



# Effective Engineering Leadership



Prof.Dr.Aung Tun Thet  
2-22-2026

- **Introduction**
- **Definition**
- **Engineering Leadership vs Engineering Management**
- **Importance of Engineering Leadership**
- **Roadmap to Becoming Engineering Leader**
- **Challenges & Pitfalls in Engineering Leadership**



Overview



# Introduction



**Become the kind  
of leader that  
people would  
follow  
voluntarily  
even if you had no  
title or position**

— BRIAN TRACY



# Engineering Leadership



- Most **sought-after qualities** in modern tech world
- Need more than **brilliant engineers** who solve **technical problems**

# Engineering Leadership



- **Guide teams**
- **Align engineering work with business priorities**
- **Foster innovation in uncertain environments**

# Engineering Leadership

A group of five people, including engineers and a leader, are gathered on a construction site. They are looking at a tablet and blueprints. The background shows a modern building under construction with a curved facade and a white metal structure in the foreground. The scene is brightly lit, suggesting a sunny day.

- Set vision
- Inspire people
- Create environment where engineers *do best work*

# Engineering Leadership

- **Balance**
- ***Technical credibility with empathy***
- ***Strategy with execution***
- ***Long-term direction with day-to-day problem-solving***





# Definition



**If you have  
integrity, nothing  
else matters.**

**If you don't have  
integrity, nothing  
else matters.**

— HARVEY MACKAY



# Engineering Leadership

A person wearing a white lab coat, a green surgical cap, and a white face mask is shown in profile, focused on adjusting a control panel. The panel features a digital display with red numbers '63' and green numbers '000'. Below the display are several buttons and knobs, including a prominent red one. The background is a blurred industrial or laboratory setting.

- **Combine:**
- *Technical expertise*
- *People skills*
- *Strategic thinking*
- **Drive meaningful outcomes**

# Engineering Leadership

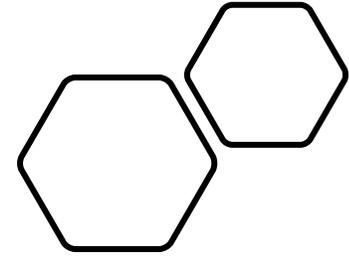


- *Understand technology* deeply enough to earn **trust** of engineers
- **Communicate** effectively with **stakeholders** without **technical background**
- **Bridge gap** between **organizational goals** and **day-to-day technical execution**

# Technical Authority



- *Ask right questions*
- *Spot risks*
- *Guide technical decisions*





- **Build trust**
- **Mentor**
- **Foster collaboration**
- **Create psychological safety**

**People Leadership**

# The Four Stages of Psychological Safety

## 1. Inclusion Safety

Employees feel safe valued, treated fairly, and believe their experiences and thoughts matter.

## 4. Challenger Safety

Employees feel safe to challenge the status quo and see positive change opportunities.



## 2. Learner Safety

Employees feel safe to learn and grow. They ask questions, and give and receive feedback.

## 3. Contributor Safety

Employees feel safe contributing their ideas. They feel they can use talents and abilities to make a difference.

- **Business goals and engineering efforts**
- **Solve right problems in right way**



## The Strategic Alignment

# ADAPTABILITY

**Adjust style to fit environment**

# Foundations of Engineering Leadership



## Technical Authority

Leaders must possess technical acumen to guide decisions and identify risks.



## People Leadership

Building trust and fostering collaboration are essential for team success.



## Strategic Alignment

Ensuring engineering efforts align with business goals is crucial.



## Adaptability

Adjusting leadership style to fit different team sizes and contexts.



# Engineering Leadership

- Improve **technical breadth**
- Strengthen **soft skills**
- Think **strategically**



# Engineering Leadership vs Engineering Management

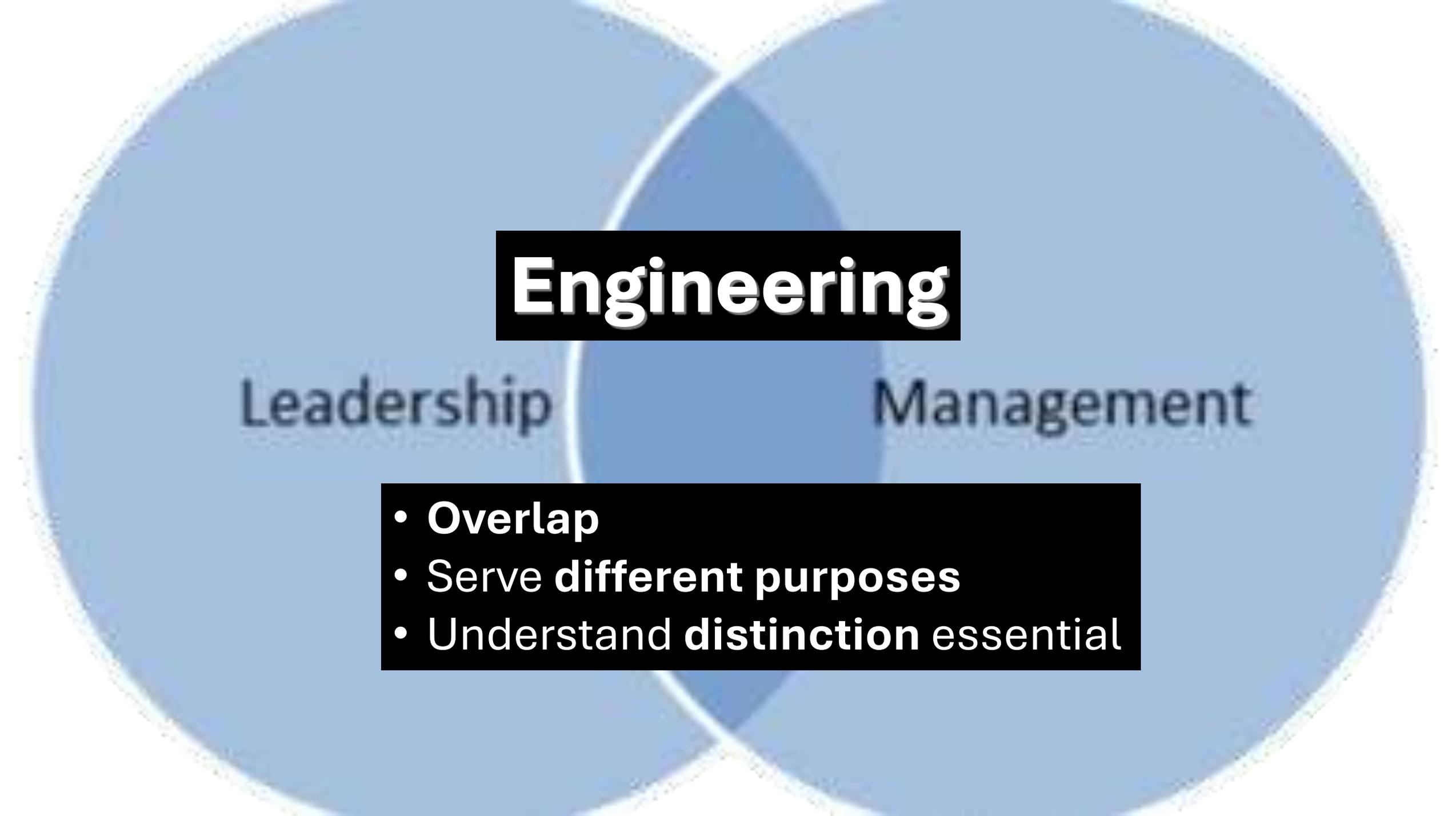




**Real integrity is doing the  
right thing, knowing that  
nobody's going to know  
whether you did it or not.**

OPRAH WINFREY

**BRIAN TRACY**  
— INTERNATIONAL —

A Venn diagram with two overlapping circles. The left circle is labeled 'Leadership' and the right circle is labeled 'Management'. The overlapping area in the center is highlighted with a black box containing the word 'Engineering'.

# Engineering

Leadership

Management

- **Overlap**
- **Serve different purposes**
- **Understand distinction essential**

# ViSiON



**Vision and influence**  
Set “why” and “what”

**Engineering Leadership**

- 
- A wide-angle photograph of the Golden Gate Bridge in San Francisco, California. The bridge's iconic orange-red towers and suspension cables are the central focus, stretching across the frame. In the background, the San Francisco city skyline is visible across the water, and the sky is filled with soft, white clouds. The water below is a deep blue-green color.
- **Inspire** people to **grow**, take **ownership**, and deliver **impactful work**
  - **Bridge** between **execution** and **organizational strategy**

# **Engineering Leadership**



# Engineering Leadership

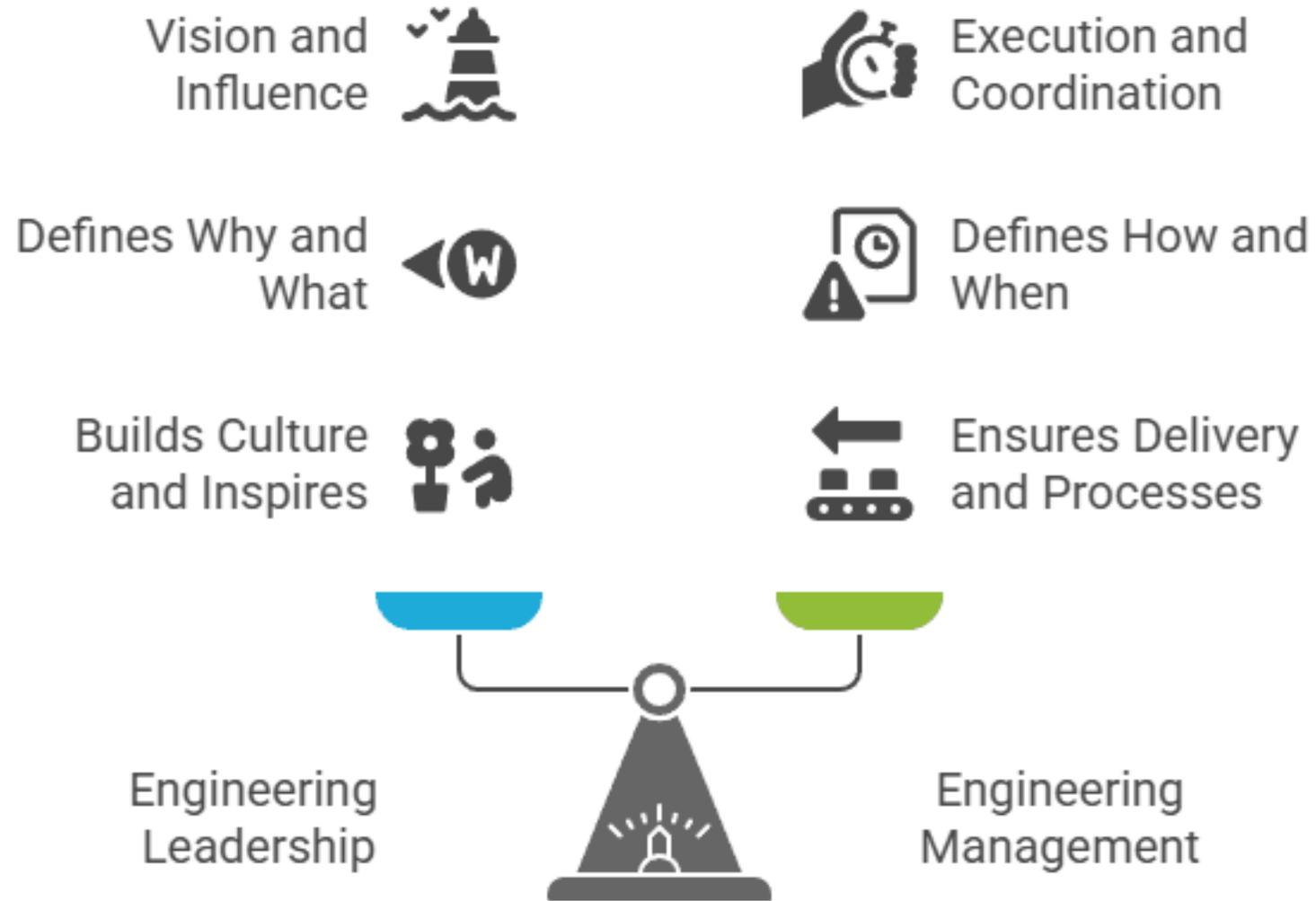
- Don't just manage tasks
- Shape direction and outcomes

- *Are we working on the right problems?*
- *How do we motivate and empower?*
- *How do we turn business goals into engineering solutions?*



# Engineering

- **Execution-focused**
- **Ensure:**
  - *Projects scoped, scheduled, and delivered*
  - *Processes and workflows run smoothly*
  - *Time, budget, and people allocated effectively*
  - *Performance tracked and reported*





# Importance of Engineering Leadership

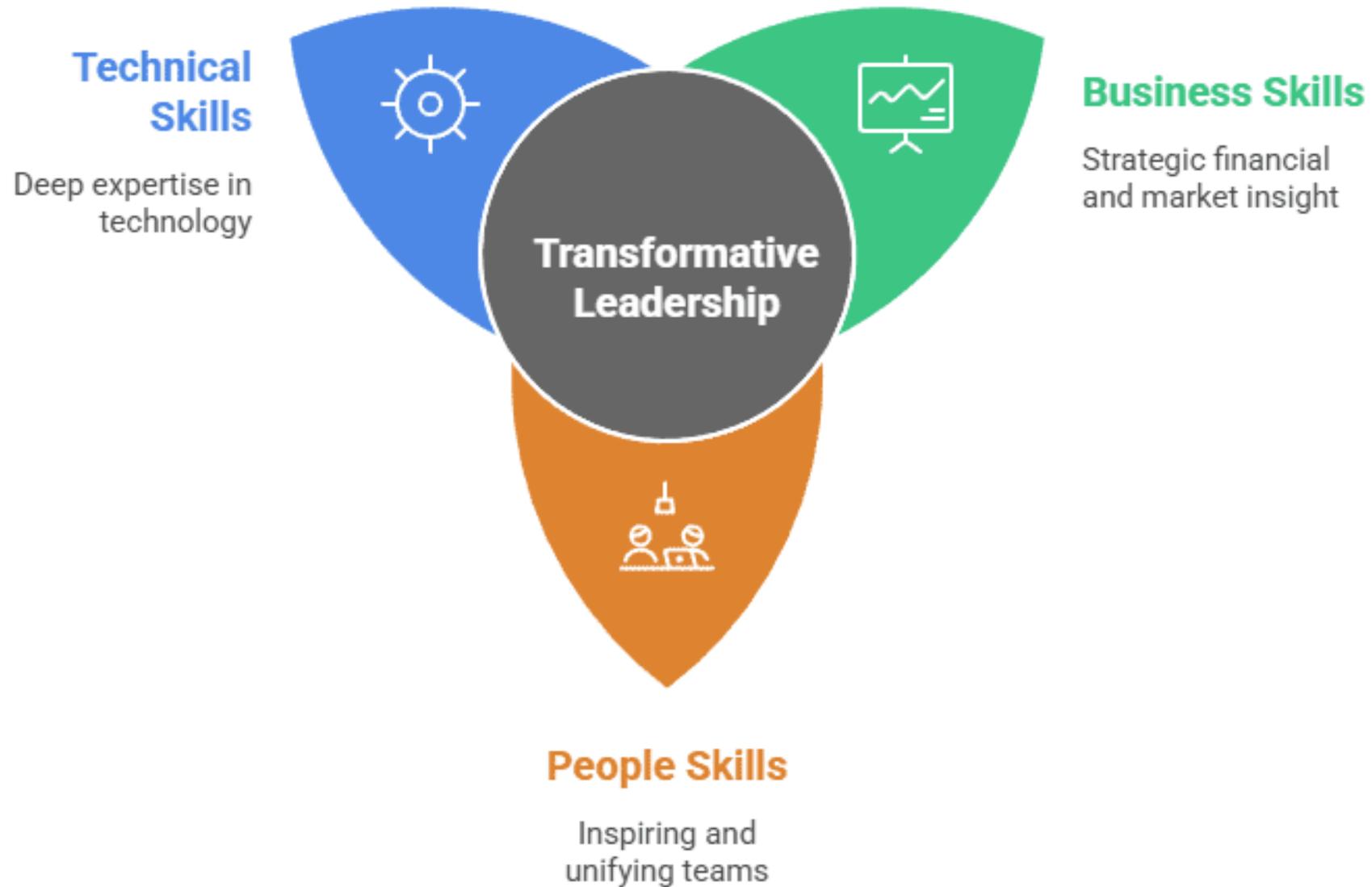


**The greatest leader is not  
necessarily the one who does  
the greatest things.  
He is the one that gets the  
people to do the greatest things.**

RONALD REAGAN

**BRIAN TRACY**  
— INTERNATIONAL —

# Three Dimensions of Effective Leadership



- Understand **technology** deeply
- Connect **expertise** to **bigger challenges**
- Move across **disciplines**

# TECHNICAL SKILLS

- **Adapt** quickly
- **Collaborate** with other departments
- Apply **knowledge** to guide **right decisions**

# CRITICAL **BUSINESS** SKILLS

- **Engineering decisions** never made in vacuum
- Understand **financial** and **strategic impact**
- **Profit and loss/ROI**

- **Assess value added by engineering initiatives**
- **Maximize returns on projects**
- **Build great technology**
- **Drive business forward**

A hand is shown holding a glowing blue globe. The globe is covered in a network of white lines and dots, representing a digital or technological theme. The text "BUSINESS SKILLS" is written in large, white, bold, sans-serif capital letters across the center of the globe. The background is dark with various blue and green light effects, including a grid pattern and some blurred lights, suggesting a high-tech or data center environment.

**BUSINESS  
SKILLS**

- 
- The background of the slide features a world map in a light blue color. In the foreground, there are five dark silhouettes of people in business attire. On the left, a man and a woman stand together. In the center, a man and a woman are shaking hands. On the right, a woman and a man stand together. The overall color scheme is a gradient of blue and teal.
- **Lead people**
  - **Inspire growth**
  - **Manage differences**
  - **Diverse voices thrive**

**People Skills**

- **Balance**
- *Technical credibility*
- *Business acumen*
- *People-first thinking*



**True Engineering Leadership**

- Build resilient innovative teams
- Adapt, grow, and stay competitive



**True Engineering Leadership**



# Core

- Earn **respect** of teams
- Spot **risks** and evaluate **trade-offs**
- Ask **right questions** during **decision-making**
- “**Get it**” at **technical level**





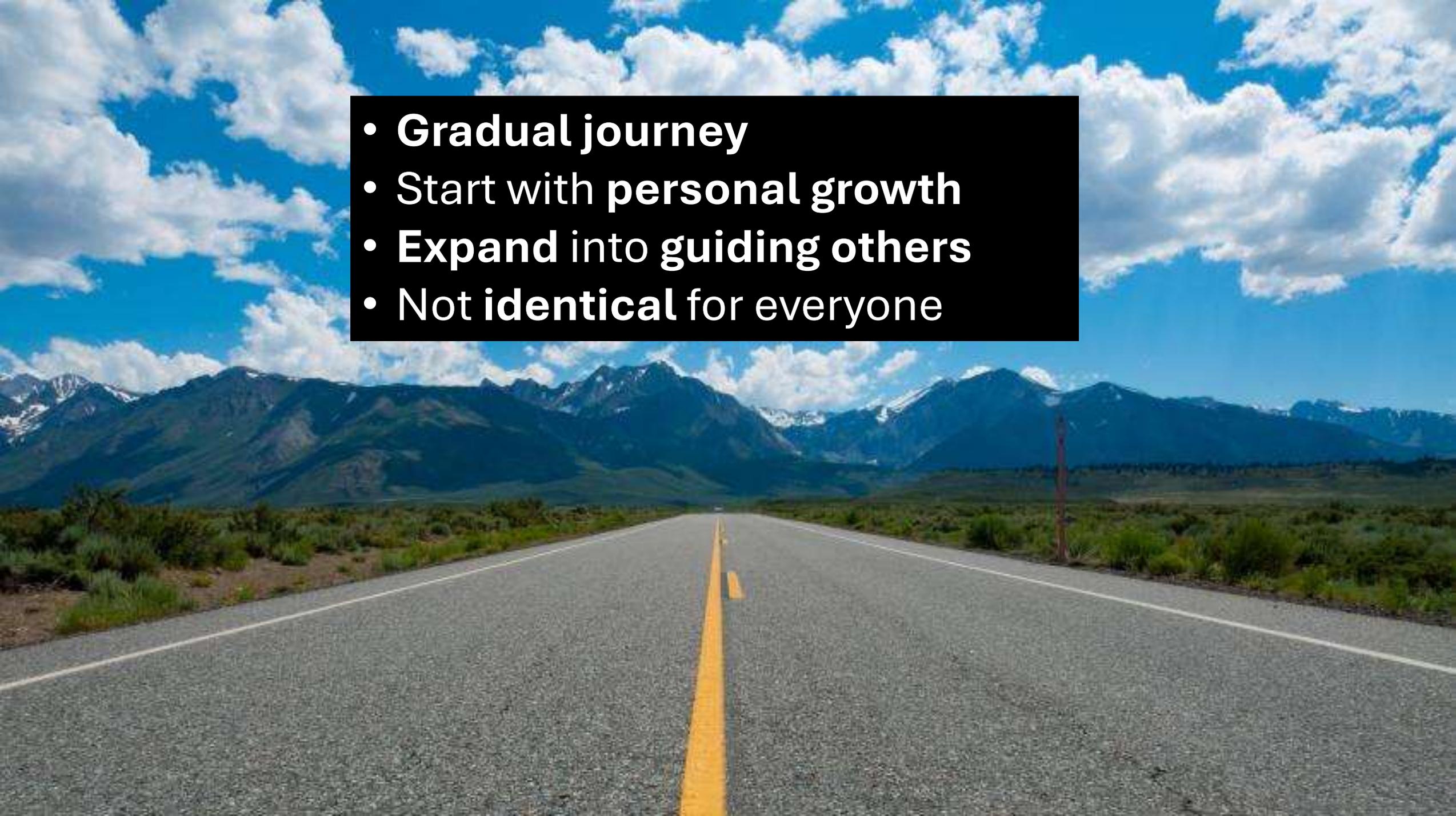
# Roadmap to Becoming Engineering Leader



**A leader is one  
who knows the  
way, goes the  
way, and  
shows the way.**

— JOHN C. MAXWELL



- 
- **Gradual journey**
  - **Start with personal growth**
  - **Expand into guiding others**
  - **Not identical for everyone**

A man in a dark suit, white shirt, and blue polka-dot tie is shown from the chest up. He is holding a white marker in his right hand. To his right is a white line graph on a dark background, showing an overall upward trend with some fluctuations. The text 'Self Leadership' is written in large, bold, white letters across the top of the graph.

# Self Leadership

- Learn to lead yourself
- Build discipline
- Take ownership
- Develop self-awareness

- Consistently deliver **high-quality work**
- **Communicate** effectively
- **Informal leaders**



**SELF LEADERSHIP**

- Influence **decisions** without **formal authority**
- **Communicate** clearly with both **technical** and **non-technical audiences**
- **Think strategically** about **long-term goals**
- Not just **immediate tasks**

A hand holding a smartphone in front of a futuristic digital interface with glowing blue icons. The icons include a target, a head with gears, and a group of people around a table. The background is dark blue with a grid pattern.

**DEVELOP SKILLS**

# Seek Mentorship

A person in a dark suit is shown from the chest down, with their hands cupped together in front of them. In the center of their hands is a small, white, stylized figure of a person in a suit and tie. In the background, several other similar white figures are visible, but they are faded and out of focus. The overall scene is set against a dark, textured background.

- **Strong leaders** rarely grow in isolation
- **Mentorship** - *formal or informal* – shape leadership style



# Seek Mentorship

A person in a dark suit is shown from the chest up, holding a glowing white silhouette of a person in a suit. The background is dark and blurry, showing other faint silhouettes of people in business attire.

- **Strong leaders rarely grow in isolation**
- **Mentorship - *formal or informal* – shape leadership style**
- **See blind spots**



- **See blind spots**
- **Avoid common pitfalls**
- **Accelerate growth**

- Move from **informal leadership**
- **New challenges**

**Formal Leadership Roles**





- Move from **individual contributor** to **tech lead**
- **Shift** from “**my work**” to “**our work**”
- Balance **people management**, **delivery**, and **technical guidance**
- Let go of day-to-day **technical details**
- Focus on **organizational strategy** and **culture**

# Commit to Continuous Learning

- **Leadership practices** evolve quickly
- Stay on top of **new tools**
- Learn about **organizational psychology**
- Study **different leadership styles**
- Best leaders treat learning as **lifelong process**



# Path to Engineering Leadership

A scenic landscape featuring a winding, light-colored path that meanders through a lush green field. In the background, there are rolling hills and mountains under a blue sky with scattered clouds. The overall atmosphere is peaceful and suggests a journey or path.

- *Start with self-leadership*
- *Expand through skill-building and mentorship*
- **Grow into formal roles**
- *Need adaptability, vision, and continuous learning*



# Challenges & Pitfalls in Engineering Leadership



**A good leader leads  
the people from  
above them.**

**A great leader leads  
the people from  
within them.**

— M.D. ARNOLD



# Balance Technical and Managerial Work



- Let go of **'hands-on'** technical work
- Shift **focus**
- Find **right balance**
- **Technically** credible

# Balance Technical and Managerial Work



- Give enough time to **people, strategy, and delivery**
- Risk **micromanaging** or **losing touch** with team's work

# Distributed Teams



- **Build inclusive, flexible systems for collaboration**
- **Mindful of cultural differences**
- **Over-communicate**
- **Maintain connection**

# Avoid Micromanagement

A hand from the top left corner holds a dark stick, which is part of a complex maze of thin black lines. A person in an orange shirt is running through the maze, looking back over their shoulder. The background is a light, neutral color.

- **Trust** core of effective leadership
- Leaders feel **pressure** to **control every detail**
- Undermine **morale**
- **Slow** teams down

# Avoid Micromanagement

- **Set clear goals**
- **Give context**
- **Empower engineers to figure out “how”**
- **Leading Distributed and Hybrid Teams**



# Stay Relevant



- **Technology** evolve fast
- Leaders who **cling** to **outdated practices** risk losing **credibility**
- Chasing **latest trends** distracts from building **long-term vision**

- **Balance**
- ***Stay informed to guide smart decisions***
- ***Focus on timeless leadership principles***



**CHANGES AHEAD**

- 
- Key driver of **innovation**
  - Don't happen **automatically**
  - Create **inclusive cultures**
  - **All engineers** valued and supported

**Build and Sustain Diversity**

# Lack of Diversity

- Risk high turnover
- Among underrepresented groups
- Miss out on benefits of diverse perspectives

# Navigate Conflicting



Priorities

- Intersection of technology, business, and people
- Pulled in different directions



YES

- Lead to **burnout**
- **Push back** when necessary
- **Prioritize**

MAYBE

# ACTION PRIORITY MATRIX





# Conclusion

The background of the image shows the silhouettes of several business professionals in a modern office setting. A man in a suit stands in the foreground with his arms crossed, looking out a large window. In the background, two women are also silhouetted against the window. The overall lighting is a cool, blue-toned glow from the window, creating a professional and contemplative atmosphere.

**Lead and inspire people.  
Don't try to manage and  
manipulate people.  
Inventories can be managed  
but people must be led.**

●  
ROSS PEROT

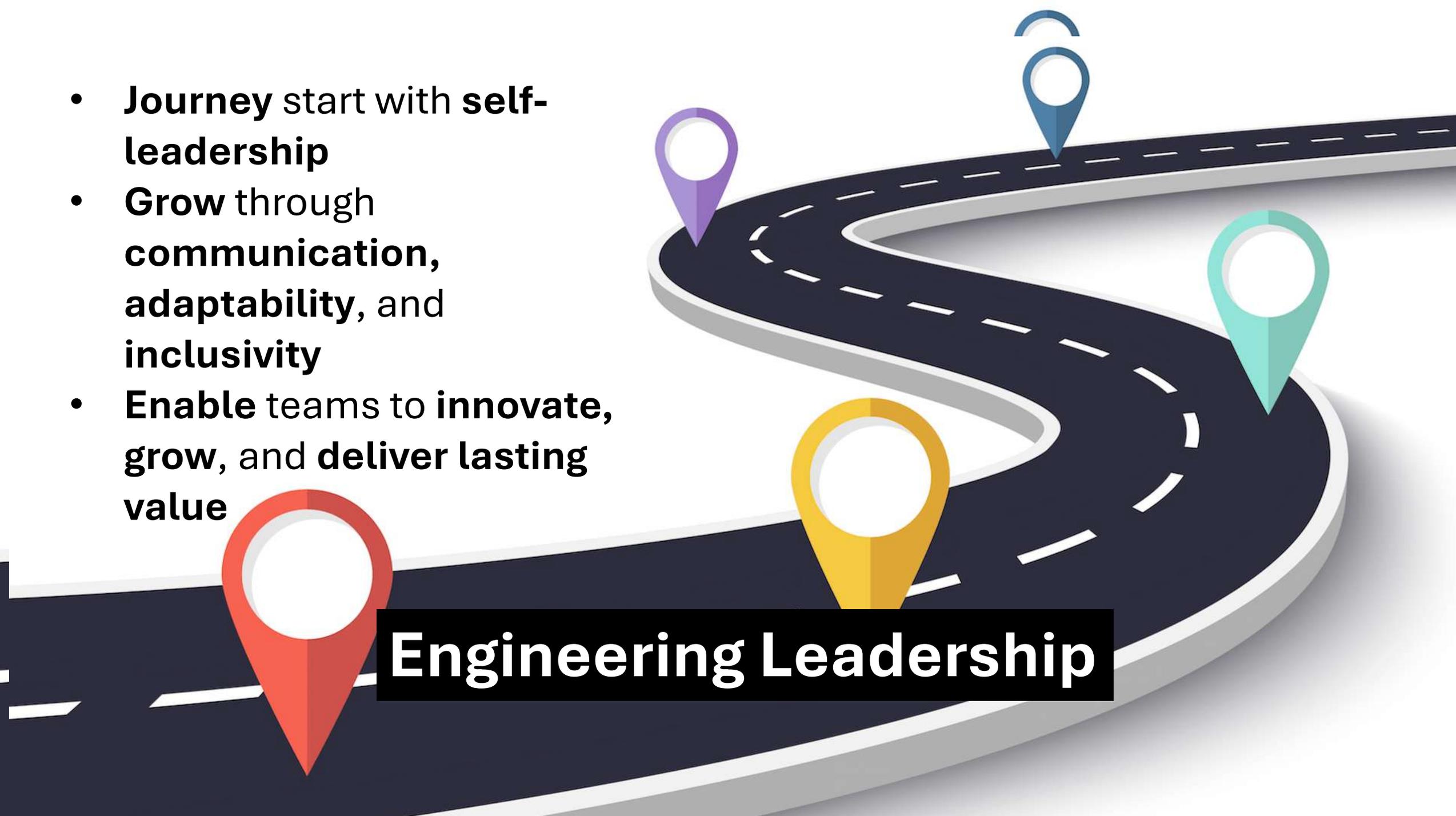
**BRIAN TRACY**  
— INTERNATIONAL —



- Transform **technical work** into **real impact**
- Beyond **managing projects**
- Set **vision**
- **Empower** people
- *Align engineering with business goals*

# Engineering Leadership

- **Journey** start with **self-leadership**
- **Grow** through **communication, adaptability, and inclusivity**
- **Enable** teams to **innovate, grow, and deliver lasting value**



**Engineering Leadership**

- 
- Guide teams
  - Shape technical direction
  - Deliver at scale

# Step Into Engineering Leadership With Confidence

- **Introduction**
- **Definition**
- **Engineering Leadership vs Engineering Management**



- **Importance of Engineering Leadership**
- **Roadmap to Becoming Engineering Leader**
- **Challenges & Pitfalls in Engineering Leadership**



**Real leadership is  
leaders recognizing  
that they serve the  
people that they lead.**

PETE HOEKSTRA

**BRIAN TRACY**  
INTERNATIONAL

Thank

you

