

ADD0

ALL DAY DEVOPS

NOVEMBER 12, 2020

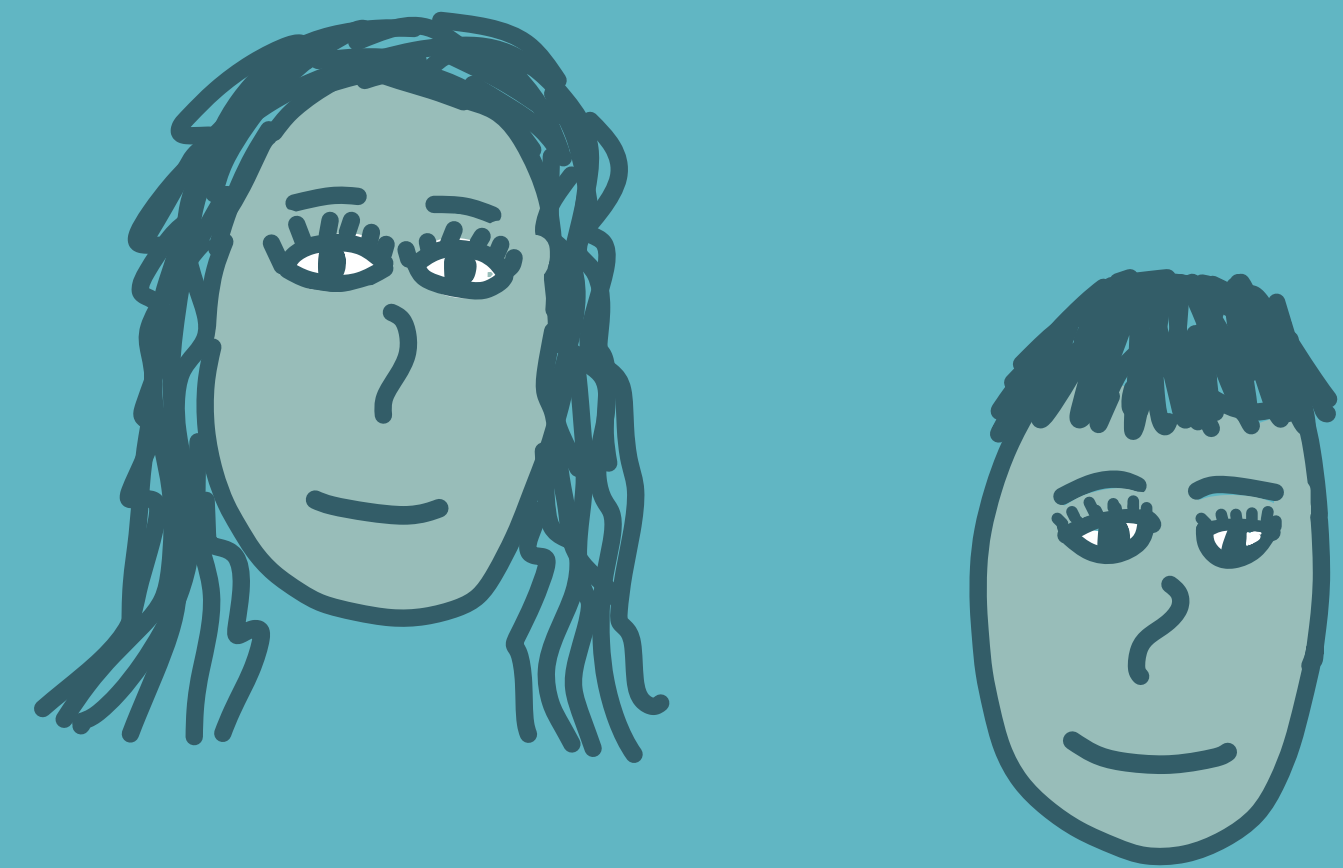
Taylor Barnett

Human-in-the-Loop
DevOps



Human-in-the-Loop DevOps

Taylor Barnett, Transposit



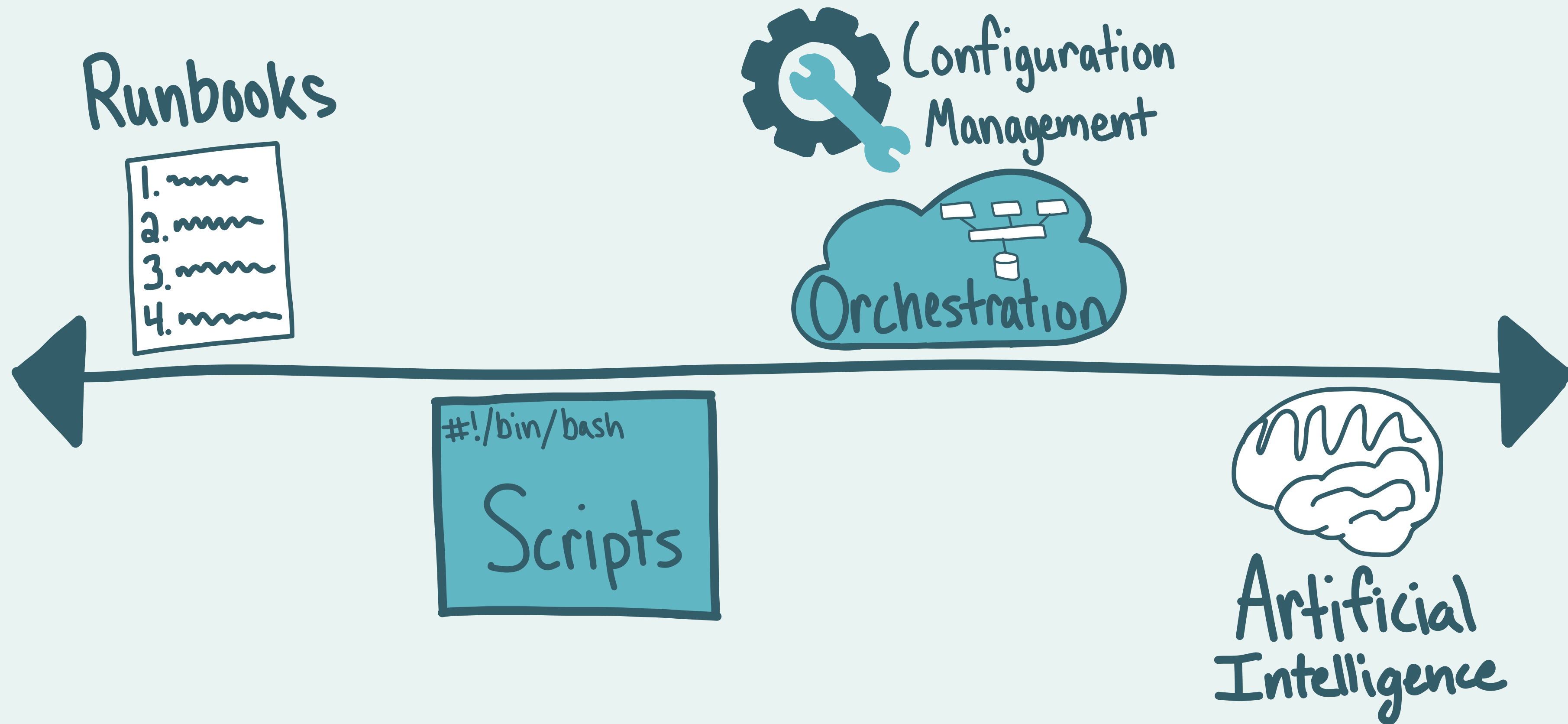
Why Humans
Are Critical to
Successful Automation

What exactly is
automation?

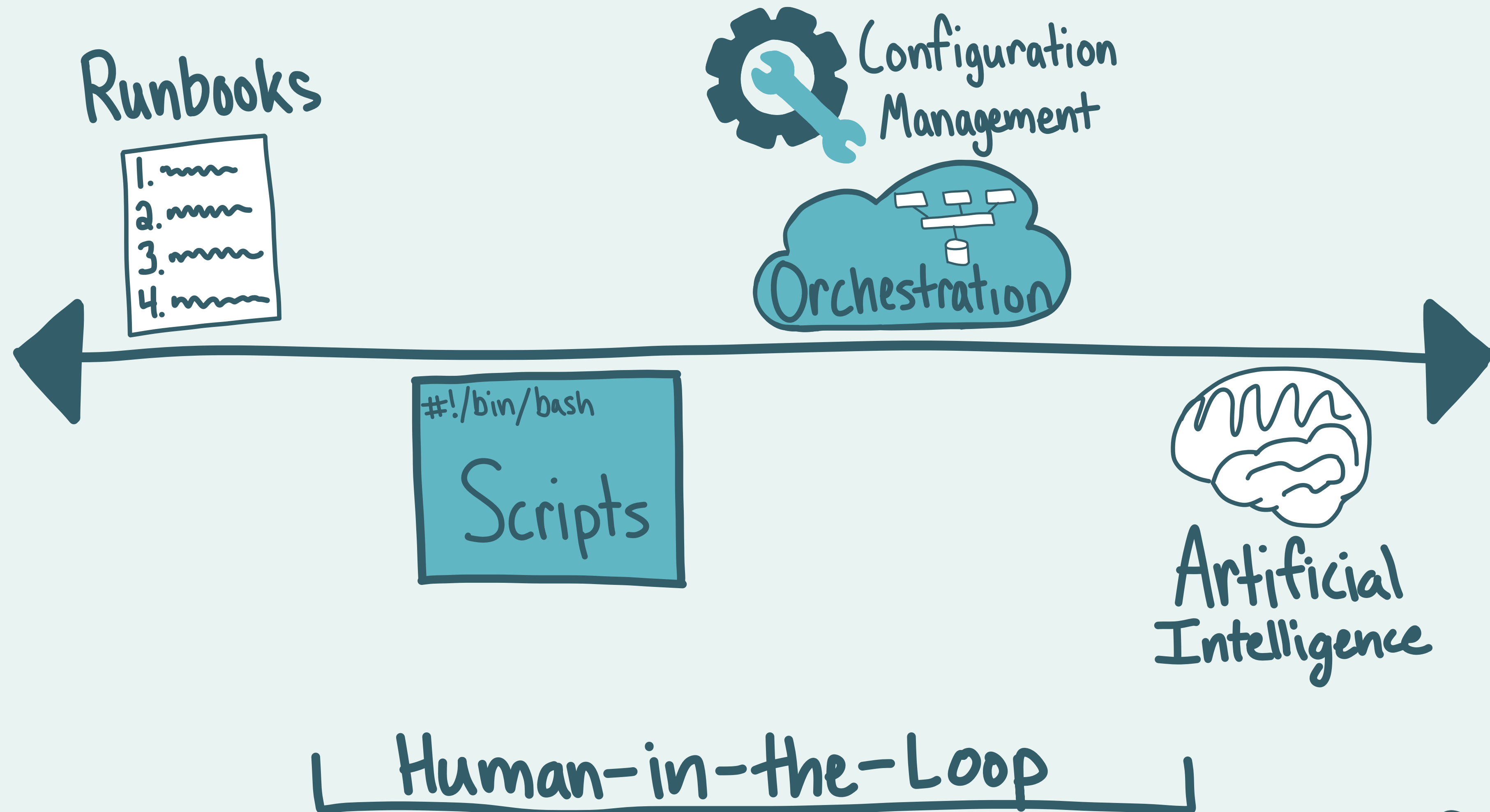
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Spectrum of Automation



Spectrum of Automation





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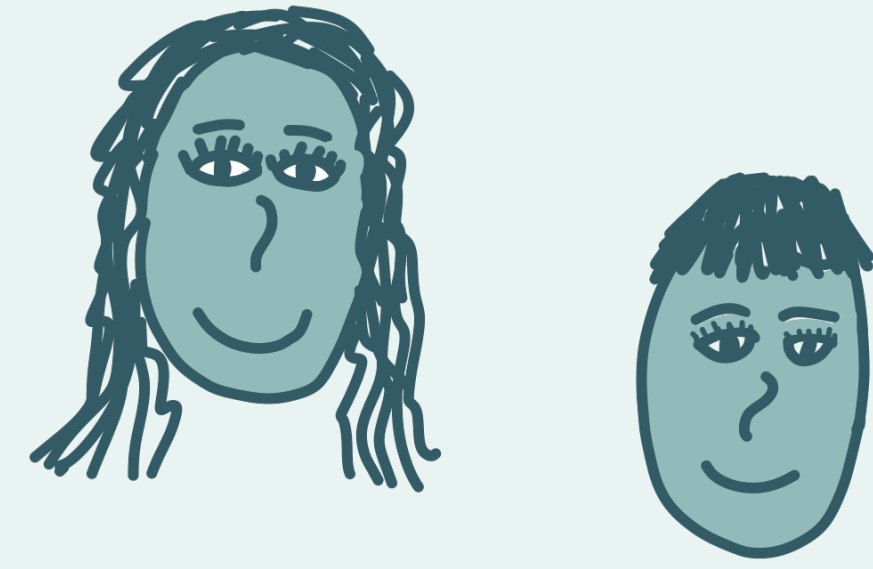
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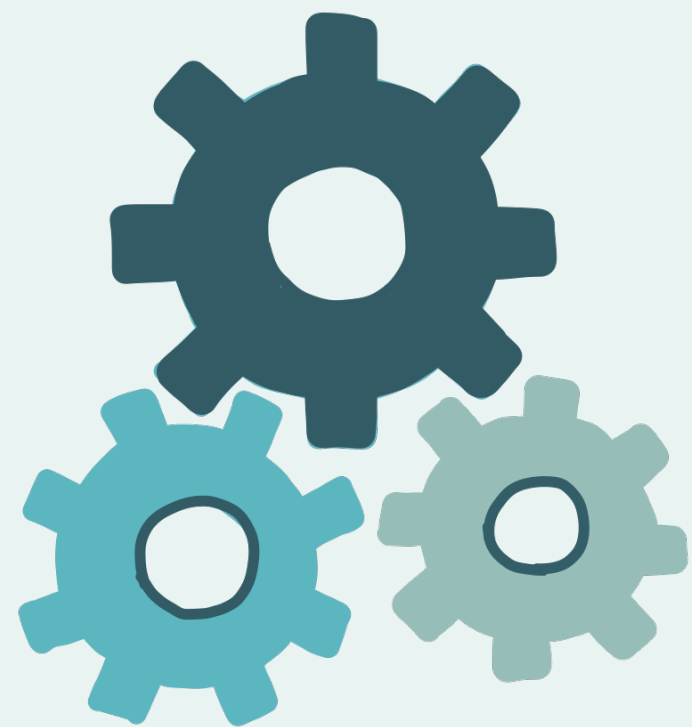
What is Human-in-the-Loop
Automation?

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When humans intersect
at critical decision points



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"#12 Human practitioners are the adaptable element of complex systems"

—How Complex Systems Fail,
Richard I. Cook, M.D.

"It depends..."

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"This paper suggests that the increased interest in human factors among engineers reflects the irony that the more advanced a control system is, so the more crucial may be the contribution of the human operator."

Automatiza, Vol.19, No.6 pp 775-779, 1983

Brief Paper

Ironies of Automation

LISANNE BAINBRIDGE



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In conclusion: "... possibility that resolving them will require even greater technological ingenuity than does classic automation."

Automatica, Vol. 19, No. 6 pp 775-779, 1983

Brief Paper

Ironies of Automation

LISANNE BAINBRIDGE

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# "End-to-end Automation"

- Testing
- Build scripts
- Continuous integration/deployment
- Server provisioning
- Account creation
- Health checks

End-to-end automation breaks  
down in other ways too:

- Can't redirect or tell end-to-end automation to focus on something specific
  - ↳ Basis of coordination in sociotechnical systems
- Fragile to change

# Human-in-the-Loop

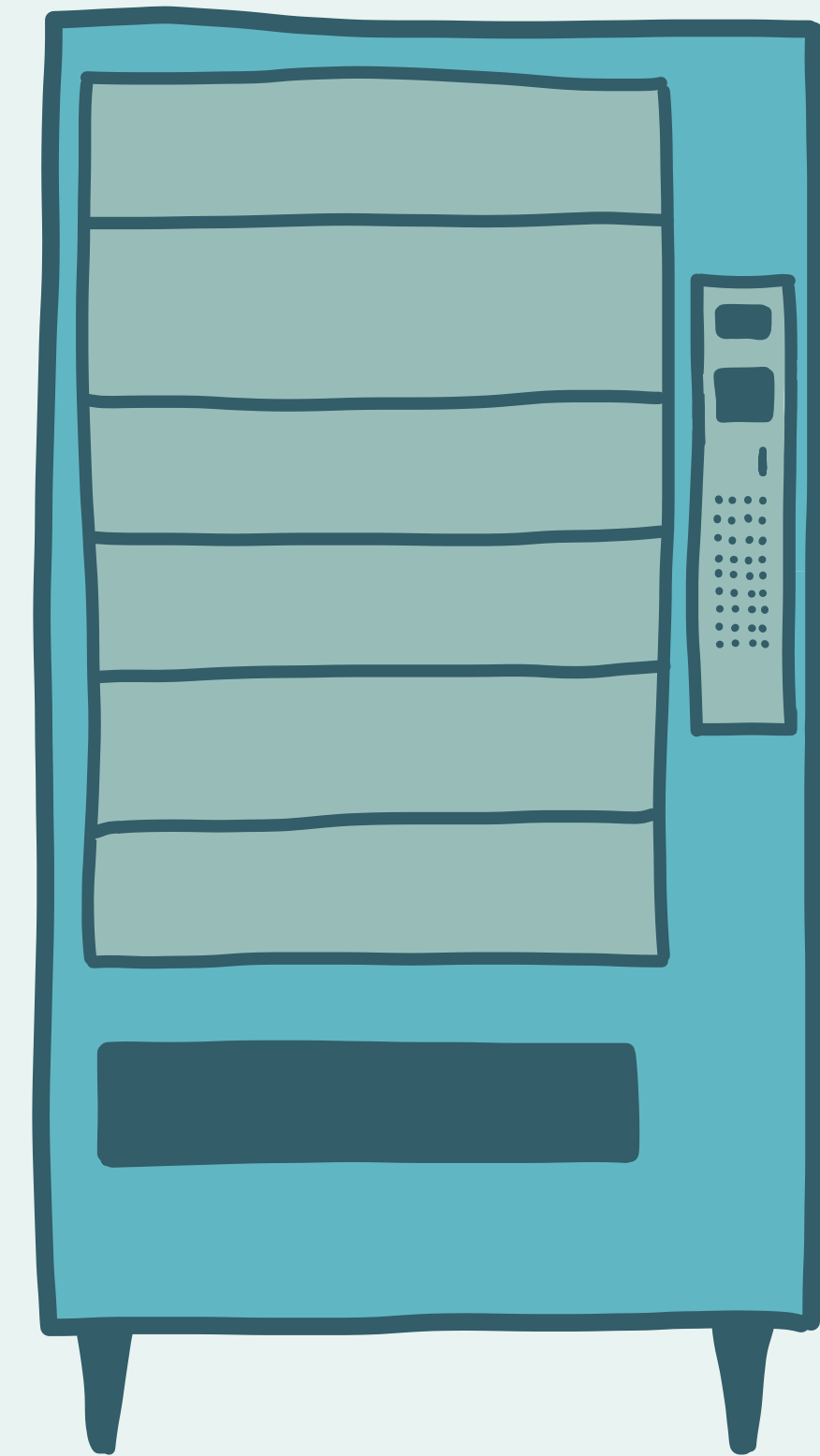
## Examples

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Self-service

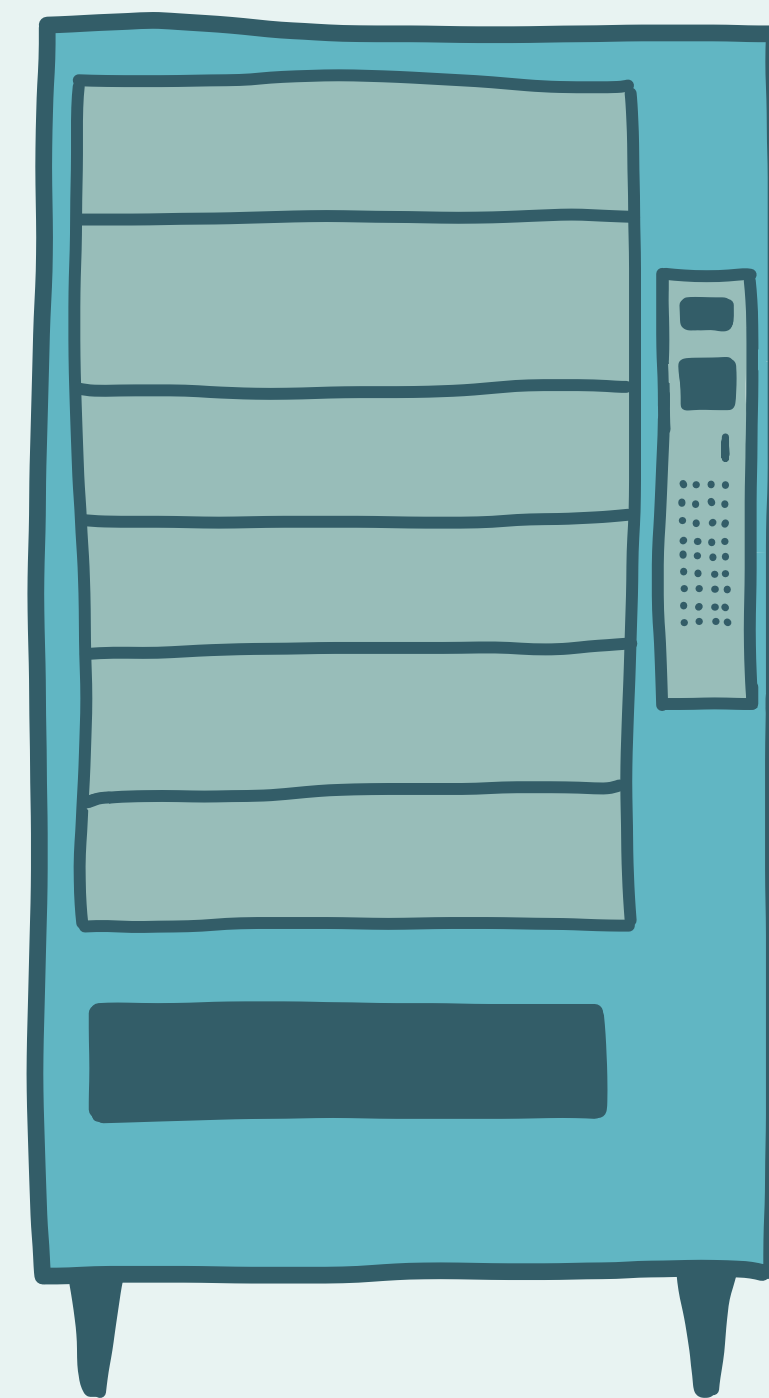


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Human-in-the-Loop automation enables  
self-service infrastructure





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Service 

+

Config. variables  
Input

fill in the blank

+

Security   
Access control  
Guardrails

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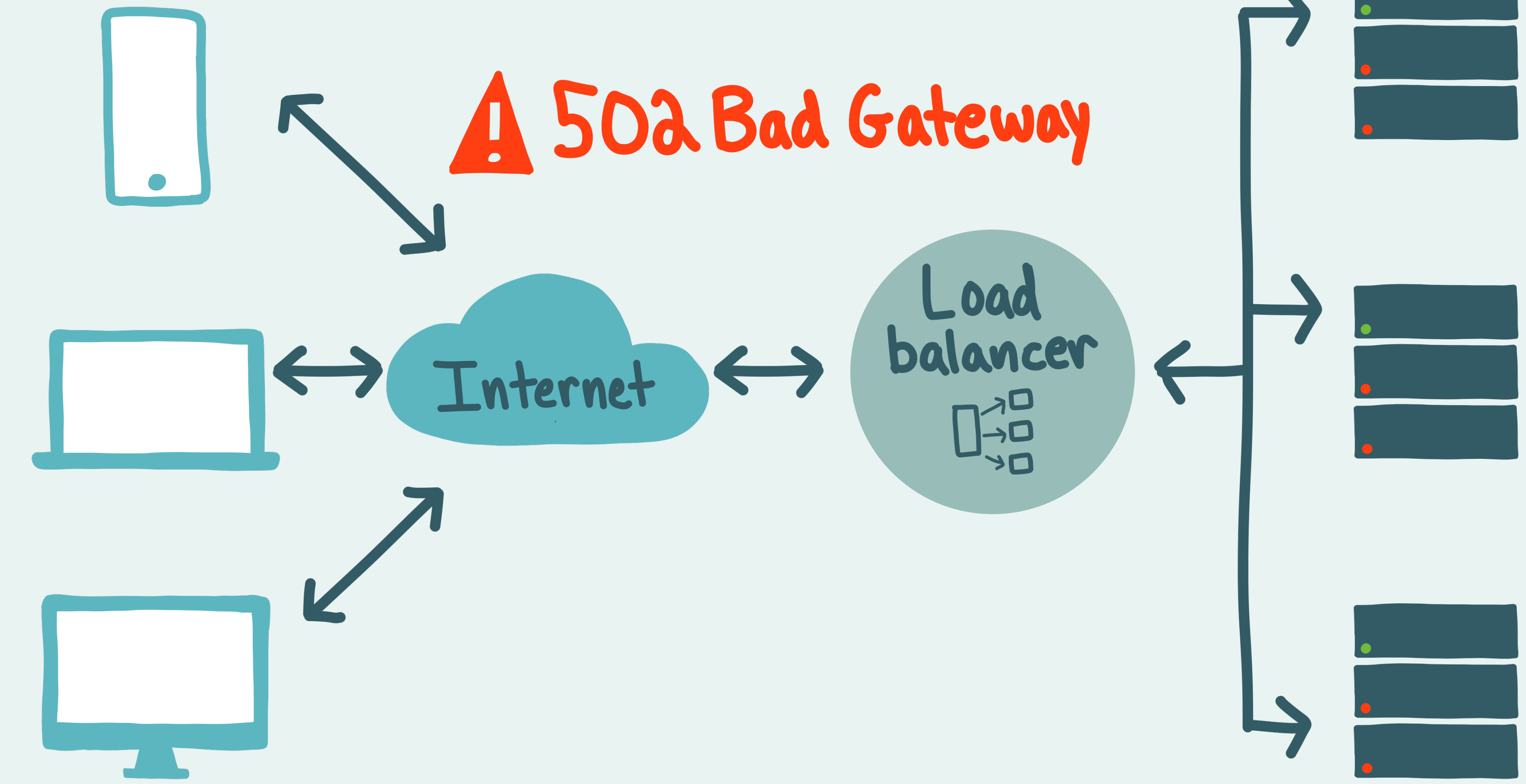
# Incident Response



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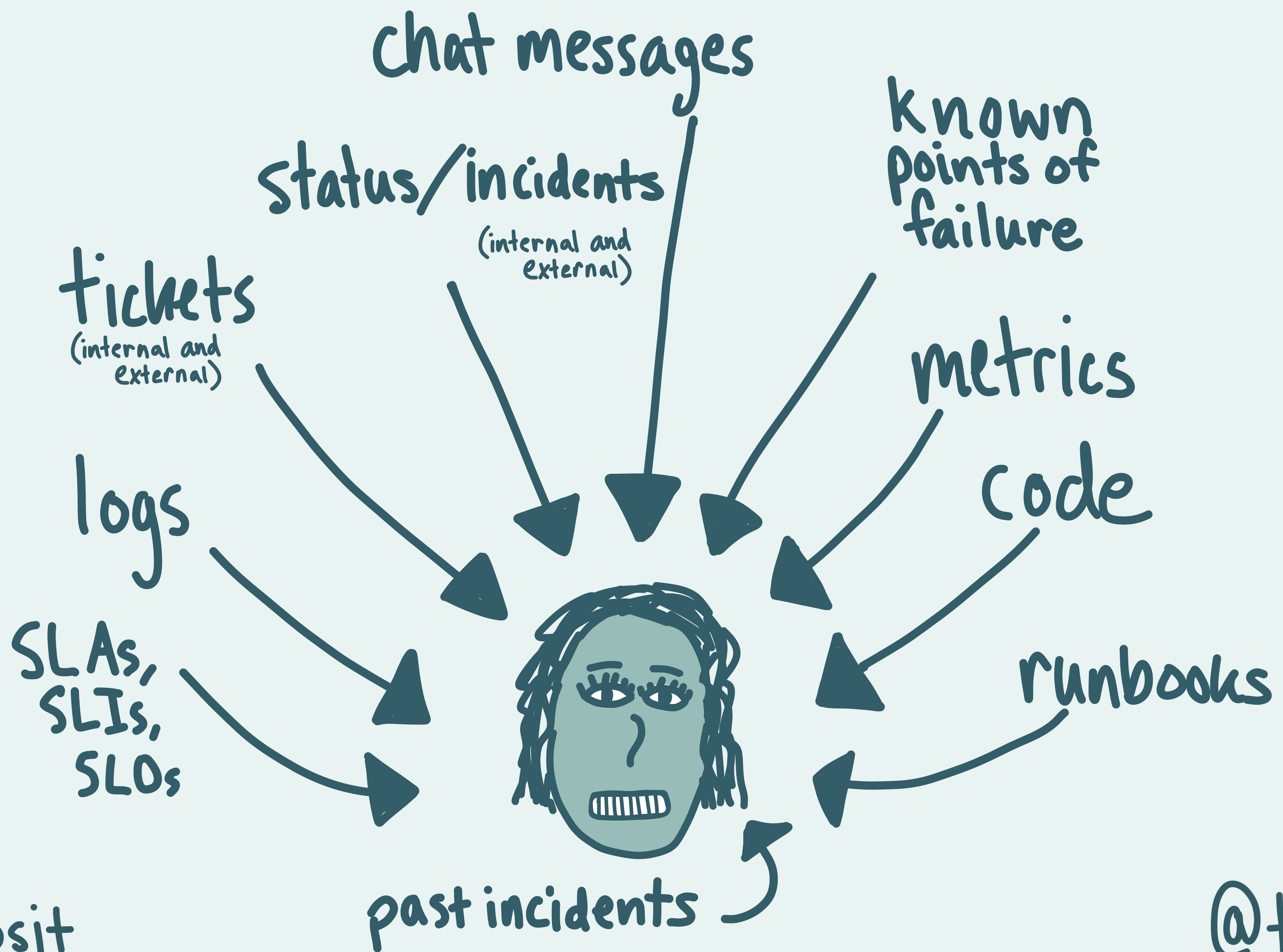
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Users/clients



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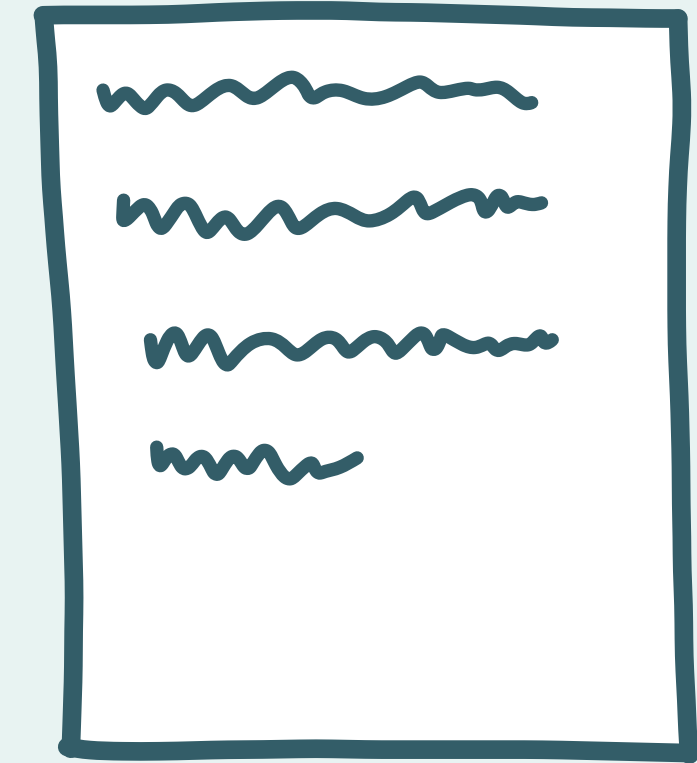
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Inspired by "Ironies of Automation"

- Instructions and advice
- Access to data and tools
- Relieving human work-load





# Instructions and advice

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# Access to data and tools

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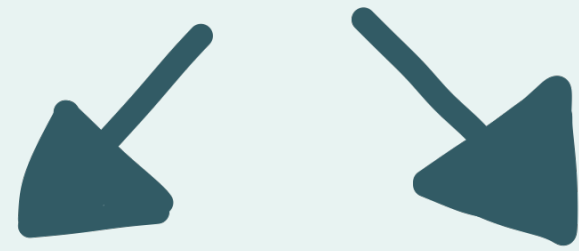


Relieving human work-load

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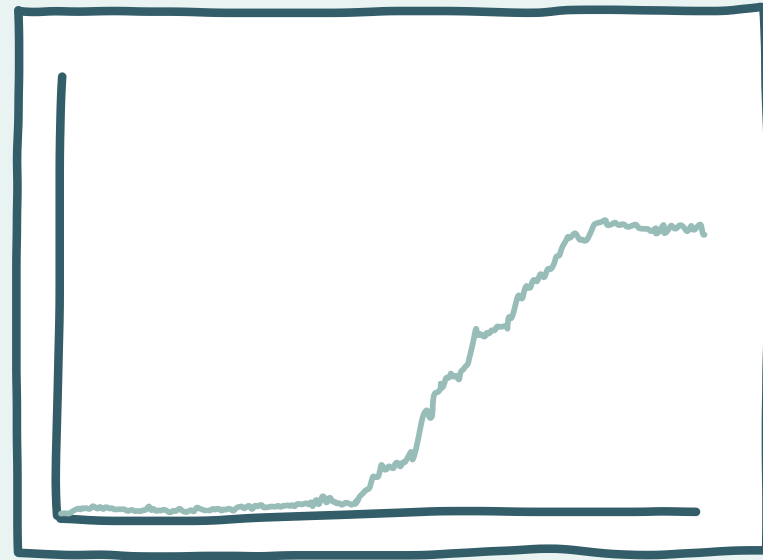
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# Alert fires



High 5xx errors





# High 5xx Errors:

## Triage

~~~~~  
 ~~~~~  
 ~~~~~

Metrics **Logs**

Coordinate

~~~~~  
 ~~~~~

Jira **Status Page**

Date	Message
Aug 2 13:19:38.000	Info: ~~~~~
Aug 2 13:19:39.000	Error: ~~~~~
Aug 2 13:19:39.556	Error: ~~~~~
Aug 2 13:19:41.000	Info: ~~~~~
Aug 2 13:19:42.123	Error: ~~~~~
Aug 2 13:19:43.050	Error: ~~~~~

New Issue

Type: ~~~~~ Status: ~~~~~ Assignee: ~~~~~

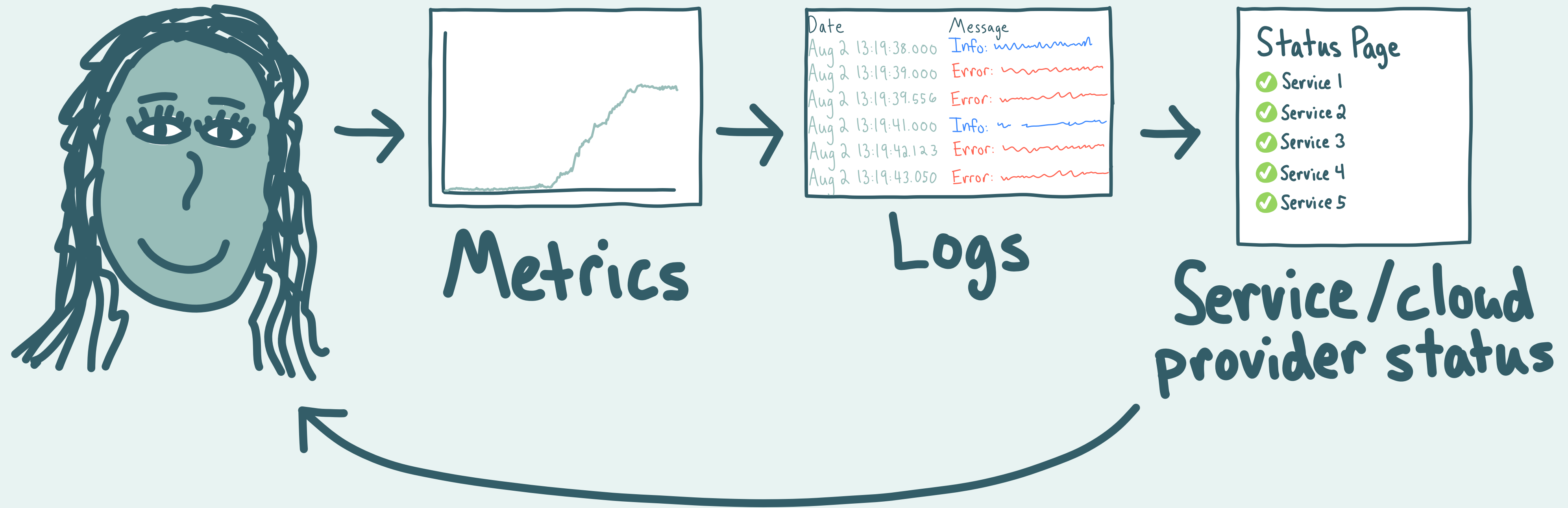
Priority: ~~~~~ Reporter: ~~~~~

Labels: ~~~~~

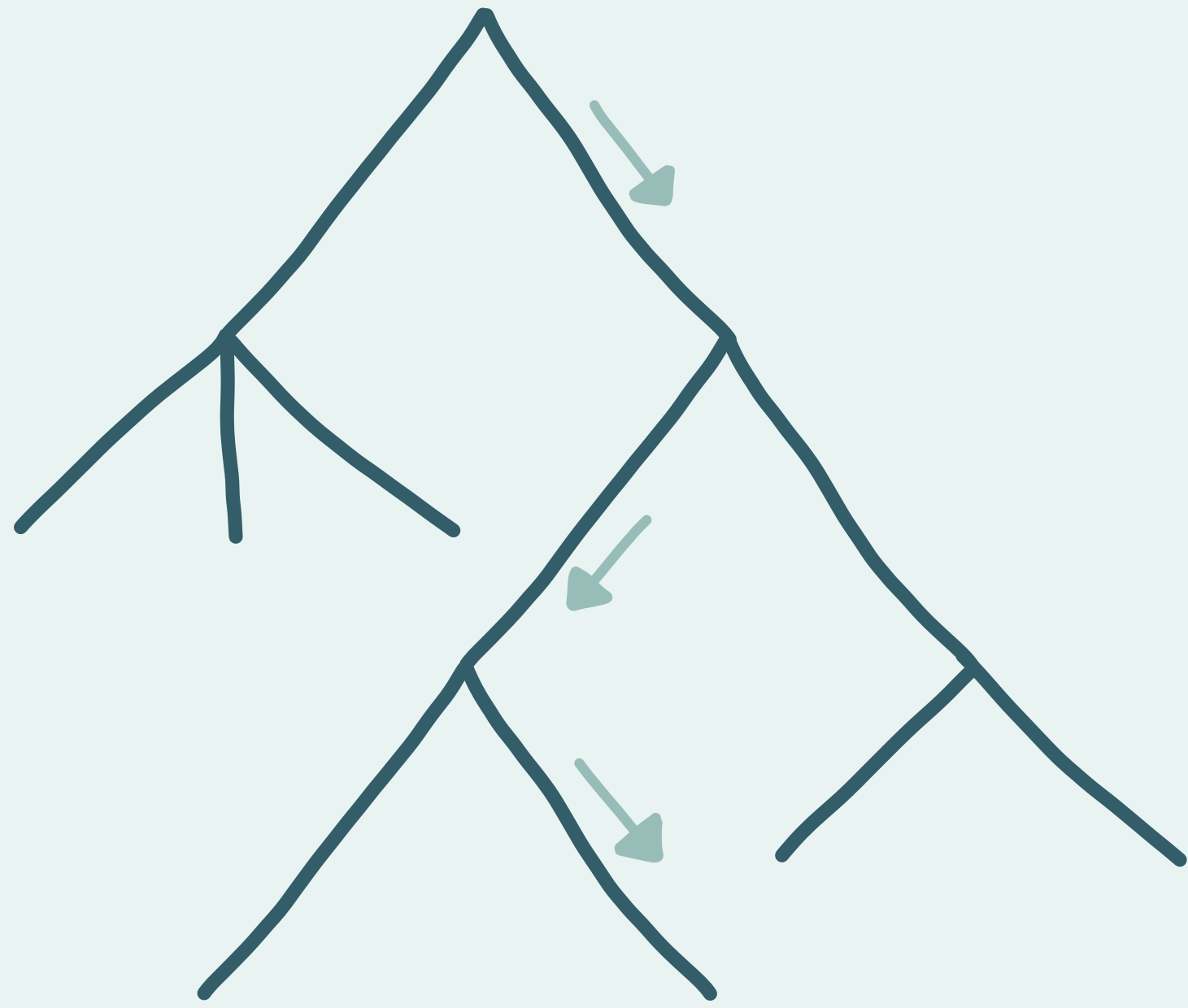
Description: ~~~~~
 ~~~~~  
 ~~~~~

Status Page

- ✘ Service 1
- ✔ Service 2
- ✔ Service 3
- ✔ Service 4
- ✔ Service 5



It depends...



Runbook

Option: Git revert

Virtual machines on EC2 are deployed from scratch

Make PR

Option: Restart API service

Closes all established connections

Restart

Only a few of the options

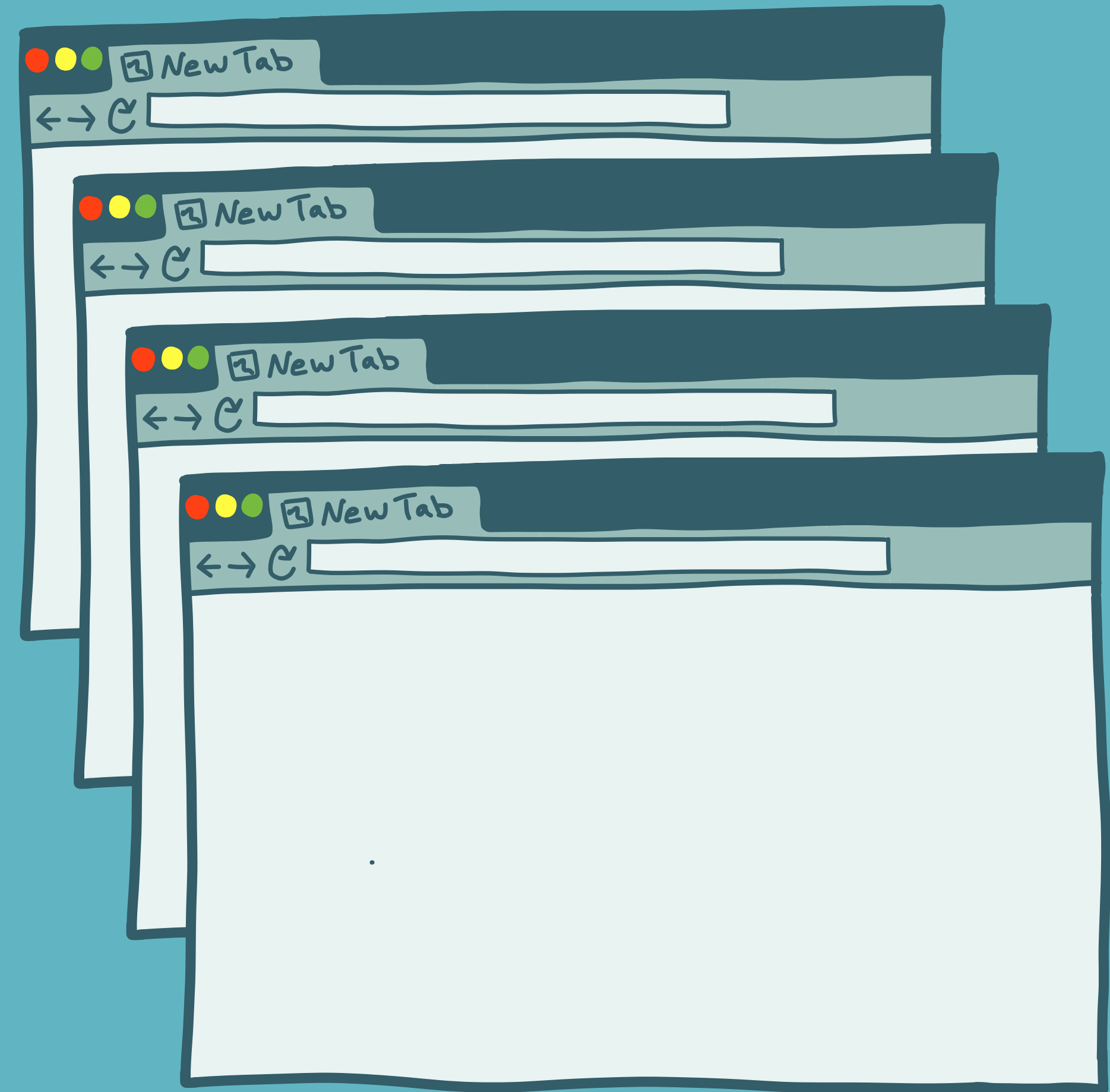
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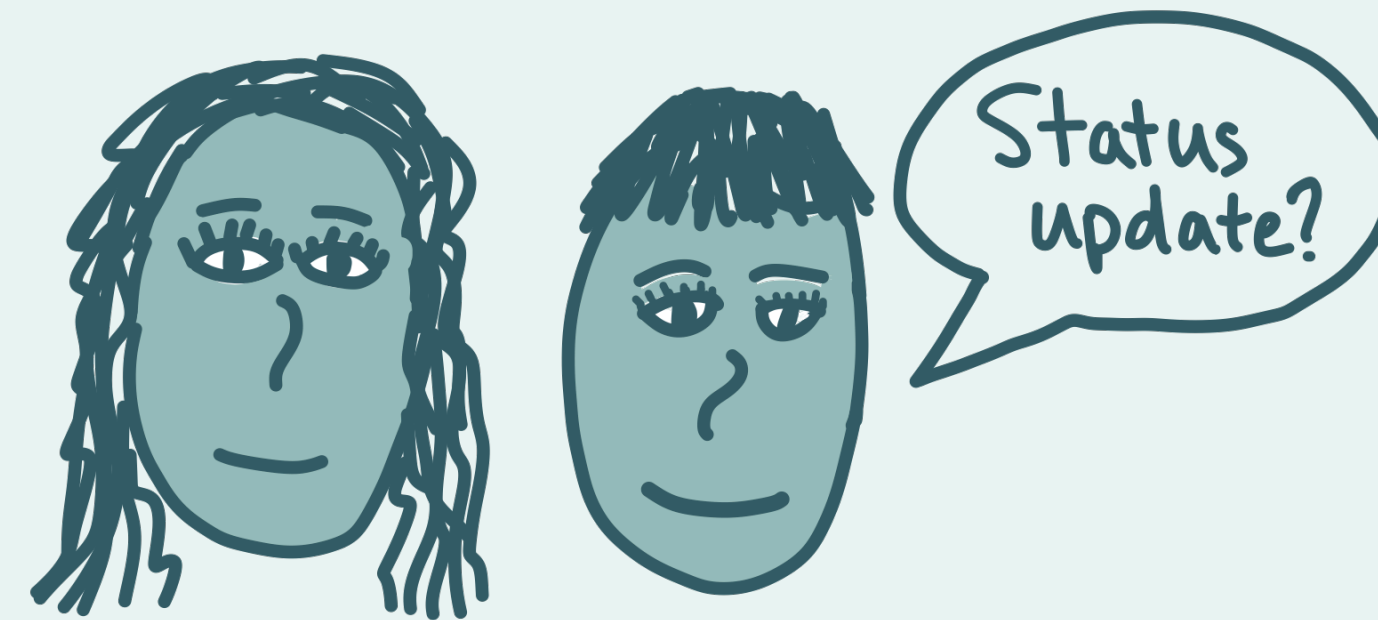
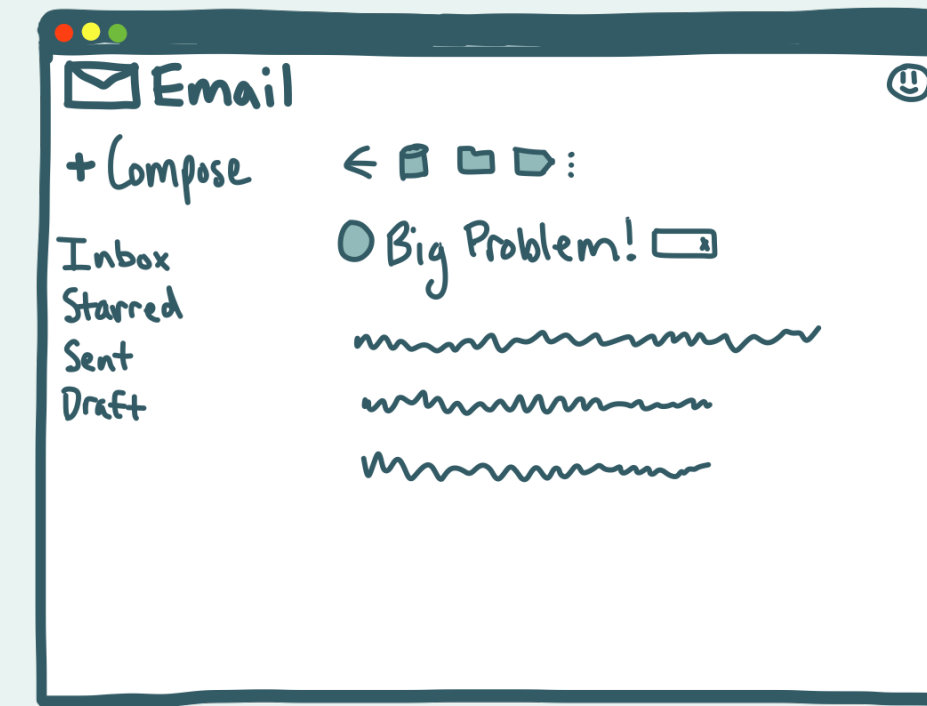
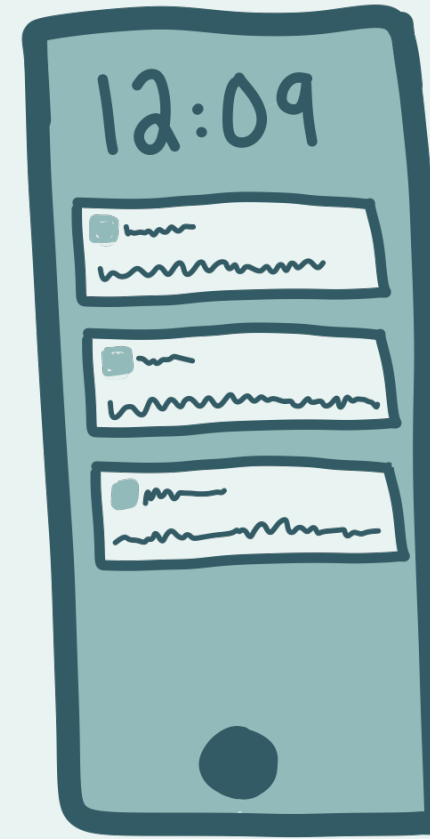
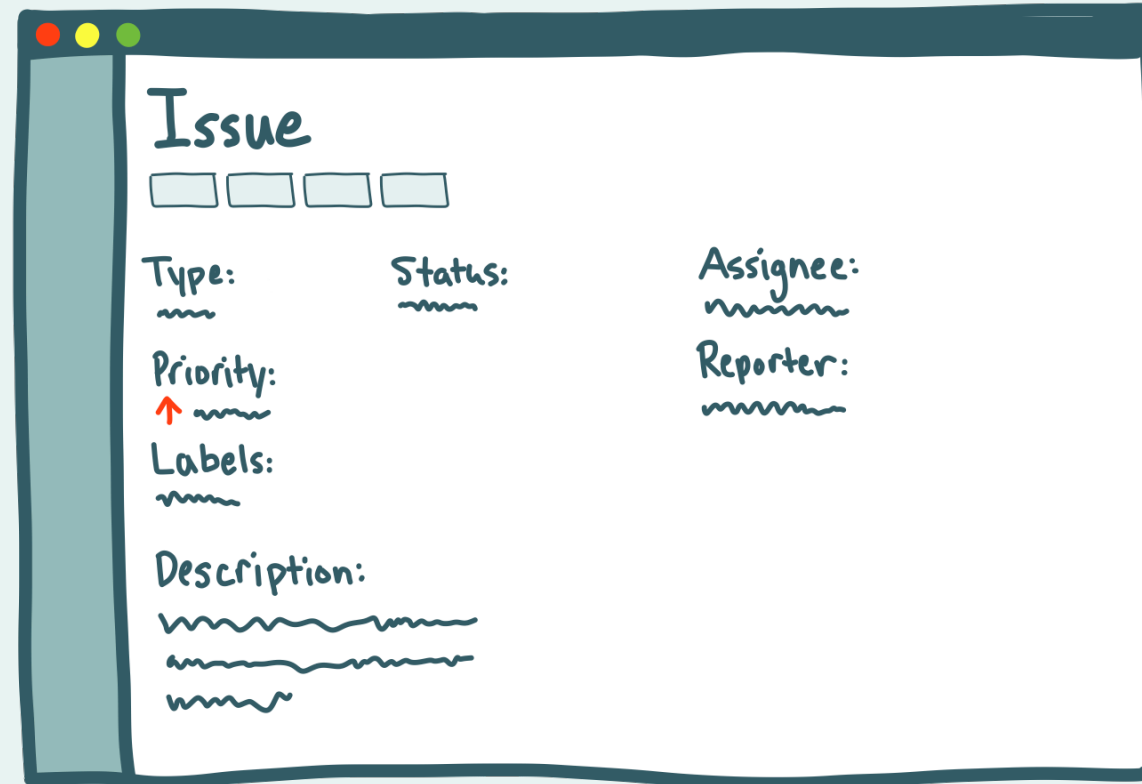
Human intuition
+
Machine process

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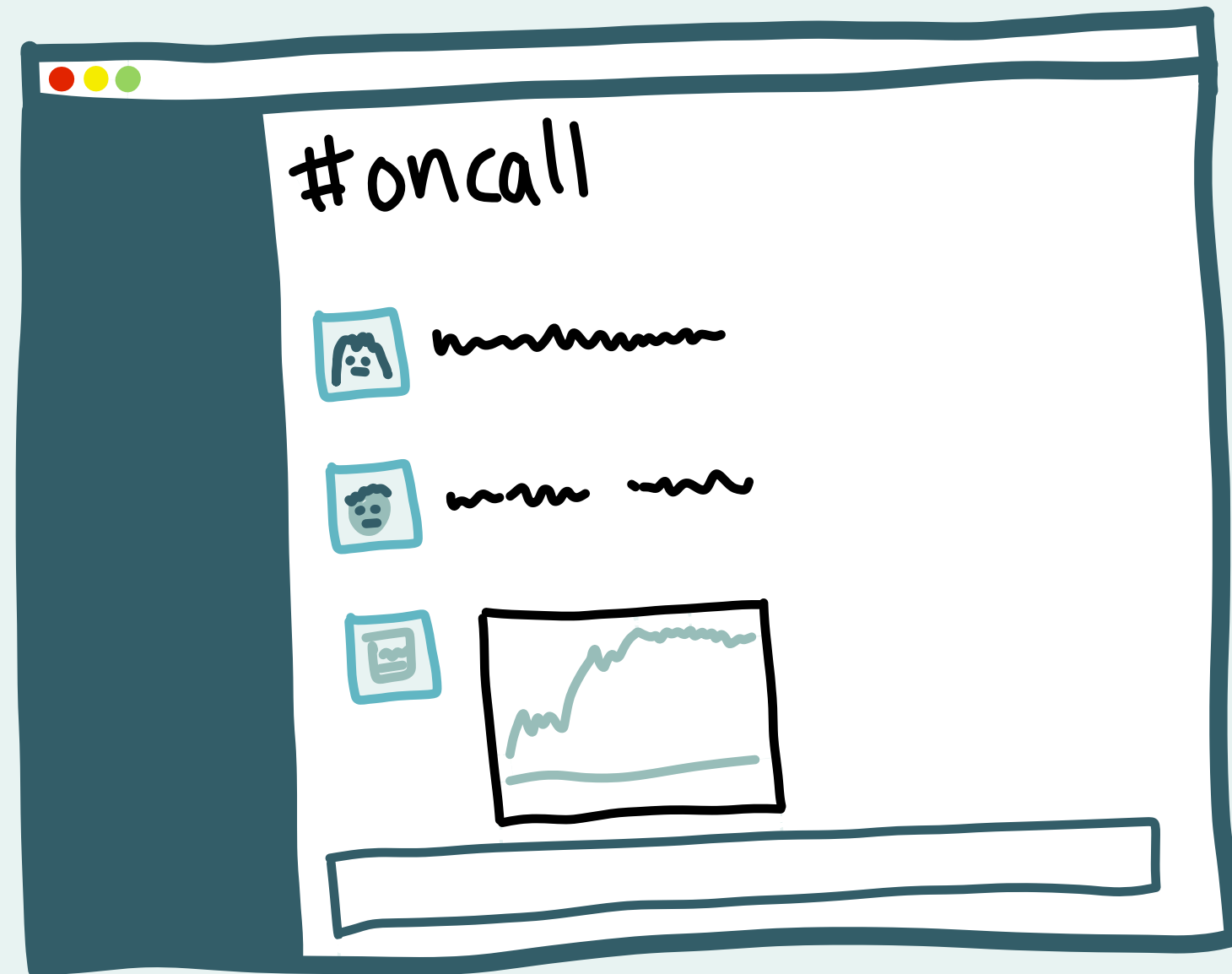
Reducing Cognitive Load





"Leadership"

Communication Workflows



Built into existing
processes, runbooks

Chat, status pages, customer
service, both internal/external

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Example:

"Playing telephone" in
the middle of an incident

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Other examples:

- Approvals and coordination
- Certain types of code reviews
- Rollbacks of deployments
- Interactive scripts

Where do you
start?

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Don't forget to:

- Use existing tooling
- Refine checklists
- Add more interactive steps in checklists
- Idea: Do-nothing scripts



Questions,
Opinions,
and more!



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Q&A



#2020-culture

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