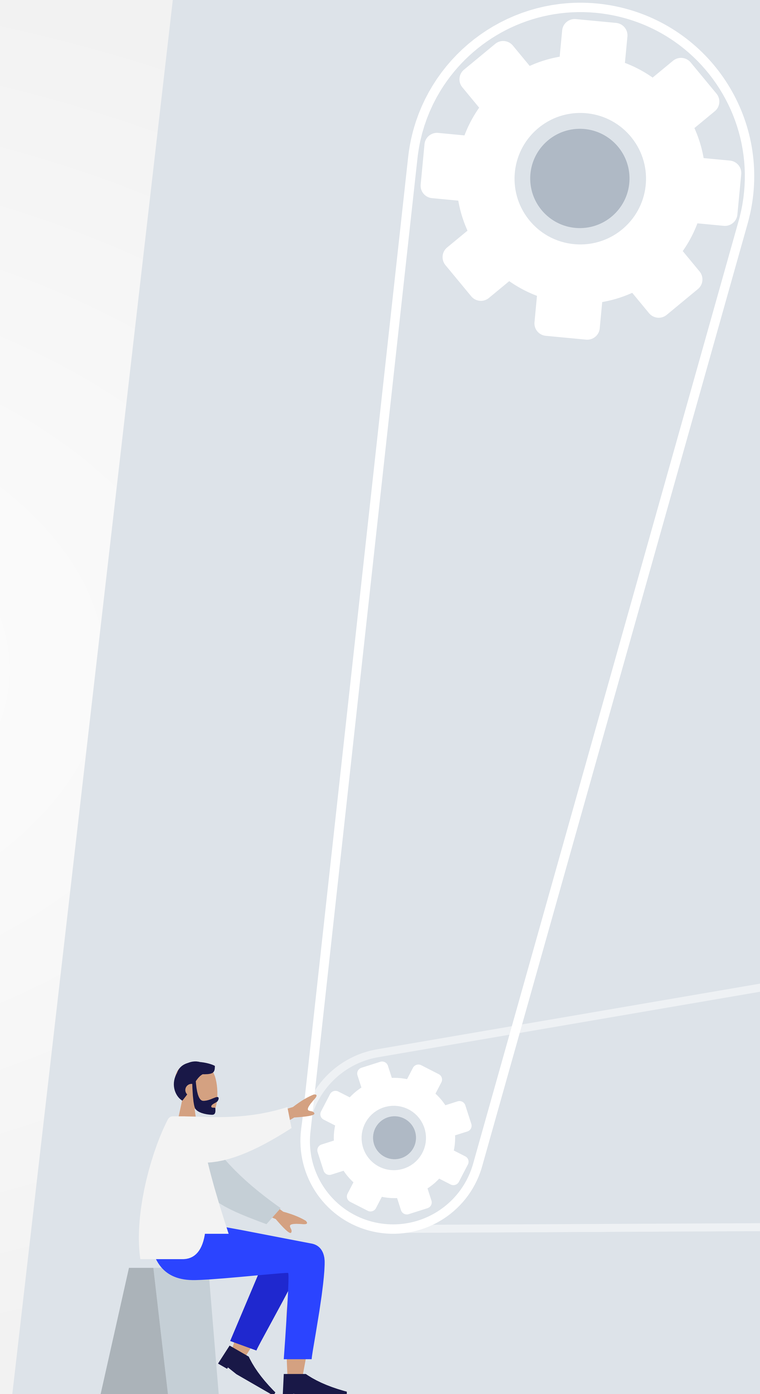
GE Transportation
a Wabtec company

# Engineering Focused UX

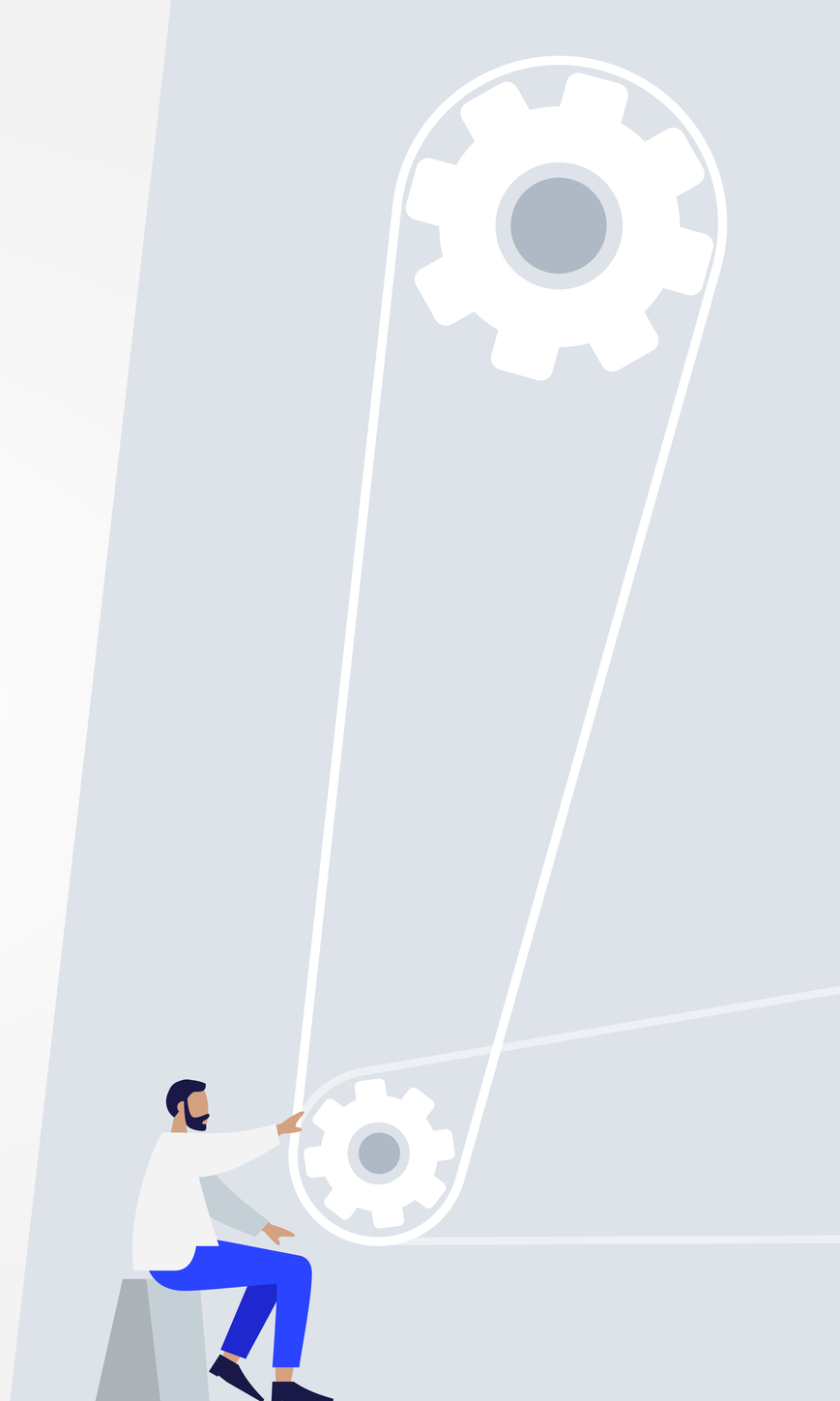
Richard W. Baker • UX Strat USA • Aug 2019



@rwbaker #uxstrat

*Richard Baker, Head of UX*

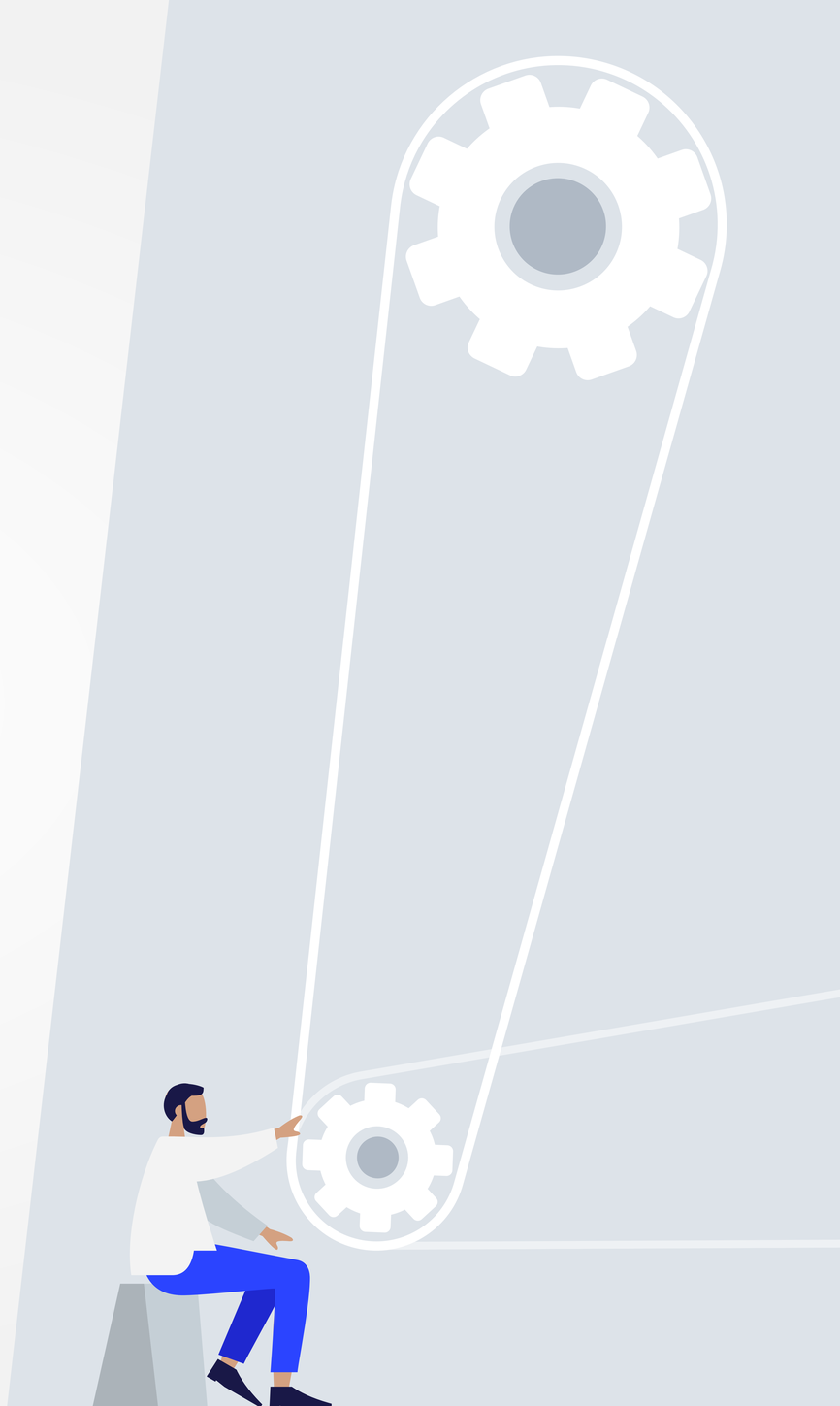
# GE Transportation



*Richard Baker, Head of UX*

# GE Transportation

27,000 employees



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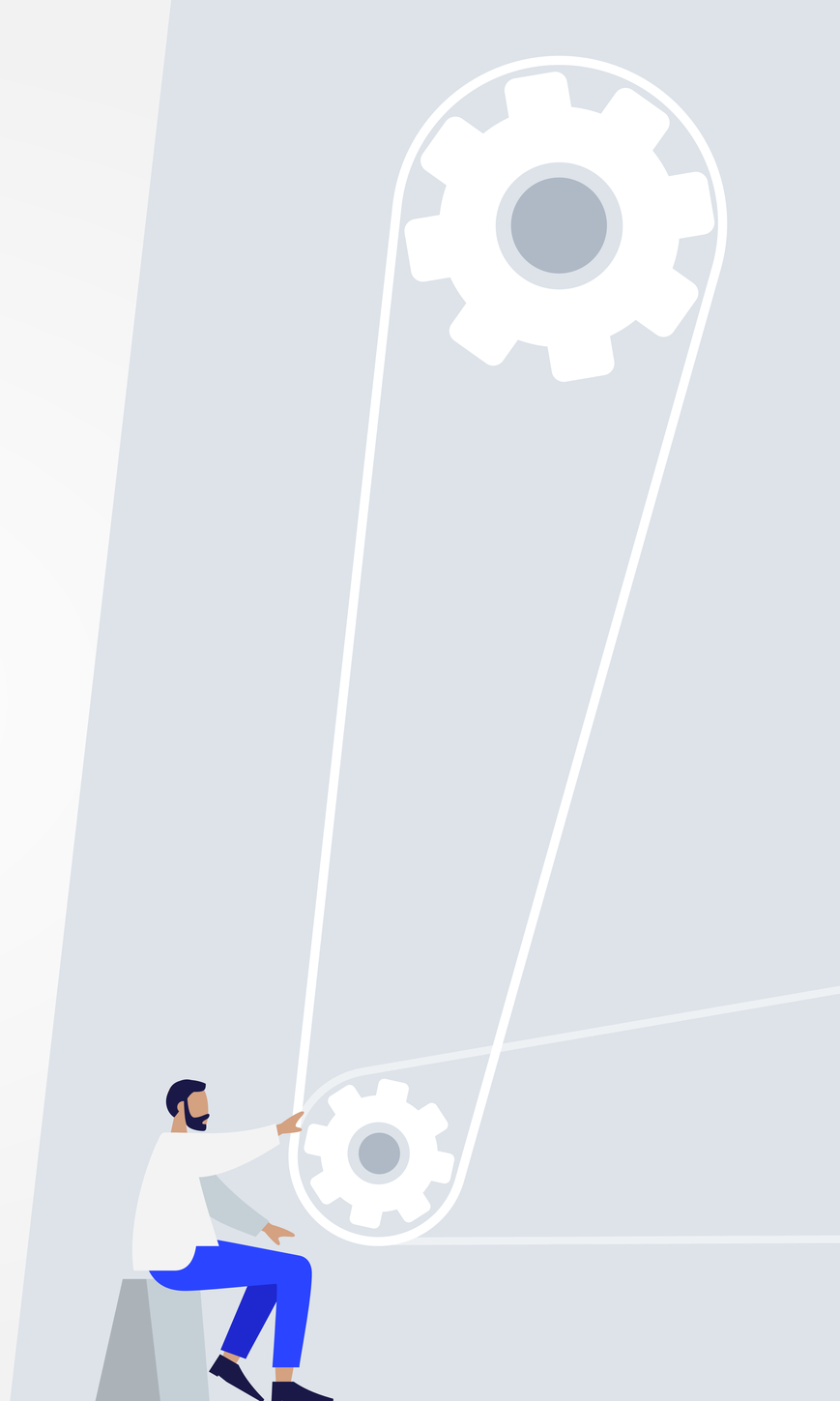
# GE Transportation

27,000 employees
5,000 engineers



*Richard Baker, Head of UX*

# GE Transportation

27,000 employees
5,000 engineers
1,500 software engineers



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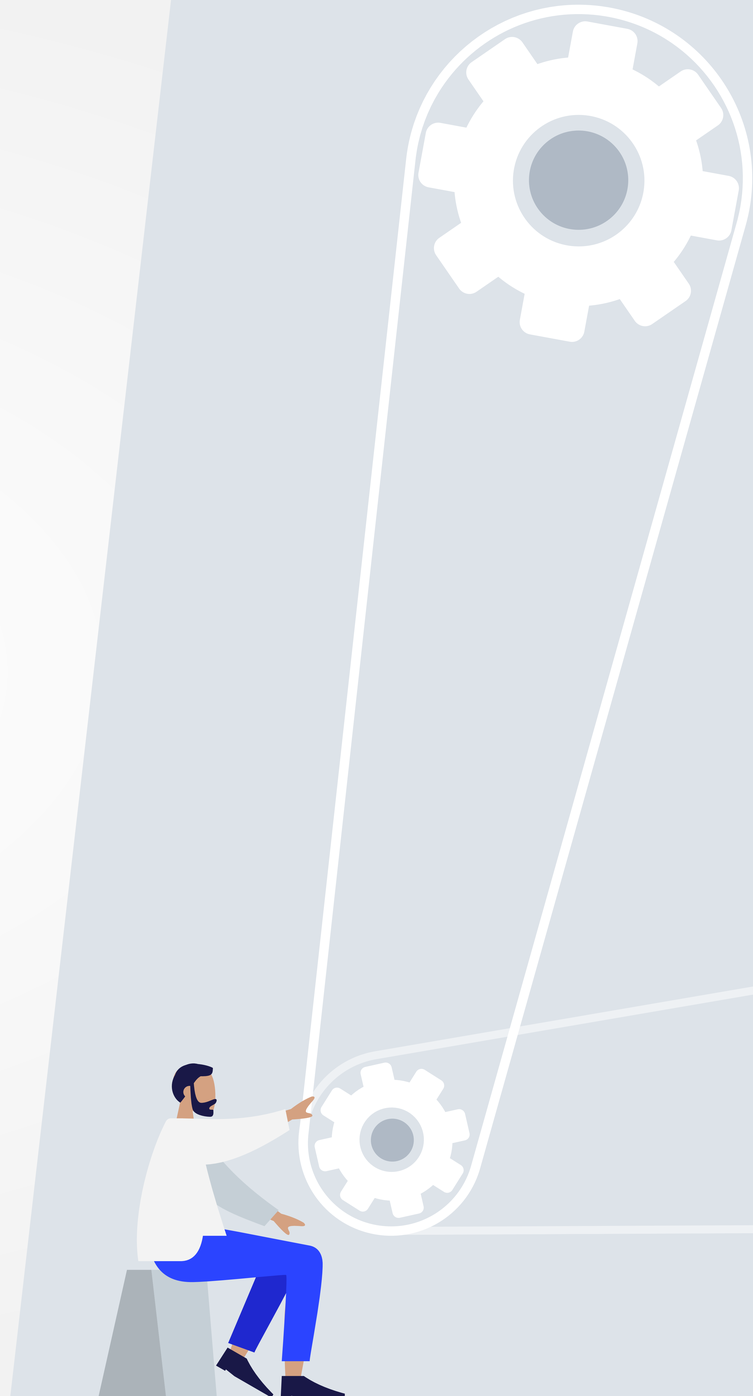
# GE Transportation

27,000 employees
5,000 engineers
1,500 software engineers
100+ software products



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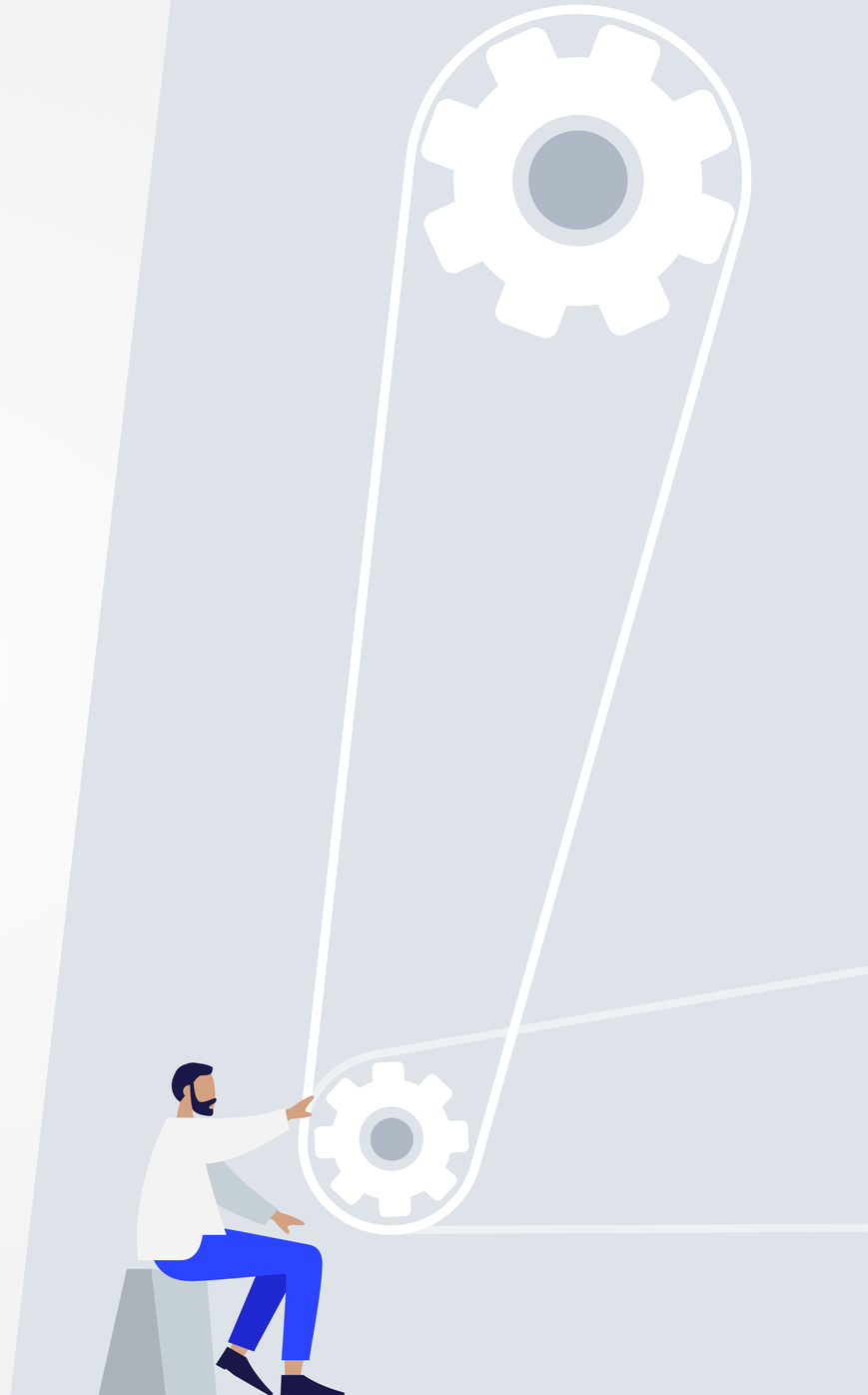
# GE Transportation

27,000 employees
5,000 engineers
1,500 software engineers
100+ software products
**25 UXers** (1:60)



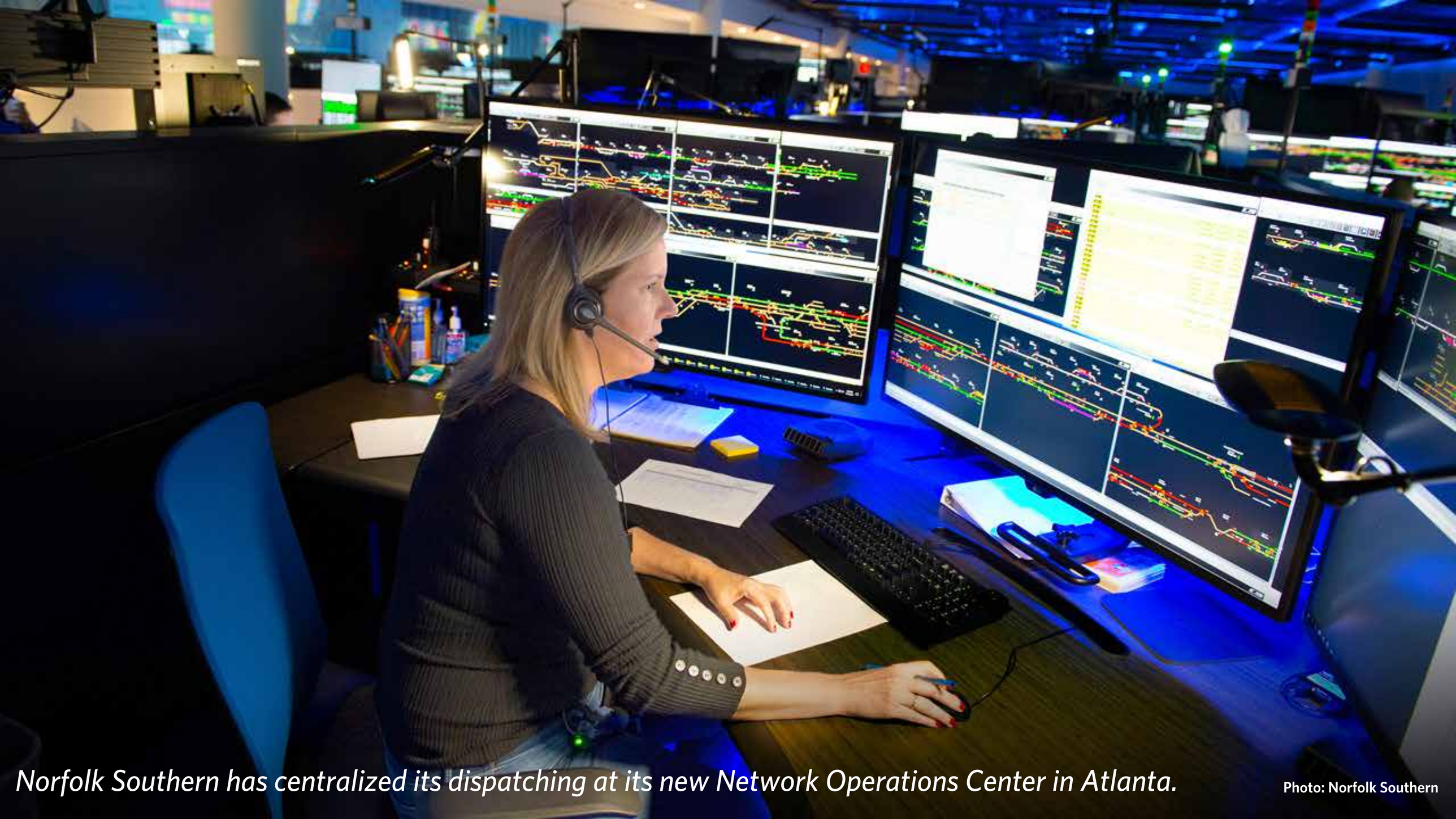
# What is *engineering-focused?*




Photo: Kharisma Cendhika Putra, GE Transportation



Photo: GE Healthcare



*Norfolk Southern has centralized its dispatching at its new Network Operations Center in Atlanta.*

**Photo: Norfolk Southern**




*Burlington Northern Sante Fe (BNSF) centralized dispatch center in Fort Worth, Texas*

Photo: Raymond D. Woods, Jr.




Photo: Alex Kotliarskyi on Unsplash

# So,
# what do all these have in common?



# Engineers love data

...keeps users safe

...prevents mistakes

...informs strategy



# Engineers have a process

...Six Sigma

...ISO standards

...change management



# Engineering orgs are huge

...big companies

...big products

...big tools



# Engineers prioritize safety

Complexity is dangerous...

Scale is dangerous...



# Engineer-focused UX is...

*an iterative design process that reduces complexity & ensures company & user success*

# Engineer-focused UX is...

*an iterative design process that reduces complexity & ensures company & user success*

**Simplify the complex.**

**Bite-size chunks.**

**Built-in exit ramps.**

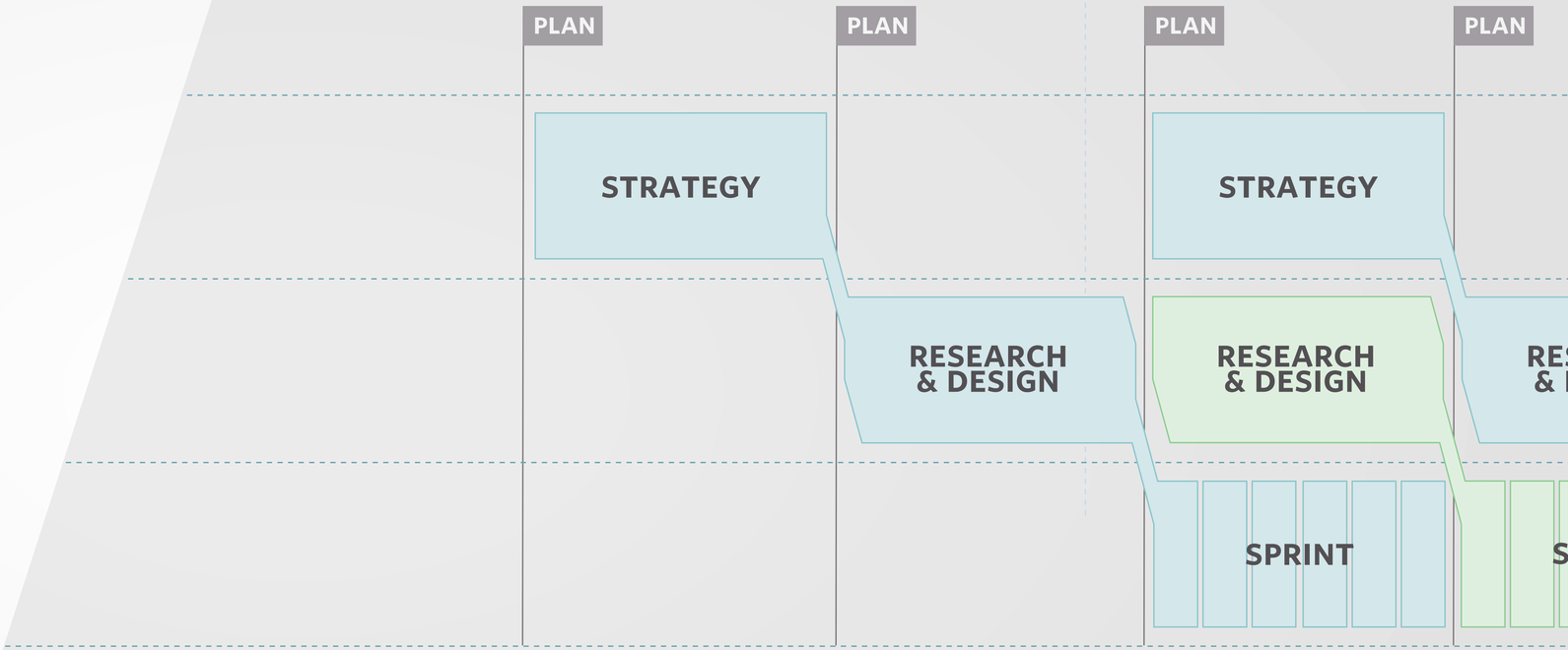
**Transparent.**

Strategic innovation.
Tactical design.
Agile execution.





# 1. Get buy-in.


PLAN
PLAN
PLAN
PLAN
STRATEGY
STRATEGY
RESEARCH
& DESIGN
RESEARCH
& DESIGN
SPRINT

# Get everyone on the same page

## Clarify all assumptions, especially the ones you think are obvious



# Answer questions before they're asked



Why should we do this?

What am I getting?

How much will it cost?

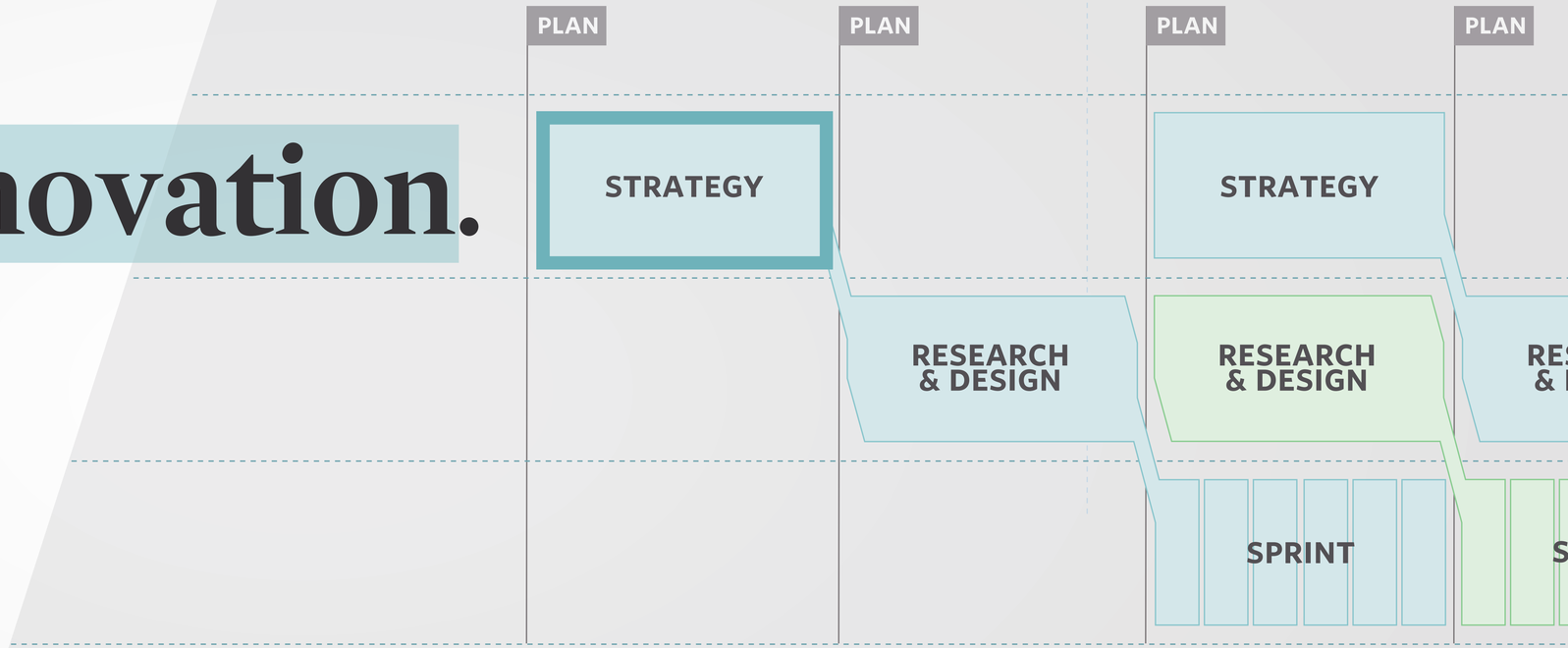
How long will it take?

Do we really need all these steps/people/deliverables?

*Ensuring everyone understands what is to come makes things run smoother*

~~1. Get buy-in.~~

# 2. Strategic innovation.



# Yard of the Future

A vision-setting roadmap by GE Transportation

Questions? Contact **adam.franco@ge.com** and **jeremiah.dirnberger@ge.com**
UPDATED NOVEMBER 2018

## BARE MINIMUM TO EXIST

While seemingly aggressive in timeline, these recommendations are all achievable and overdue—standard in surrounding industries. Our catching up with the new competitive world is not a question of how big of a market slice we maintain, but if we ourselves exist.

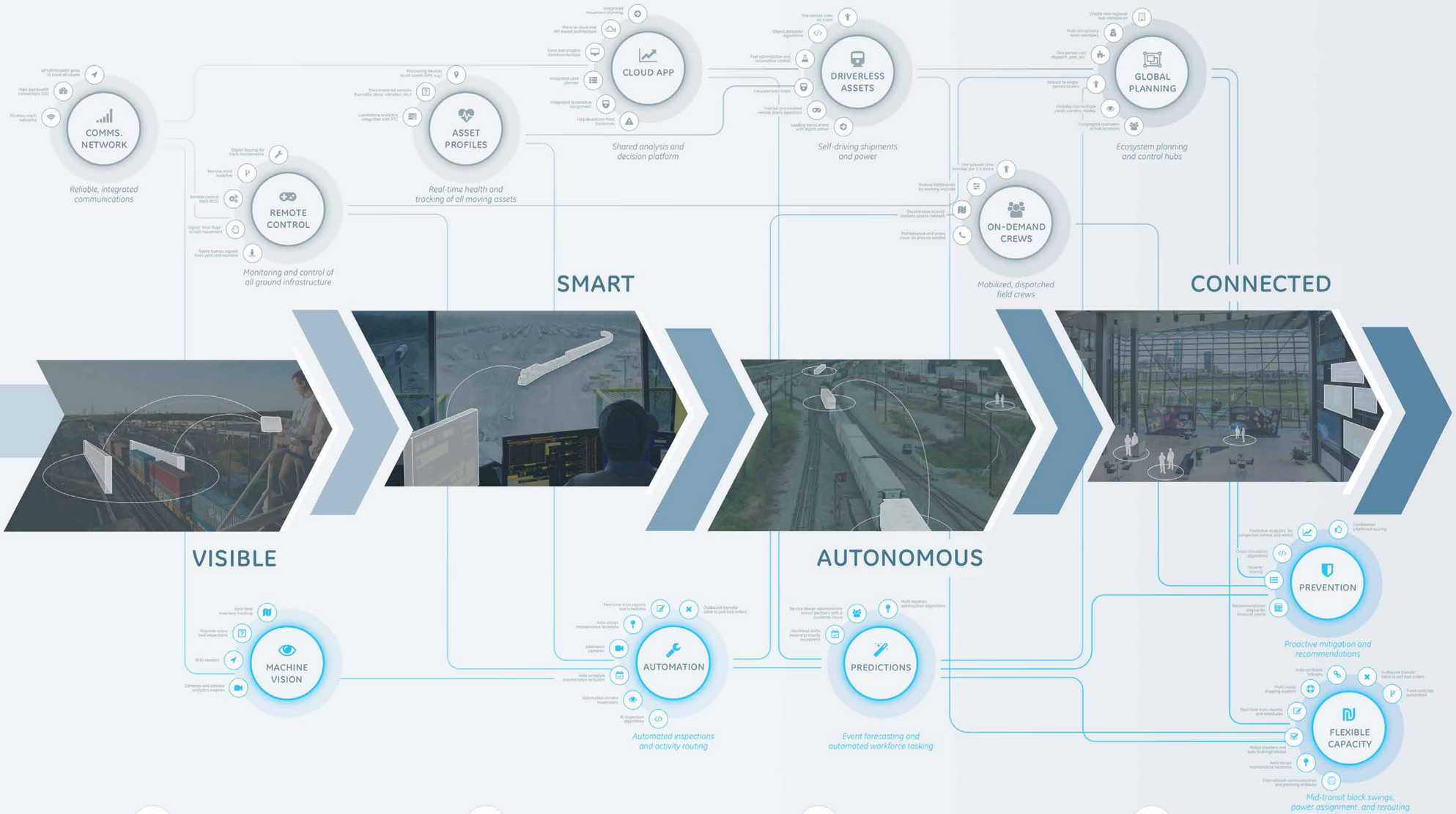
- Customers expect reliability and beyond
- Veteran workforce is rapidly retiring
- Many competitors are under-regulated
- Technology evolves faster than rail ever has

## *Everything is...*

## FORGING NEW OPPORTUNITIES

As we gain control of our ecosystem, we're able to not only compete, but to provide new value to our customers.

- Improved safety, reliability, and flexibility
- Reduced maintenance and downtime
- Diversified revenue via better-utilized capacity
- Boosted margins via superior customer service




## SUPPORTING INPUTS

### HUMANS AND THE VETERAN KNOWLEDGE BASE

As automation and AI are introduced, the role of humans shift from reactive to strategic. Veterans will play an important advisory role to a data-empowered strategic team.

### DATA INSIGHTS AND COLLABORATIVE HUBS

Sensors, data, analytics, and new predictive tools will support multi-disciplinary teams, working together on bigger problems. The workforce will likely shift into central planning environments.

### POLICY CHANGES AND LABOR RELATIONS

To level the competitive playing field and defend against under-regulated emerging technologies, a consistent effort will be required, to enable labor and technology changes.

### CARRIER AND MODE PARTNERSHIPS

The walls between "us" and "them" need to be torn down within today's connected world. Share data and compete as a uniform, customer-centered shipping experience.

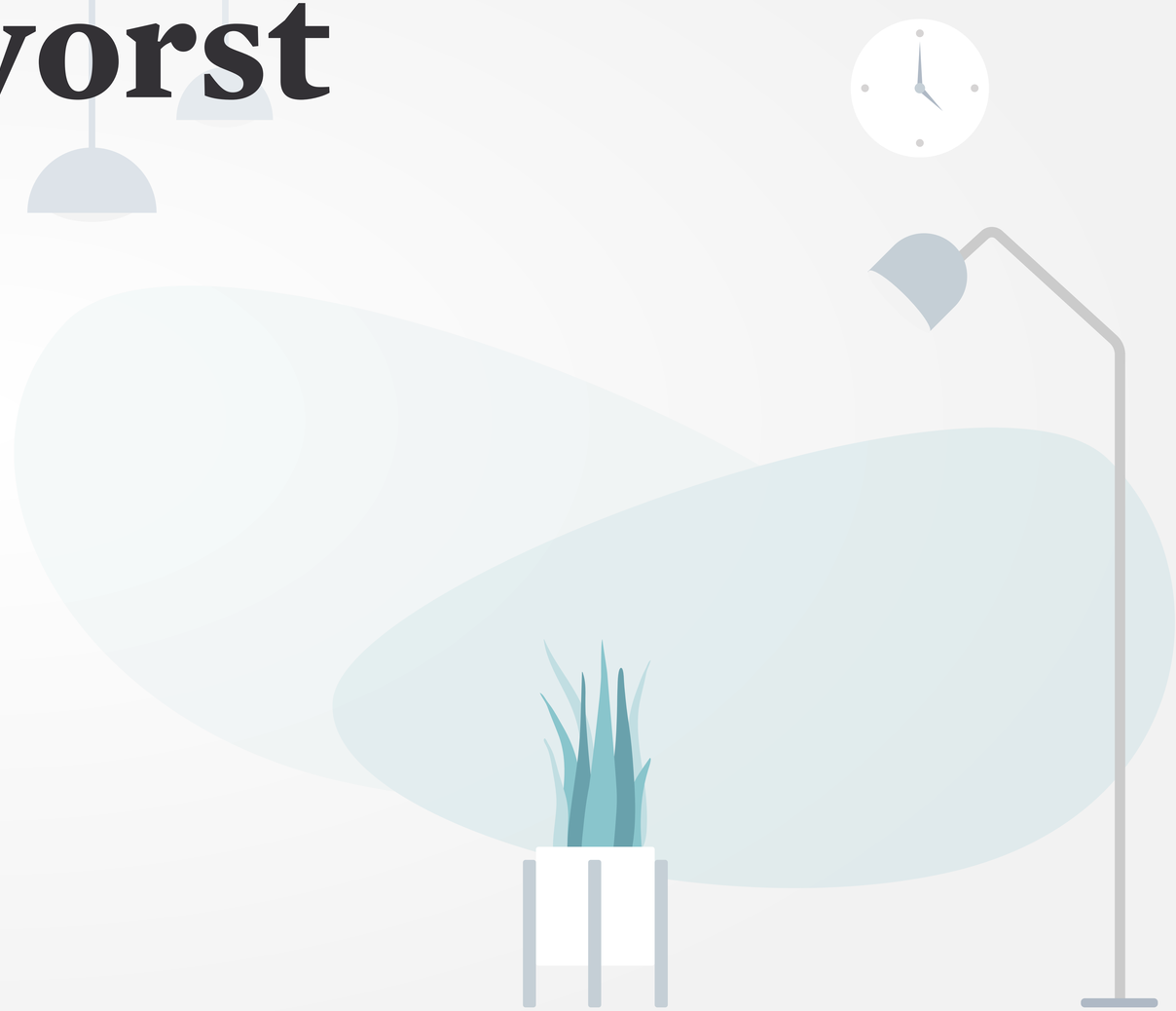
# 1. Understand current state

## Who are the players?
## How does work get done?



# 2. Imagine the worst

## Paint a picture of where you'll be if you do nothing



# 3. Set a vision

## Who are the future users?
## What are the core benefits?



# Typical site visit agenda...

1. **Tour**
2. **Workshop**—*vision & roadmap*
3. **Observe**—*validate what we heard*
4. **Lite synthesis**—*look for gaps before we leave*
5. **Recap**—*quick insight report & followup*
6. **Go home**

# Workshop!

1. Current. Worst. Vision.
2. Plot opportunities. Vote.
3. Document contributions.
4. What are we missing?

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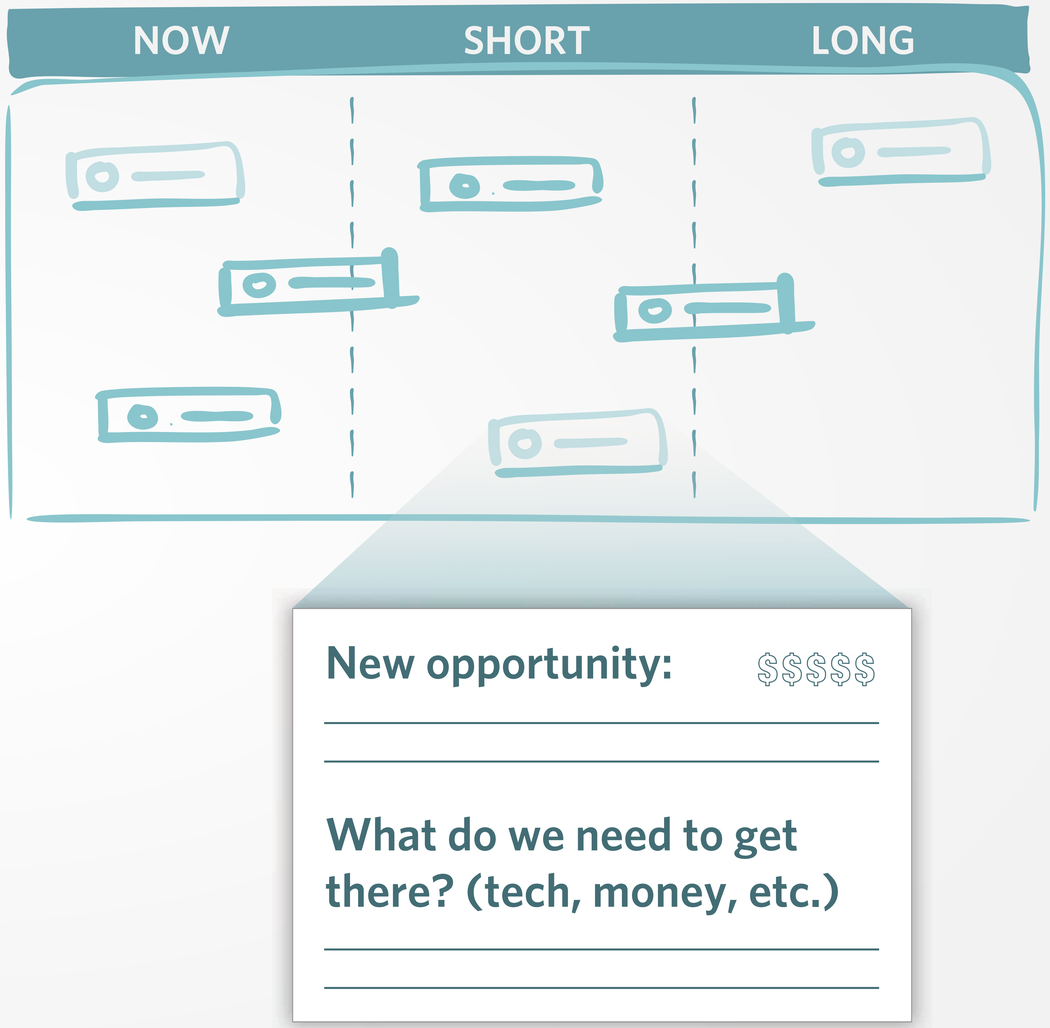

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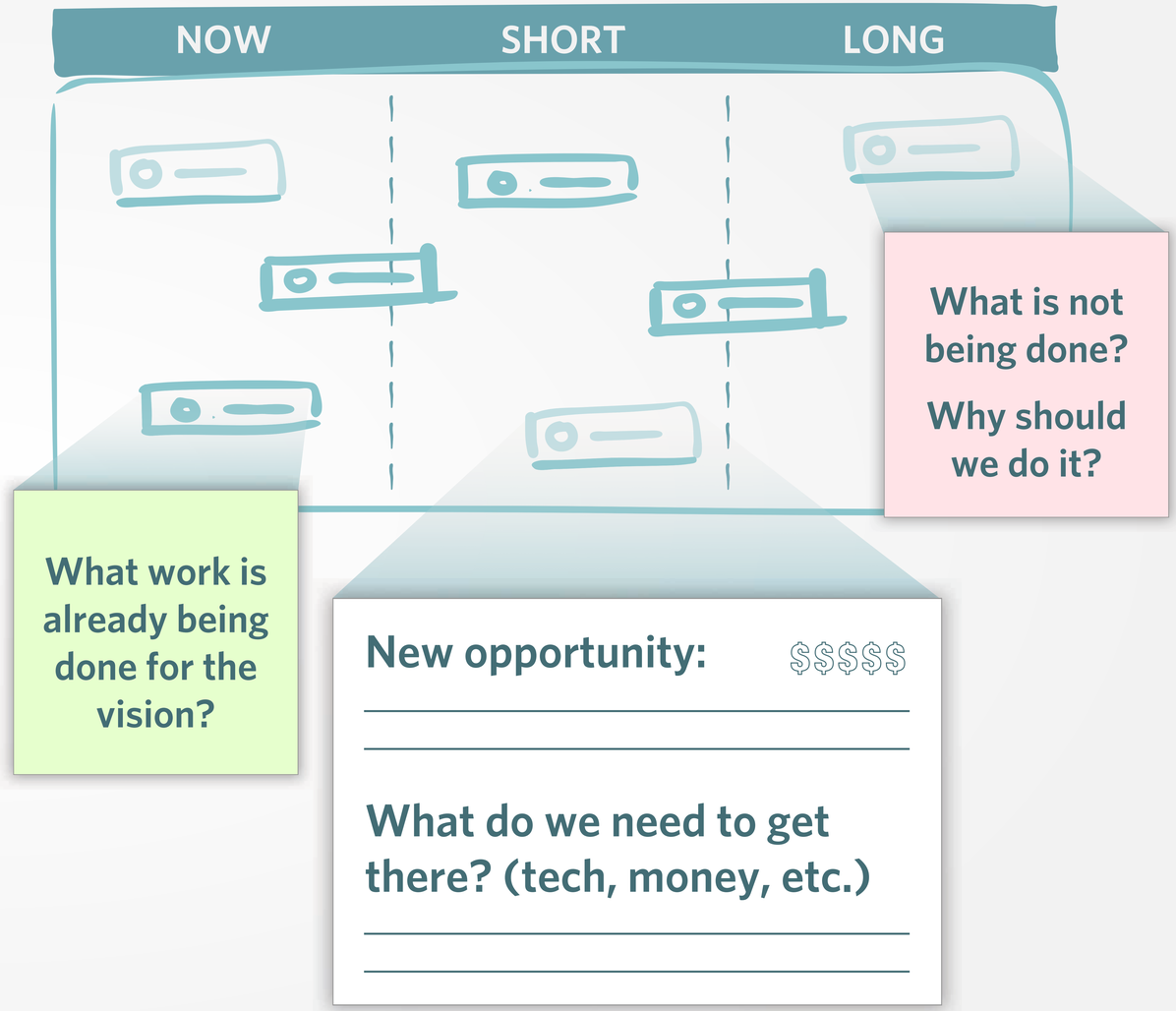


# 4. Visualize the plan

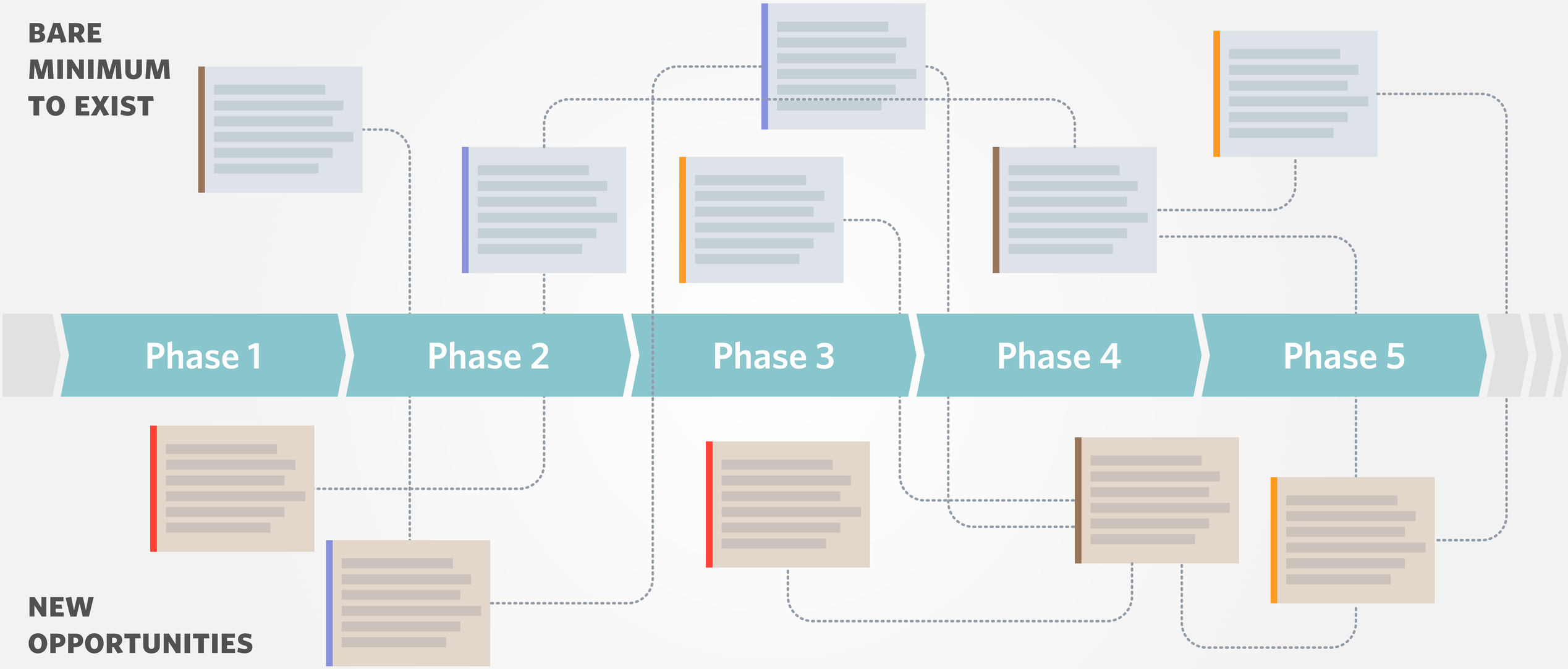
## Visual plan enables conversation & alignment



**Bare minimum to keep the lights on**

**Progress**, *not time* →

**New opportunities & growth**


BARE MINIMUM TO EXIST
Phase 1
Phase 2
Phase 3
Phase 4
Phase 5
NEW OPPORTUNITIES

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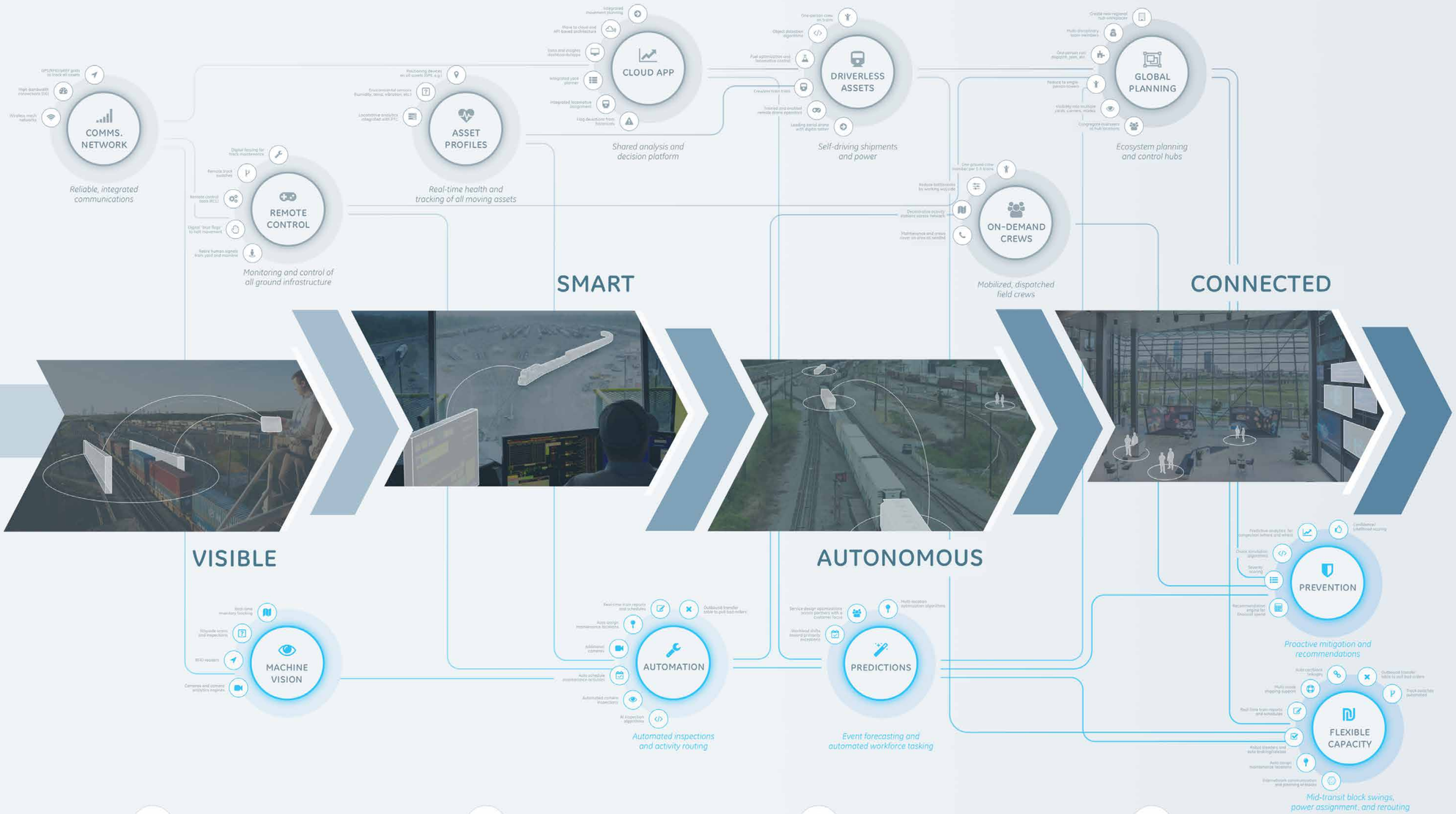


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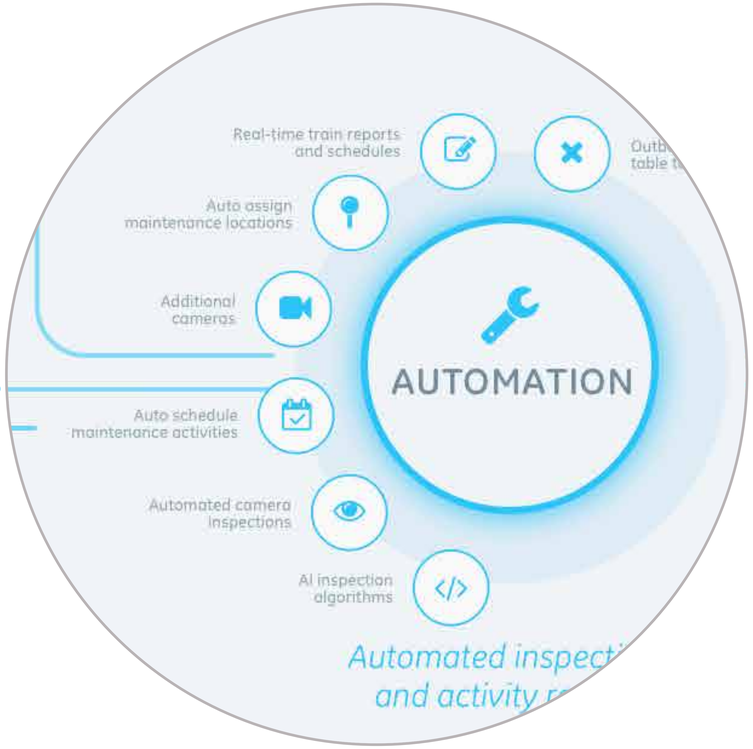
**BARE MINIMUM TO EXIST**

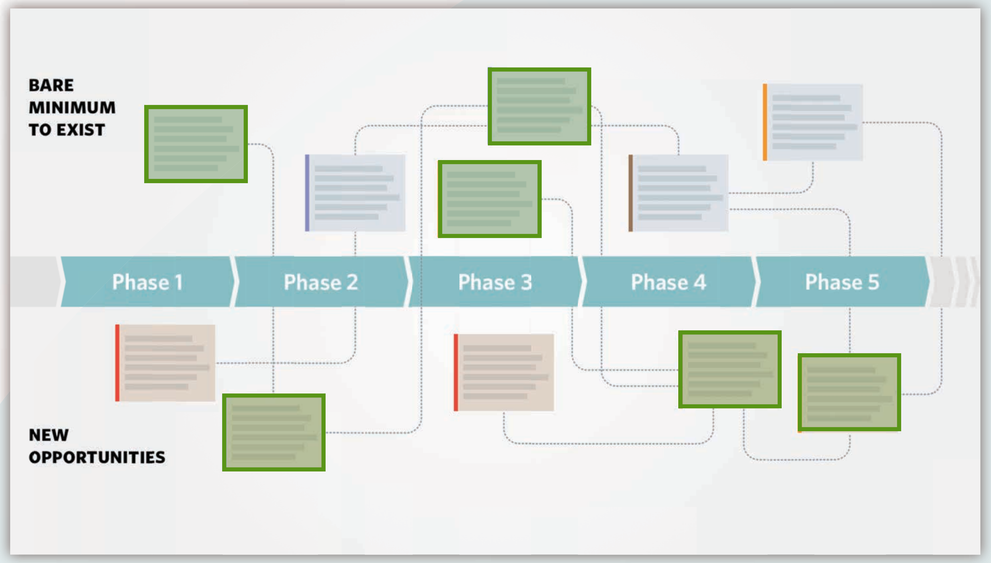



**FORGING NEW OPPORTUNITIES**



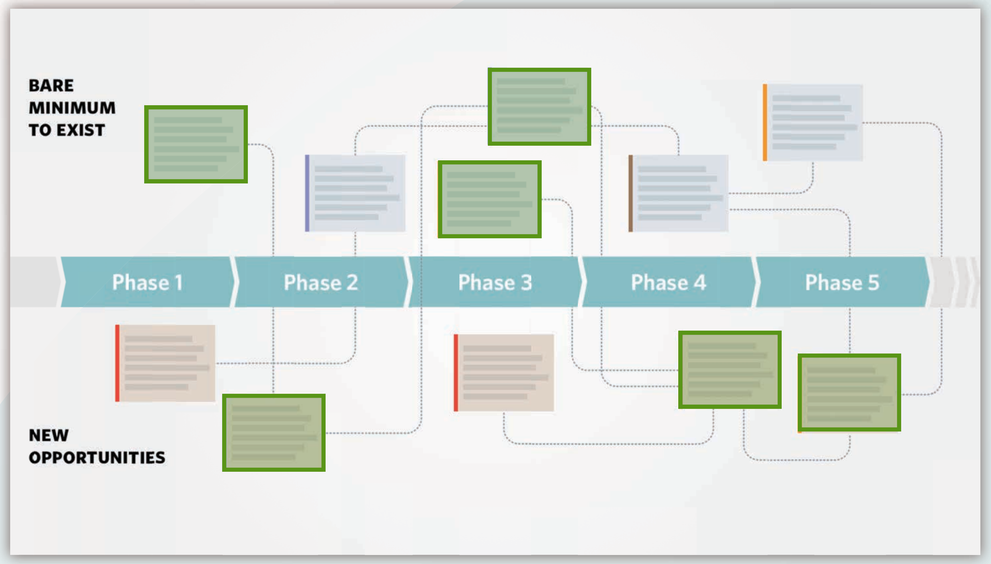
# 5. Choose path forward

This roadmap facilitates the conversation to choose which opportunities matter most, and which can be reprioritized



# 6. Validate

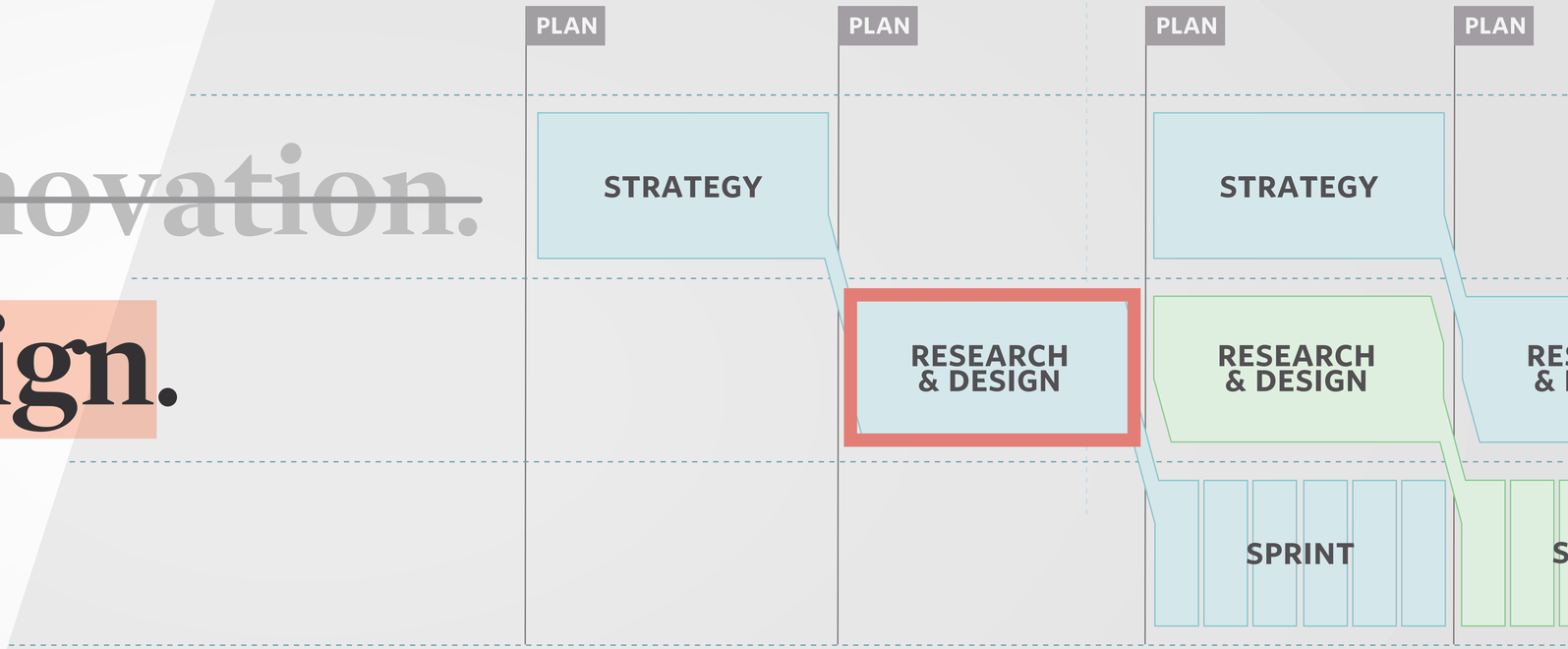
## Research landscape to validate strategic plan



~~1. Get buy-in.~~

~~2. Strategic innovation.~~

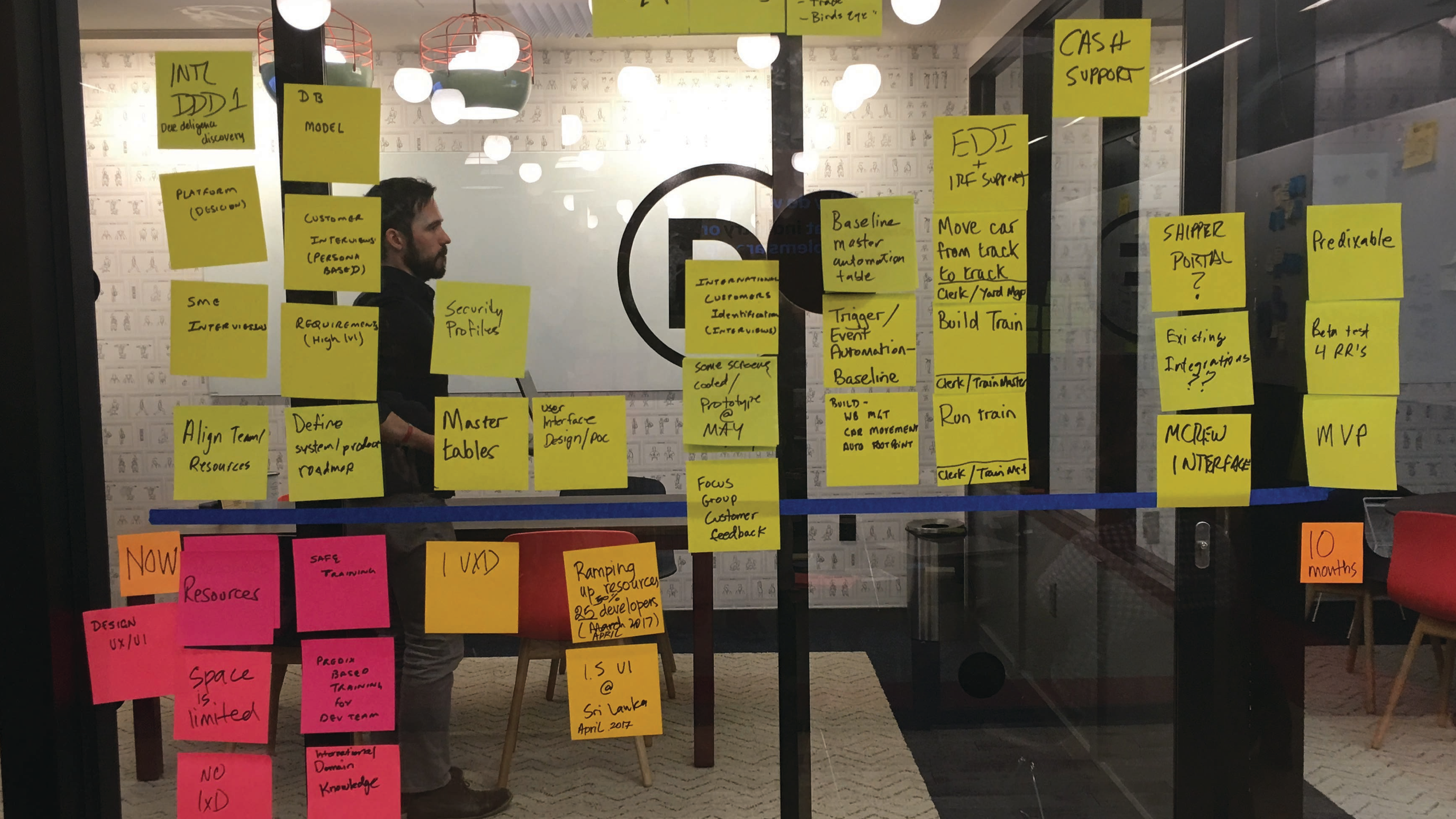
# 3. Tactical design.



# Get everyone on the same page

## How will we turn strategy into reality?




INTL DDD 1
Due diligence discovery
DB MODEL
PLATFORM (DESICION)
CUSTOMER INTERVIEWS (PERSONA BASED)
SME INTERVIEWS
REQUIREMENTS (High lvl)
Security Profiles
Align Team/ Resources
Define system/ product roadmap
Master tables
User Interface Design/ poc
INTERNATIONAL CUSTOMERS Identification (INTERVIEWS)
some screens coded/ Prototype @ MAY
Focus Group Customer feedback
Baseline master automation table
Trigger/ Event Automation- Baseline
BUILD - WB MGT CAR MOVEMENT AUTO FOOTPRINT
EDI + IRF SUPPORT
Move car from track to track
Clerk/ Yard Mgr
Build Train
Clerk/ Train Master
Run train
Clerk/ Train Mgt
CASH SUPPORT
SHIPPER PORTAL ?
Existing Integrations ??
MCREW INTERFACE
Predixable
Beta test 4 RR's
MVP
10 months
NOW
DESIGN UX/UI
Resources
Space is limited
NO IxD
SAFE TRAINING
PREDIX BASED TRAINING for DEV TEAM
Interactions/ Domain Knowledge
1 UXD
Ramping up resources, 25 developers (March APRIL 2017)
1.5 UI @ Sri Lanka April 2017


Tasks, Features, Milestones, etc.
Time →
Blockers

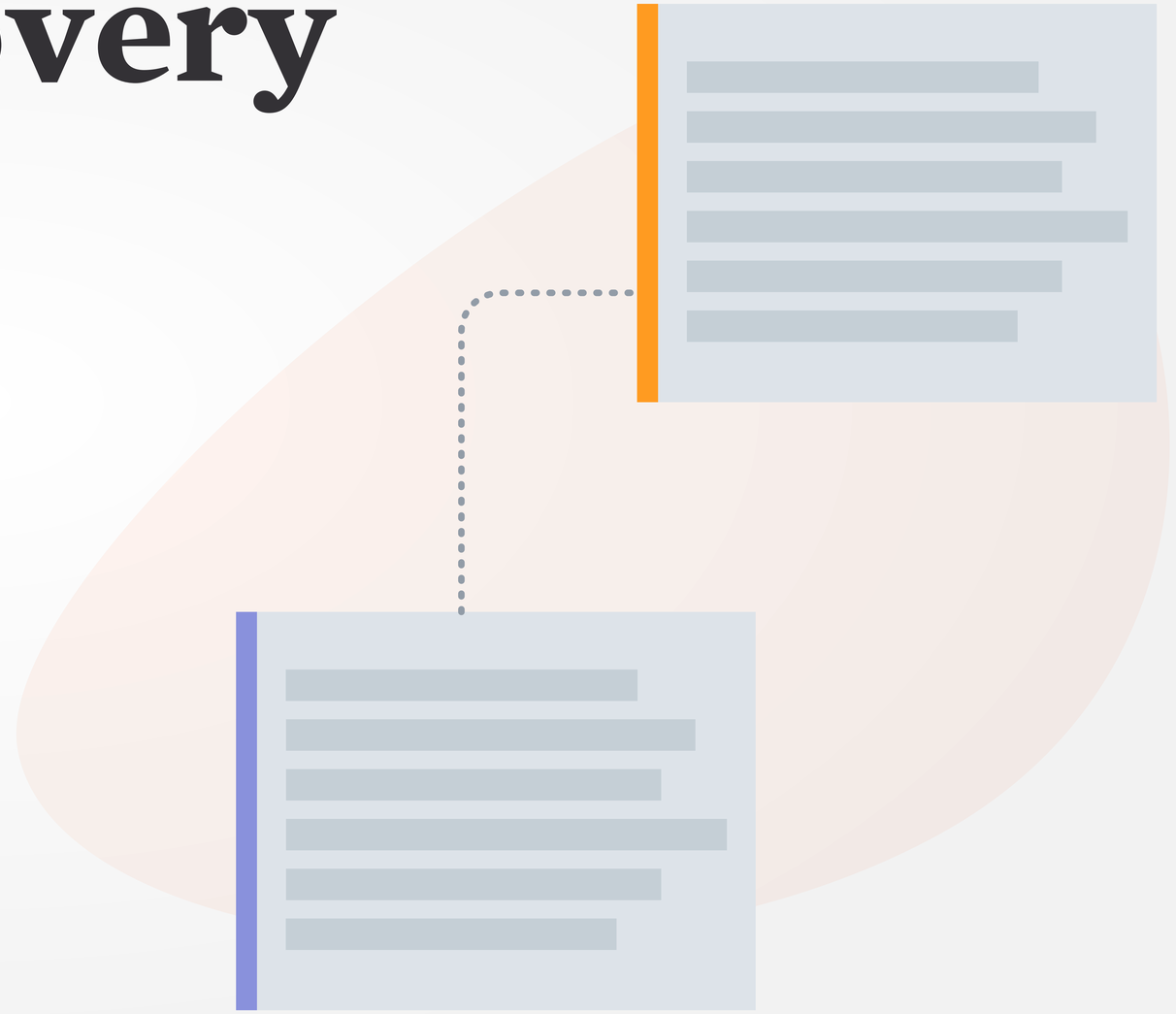
# 1. Quarterly planning

## The effectiveness of your strategy is proportional to how many people believe it



# 2. Focused discovery

## Focus on process, relationships, & data



# 3. Iterative design

## User involvement leads to increased FOMO

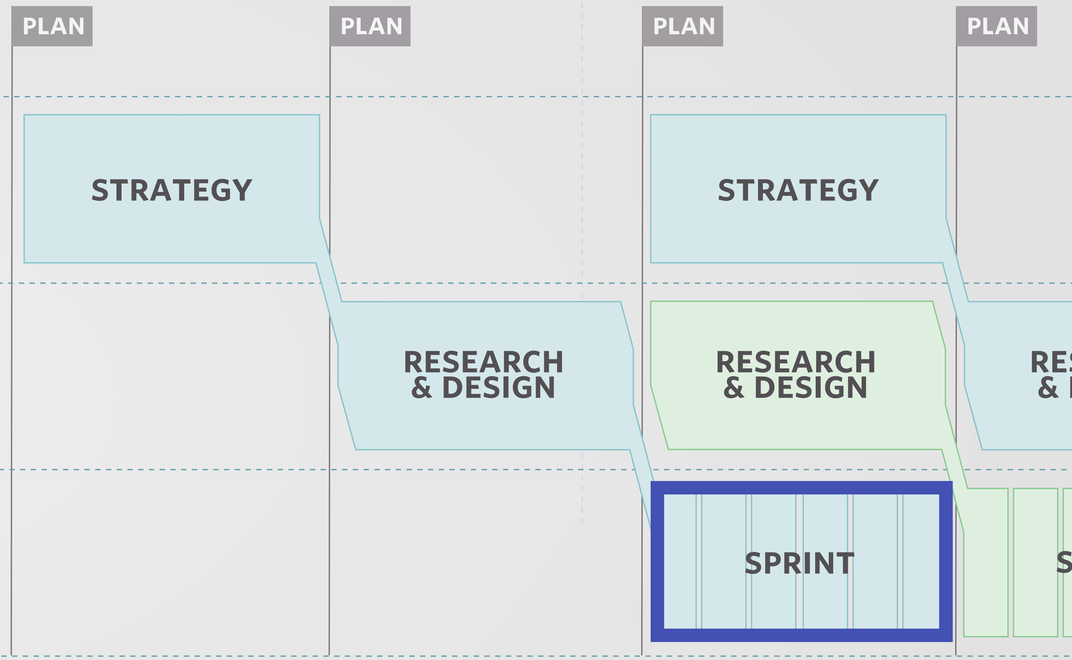


~~1. Get buy-in.~~

~~2. Strategic innovation.~~

~~3. Tactical design.~~

4. Agile execution.



# Get everyone on the same page

## Quarterly planning sessions keeps everyone aligned



# Celebrate success

## Sprint demos aren't just for engineers



~~1. Get buy-in.~~

~~2. Strategic innovation.~~

~~3. Tactical design.~~

~~4. Agile execution.~~

# 5. Repeat.



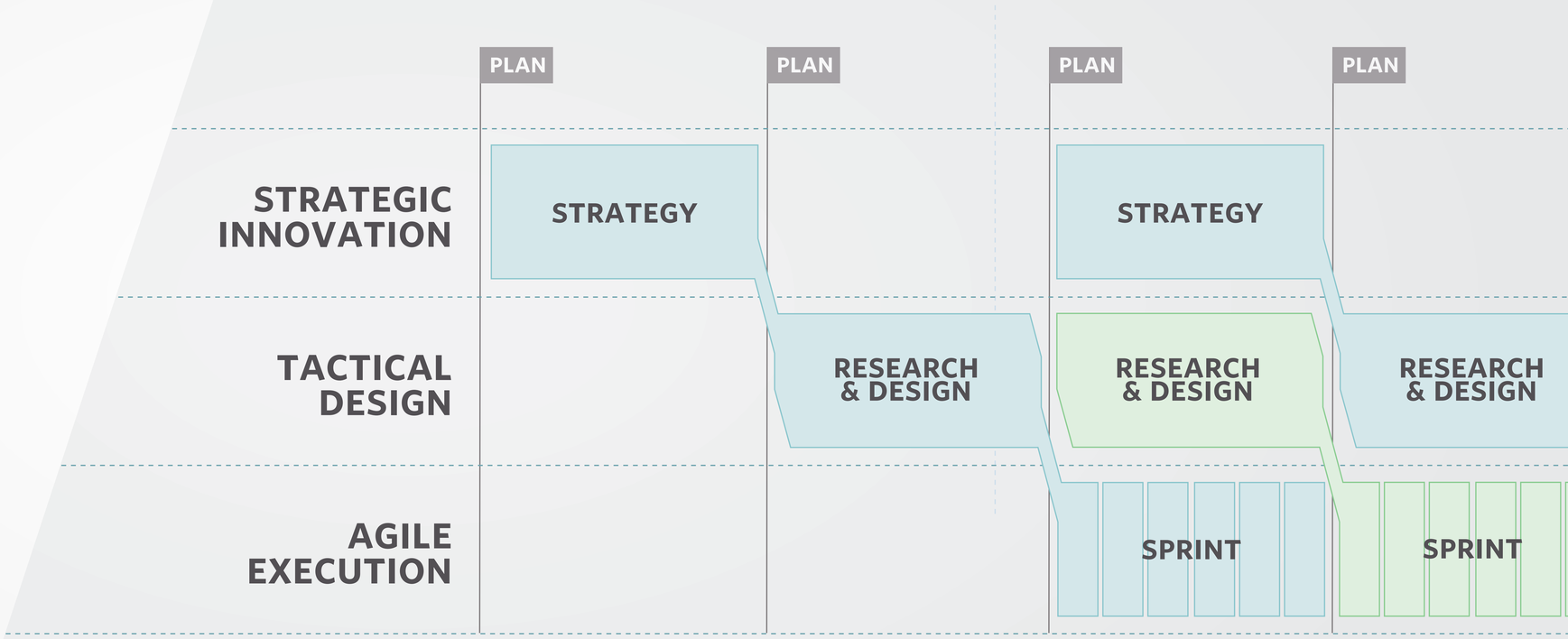

@rwbaker #uxstrat

# Repeat...

**6mo** Strategy

**3mo** Tactical

**2wk** Celebrate success



**Simplify the complex.**
**Bite-size chunks.**
**Built-in exit ramps.**
**Transparent.**

# Simplify the complex.

*Clarify all assumptions, especially the ones you think are obvious*

# Bite-size chunks.

*Quarterly planning allows for team alignment & sanity checks*

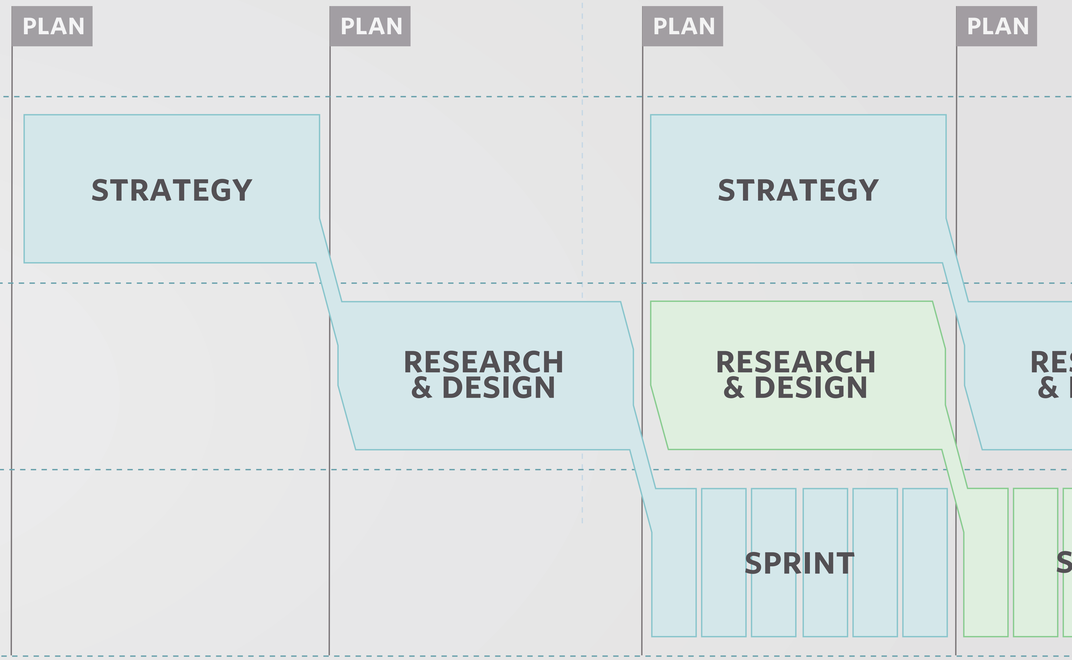
# Built-in exit ramps.

*Collectively validate & optimize strategy every 6 months*

# Transparent.

*The effectiveness of your strategy is proportional to how many people believe it*

1. Get buy-in.
2. Strategic innovation.
3. Tactical design.
4. Agile execution.
5. Repeat.



# Thanks!

## 2-4pm Mini-workshop

Presentation download:
http://rwbaker.com/engineering-focused-ux

@rwbaker #uxstrat

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