What your developers DON'T know!

….and what you can do about it!

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Please note:

- Stephen F. Austin is NOT is Austin, Texas
  (it is in the NE corner of Texas, in the city of Nacogdoches – the oldest city in Texas)

Why this talk

- As part of the Software Engineering course I teach, I work with students on how to "succeed in the real world"

- The content of this talk comes from feedback from our Computer Science Advisory Board

They Don't Know Traditional Languages

- Most graduates have a "working" knowledge of (AT MOST) two languages
- Reason – this is all that ABET requires of CS and Comp Engineering Programs
- Typical choices
  - Java
  - C++
  - Some scripting (but usually only "cool" scripting languages)

Language Issue Side Effects

- Unable to directly work in supporting teams that work in other languages
- Unable to easily work on older projects
- Unable to do maintenance!!!
- When they say they know a dozen languages, they really have minimal experience in all but two.

They don’t know how to do Maintenance

- Legacy code and maintaining legacy code is not usually taught (other that as an abstract topic) in a curriculum.

- Developers do not know how to effectively debug, nor to plan for running a piece of code more than one time.

- They are unaware how to write code that efficiently utilizes *time* or *space.*

They haven't worked with Legacy Systems

- Which typically includes any REAL experience with any OS other that Windows
- Limited Un*x experience
- A few Mac programmers
- Little, if any, experience with older legacy OS

They are not skilled in Teamwork

- Most school projects are individual
- Most students (the good ones) really don’t work in team projects, they do the work themselves!
- They lack the ability to adequately plan and delegate work

Because they can't Plan

- Typically, start a project at the *calculated* last minute, based on intuitive performance metrics

- They lack the ability to breakdown large tasks
  - Earned Value
  - Function Points
  - LOC / methods

They often lack interpersonal skills

- Question: how can you identify an extroverted engineer?

They often lack interpersonal skills

- Question: how can you identify an extroverted engineer?

- Answer: they look at YOUR shoes when they talk to you!

Which means they might not be good at sales pitches or demonstrations

- Reasons
  - Lack of experience
  - Lack of self confidence
- Side effects
  - Inability to coherently ask for (and justify) funding
  - Inability to fully understand funding issues

And they lack Leadership Skills

- Can’t run teams
- Often don’t understand how to motivate (and not alienate) others

Other potential problems

- Dress for success
- Eat for success
- Problems with authority figures
- “Cute but charming” eccentricities

So they are not good at Presentations

- PowerPoint skills are not effectively taught in school – it's mostly learned
- Graduates cannot often coherently make an effective presentation
- They often rely on too much glamour and glitz

- Many of them are ineffective at estimating the time it takes to present slides

Why it’s not as bad as you think!

- Note that “Law Schools” are not “lawyer schools” – they teach the “theory of the law”, not how to be an attorney

- Medical Schools make graduates an “M.D.”, but still require 4 years of internship to become a “Practicing Doctor”

What you can do!

- Assume that new developers straight out of college will need some time to become both technically and interpersonally proficient.

- Take steps to meet their needs on both of these topics

Technical skills

- Assume that pride (and insecurity) will keep new developers from asking for help

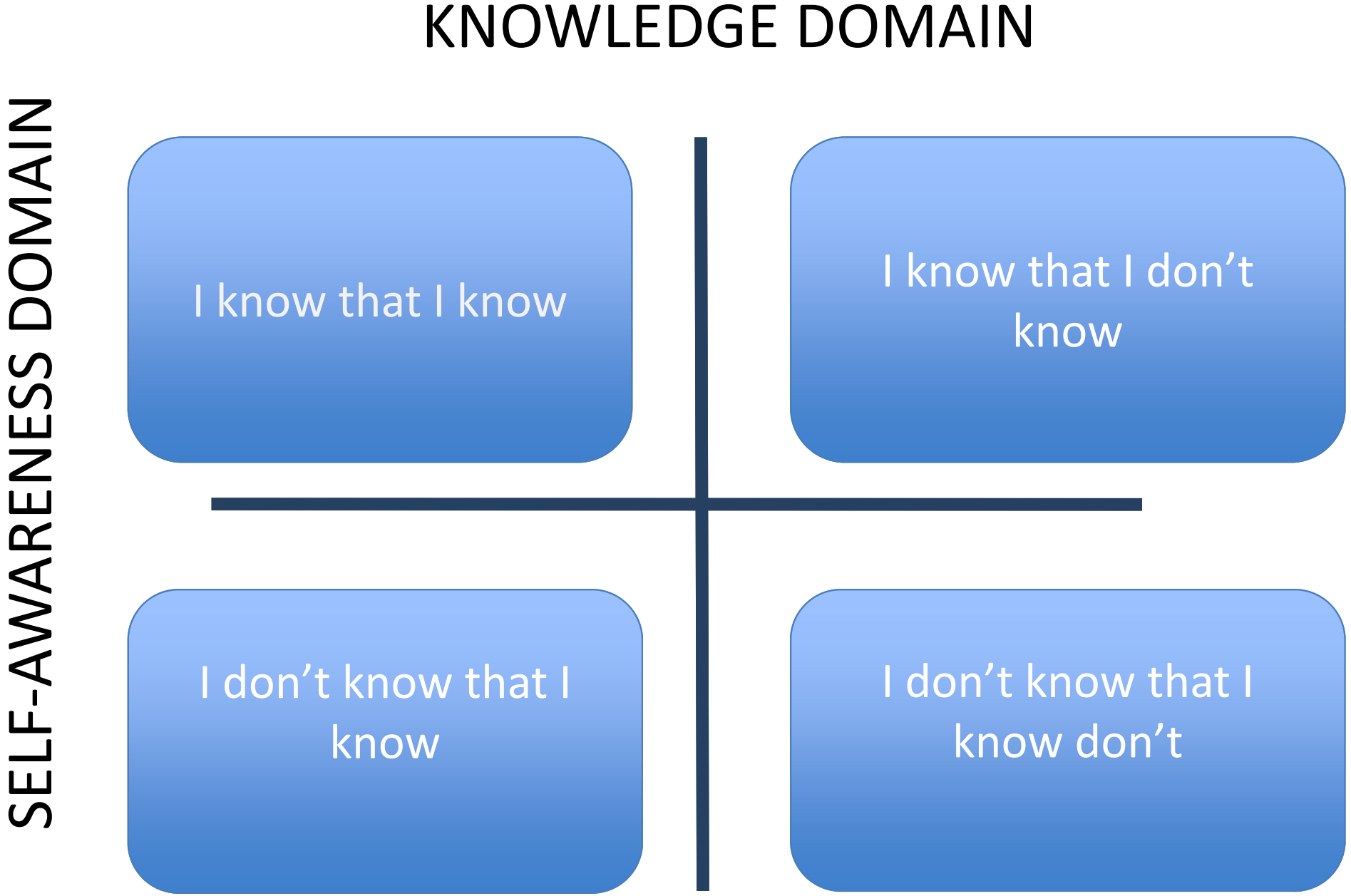
- Classes or workshops should not be limited to those who request them – they should be presented as “skill enhancers” that all “keep new developers sharp”
- New hires are often timid about asking for training

Two “must haves”

- A mentor program that is separate from the supervisory chain
  - The mentor should not even work for the same supervisor
- A peer review program that is not optional
    - Education/Training
    - Knowledge
    - Skill Enhancement

Why required skill classes?

- It’s the old “If all you have is a hammer – all problems look like nails” problem
- Many new graduates do not know what they don’t know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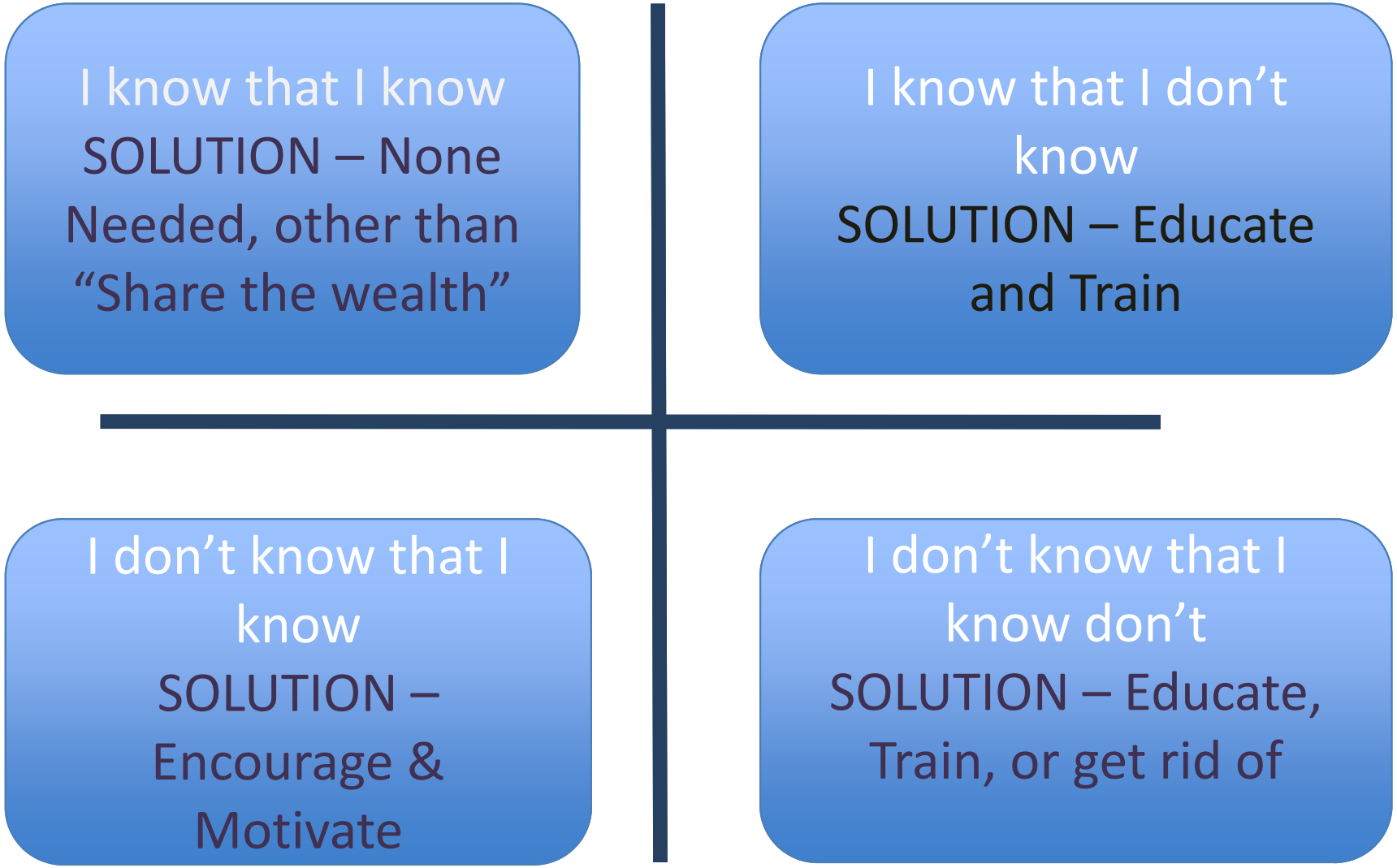

Self-confidence

Interpersonal skill enhancements

- Mentors
- Constructive and non-supervisory feedback
- Opportunities to work with diverse group of developers

Final thoughts

- I used to refer to “new graduate hires” as eggs – you have to incubate them to hatch

- Now – I refer to them as “raw dough”. All of the ingredients are already incorporated. All it needs is a conducive environment.
- If there is not enough “heat”, it stays dough. On the other hand, if there is too much “heat”, it rises too quickly and you get poor results