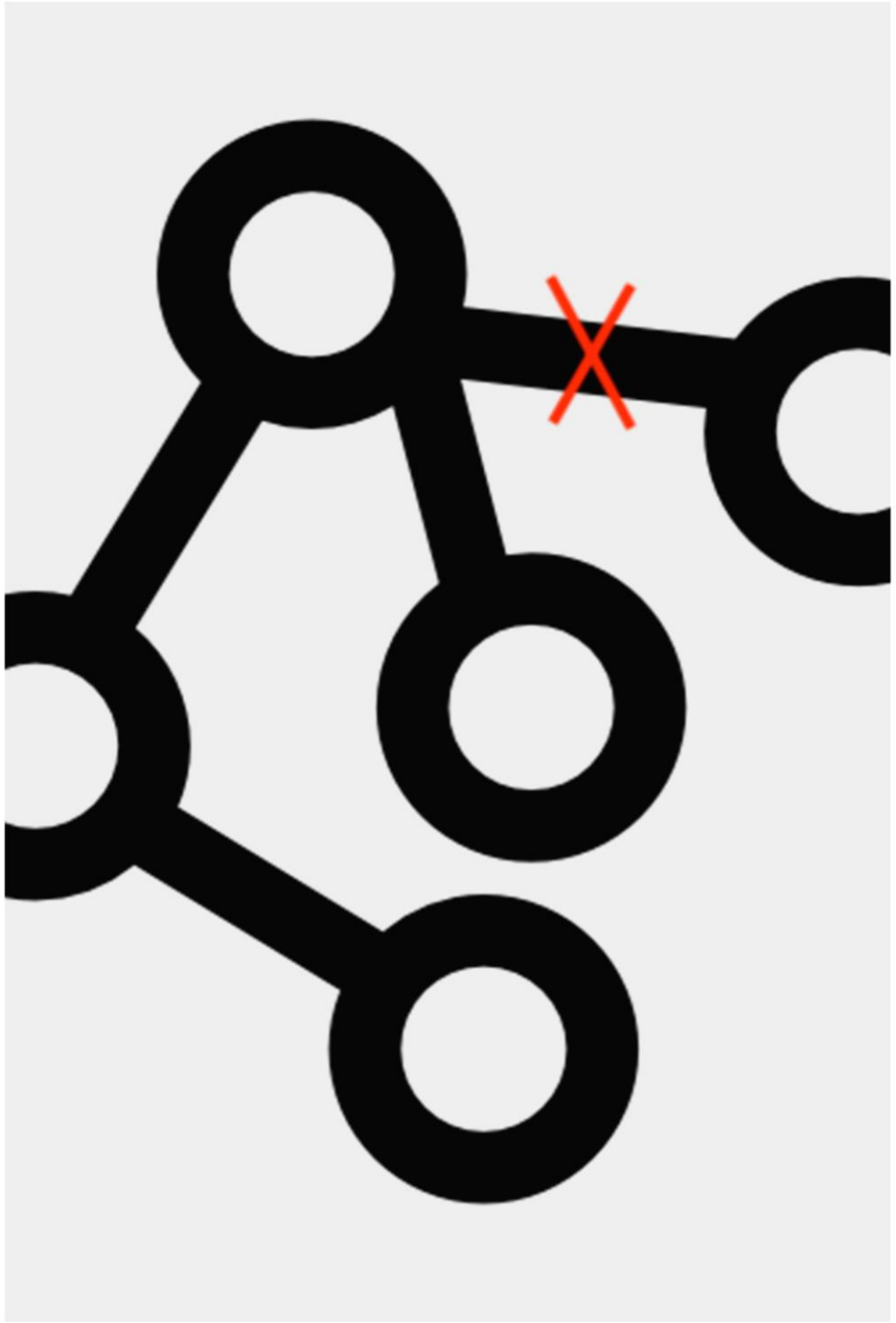
01. Introduction

How we got here?

- Endava Senior Test Consultant
- Decade spent in testing taking various roles in the team
- Part of the team who implemented a resilience test solution during modernisation program

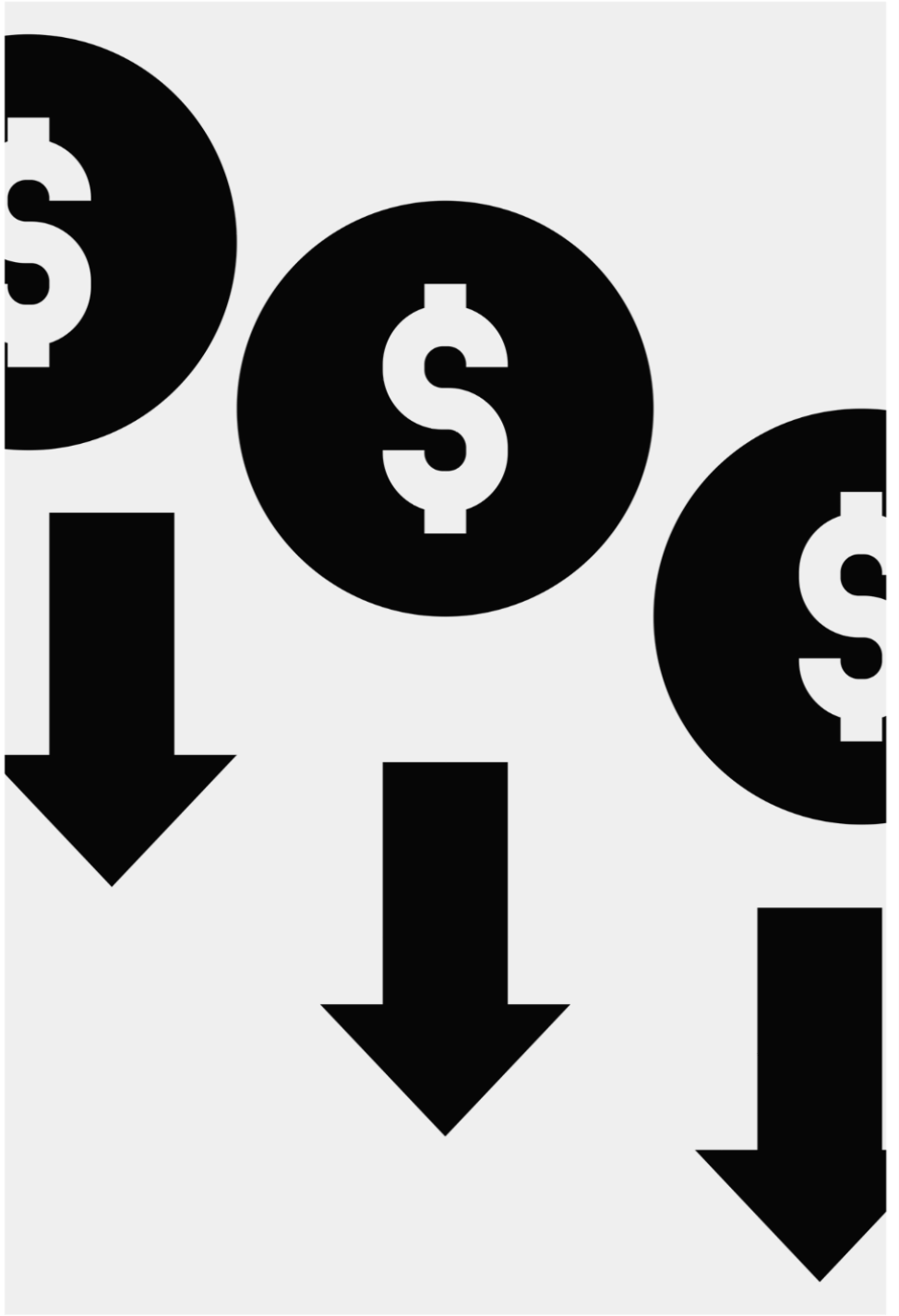
What is resilience testing?

- Non-Functional type of testing
- How system reacts to failures
- Many aspects to focus on
- Manual or automated
- Specific to a system under test



Why it is important?

- Switch to microservice architecture is adding layer of complexity to service communication
- Resilience issues can lead to financial, reputation, integrity loses and/or impact health and safety
- Findings can be used to improve disaster recovery plan
- Can help with optimizing resourse utilization



Focus points

Tools

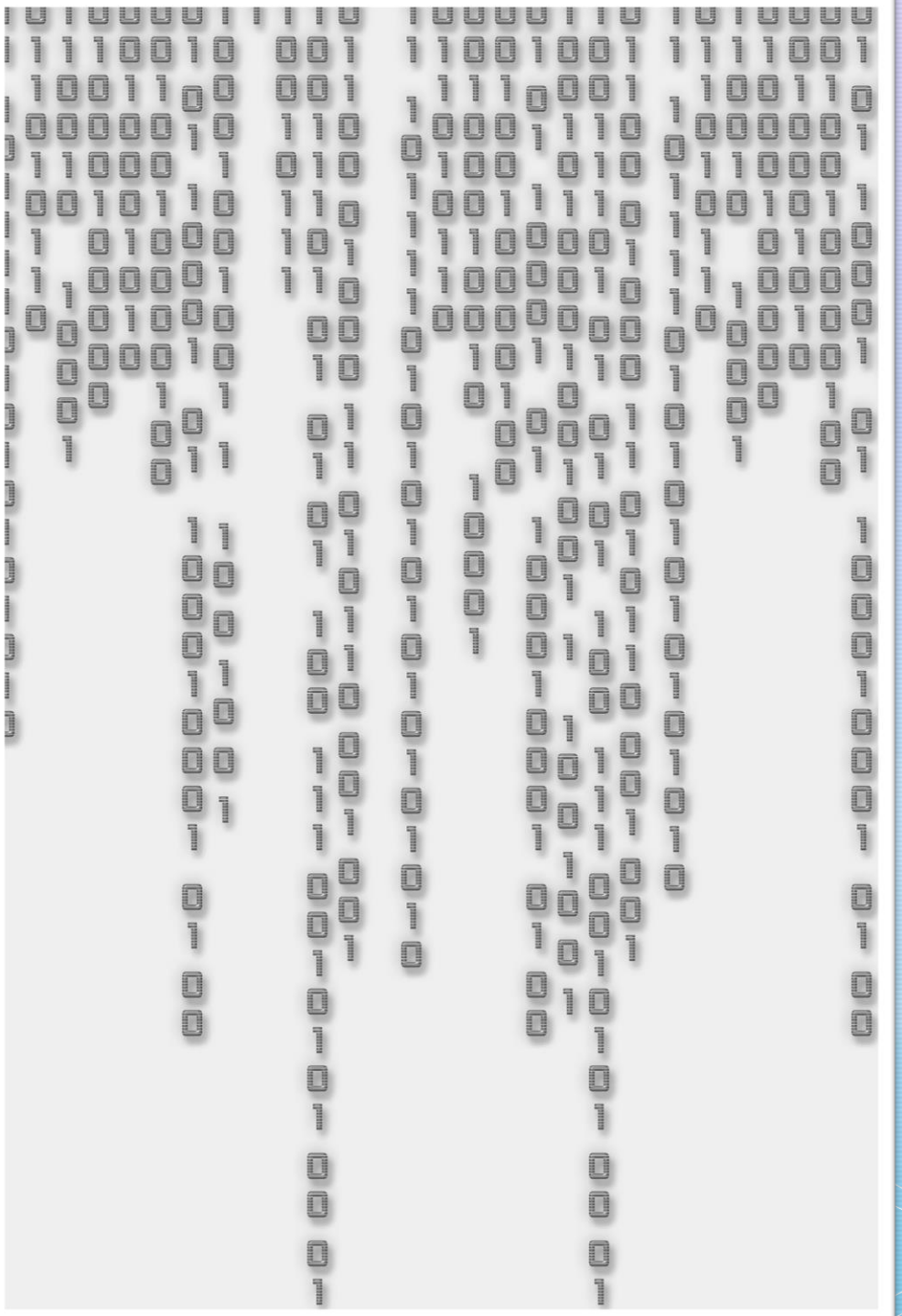
02. Implementation

Focus points
-> Service Discovery

- Health endpoints
- Status updates
- Service Mesh

Focus points -> Logs

- The Goldilocks principle
- Automated monitoring
- What, Who and When caused mailfunction



Focus points -> Connection Config

- Retry and timeout logic
- Failover and grace period logic
- Connection pool config

```
-- BudapestService
budapest.url=http://localhost:9092
budapest.url.context=/bankservice
budapest.http.connection.pool.size=50
budapest.http.read.timeout=80000
budapest.http.connection.timeout=5000
budapest.http.retry.grace.period=1000
budapest.http.gateway.max.connections=20000
budapest.http.max.route.connections=2000
budapest.http.ignore.ssl=true
budapest.http.failover.list=http://101.102.8.123:9092/
budapest.http.failover.list=http://localhost:9092
budapest.failover.tries=3


#-------------------------------------------------------------
#-------------------- Configuration for new HUSTEF Gateway
#-------------------------------------------------------------
#//http://<ip address>:<port>
hustef.rest.url=http://192.168.3.84:8080
hustef.rest.url.context=/process
hustef.rest.http.connection.pool.size=1000
hustef.rest.http.read.timeout=25000
hustef.rest.http.connection.timeout=2000
hustef.rest.http.retry.grace.period=1000
hustef.rest.http.gateway.max.connections=2500
hustef.rest.http.max.route.connections=60
hustef.rest.http.ignore.ssl=false
hustef.rest.failover.tries=3
hustef.rest.rest.http.failover.list=http://192.168.3.84:80

# Card Storage Service REST Template
hustef.http.connectionTimeout=5000
hustef.http.failoverList=http://localhost:9094
hustef.http.ignoreSSL=true
hustef.http.maxConnectionsPerRoute=300
hustef.http.maxTotalConnections=300
hustef.http.readTimeout=5000
hustef.http.retryGracePeriod=1000
hustef.http.tries=3
hustef.url=http://localhost:9094

```

Focus points
-> Fault scenarios

- Dropped connection, garbled responses
- Random data, Empty responses, Unexpected or missing fields
- Large payloads, Special characters…

```
POST /imposters HTTP/1.1
Host: localhost:38275
Accept: application/json
Content-Type: application/json

{
  "port": 4554,
  "protocol": "tcp",
  "mode": "text",
  "stubs": [
    {
      "responses": [
        {
          "fault": "CONNECTION_RESET_BY_PEER"
        }
      ]
    }
  ]
}
```

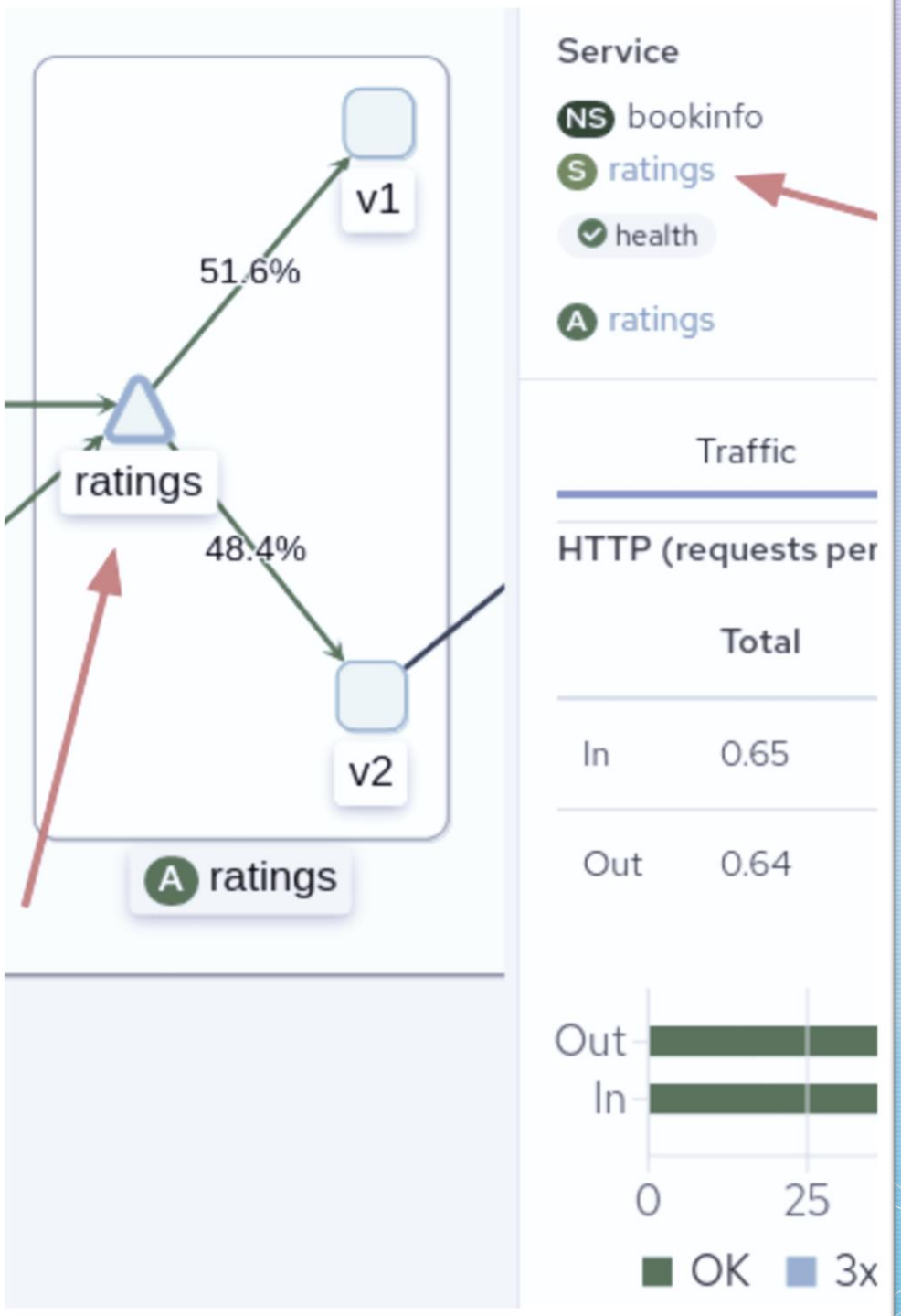
Random Data then Close

```
POST /imposters HTTP/1.1
Host: localhost:38275
Accept: application/json
Content-Type: application/json

{
  "port": 4554,
  "protocol": "tcp",
  "mode": "text",
  "stubs": [
    {
      "responses": [
        {
          "fault": "RANDOM_DATA_THEN_CLOSE"
        }
      ]
    }
  ]
```

Focus points -> Tools

- Standard Automation frameworks and IDEs
- Mocks (Mountebank, Wiremock…)
- Service Mesh (Consul, Istio, Kiali...)



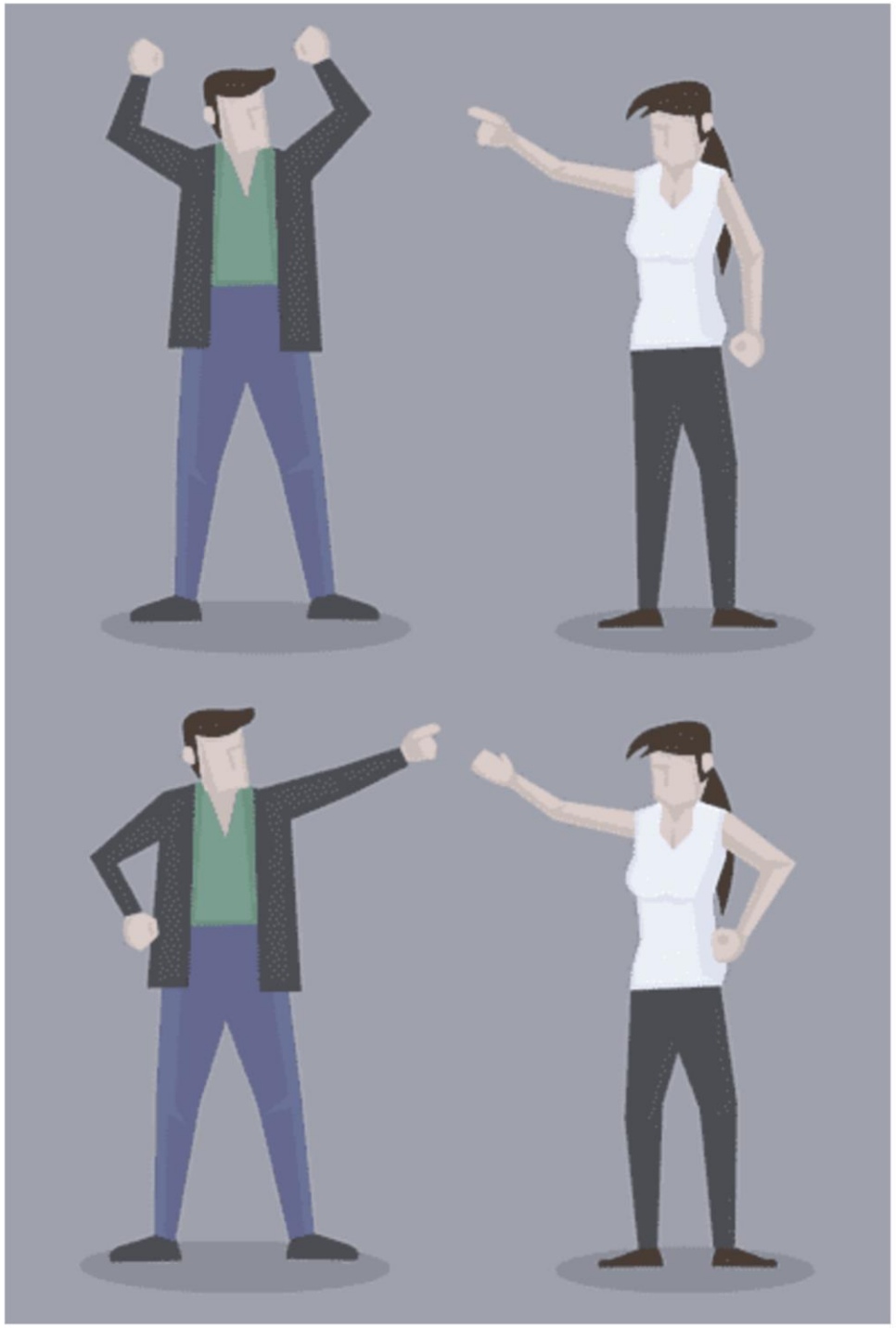
Team communication

Learning about the system

03. Challenges

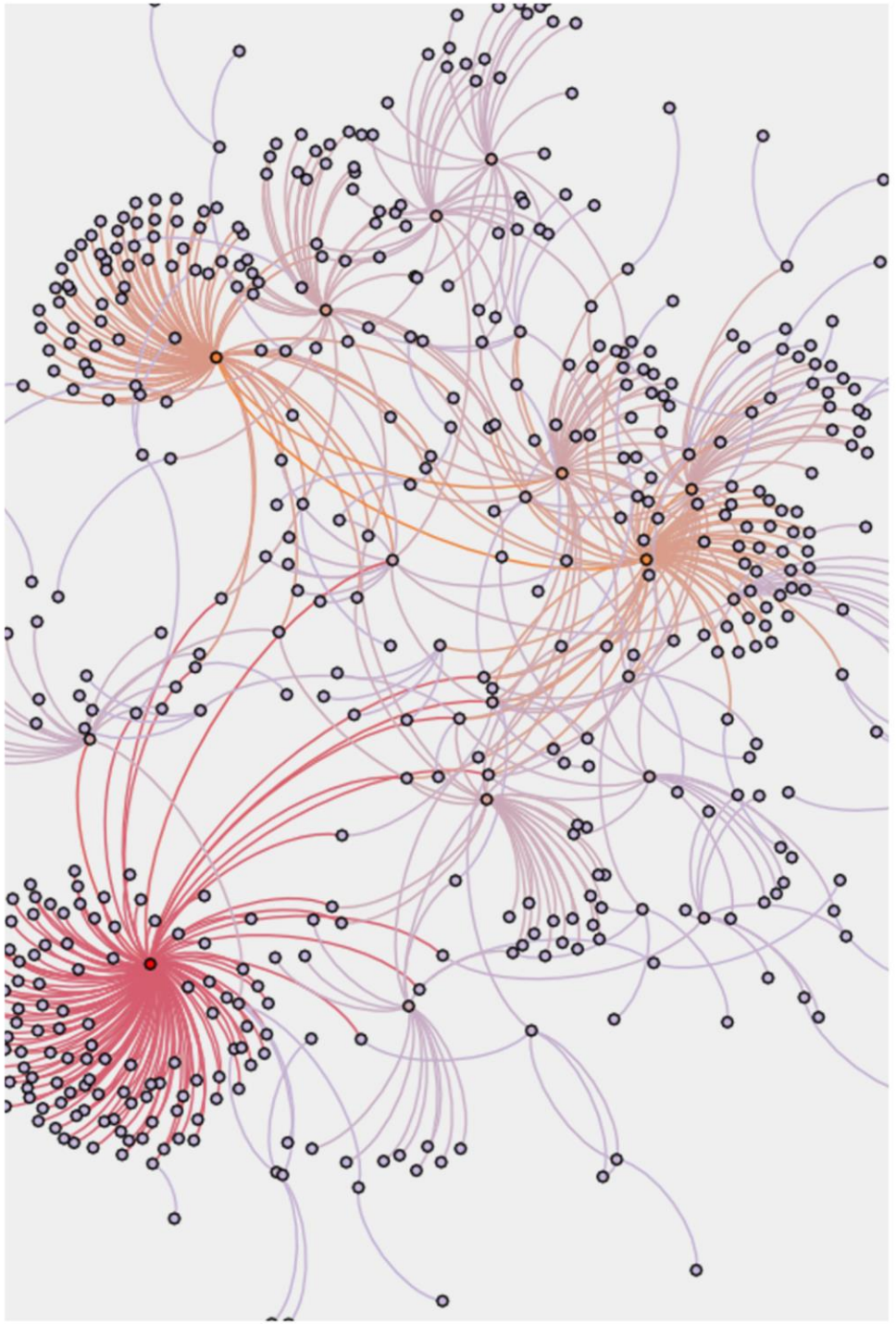
Team Communication

- Allocating enough time
- Service standardization
- Team resistance



Learning about a system

- 70% of time for existing system
- Proxy stubs
- Kiali



Include resilience early

04. Conclusion

Include resilience early

- Think about health endpoints and logs during design phase
- Plan testing connection aspects as soon as service is introduced
- Ask for standardization across services

???

05. Questions

Thank you!!