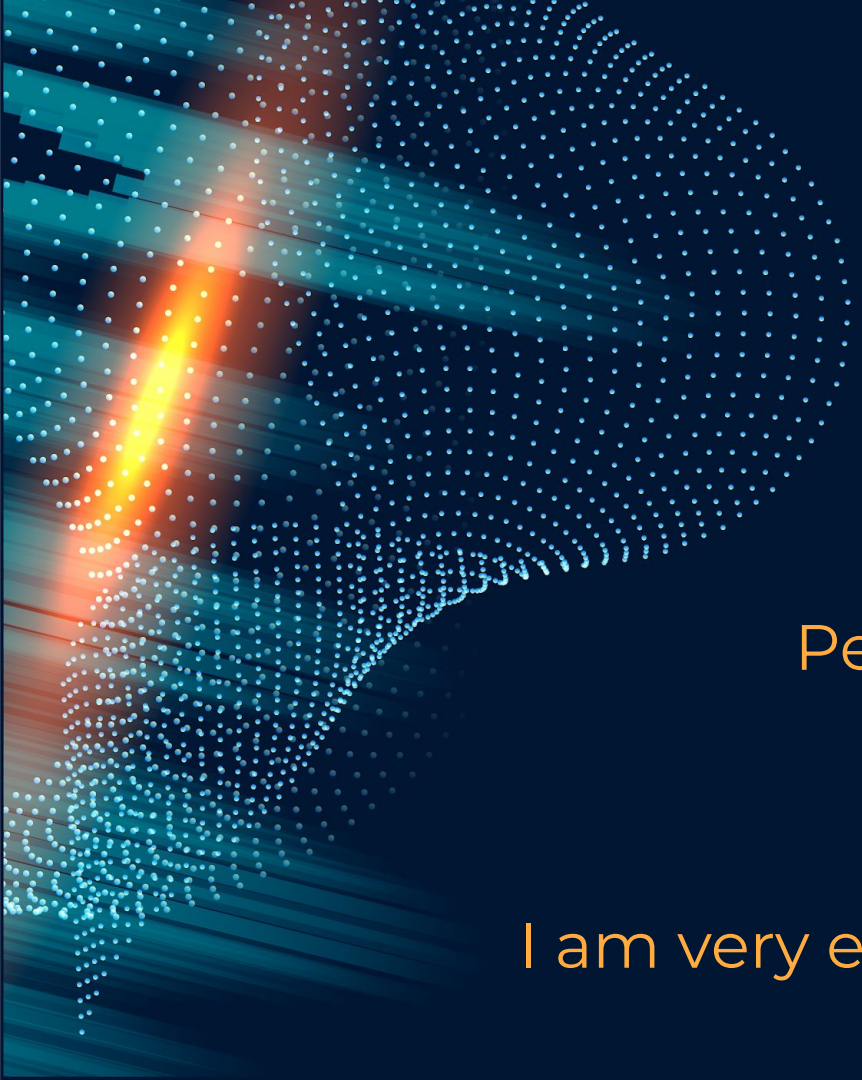
PLEASE BE SEATED

WE WILL BEGIN SHORTLY

TECH TALK - Quality

Terry Rosen
Educator, Trainer, CQE, CSSGB, LAPM



WHY AM I HERE?

People don’t buy what you do.
They buy why you do it.
-Simon Sinek

I am very enthusiastic about quality.

WHY I'M HERE!

- I'm passionate about quality improvement
- I enjoy combining my study of quality with my expertise in teaching/training
- To create change for the better
- To be of service

MY GOAL TODAY

- To Learn and Have Fun
- They are the same thing

WHAT IS A QUALITY MINDSET?

- Learning, by an organization
  - Learning how to be
  - Better
  - Faster
  - Cheaper
- Learning **WHAT** to change
- Learning **HOW** to change
- Learning **WHY** to change

WHAT ARE YOU ALLOWED TO CHANGE?

Ryan Porter

WHAT IS A QUALITY MINDSET?

Juran taught us quality is TWO things

Good Quality

- Features / Delighters
- Reasons to buy
- Reasons to tell your friends

Bad Quality

- Deficiencies / Defects
- Reasons to return a product
- Reasons to tell your friends

WHAT IS A QUALITY MINDSET?

Juran brought clarity to this

Resulting in

Features

- Customer satisfaction
- Increased market share
- Premium pricing
- Higher sales income
- Higher quality costs more

Freedom from Defects

- Reduced rework, waste
- Reduced warranty charges
- Reduced dis-satisfaction
- Reduced field failures
- Reduced inspection/testing
- Higher quality costs less

ORIGINS OF QUALITY SCIENCE

SHEWHART

1924

Scientific approach
Creates first control charts
Statistical Quality Control
Trains Juran and Deming
Applies valid reasoning *
Discerns common cause from special cause

Deming

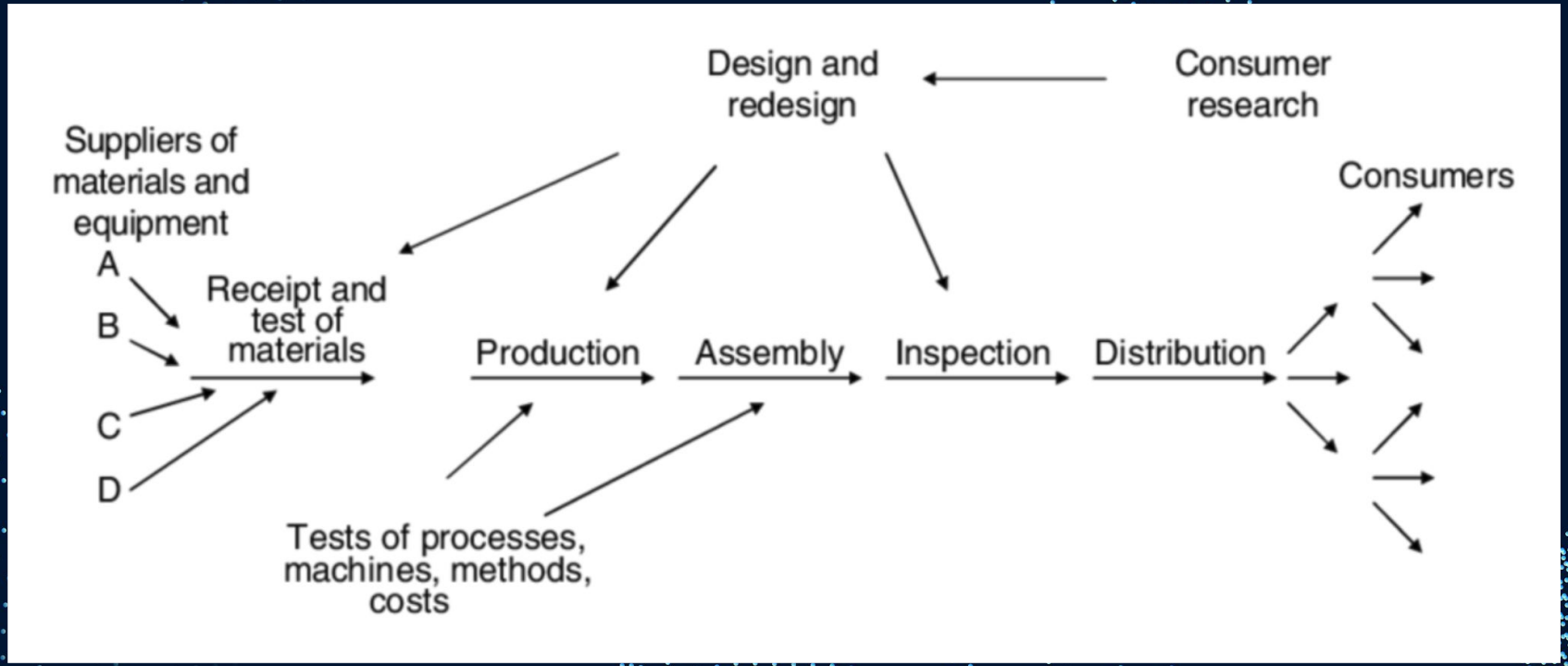
Helps Japan perform their first census since WW2

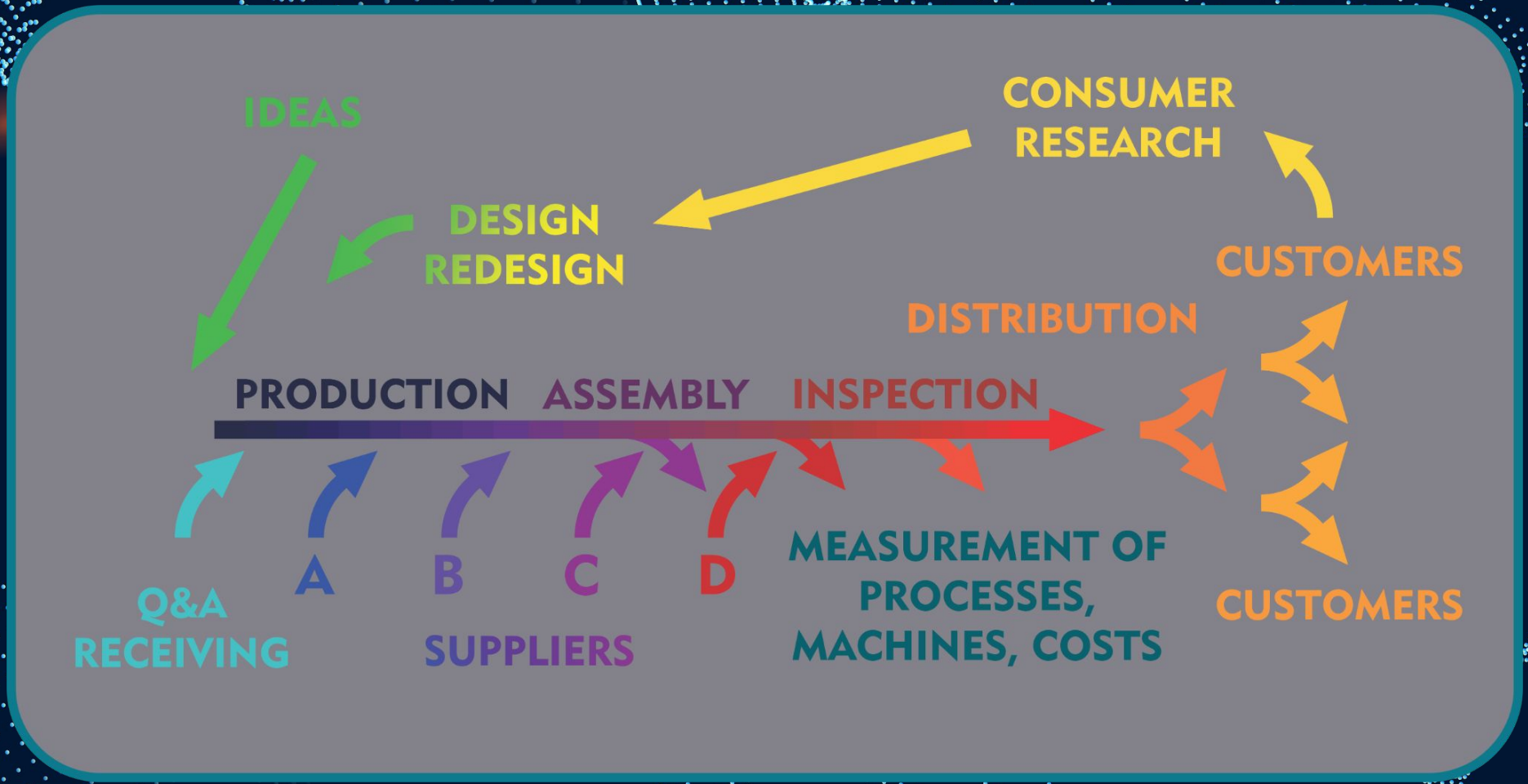
Juran

Lectures American industry on quality control

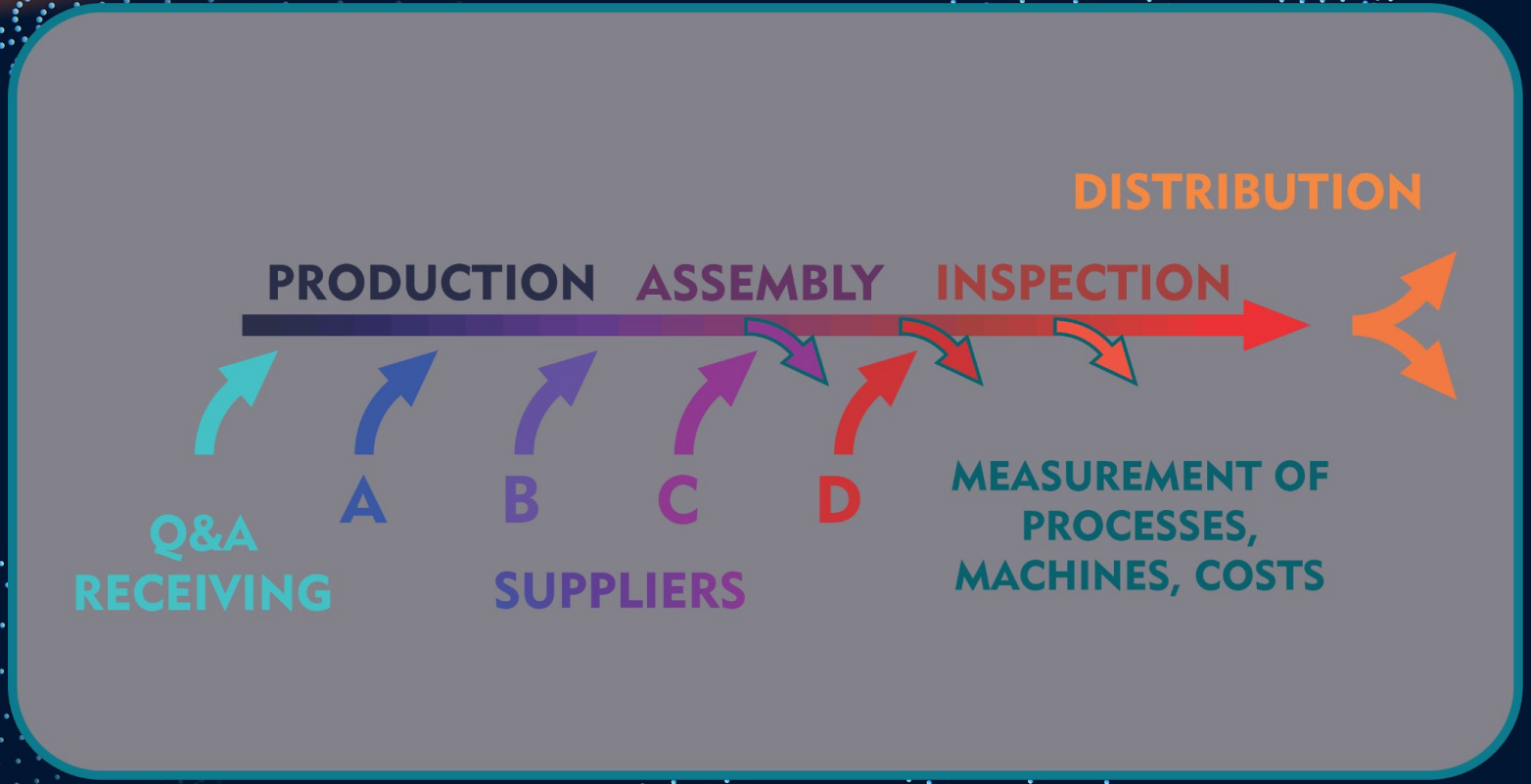
Deming and Juran both invited to Japan to train top management and engineers in quality

Deming started here
Production viewed as a system

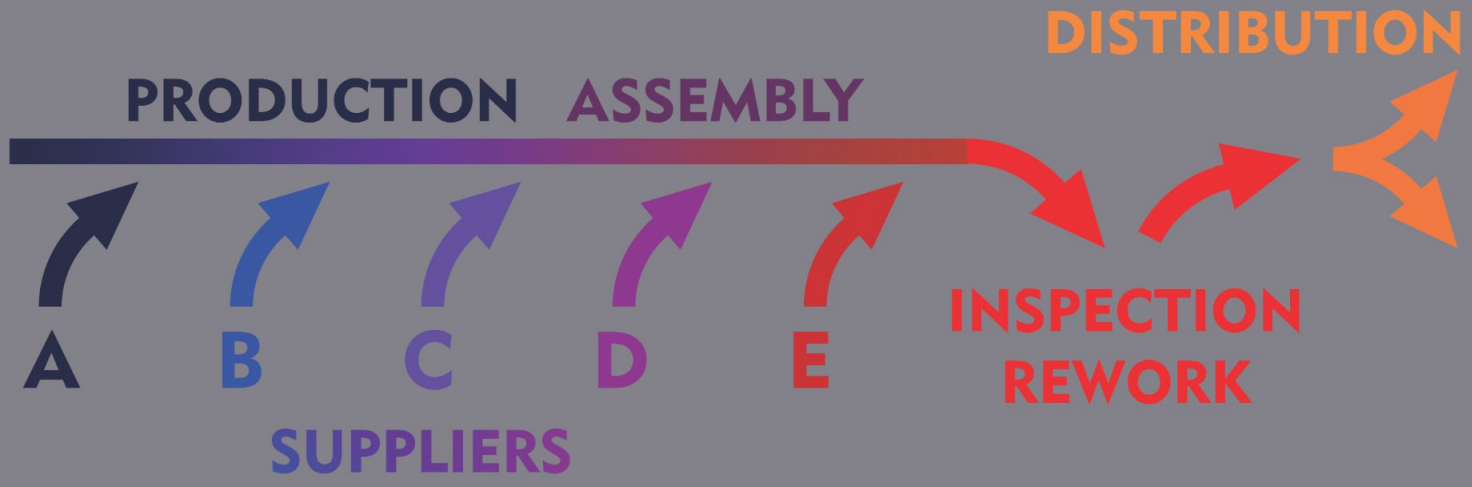



IDEAS
CONSUMER RESEARCH
DESIGN REDESIGN
CUSTOMERS
DISTRIBUTION
PRODUCTION
ASSEMBLY
INSPECTION
A
B
C
D
Q&A RECEIVING
SUPPLIERS
MEASUREMENT OF PROCESSES, MACHINES, COSTS
CUSTOMERS

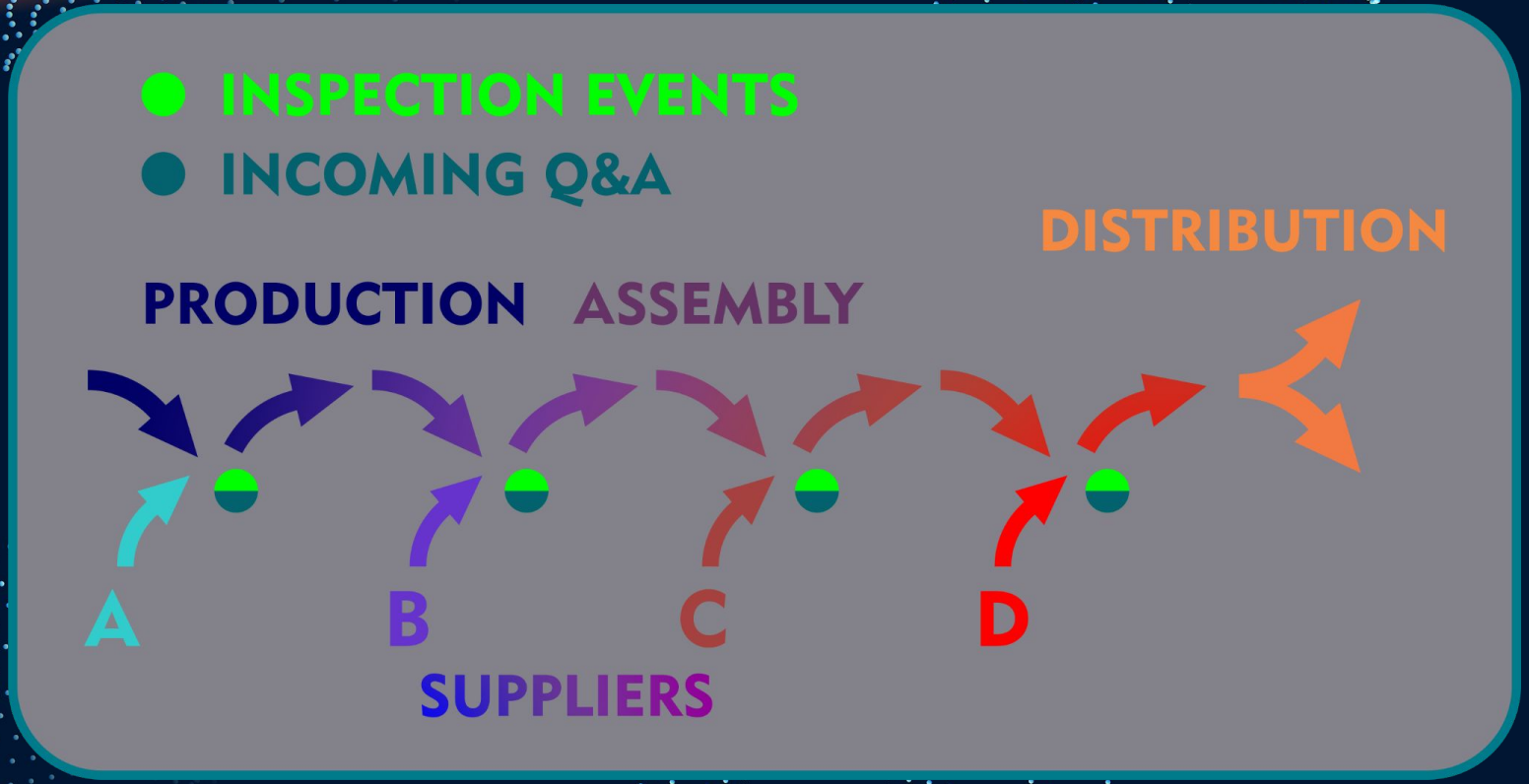
Production Focus



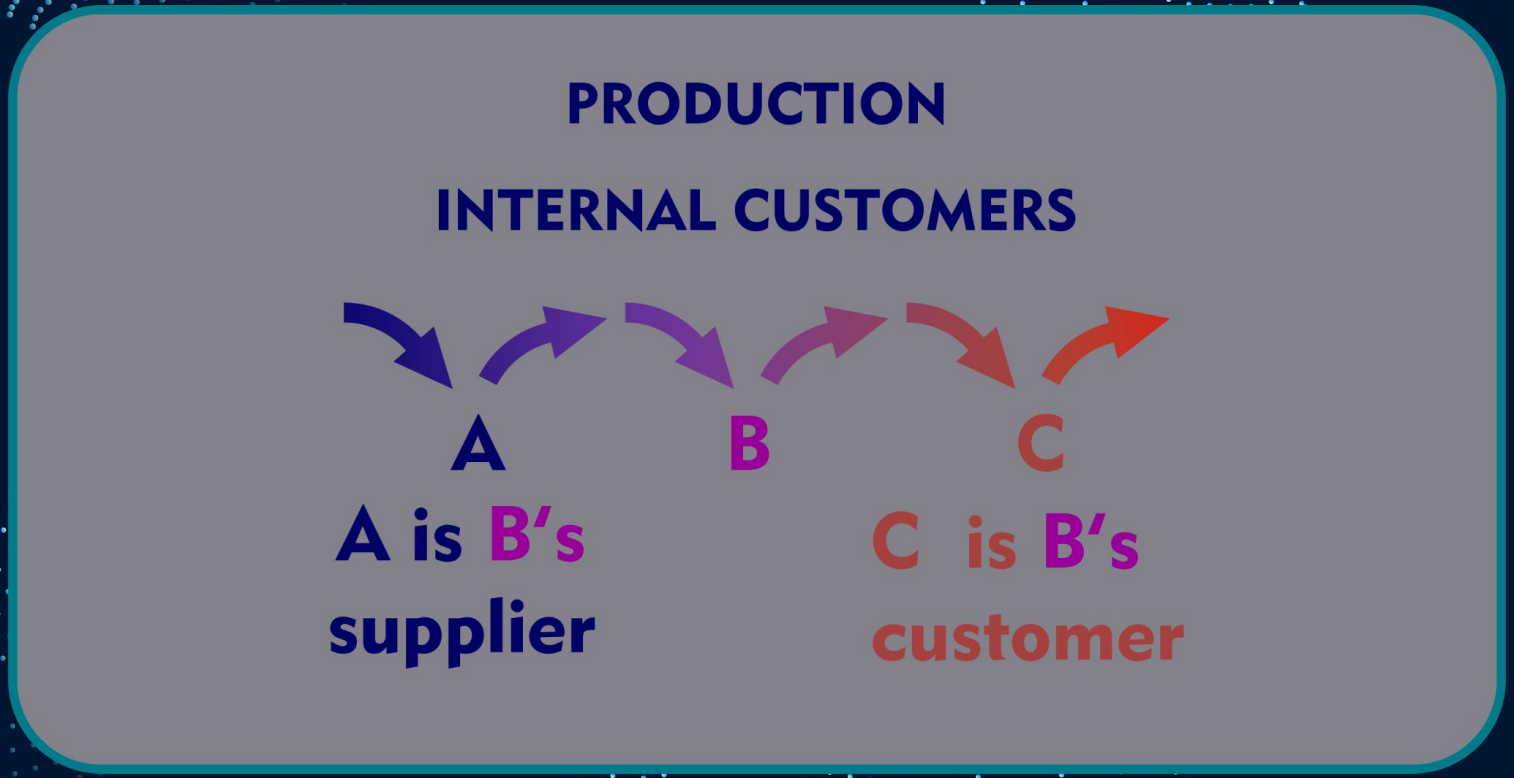
Production Focus - Old School



Production Focus - Japan Normalized

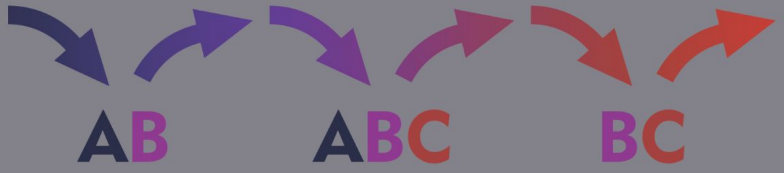


Production Focus
Each station as supplier/customer



Japan also Normalized Widespread cross training

PRODUCTION
CROSS TRAINING



Each worker having multiple skills makes production far more agile.

HOW DID DEMING GET THE JAPANESE ON SAME PAGE?

Maybe he didn't. Consider...

They had already faced their ultimate crisis.
The Japanese understood they had problems.
They invited many of America's experts to advise them.
They were dedicated to listening carefully.
They organized all their industry leaders to study improvement.
Then they had their top level managers and engineers learn it.
From the top down, they learned improvement science and passed it down, training everyone in industry.
The Japanese got themselves on the same page.

How do I do it?

I start with a process we all know

Rolling out of bed - as a project

Work Breakdown Structure

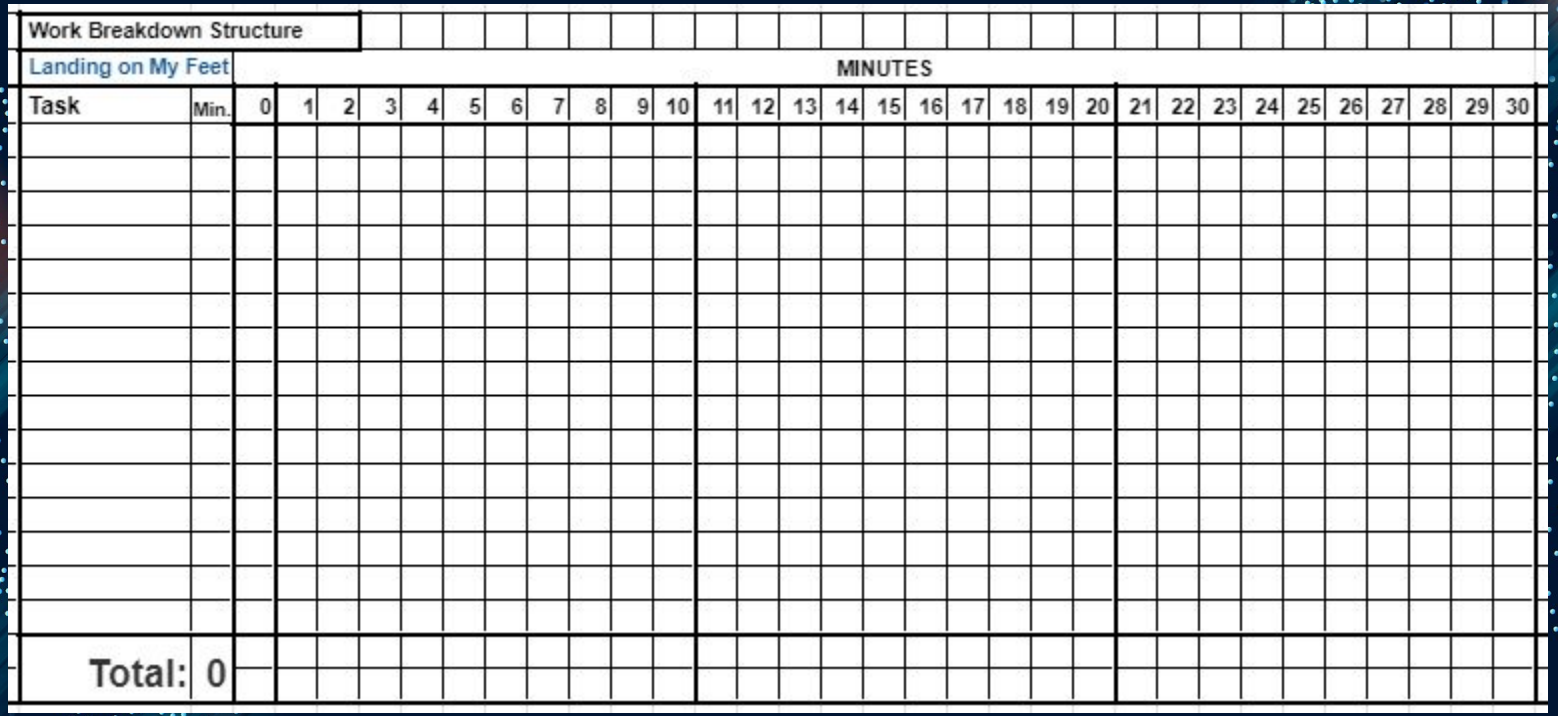
- It's a process
- We all do it every day
- It's usually the same
- It's easily measured
- Puts it in writing

Basic Gantt Chart

- Simple to create
- Visual
- Separates steps
- Illustrates time
- Standardizes the process
- Helps reveal waste

Once completed, everyone sees processes in the same way.
Everyone also sees how easy they are to change.

ROLLING OUT OF BED



ROLLING OUT OF BED

Work Breakdown Structure

Landing on My Feet

MINUTES

Task	Min.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Wake up																																										
Go to the bathroom																																										
Brush teeth																																										
Shower																																										
Shave																																										
Final prep																																										
Choose clothes																																										
Head to kitchen																																										
Greet Dogs																																										
Prepare coffee																																										
Eat Banana, incl. for Dogs																																										
Breakfast Sandwiches																																										
Dispose of trash																																										
Empty Dishwasher																																										
Go to my work area																																										
Total:	0																																									
	SUM																																									

ROLLING OUT OF BED

Work Breakdown Structure

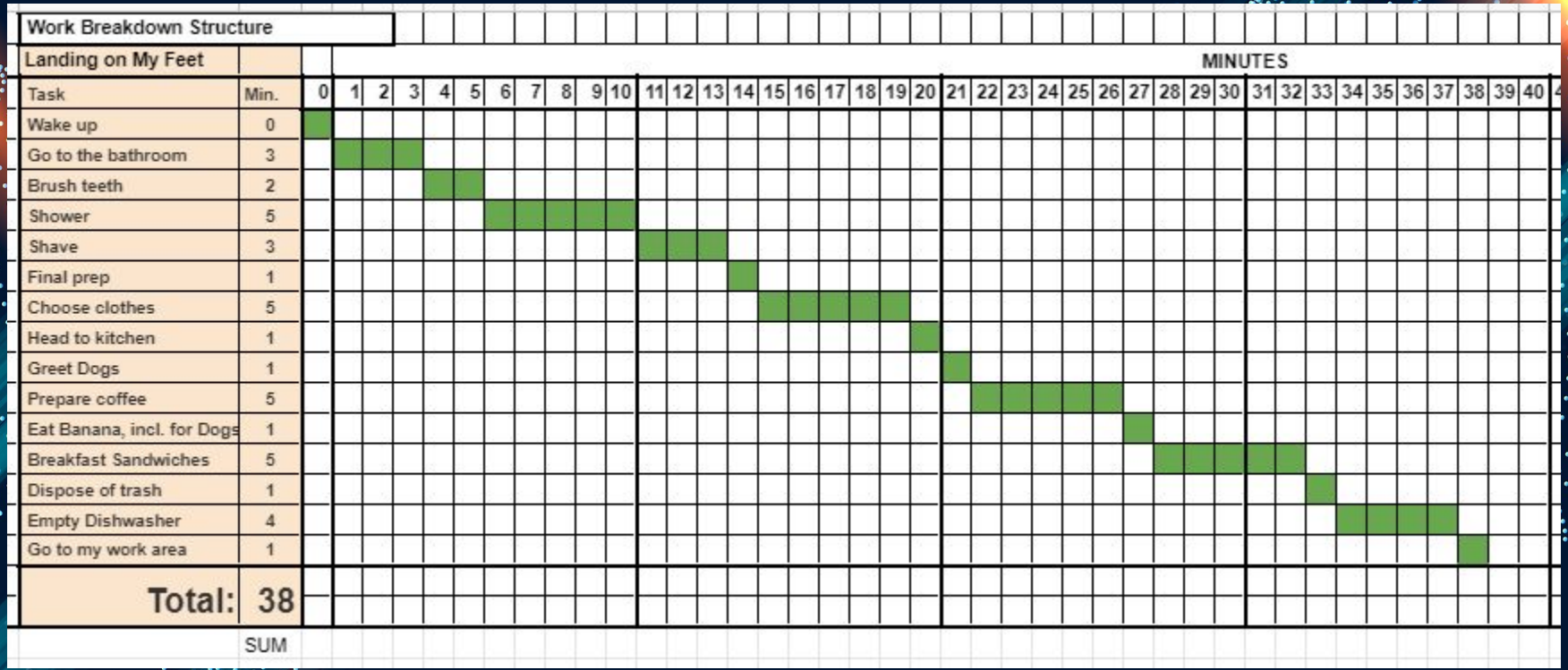
Landing on My Feet

MINUTES

Task	Min.
Wake up	0
Go to the bathroom	3
Brush teeth	2
Shower	5
Shave	3
Final prep	1
Choose clothes	5
Head to kitchen	1
Greet Dogs	1
Prepare coffee	5
Eat Banana, incl. for Dogs	1
Breakfast Sandwiches	5
Dispose of trash	1
Empty Dishwasher	4
Go to my work area	1
Total:	**38**

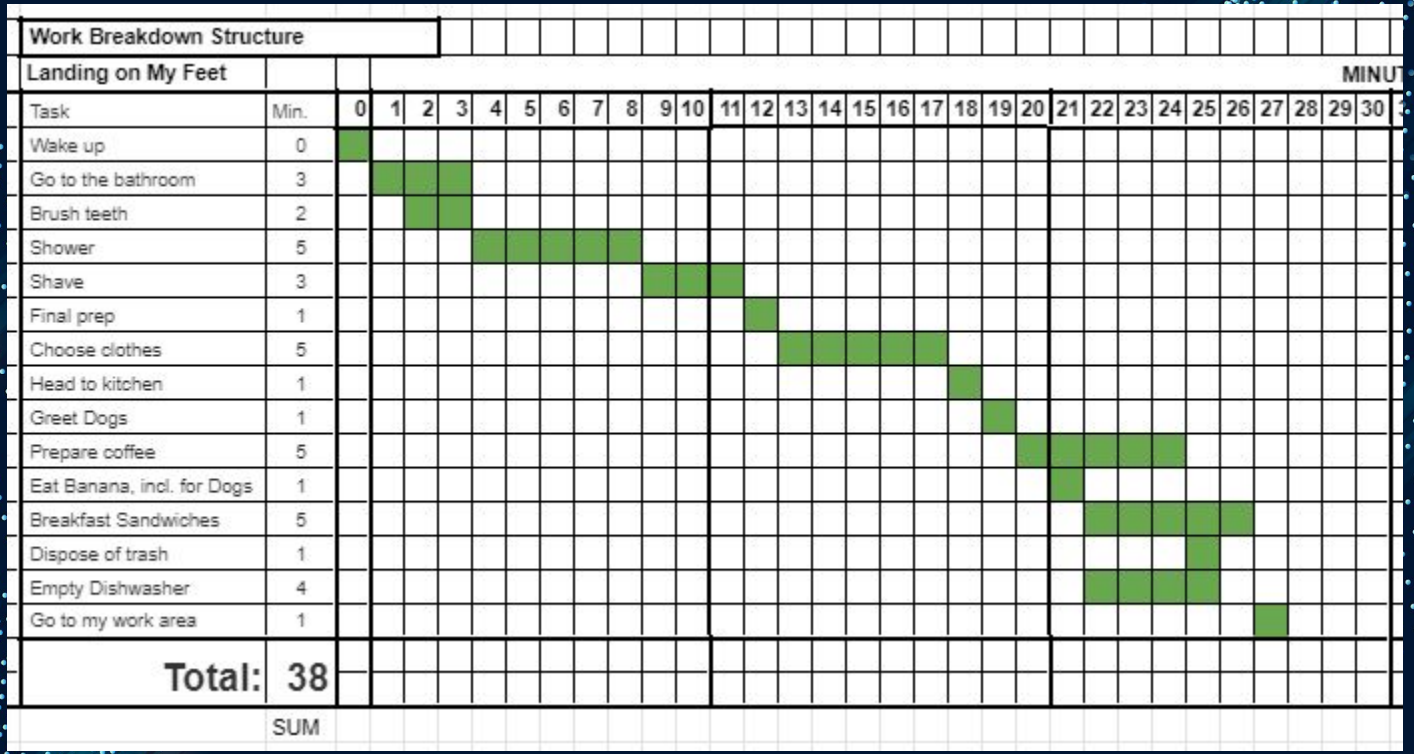
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

ROLLING OUT OF BED



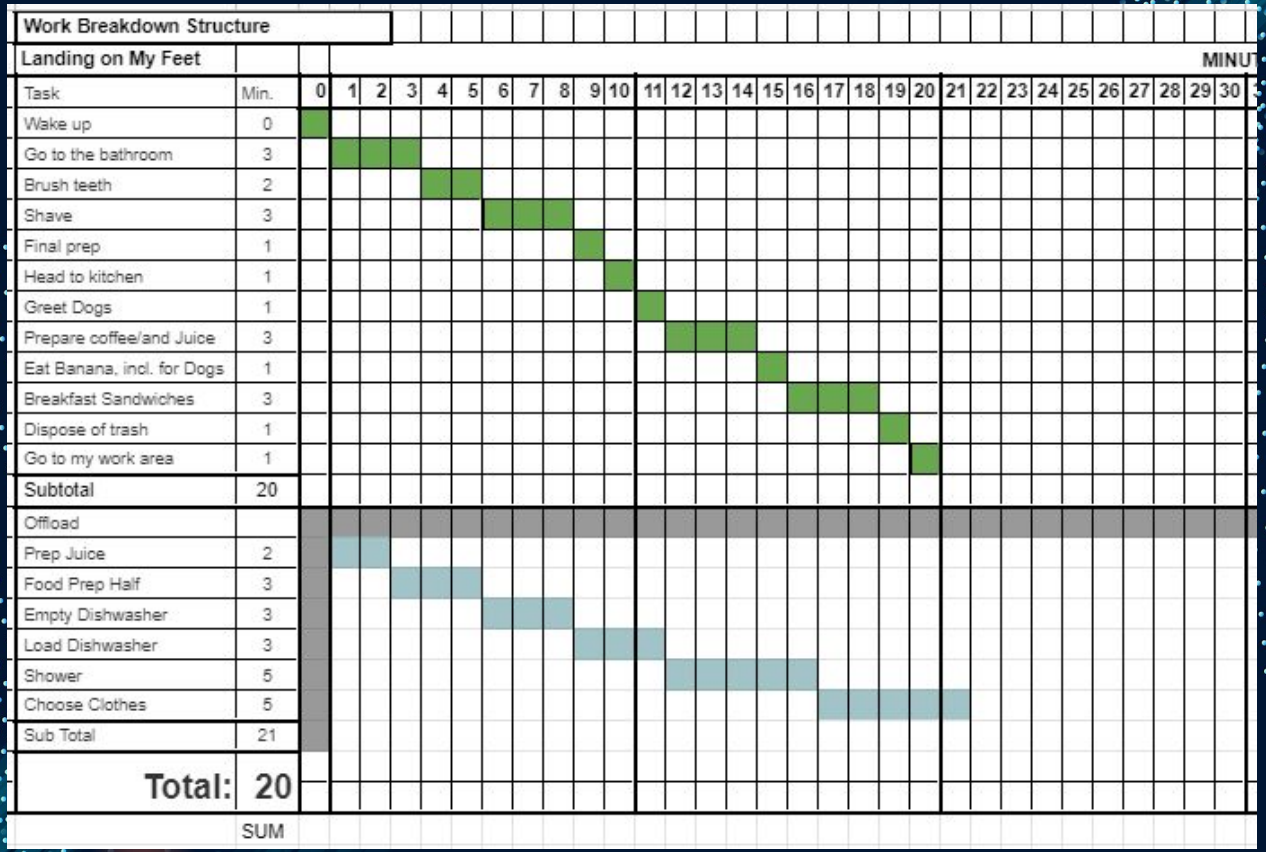
Work Breakdown Structure	
Landing on My Feet	
Task	Min.
Wake up	0
Go to the bathroom	3
Brush teeth	2
Shower	5
Shave	3
Final prep	1
Choose clothes	5
Head to kitchen	1
Greet Dogs	1
Prepare coffee	5
Eat Banana, incl. for Dogs	1
Breakfast Sandwiches	5
Dispose of trash	1
Empty Dishwasher	4
Go to my work area	1
Total:	38
	SUM

ROLLING OUT OF BED



Work Breakdown Structure	
Landing on My Feet	
Task	Min.
Wake up	0
Go to the bathroom	3
Brush teeth	2
Shower	5
Shave	3
Final prep	1
Choose clothes	5
Head to kitchen	1
Greet Dogs	1
Prepare coffee	5
Eat Banana, incl. for Dogs	1
Breakfast Sandwiches	5
Dispose of trash	1
Empty Dishwasher	4
Go to my work area	1
Total:	38
	SUM

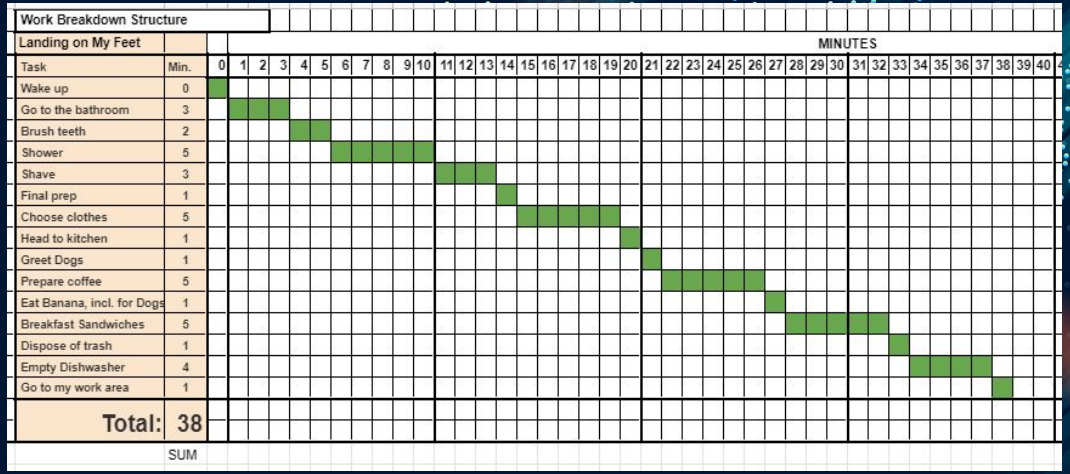
ROLLING OUT OF BED



Work Breakdown Structure	
Landing on My Feet	
Task	Min.
Wake up	0
Go to the bathroom	3
Brush teeth	2
Shave	3
Final prep	1
Head to kitchen	1
Greet Dogs	1
Prepare coffee/and Juice	3
Eat Banana, incl. for Dogs	1
Breakfast Sandwiches	3
Dispose of trash	1
Go to my work area	1
Subtotal	20
Offload	
Prep Juice	2
Food Prep Half	3
Empty Dishwasher	3
Load Dishwasher	3
Shower	5
Choose Clothes	5
Sub Total	21
Total:	20
	SUM

Why Gantt?

So many reasons



- Visual Clarity
- Time Clarity
- Defines Roles
- Approximates CTQ
- Timeline reminder
- Reveals Waste
- Reveals non-value added work (waste)
- Clarifies consequences
- Every improvement project is a **project**
- Reveals many benefits of process improvement
- Reinforces one's role in the Production Focus flow diagram
- Every process is a project

How do we improve a process?

PDCA

PLAN Figure out what to try

DO Try it - (a few times)

CHECK Measure what happened

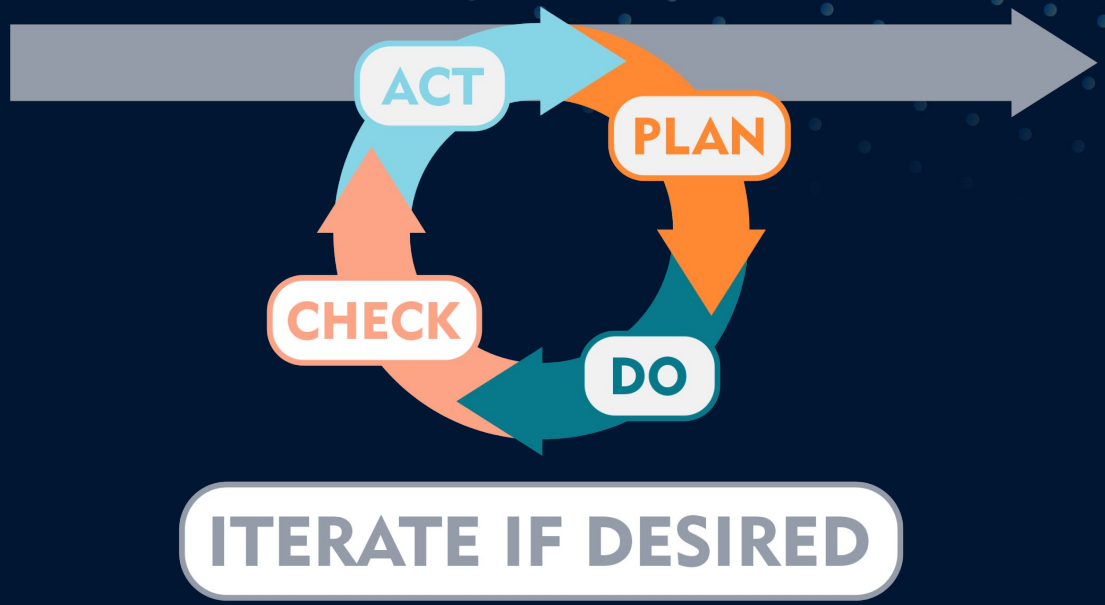
ACT Decide what to do

Prior to Improvement

Before

Complex processes made up of many simpler ones

Most Basic Understanding



Improvement takes an existing process, and creates an experiment. We measure the results and decide whether it was an improvement or not based on new data.

Most Basic Results

The new system shows improvement

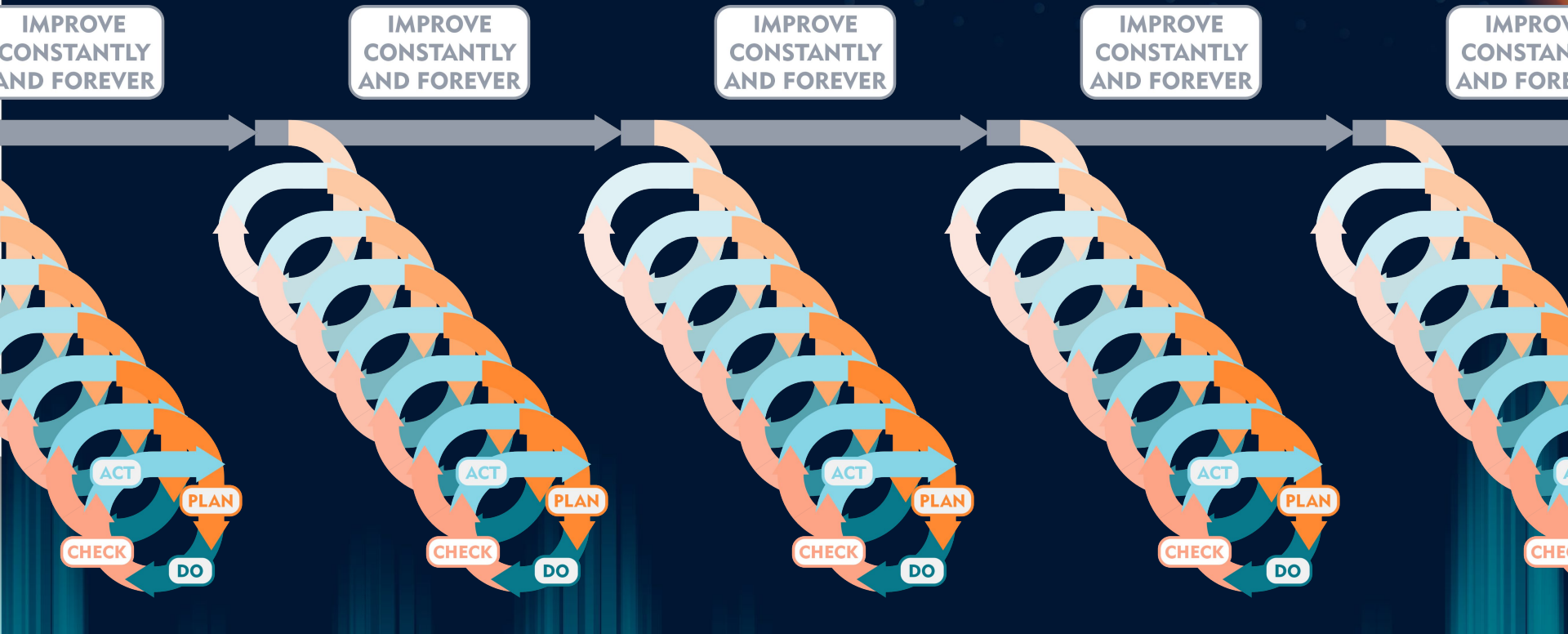
And suffers from a few critical errors

#1

Deming never suggested improving processes if desired.

“Improve constantly and forever the system of production and service, to improve quality and productivity, and thus constantly decrease costs.”

It looks more like this



#2

Who is going to develop all these improvements?

- At Toyota, workers provide 1.5 million suggestions per year
- 95% are put to practical use
- The vast majority of these come from line workers

  - Line workers not only know what is wrong
  - They know how to fix it
  - They've tried
  - And been shut down

#3

Suggestion systems make this work all over Japan

- At Toyota suggestions are accepted automatically, without review.
- When reviews occur, they are reviewed by at the lowest level possible.
- The Almost always, the worker that made the suggestion is involved in its implementation.
- Since worker specific processes are so badly understood in America, (Deming), in my opinion, workers should be empowered to alter their own process once they've been trained to assess them.

#4 Then there are basic problems to avoid.

1. **There is no such thing as a good open door policy.**
   - Employees often feel at risk making ANY suggestion
   - Some suggestions must be made anonymously (or not at all)
2. **An employee that makes three suggestions that are denied, will never make another suggestion.**
3. **All over the world, suggestions result in rewards to the employee. It is a mistake**
   - Rewards cause the reduction or elimination of the desired behavior once the rewards are removed.
   - Being ‘allowed’ to participate in improvement is often the greatest reward, and increases intrinsic motivation
4. **Without a suggestion feedback loop, suggestions will cease.**

G.E.T. S.M.A.R.T.

To Reduce Waste

WASTE: any activity that does not add value to the product/service

- **G** • Glitch
- **E** • Excess Processing
- **T** • Transportation

- **S** • Surplus
- **M** • Motion
- **A** • Abilities
- **R** • Reserve (Supply)
- **T** • Time

Also known as:
Muda - Japanese for waste
TIMWOODS - acronym
DOWNTIME - acronym

G.E.T. S.M.A.R.T.

To Reduce Waste

G

- Glitch - Defect, scrap, rework
  Parts not made to spec, breakage in the field
  Spelling, grammar, math errors, no internet

E

- Excess Processing - Too good, extra steps
  Time spent going beyond customer spec
  Busy work, more quiz questions without value

T

- Transportation - Moving stuff around
  Moving supply to or from storage, moving it again
  Driving to school when students are staying home

Note: why is reducing waste Better, Faster and Cheaper?

G.E.T. S.M.A.R.T. To Reduce Waste

S
- Surplus - Product made without a buyer
  - Too many widgets, more storage, transportation
  - Increases all other forms of waste

M
- Motion - People moving around
  - Needless movement of people, non value added
  - Crossing campus to retrieve a printout

A
- Abilities - Untapped worker skills
  - Qualifications, improvement opportunities, ideas
  - People not challenged at their level, joy in learning

R
- Reserve (Supply) - Excess raw materials
  - Excess inventory for production, increases costs
  - Buying unneeded supplies to maintain the budget

T
- Time - Waiting, anyone or anything
  - A product spends 99% of its time waiting
  - Teachers wait for work; students wait for grades

G.E.T. S.M.A.R.T.

To Reduce Waste

Reasoning Tip - If you estimate how much of each waste you have, you can focus your efforts where they'll be most effective, but...

The waste you have the most of, is likely the waste you understand best, and...

The waste you have none of, is likely be the one you understand the least, or not at all.

WASTE: any activity that does not add value to the product/service

G.E.T. S.M.A.R.T.

Generally Considered Higher Priority

SURPLUS - this waste can be much greater because it compounds all of the other wastes simultaneously.

TIME - Time can be an invisible toxic mess because product sitting still seldom complains, thus gets no attention.

ABILITIES - is, BY FAR, the biggest waste. Workers have historically been valued mostly for the task they perform on the line, rather than as a member of a team. A good 'suggestion system' can change this.

Introduction to Statistical Process Control

Control Chart

There will always be variation

Common Cause

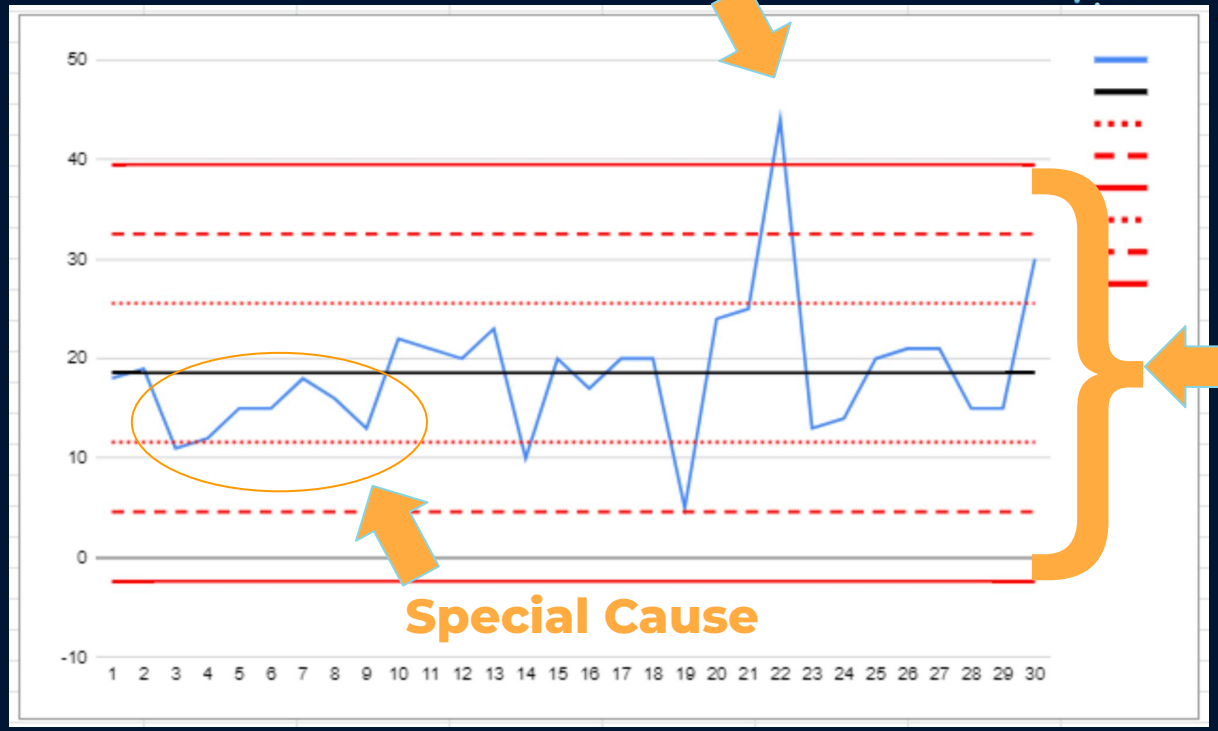
- Naturally occurring variation
- Inherent within the system
- Multivariate
- .26% outside of 3 STD DEV
- Essentially RANDOM
- No **ROOT** cause

Special Cause

- Unexpected
- Well outside the norm
- Often caused by a specific variable
- Identified if it occurs outside +/- 3 Std Dev
- Non-RANDOM
- Often has a single **ROOT** cause

There are various ways to detect special cause variation

Control Chart

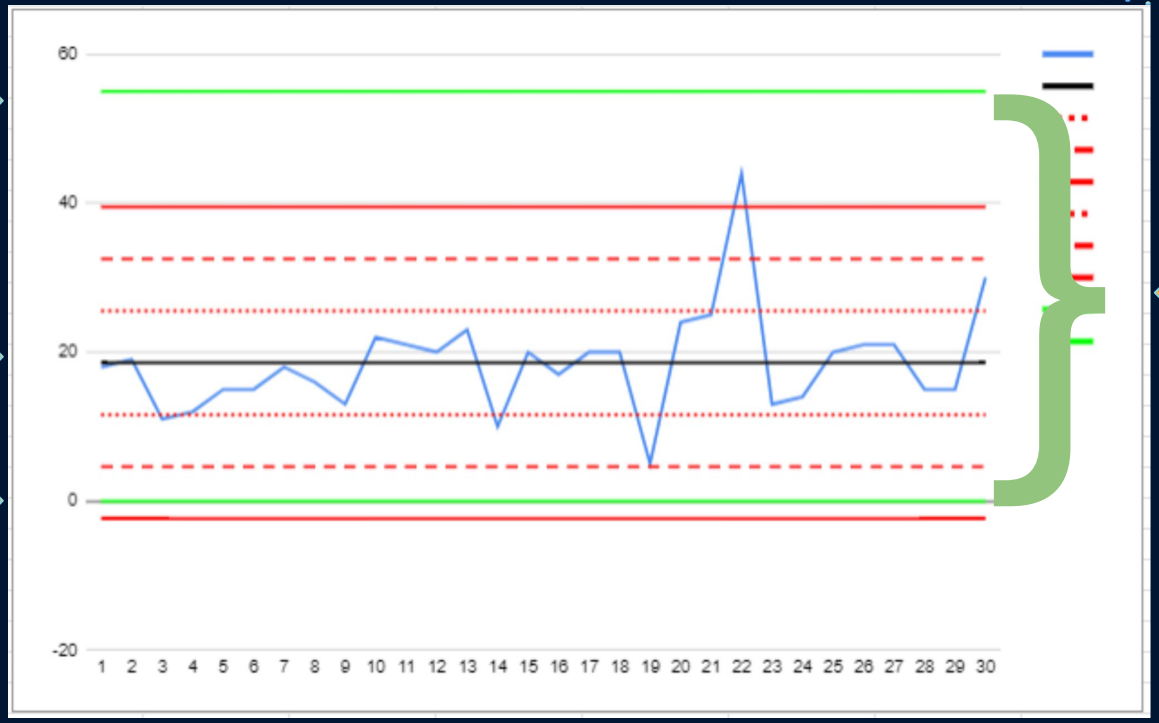


Control Chart

USL

Mean

LSL



Ideal Quality

Control Chart

Houston, we have a problem