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# The unbreakable delivery pipeline

AGILE/
DEVOPS
GLOBAL
CONFERENCE

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René works in NTT DATA DACH as a Managing Technical Consultant, supporting various customers mainly with Application Performance Management, Observability and integrate all those topics into useful processes.

# Intro …

We need to …

… deliver faster

… deal with increased complexity

… meet compliance

! but we always did it this way

! but we never have done it that way



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# Key Takeaways …

- Implement a common language across a value stream
- Increasing speed of changes through quality gates
- Increase reliability through Observability
- Integrate DevOps & SRE methods into enterprise processes

# Holistic Approach

## Common Language

Create measurements and methods through the whole Service Chain which enable Development, Operations and Business to rely on the same data

## Automate all the Stuff

Complex Systems mostly come with complex processes and workflows

## Integrate all the Stuff

Many people means many preferences resulting in many tools.

EVERYTHING as Code!

# Common Language

SLI - SLO - SLA

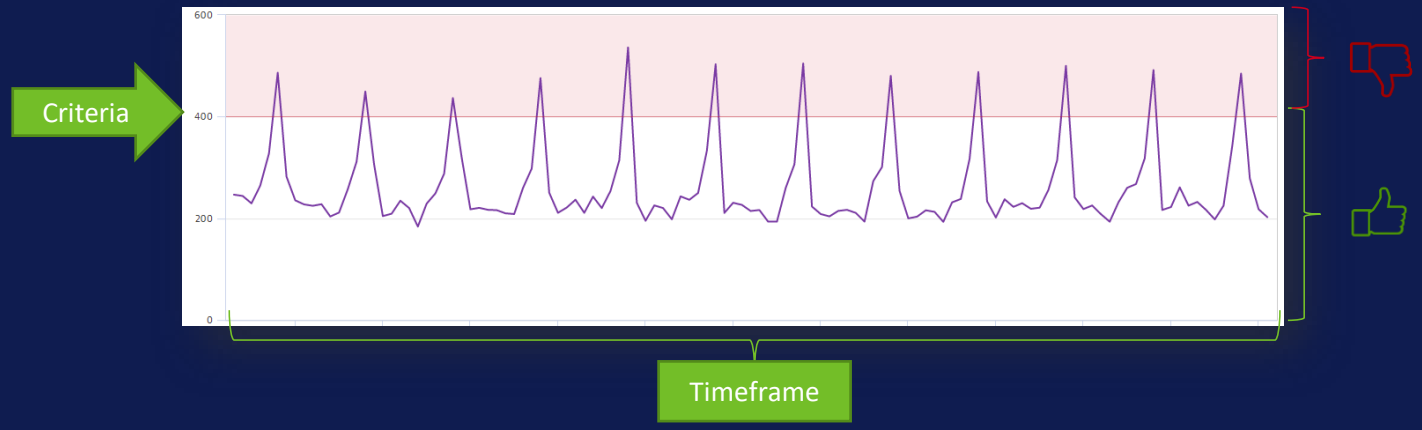
# SLIs drive SLOs which inform SLAs!!!

## Service Level Indicators (SLIs)

- **Percentage** of an **imporant metric** against a **criteria**
- **Example**: Service Response Time p95 < 400ms

## Service Level Objectives (SLOs)

- **Success-% SLI** over a **timeframe**
- **Example**: p95 < 400ms in 90% of the time over 30 days



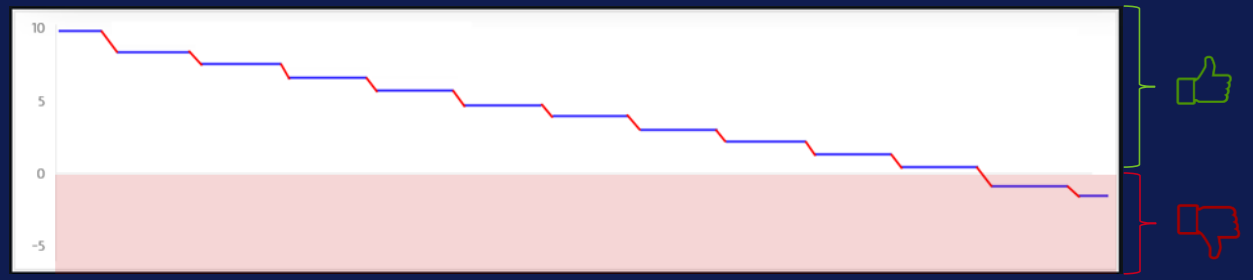

## Error Budget

- How much more **impact** can we **afford** before violating SLO?

## Service Level Agreements (SLAs)

- What happens IF SLO is breached
- Example: Paying penalities, loosing customers ...

## Error Budget: how much budget is left?

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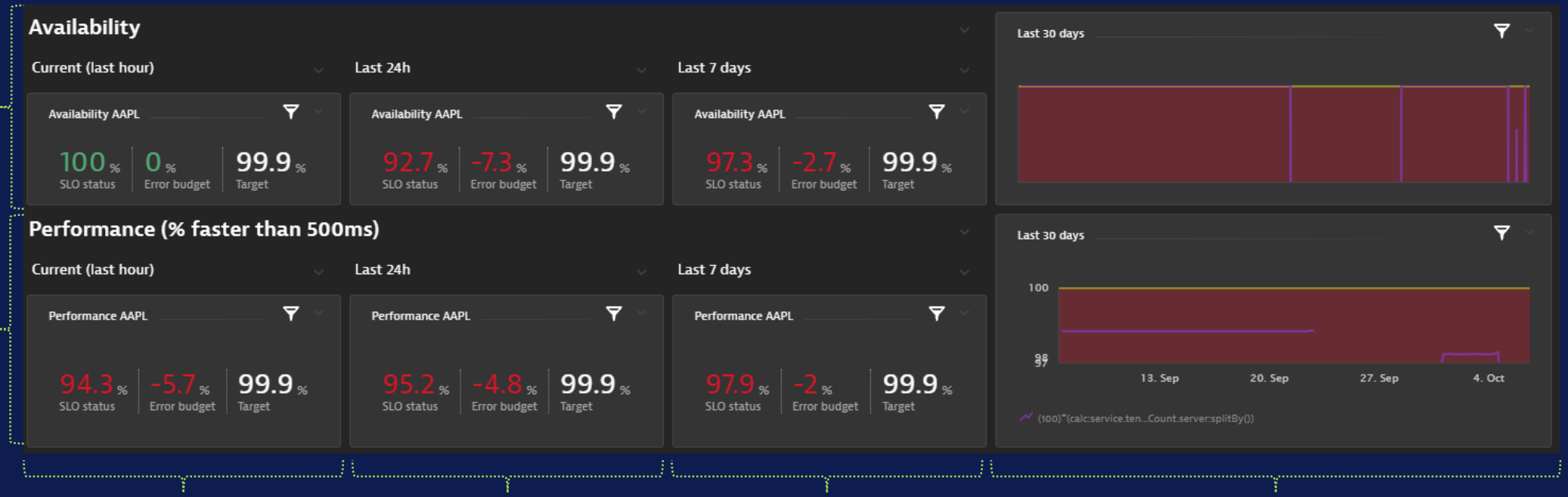
# A best practice SLO dashboard to start with

% of Time System is available

% of Requests meeting Performance Goal




Last 1 hour

Any current issues?

Last 24 hour

Any long running issues?

Last 7 days

Any permanent issues?

Last 30 days

Any repeating issues? Will we meet our SLO?

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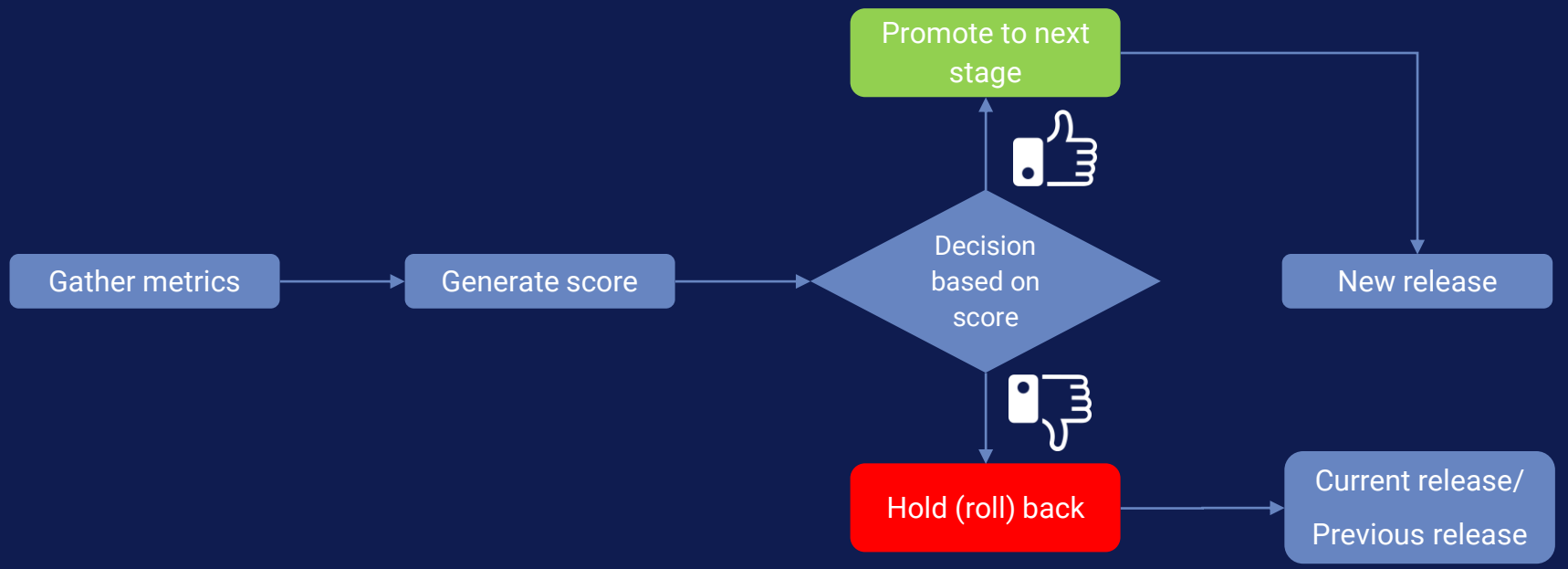
# Automate it!

Automated Quality Gates  - Automated Observability

# Concept of Quality Gates



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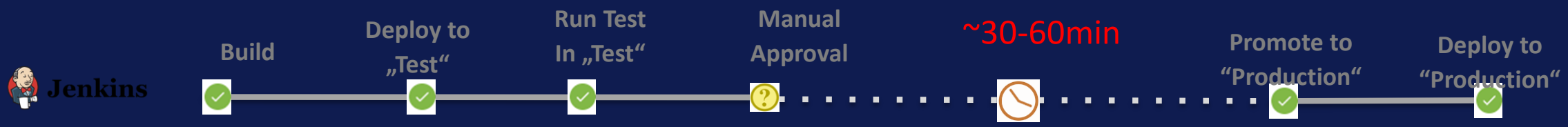
# From this …




~30-60min


Either affects delivery throughput!

Or quality due to skipped analysis

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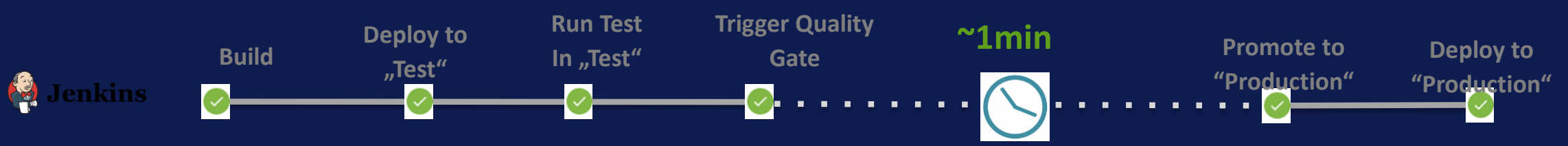
# … to that




keptn

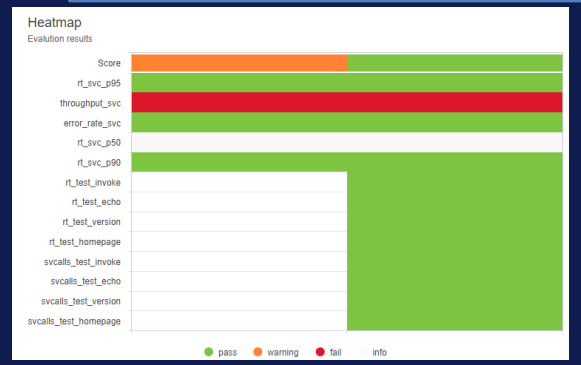
Labels

**SLI & SLO**

```
Rt(p95) < 500ms
#ofSQLs <=   5
cpu(max)<   80%
Java GC <    2%
...
```

Validate SLOs

Result: success, Score: 85/100




Pull SLIs for Testing time frame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# How SLO-based Quality Gates „as Code“ or „as Dashboard“ work

| SLIs (Service Level Indicators) | SLO (pass / warn) | Build 1 | Build 2 | Build 3 | Build 4 |
|---|---|---|---|---|---|
| **Response Time 95th Perc**<br>**Query**: builtin:service.responsetime(p95) | <=100ms<br><= 250ms | 80ms | 120ms | 90ms | 95ms |
| **Overall Failure Rate**<br>**Query**: builtin:service.errors.total | <= 2%<br><= 5% | 0% | 4% | 1% | 0% |
| **Test Step LOGIN Response Time**<br>**Query**: calc:service.teststeprt:filter(Test, LOGIN) | <=150ms & <=+10%<br><= 400ms | 100ms | 90ms | 120ms | 95ms |
| **Test Step LOGIN # Service Calls**<br>**Query**: calc:service.testsvc:filter(tx, LOGIN) | <= +0% | 1 | 2 | 1 | 1 |
| **Open Security Vulnerabilities**<br>**Query**: calc:secproblems:filter(risk,CRITICAL) | <=0 | 0 | 0 | 1 | 0 |
| **SLO: Overall Score Goal** | 90% / 75% | 100% | 50% | 70.0% | 100% |

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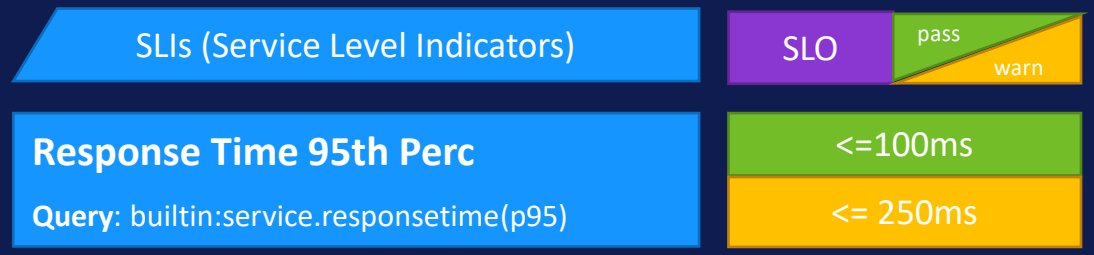
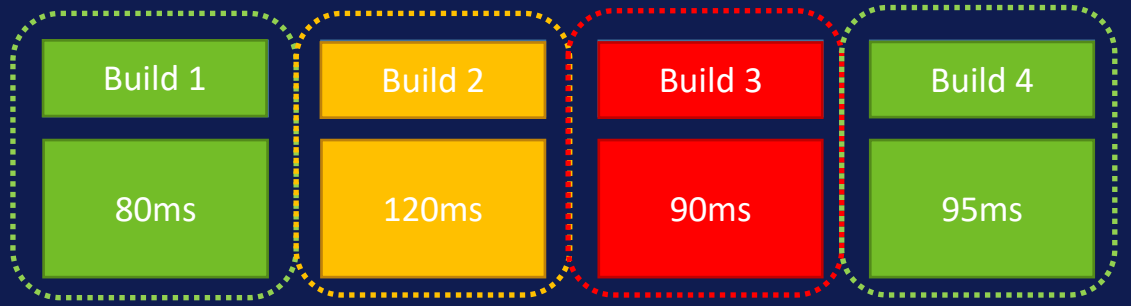
# How SLO-based Quality Gates „as Code“ or „as Dashboard“ work




sli.yml

```yaml
---
spec_version: '1.0'
indicators:
  response_time_p95:      "metricSelector=builtin:service.response.time:merge(
  error_rate:             "metricSelector=builtin:service.errors.total.count:m
  rt_login    :           "metricSelector=calc:service.teststeprt:filter(eq(ur
  pg_heap_suspension:     "metricSelector=builtin:tech.jvm.memory.gc.suspensic
  pg_cpu_usage:           "metricSelector=builtin:tech.generic.cpu.usage:merge
```

slo.yml

```yaml
filter:
objectives:
  - sli: "response_time_p95"
    key_sli: false
    pass:             # pass if (relative change <= 10% AND absolute value is < 100ms)
      - criteria:
          - "<=+10%"  # relative values require a prefixed sign (plus or minus)
          - "<=100"    # absolute values only require a logical operator
    warning:
      - criteria:
          - "<=250"
    weight: 1
```

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# Integrate it!

Keptn and NTT DATA‘s Integration Hub



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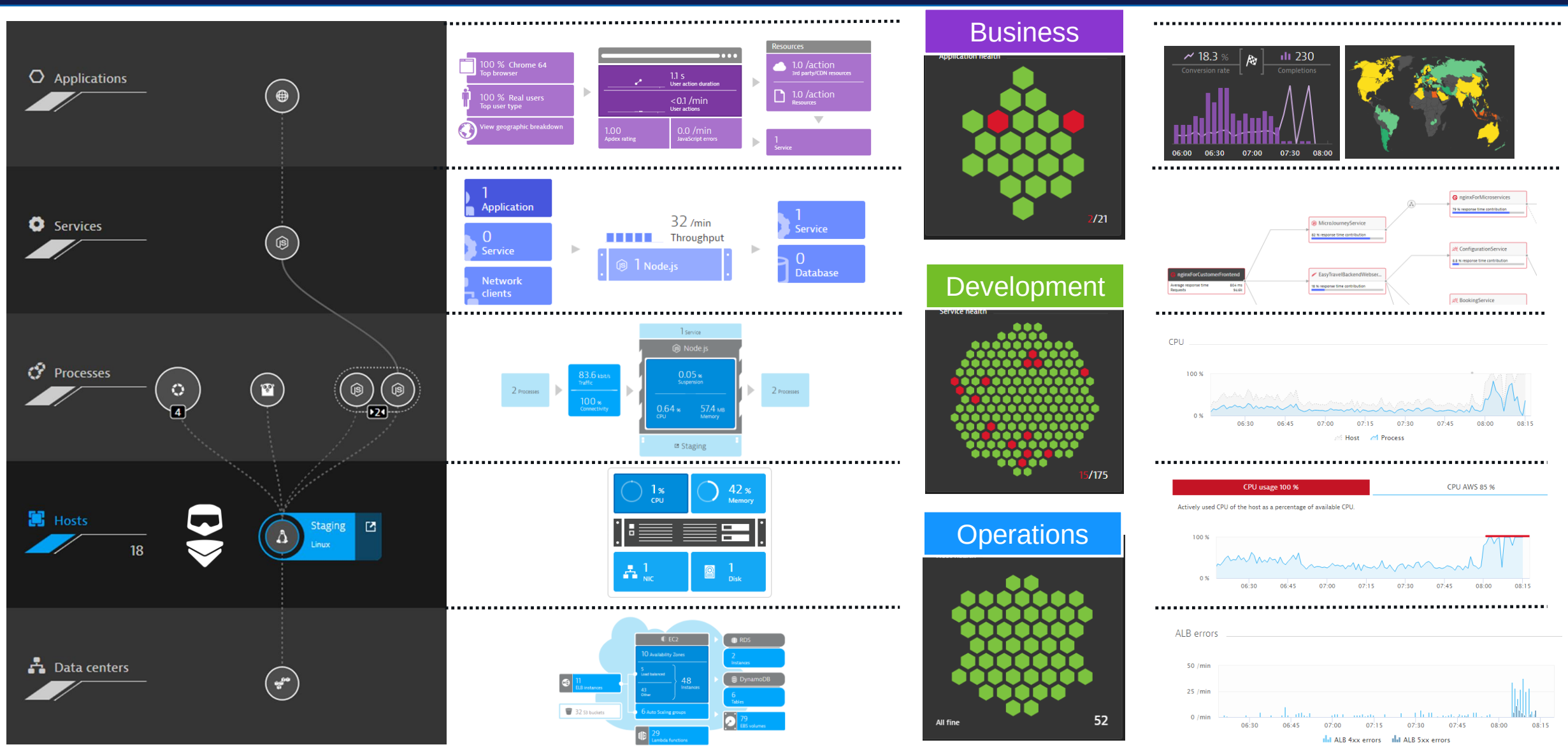
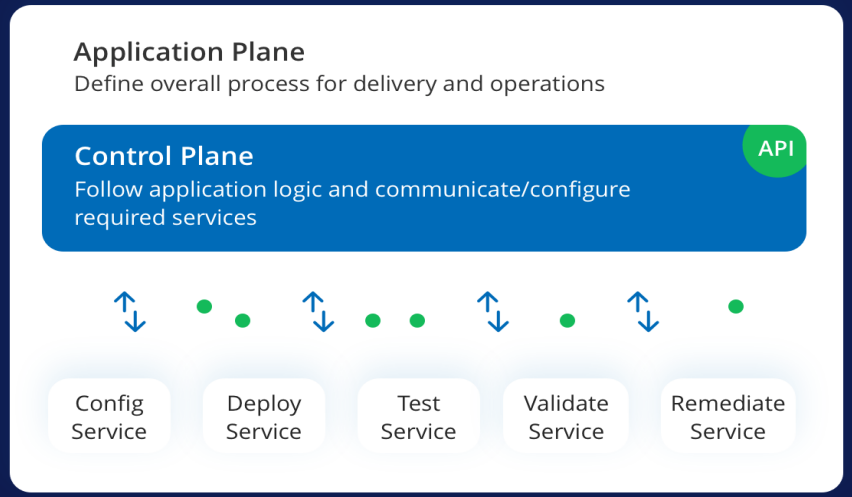
# Dynatrace: FullStack Observability @ Scale



# keptn

**Keptn – pronounced *captain* – is a control-plane for DevOps automation of cloud-native applications.***




***https://keptn.sh**



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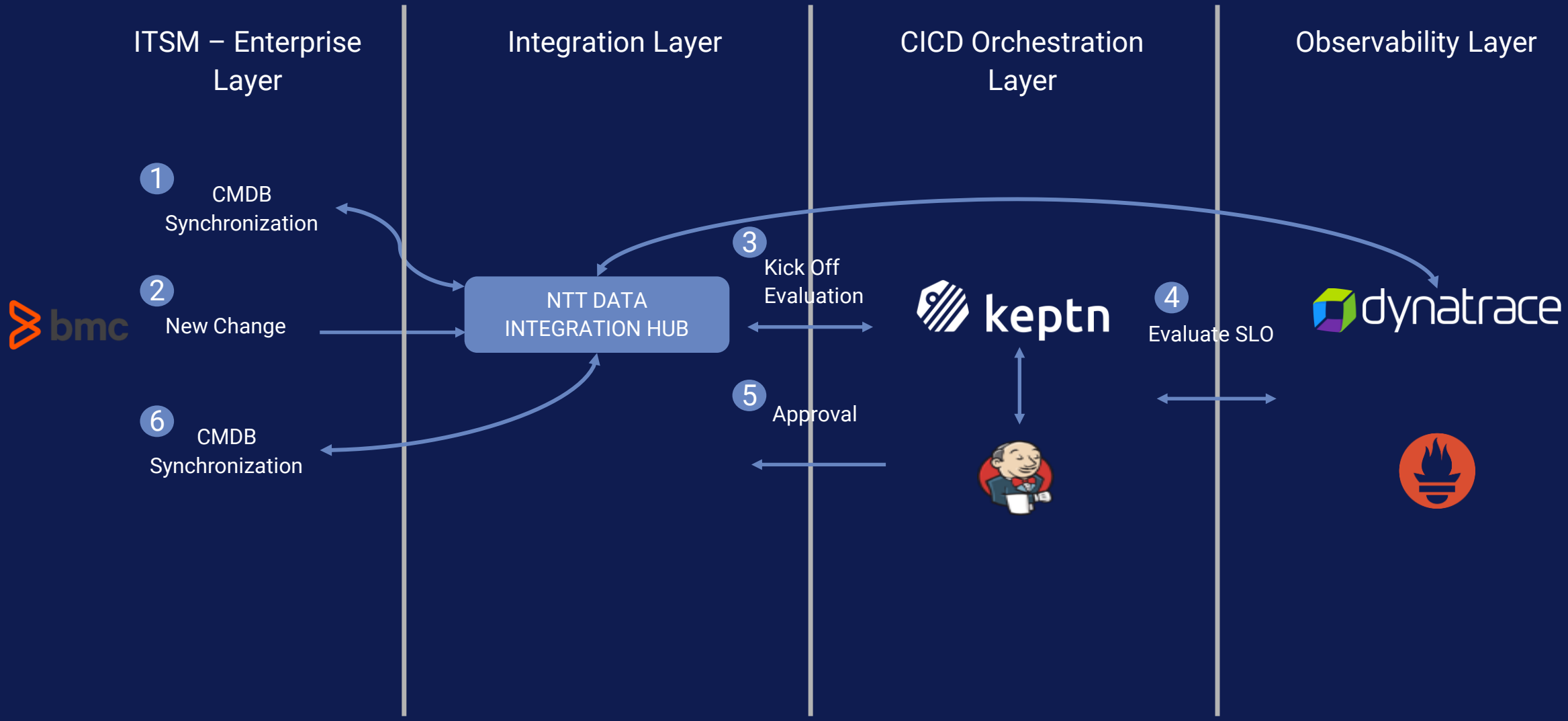
# Integration Workflow – CICD and ITSM



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# To sum it up

# Holistic Approach for our unbreakable delivery pipeline

## Common Language

Create measurements and methods through the whole Service Chain which enable Development, Operations and Business to rely on the same data

→ SLI – SLO - SLA

## Automate all the Stuff

Complex Systems mostly come with complex processes and workflows

→ Automated oberservability and quality gates through Dynatrace and keptn

→ Everything as Code

## Integrate all the Stuff

Many people means many preferences resulting in many tools.

→ keptn

→ Integrate Tooling with NTT DATAs Integration Hub

EVERYTHING as Code!

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# THANK YOU

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# Follow up for more

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