Communicating Our Knowledge with Our Next Generation of Engineers

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Agenda

Meet the Presenters

Background

Generation Diversity

Challenges

Differences in Learning
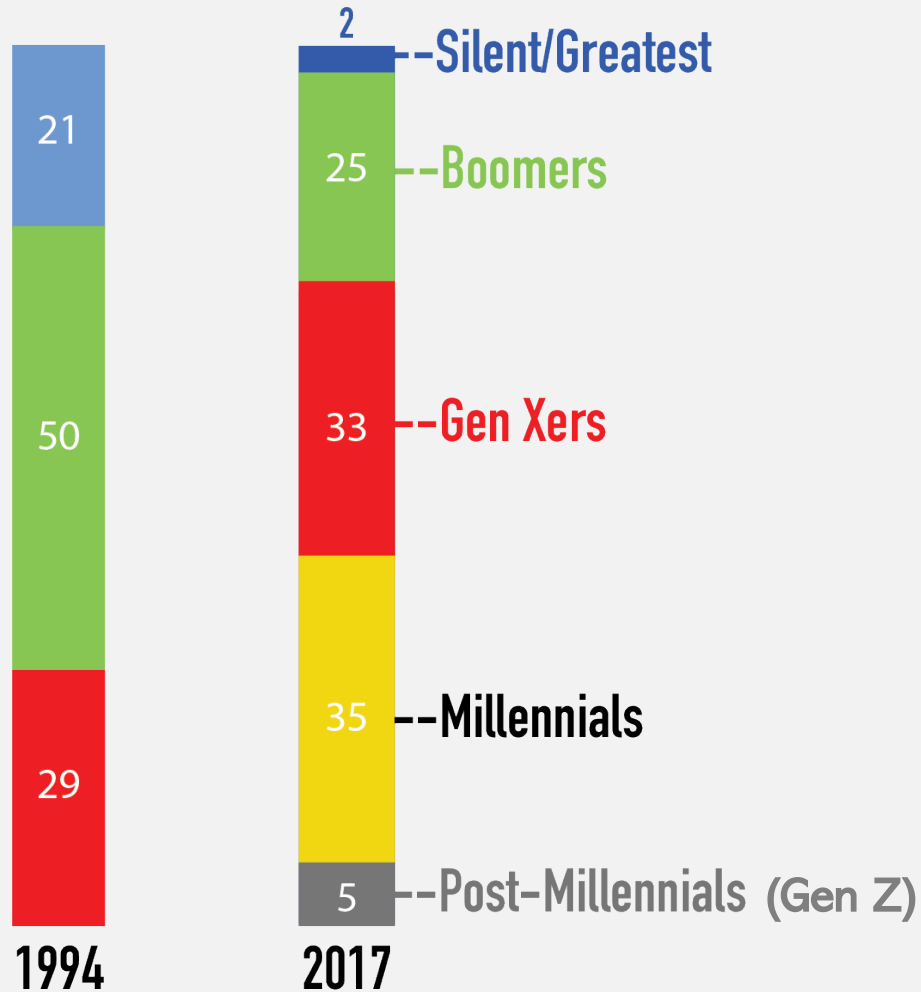
What do we do?

Takeaways

How many of you have a family member who recently entered the workforce?

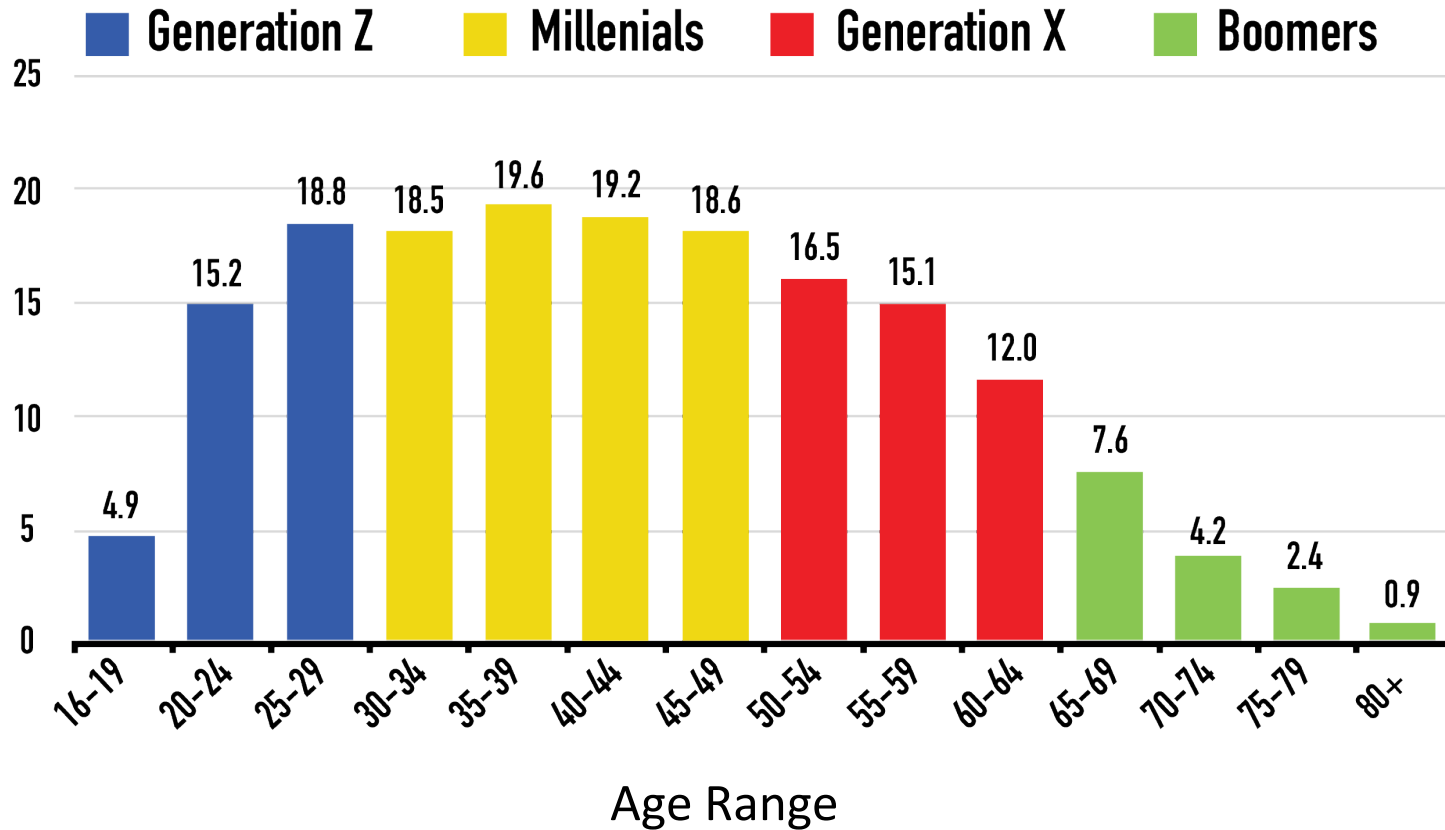How many of you know anyone who has retired in the last year?

More than a third of the workforce are Millennials

2 --Silent/Greatest

25 --Boomers

33 --Gen Xers

35 --Millennials

5 --Post-Millennials (Gen Z)

21

50

29

1994   **2017**

Background

Baby Boomers are retiring and Millennials are now making up a greater proportion of the workforce.

Note: Labor force includes those ages 16 and older who are working or looking for work. Annual averages shown
Source: Pew Research Center analysis of monthly 1994 and 2017 Current Population Survey (IPUMS).
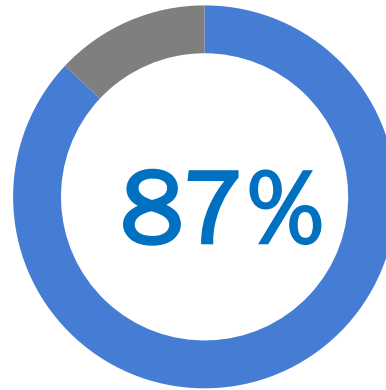
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Influx of Work

INDOT Projects: More than $2B/year over the next 5 years
New projects in addition to maintaining legacy infrastructure

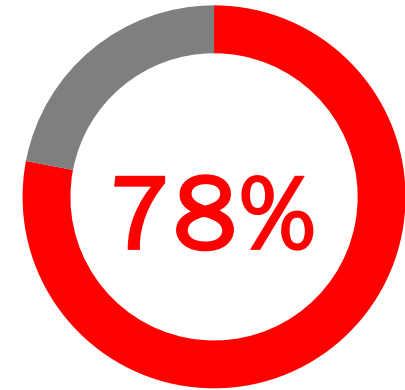Younger engineers are doing the heavy lifting for design work and need to learn quickly

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Generation Diversity can…

89%
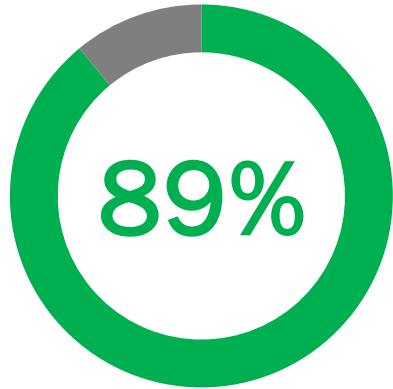
Be a positive element of work

87%

Be seen as an opportunity to learn

78%

Lead to conflict

Generational diversity: having a wide range of ages represented among your employees

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"

A boat that isn't going anywhere doesn't make any waves.

Challenges

Calls/Messages: Younger engineers prefer messages while calls aid more in holistic learning

Old School Learning: It is important to promote broader knowledge with the rise of more direct answers and "Ctrl + F"

Key to retention could be fostering this broader, more holistic learning, thus fostering curiosity and interest

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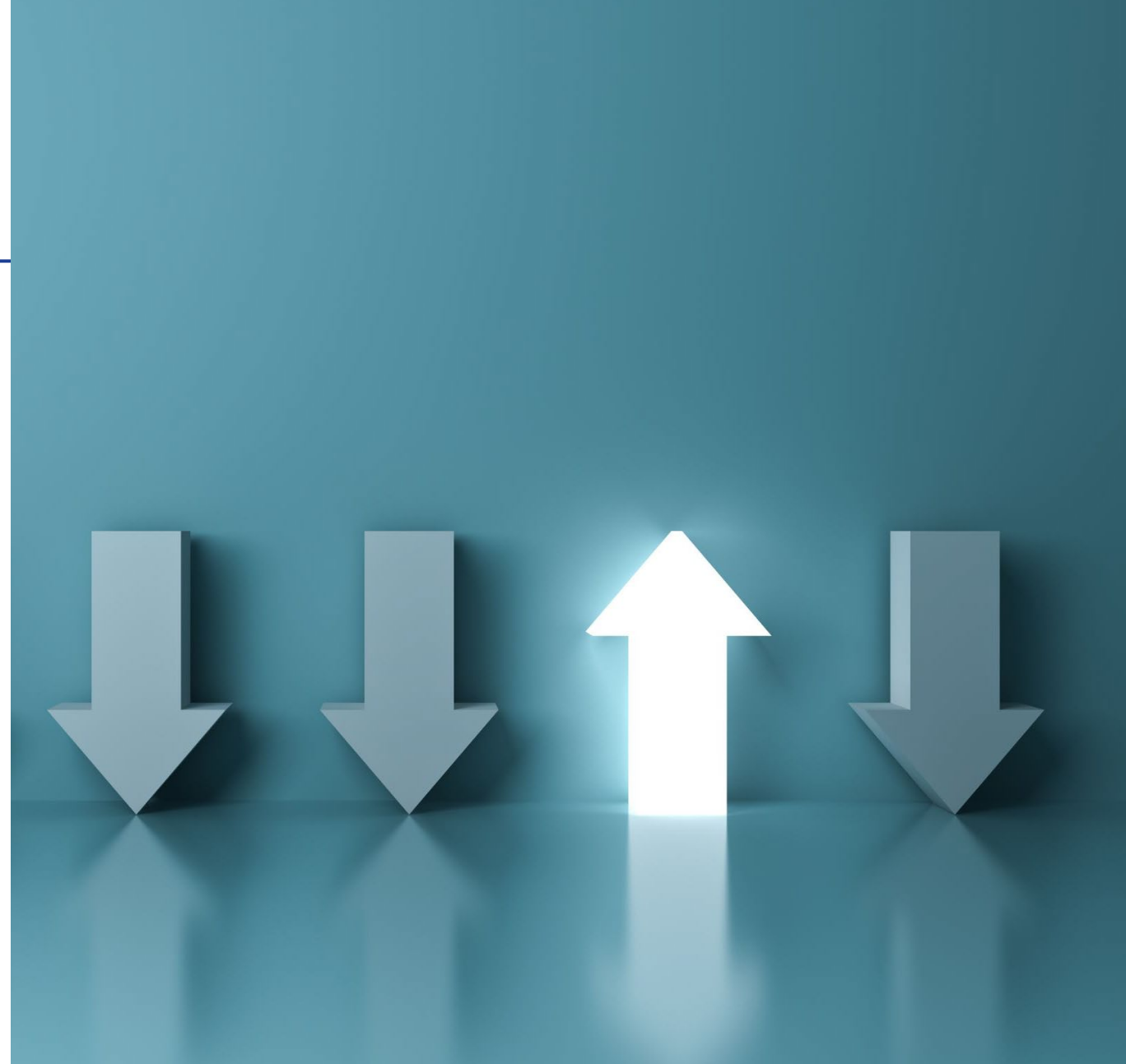
How many of you have been in a situation where you have been afraid to ask a question?

Younger engineers may not be comfortable in the learning process and working on approachability can help

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Advancing Technology

Textbooks and Screens

Development of CADD: the differences in hand drawing and now using CADD as a tool, not a crutch

2D and now 3D CADD – Model Based Design

Now learning WHAT something is and HOW to do it in CADD: Calculations vs. Visual Learning

Adapting: Importance of open-mindedness

Differences in Learning

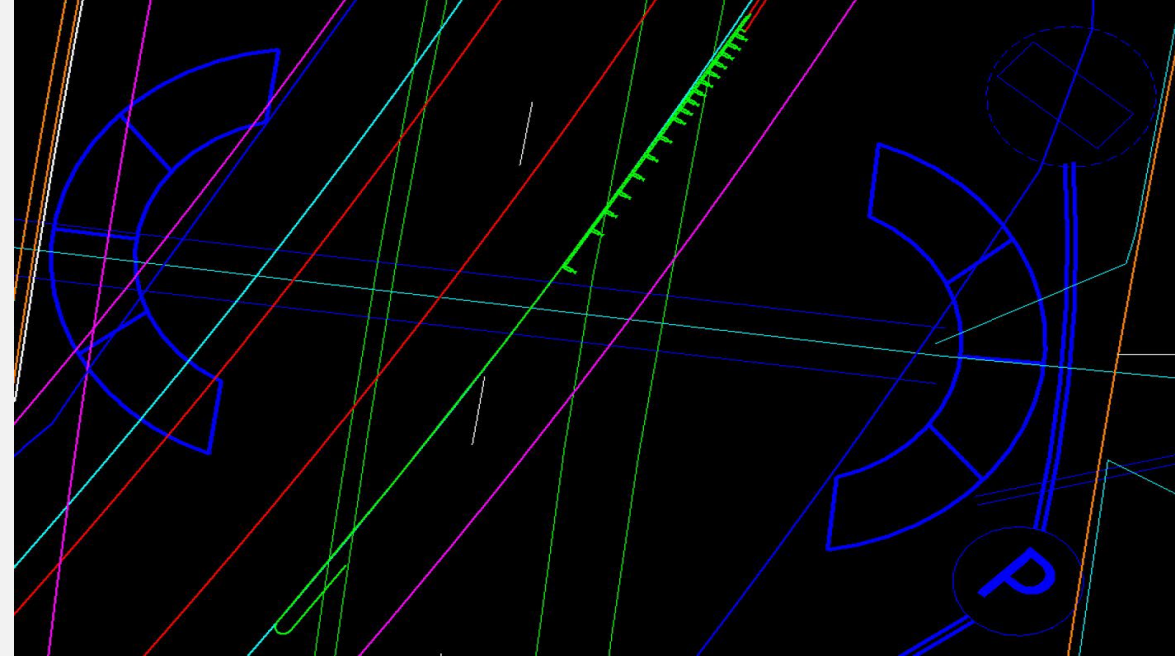How many of you have switched careers, even within the industry?

What do we do?

Field Visits

- Visual learning

- Risk assessment

- Solution-based mindset

- Use learning to keep younger engineers engaged

Fieldwork

Fieldwork assists in understanding design and constructability –

it's easier to design something you've seen and recognized in the real world.

Networking

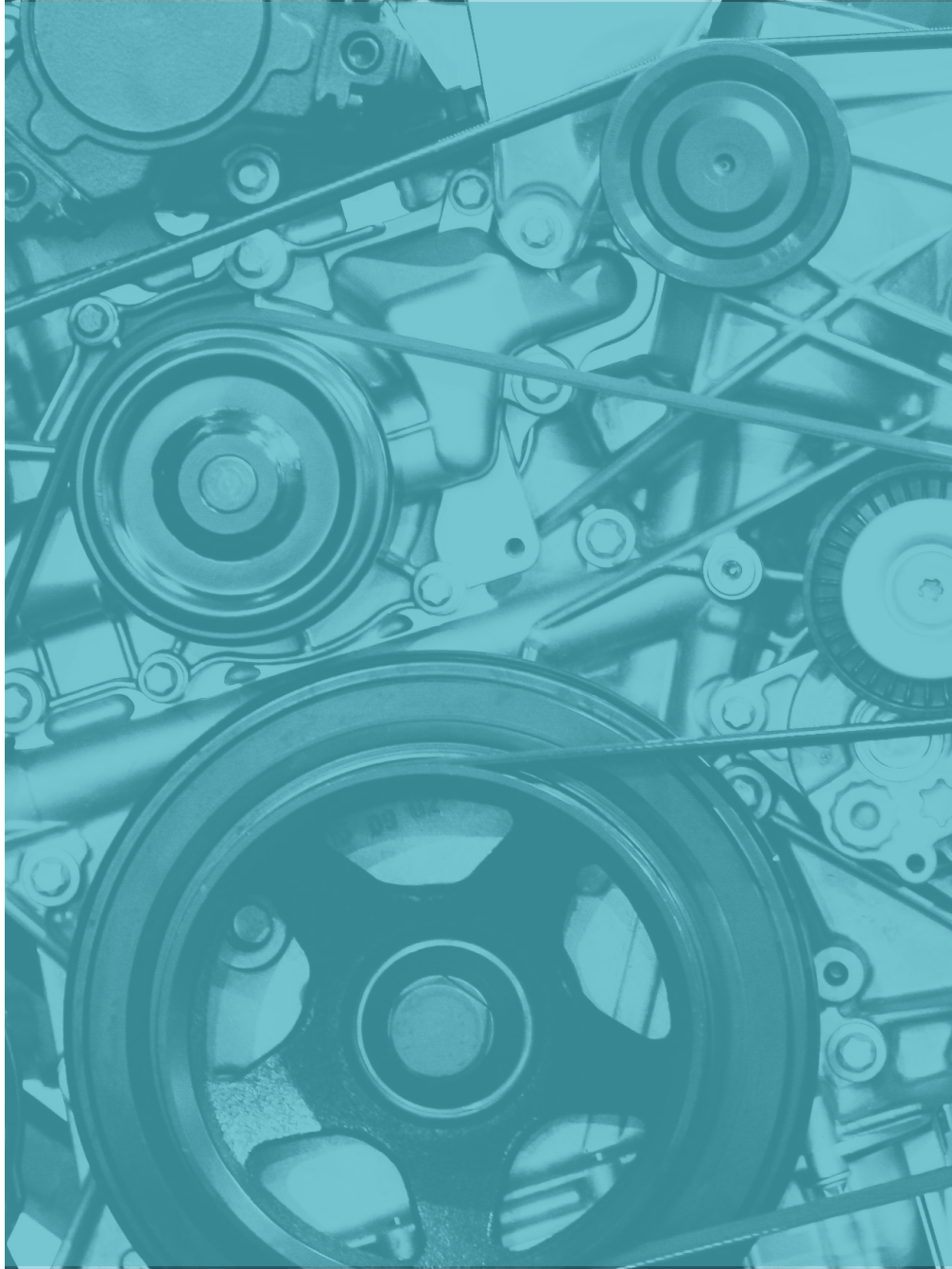- Build relationships

- Effective communication

- Team building

How many of you have had someone suggest or tell you how to do something?

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Alignment

Lane CL

PMS

Can learn something from all experience levels and different perspectives.

For Younger Engineers

Take notes

Have a "Send Me" attitude: Be open to opportunities, be a go-getter – when an opportunity arises, say "send me".

Ask questions: work through problems without spinning your wheels, don't be shy about wanting to learn.

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Find your path

Be Thoughtful & Patient

It takes time to develop skills and knowledge needed to do the job professionally.

Find a gap in your firm that no one wants to fill, and fill it yourself.

1:1 Conversations with manager

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Encourage non-traditional mentoring

Meaningful one-on-one relationships break down misperceptions between generations.

Two-way, mutual mentoring has greater benefits than traditional, one-way mentoring relationships.

Knowledge and learning can go both ways

More experienced engineers can learn from "reverse mentoring" – experiential learning, CADD, etc.

Low risk of embarrassment and greater **mutual respect when learning is in both directions.**

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Takeaways

For Experienced Engineers

Conferences: help younger engineers get exposure to other aspects of projects and industry and provides motivation by knowing what is going on outside of their immediate work.

Networking: help younger engineers meet others in their industry and learn from them; potential clients or partners may be present – build relationships; encourage younger engineers to join external networking groups/boards.
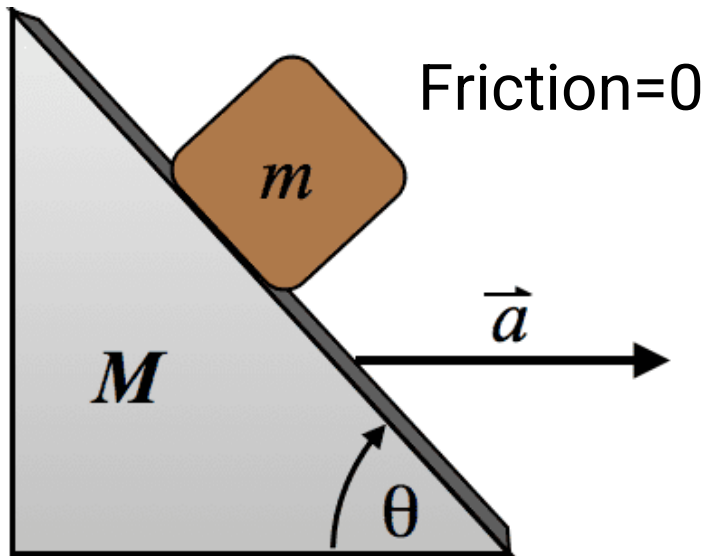
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Tips

Everyone is Different

Approachability: seeing people in a new light "outside" of work helps younger engineers feel more comfortable asking questions.

Check In: fosters asking questions, shows care.

The Learning Curve: every individual is different, important to be patient.

Takeaways For Everyone

Friction=0

Communicate your preferences openly

Respect – don't assume zero friction: **Engineers aren't like physics problems!!!**

Foster ownership: learn as you go, be your own "checker".

"That's an idea": even if you don't think it's the "best" idea, it's still worth listening to and learning from.

Solution based mentality: multiple perspectives can help find the best solutions and it's important to value differing views – focus on solutions, not the problem.

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Questions?