



OPENING DOORS

From Frustration to Opportunity

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SVP - Engineering, Quality, Planning & Logistics
Delta Technical Operations

Delta is Ideally Positioned for ToC ✨

800
aircraft

3,300
flights per day

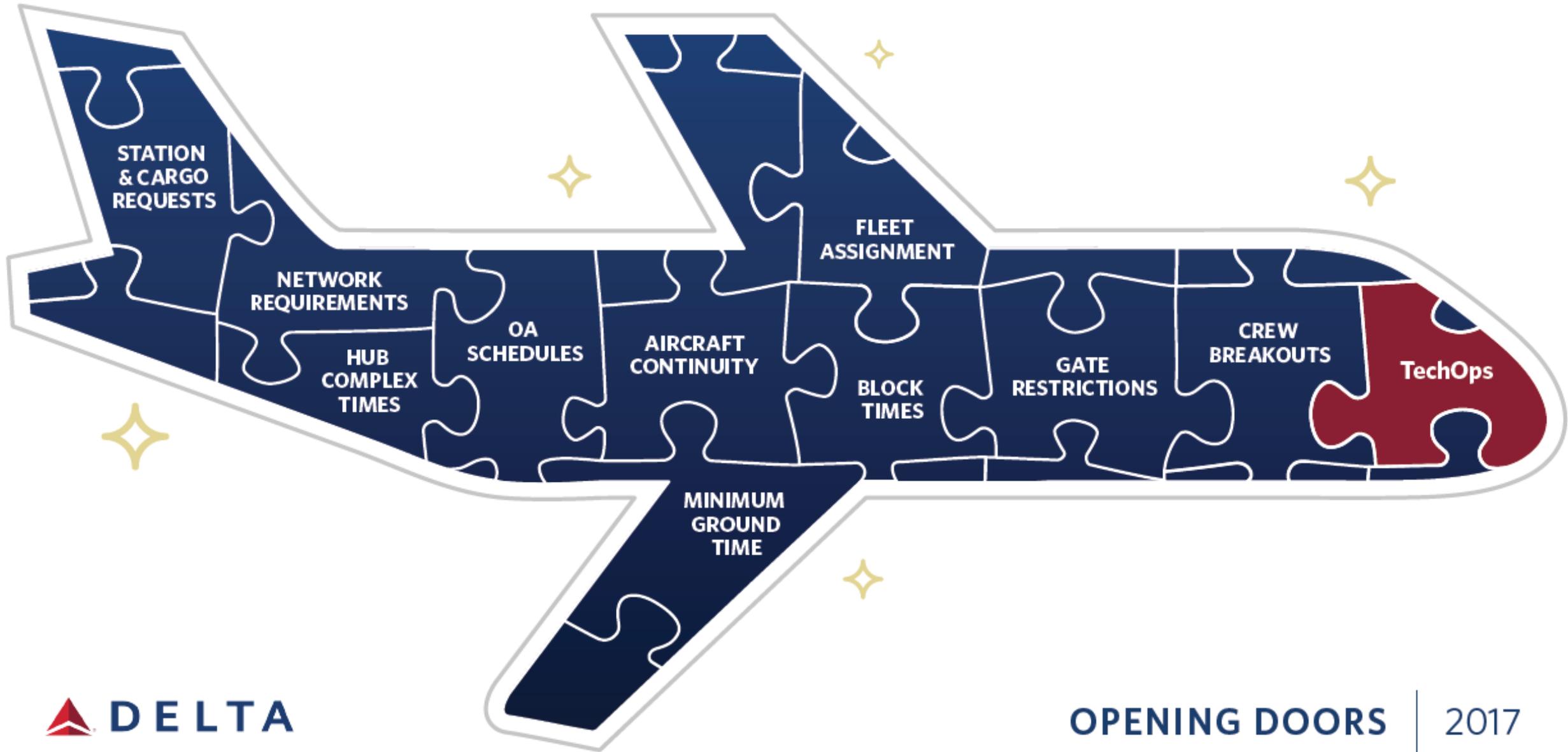
80,000
employees

180M+
customers

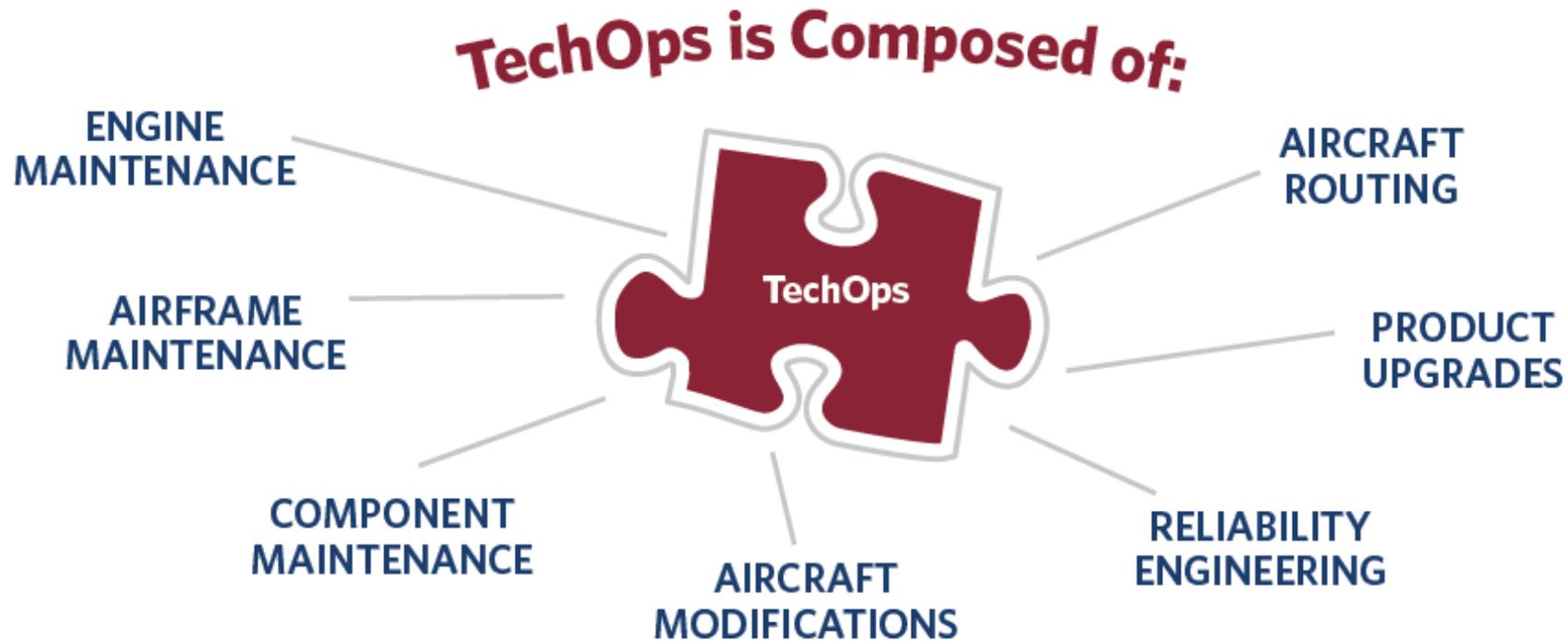


OPENING DOORS | 2017

Delta TechOps is 1 Piece of the Puzzle ✨

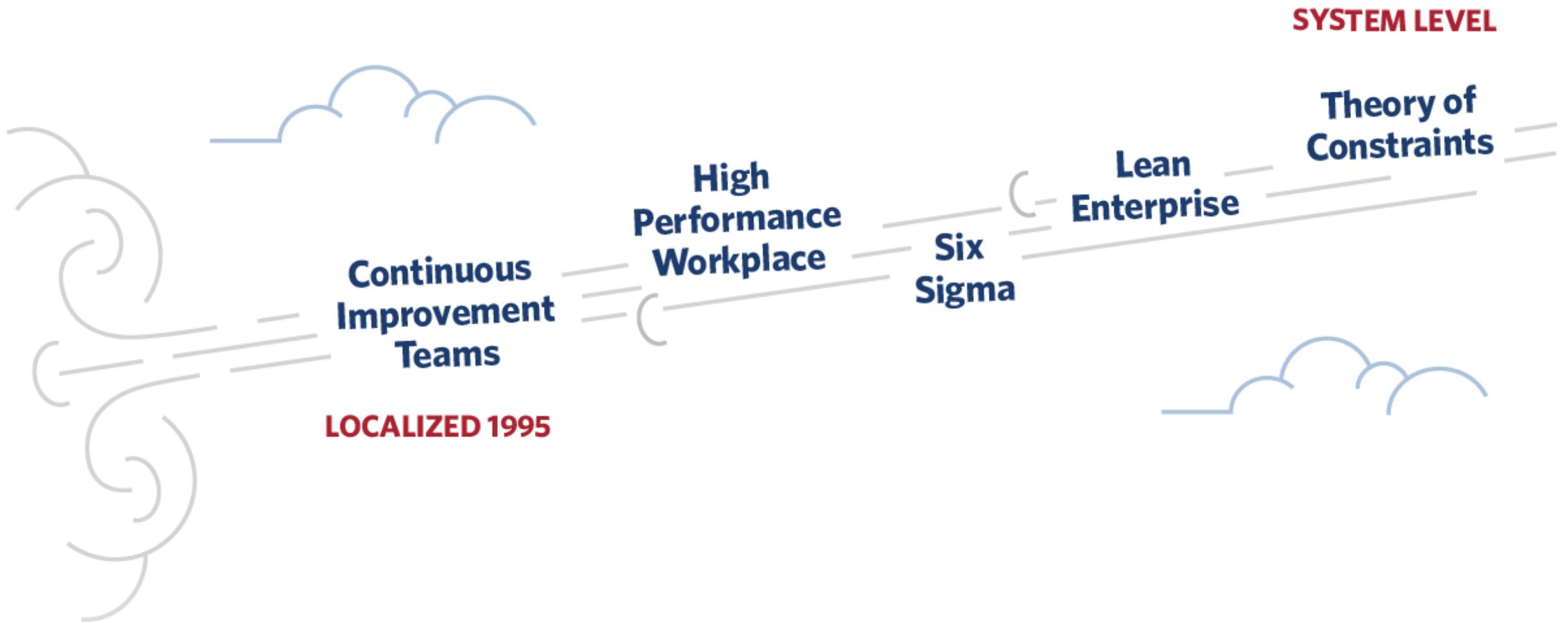


Complexity of TechOps ✨



EACH DIVISION IS COMPLEX • ALL DIVISIONS ARE INTERDEPENDENT

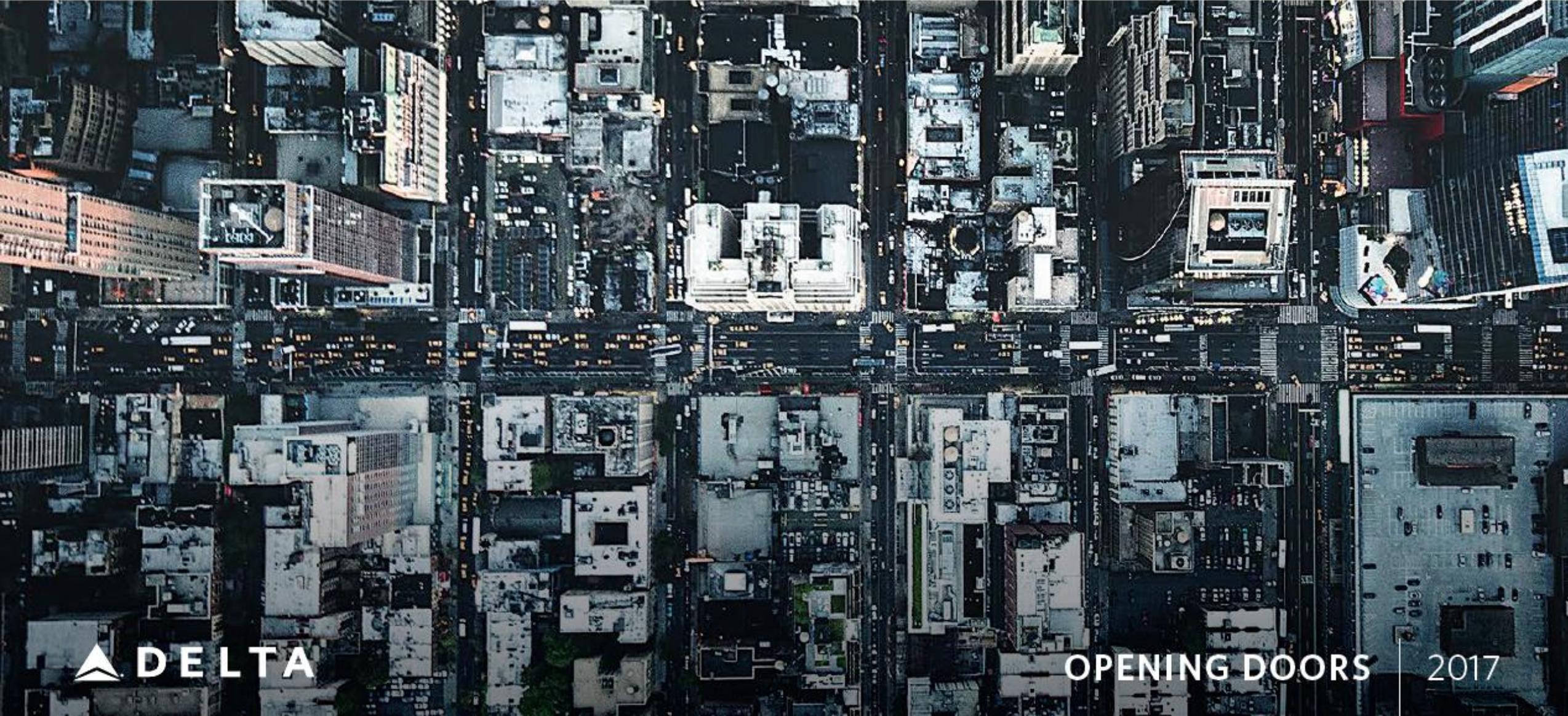
We Knew We Had To Do Something ✨





USING ToC TO DRIVE CULTURE CHANGE

Simple Ways to Attack Complex Problems ✨



Simple Ways to Attack Complex Problems ✨



Clarity of Focus ✨

Complex Systems Have
Simple Solutions

Know and Synchronize
the System

Understand Cause and Effect:
The "Why?"

Reduce
Frustration

DOORS WILL OPEN . . .

Lead Your Team ✨

SERVANT LEADERS

- Cast a Clear Vision
- Accept Personal Risk
- Display Unconventional Behavior
- Drive with Passion
- Earn Respect
- Are Foundational

Engage Your People ✨

Resistance to Change is Natural

Not Me . . . Us

Must Know Why

Individual Effort < System Success

PEOPLE WILL SEE A PATH TO SUCCESS

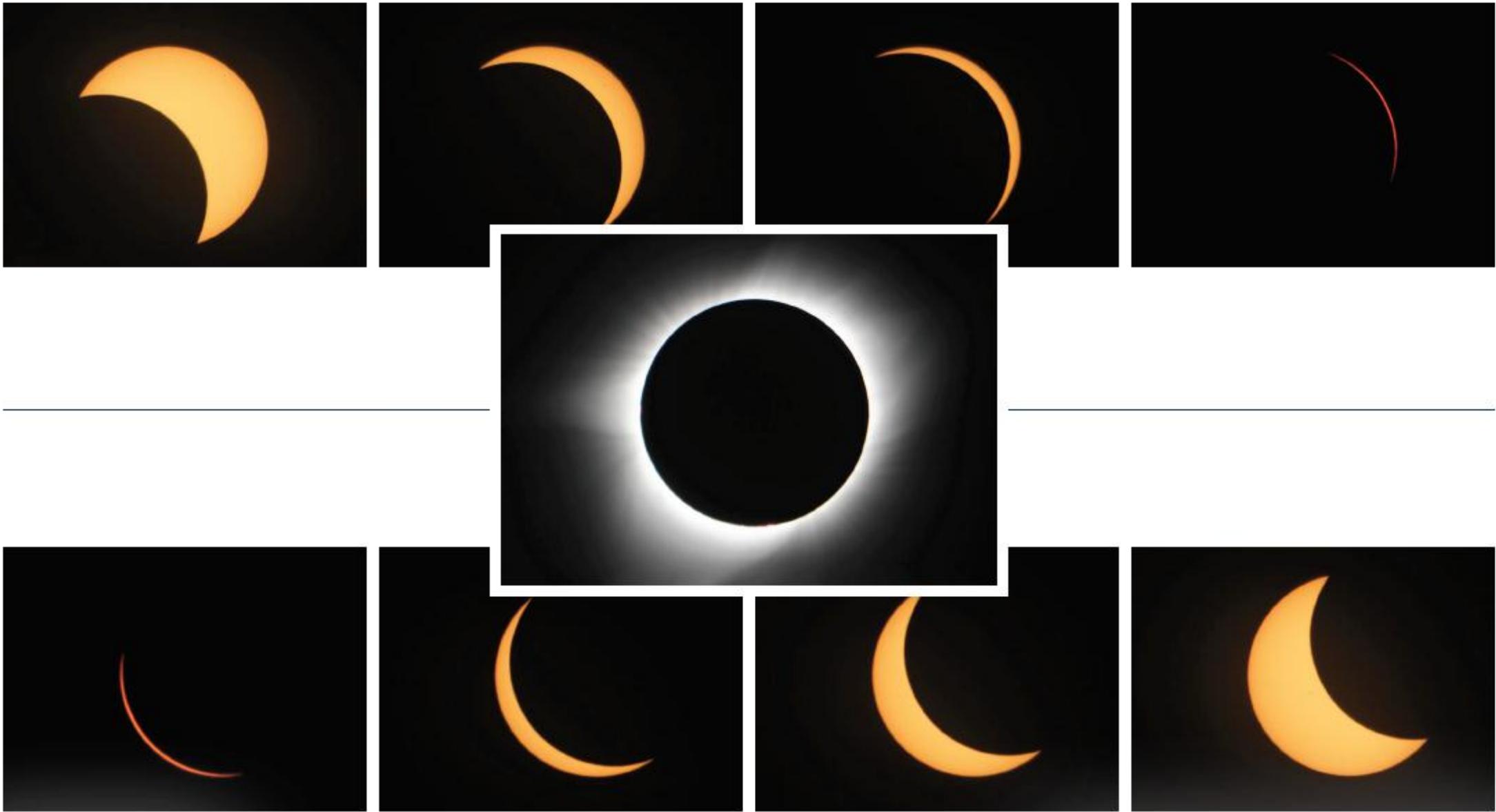
Spread the Word ✨

Breaking Through Barriers

Employee Engagement

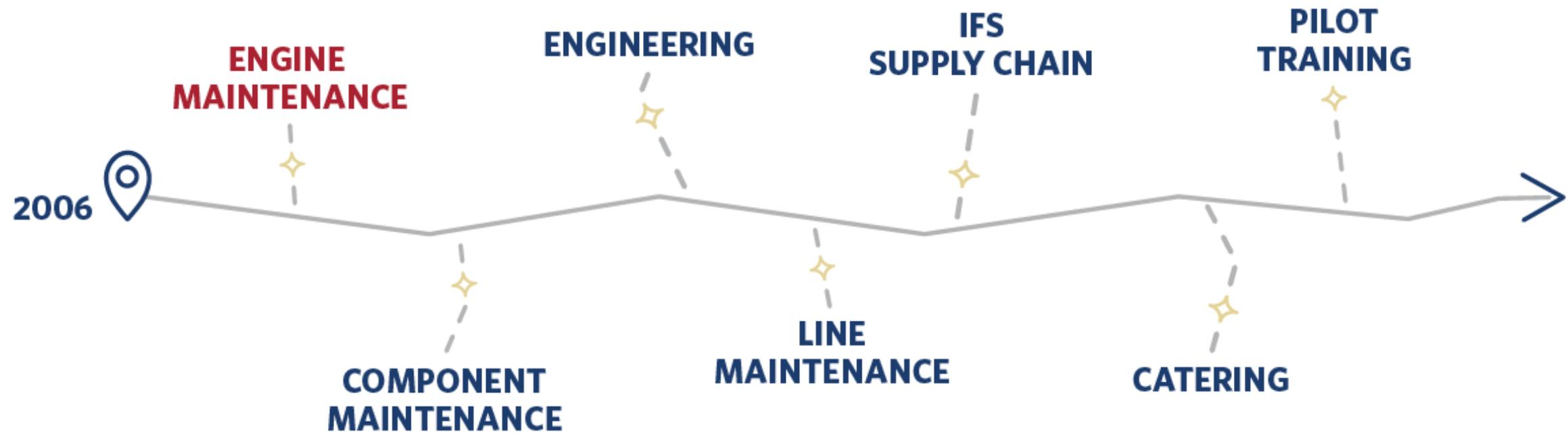
Sense of Purpose and Meaningful Life

Great Results



OUR RESULTS USING ToC

Delta's 12-Year Journey ✨



Engine Maintenance ✨

RESULTS

✨ PRODUCTION

- **25%** increase in piece part repair production
- **23%** increase in engine production within first year

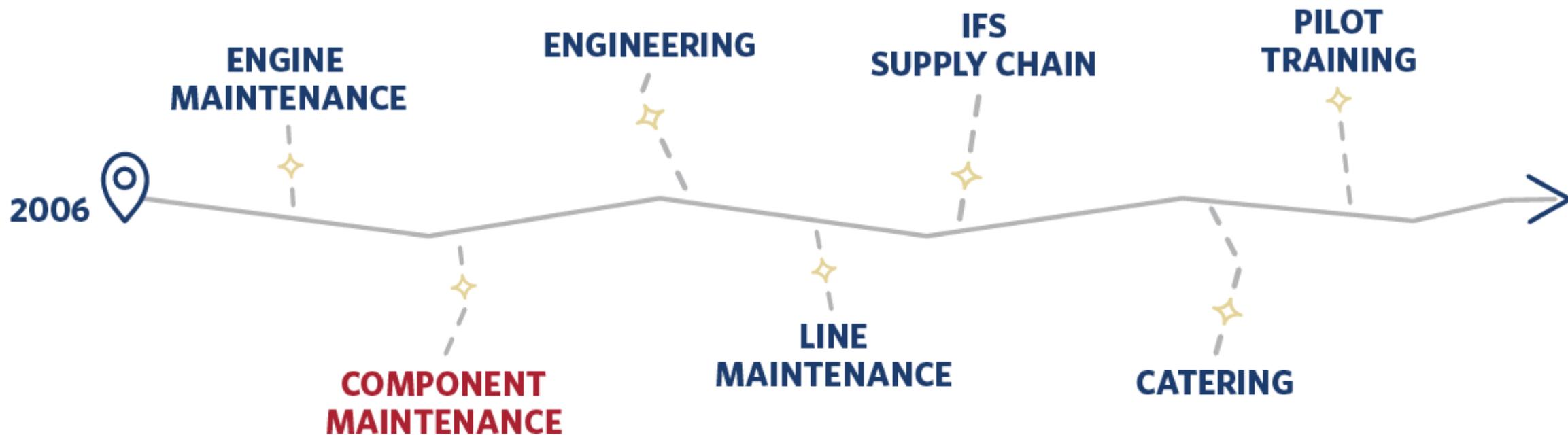
✨ CYCLE TIME

- **70%** reduction in piece part repair
- Engine Reduction: **-40%** average across all product lines
- Landing Gear Reduction: **-60%**

✨ **REVENUE:** ~**375%** increase in third-party revenue

✨ **INVENTORY:** ~**\$60M** reduction

Delta's 12-Year Journey ✨



Component Maintenance ✨

RESULTS

✨ PRODUCTION

- **21%** increase in part production

✨ CYCLE TIME

- **66%** reduction on average to produce a part

✨ INVENTORY

- ~**\$300M** reduction
- Established a max WIP concept

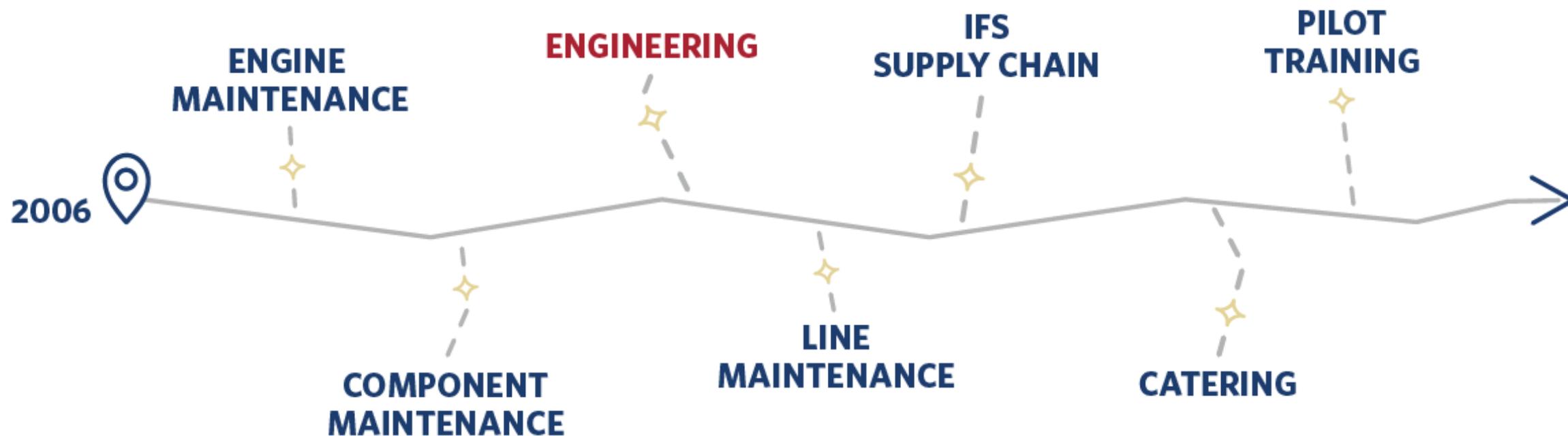
✨ JOB STOPS

- **75%** reduction

✨ IMPROVED QUALITY/RELIABILITY

- 20% reduction in unscheduled component removals

Delta's 12-Year Journey ✨



Project Development

- ✨ Previously, hundreds of projects in WIP; average time = **100+ days**
- ✨ Over the past 3 years, we set and reached goals of **60 days, 30 days** and **22 days**; we are now at **15 days**

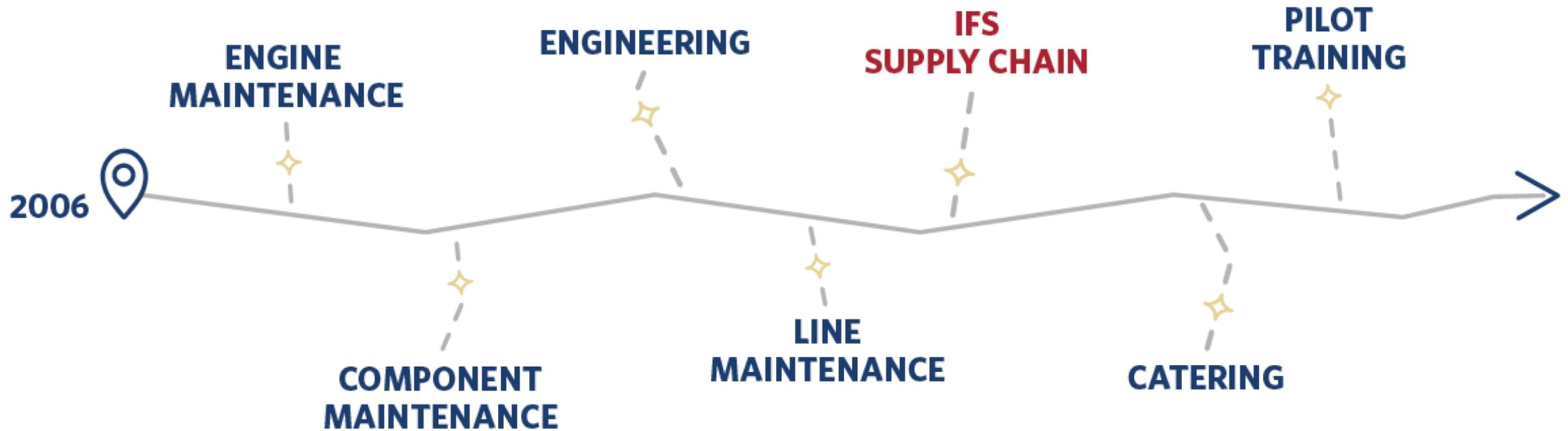
✨ ENGINEERING PROJECT ACCOMPLISHMENTS

- Previously, 300+ projects in various stages of completion; average time = **200+ days**
- We are now completing all aircraft in **30-40 days**, and sometimes as fast as 2 weeks

IN BOTH CASES, WE ACHIEVED THESE RESULTS BY:

- Reducing WIP
- Aligning resources on common priorities
- Implementing a focus and finish mentality

Delta's 12-Year Journey ✨



In-Flight Services (IFS) Supply Chain ✦

RESULTS

- ✦ **100%** availability of items in the warehouse
- ✦ **40-80%** reduction in supplier lead times
- ✦ **80%** reduction in expedited orders and cross-shipments
- ✦ **45%** reduction in Delta-owned inventory
- ✦ **SUPPLY CHAIN COST REDUCTION: \$6 million/year**
- ✦ **DELTA'S DIRECT SAVINGS: \$3 million/year**

✧ THANK YOU ✧