Saving the Titanic:
Using CAR to Rescue a Sinking Process Improvement Program

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A Plea for Help

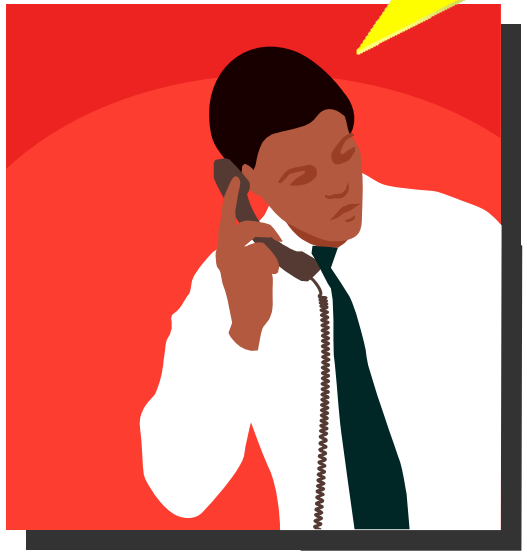
The situation:

- It's Fall 2003
- An organization is moving toward SW-CMM (CMM for Software) Level 3
- Their process improvement (PI) consultant is yours truly

And I get a call…

That's Customer Service?

We've fallen hopelessly behind on our process improvement program. Can you help us develop a **new schedule**?



My client

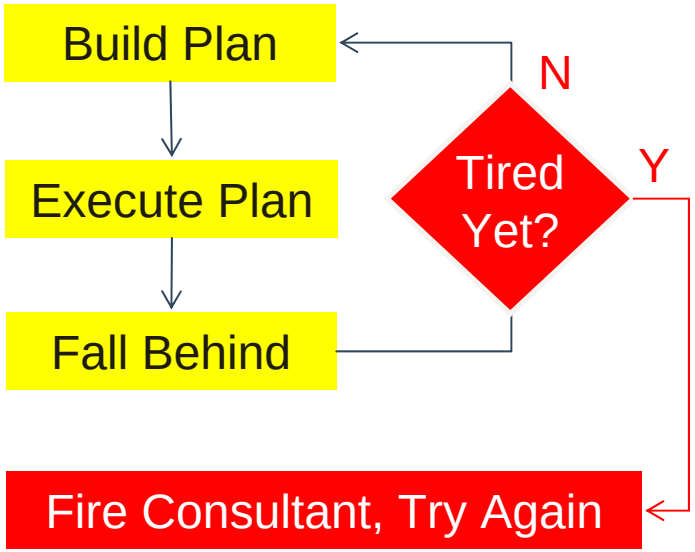
Ummm, no...

…at least, not unless we also address the reasons **why** we're behind schedule.

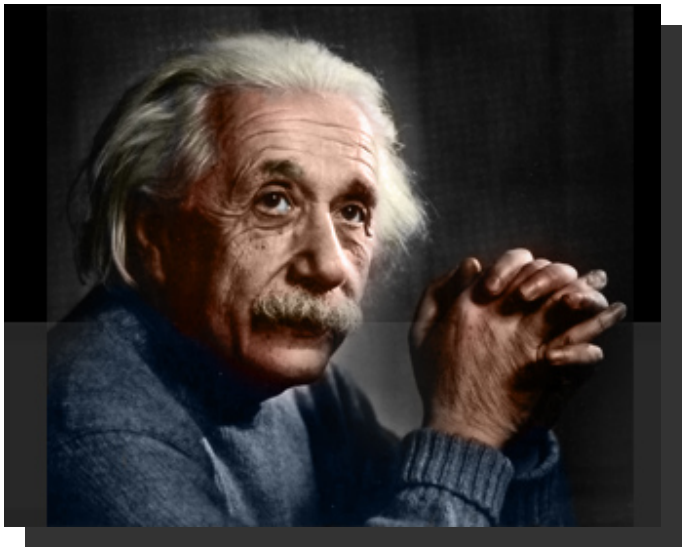
Me
(stunt double)

Stop the Insanity!

Developing a new schedule without addressing **root causes** of the slippage is not likely to prevent future slippages.



The *Process Improvement Insanity Cycle*



"Insanity: doing the same thing over and over again and expecting different results."

- Albert Einstein

What the Book Says

Purpose

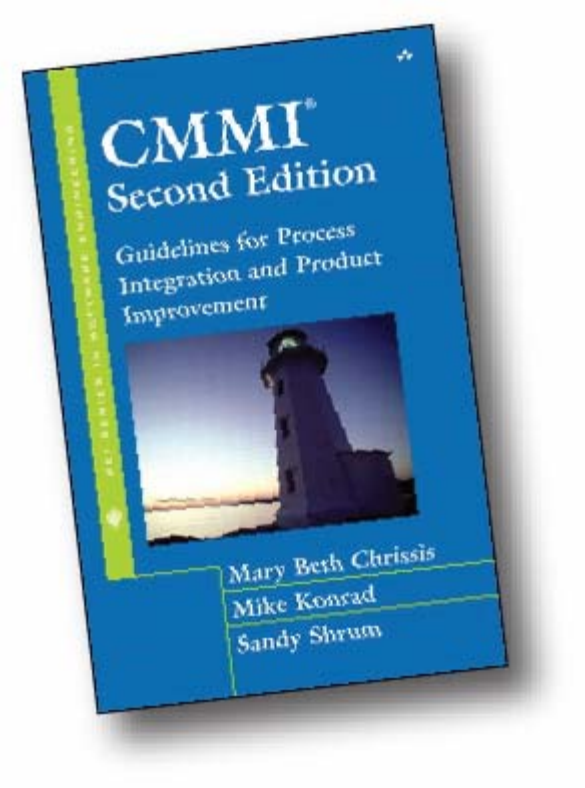
The purpose of **Causal Analysis and Resolution (CAR)** is to identify causes of defects and other problems and take action to prevent them from occurring in the future.

SG 1 Determine Causes of Defects

- SP 1.1 Select Defect Data for Analysis
- SP 1.2 Analyze Causes

SG 2 Address Causes of Defects

- SP 2.1 Implement the Action Proposals
- SP 2.2 Evaluate the Effect of Changes
- SP 2.3 Record Data



CMMI Second Edition: Guidelines for Process Integration and Product Improvement; Chrissis, Konrad, Shrum

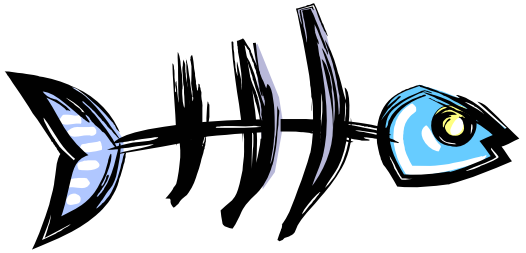
Determining What Went Wrong

SP 1.2 Analyze Causes
Perform causal analysis of selected defects and other problems and propose actions to address them.

I draft a “fishbone” diagram…

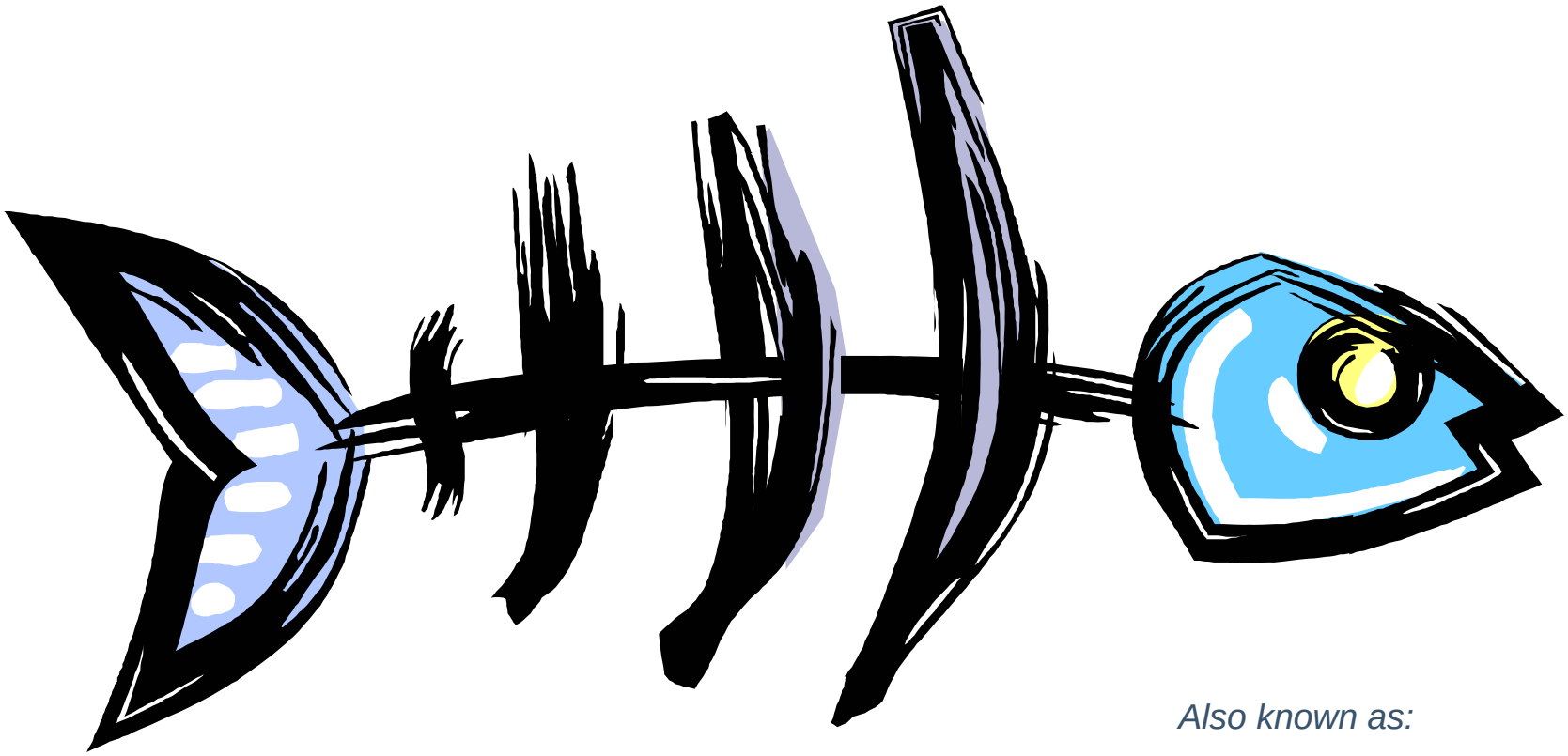
hop on a plane…

meet with my client…



…and we refine the diagram.

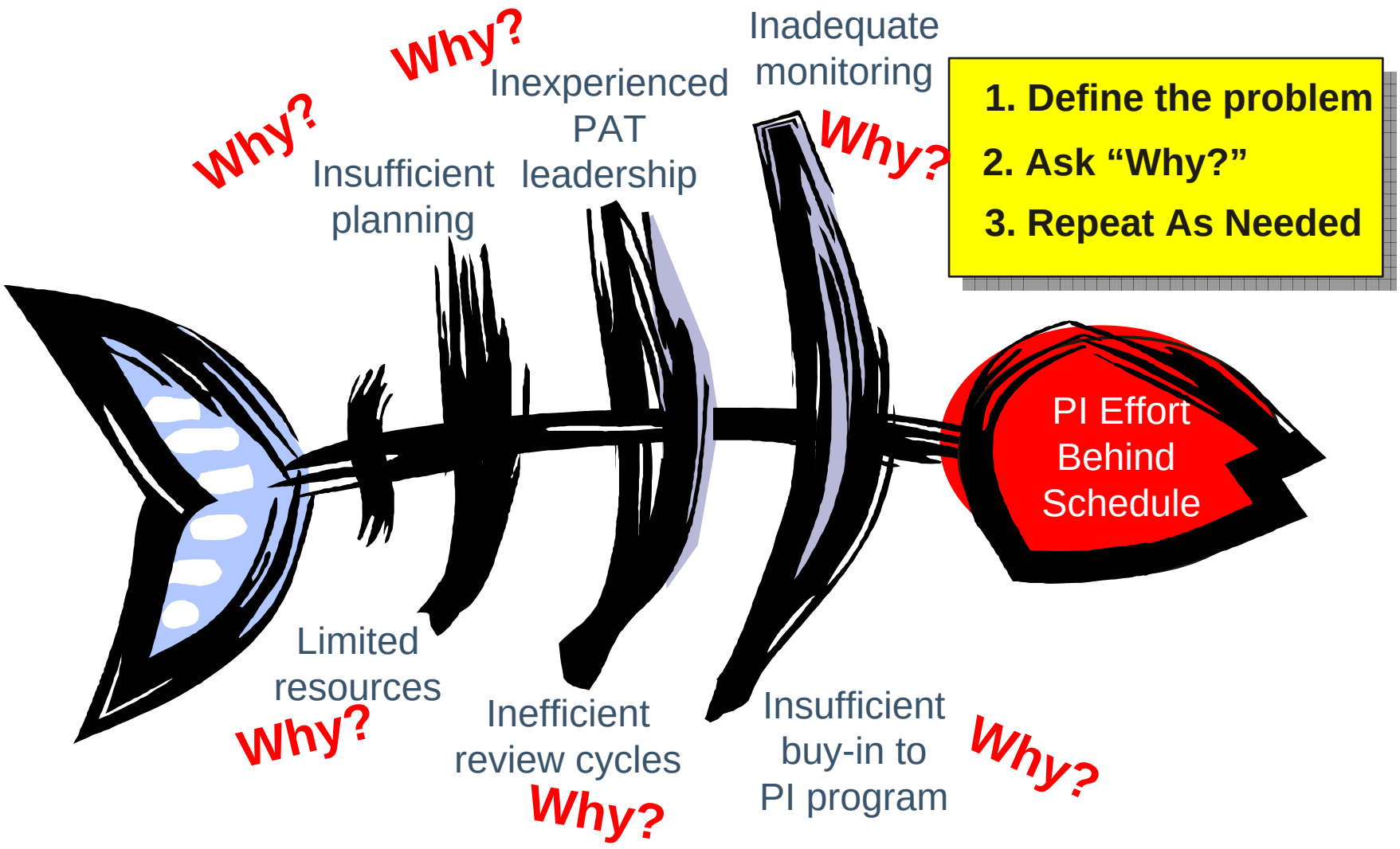
Drawing Our Fishbone



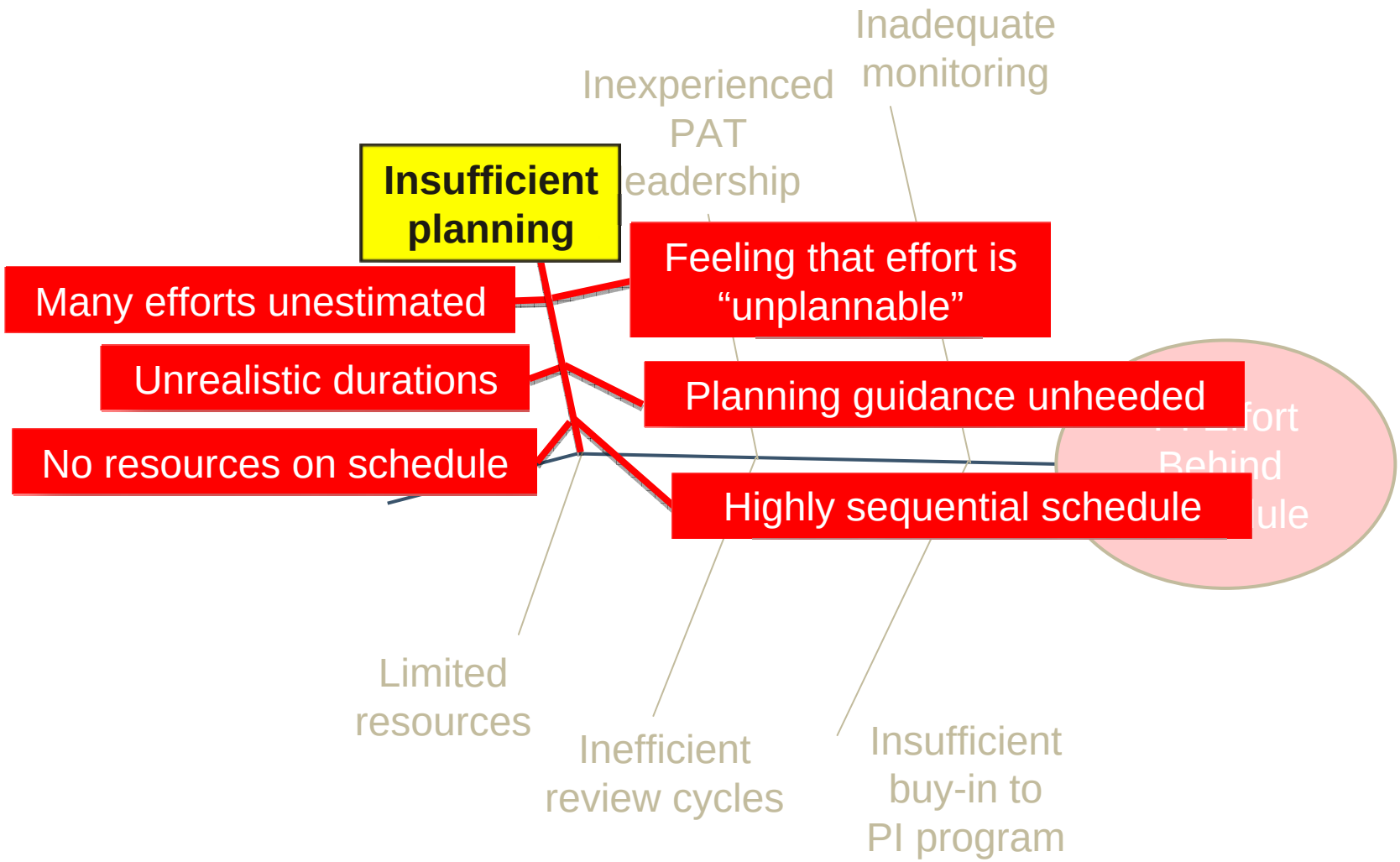
Also known as:

- *Cause-and-effect diagram*
- *Ishikawa diagram*

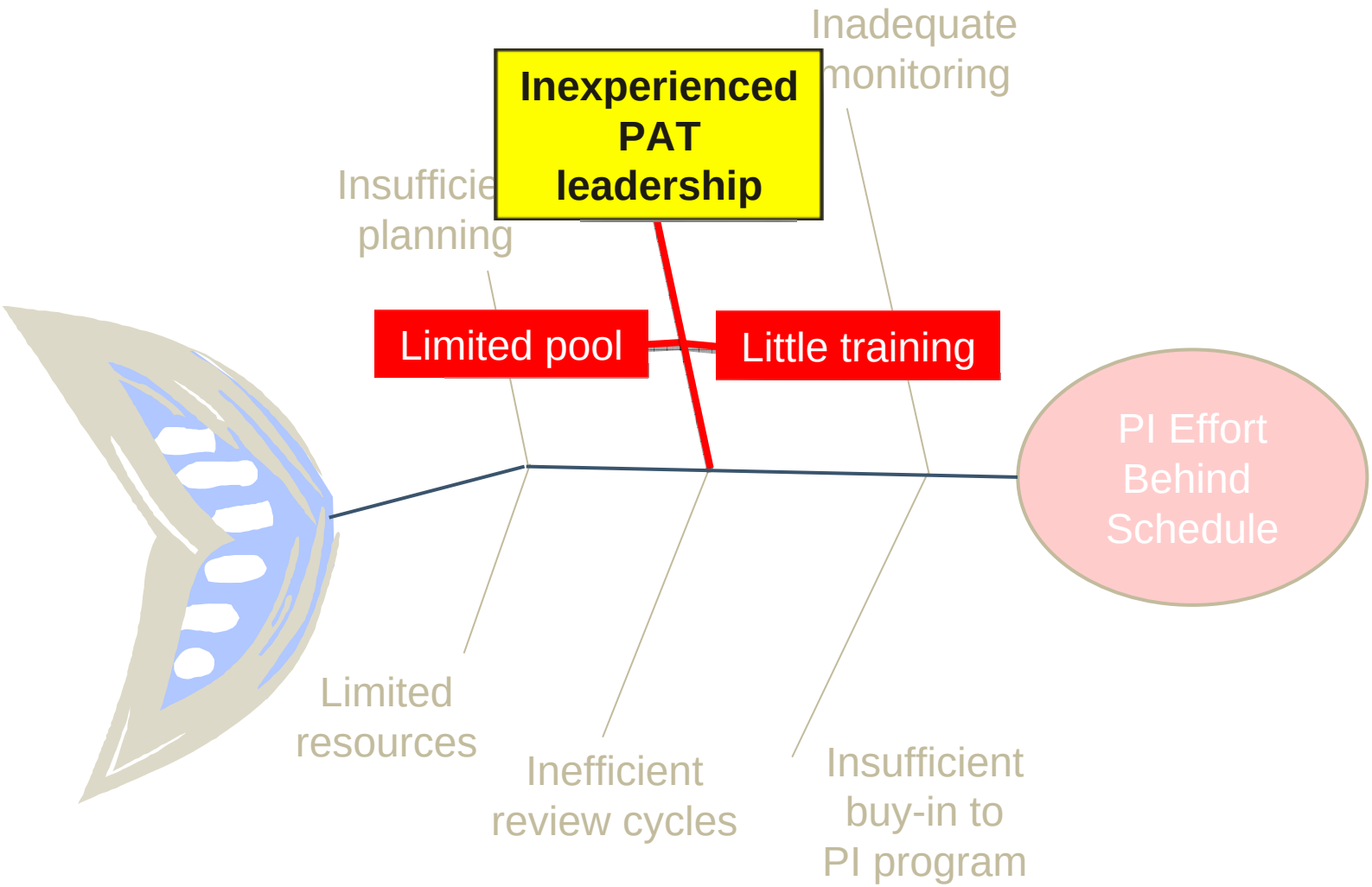
Drawing Our Fishbone



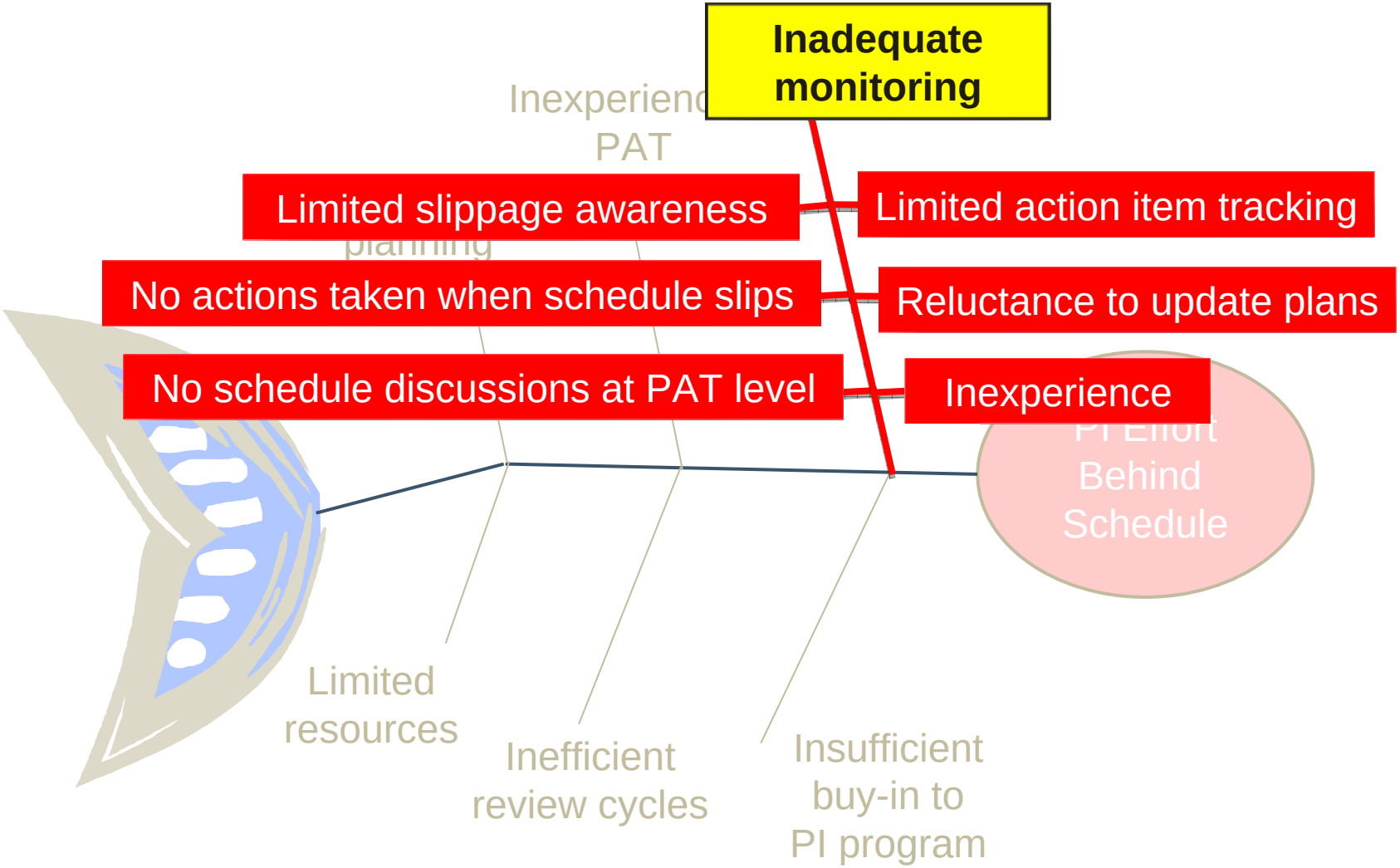
Cause: *Insufficient Planning*



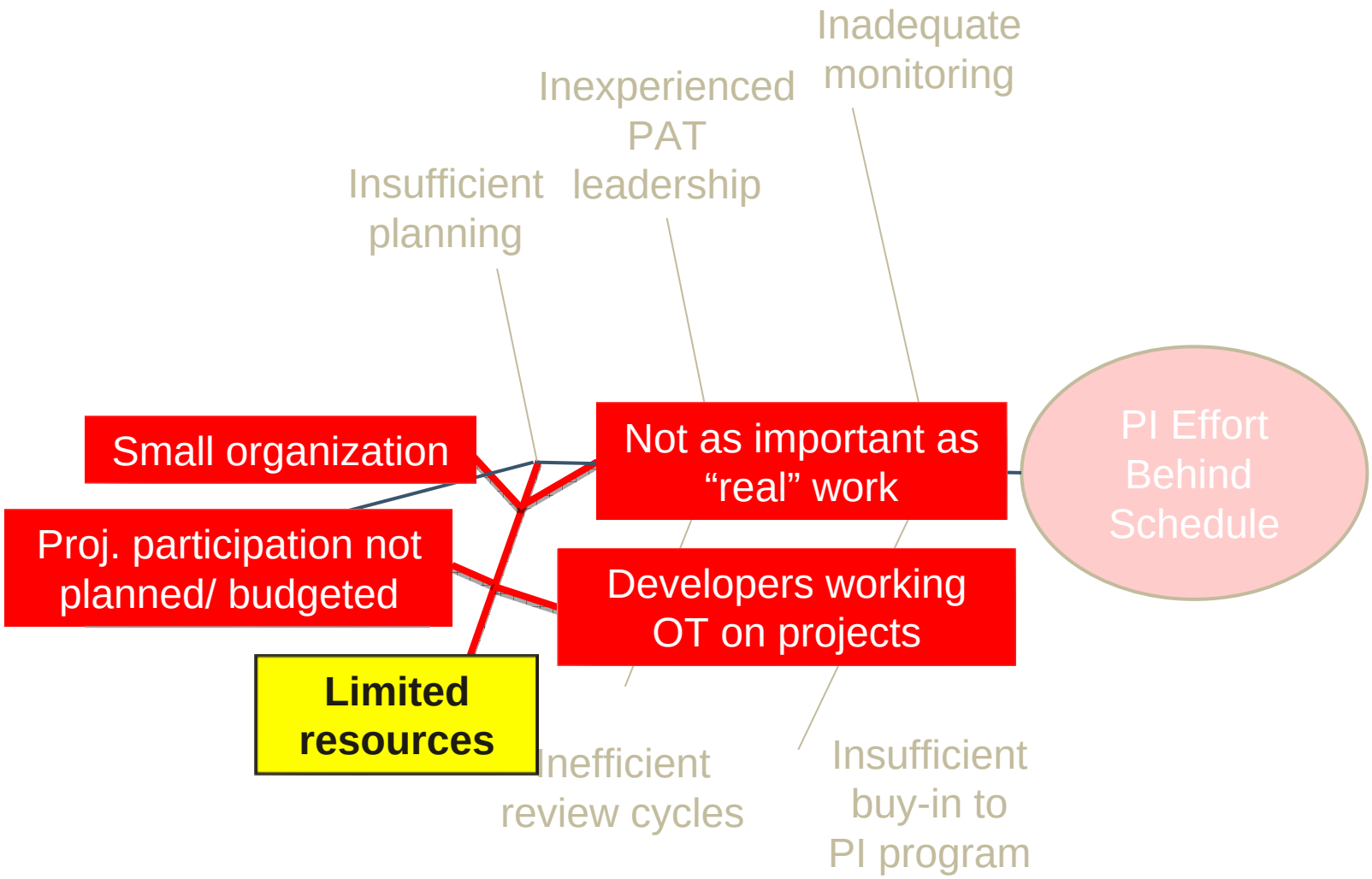
Cause: *Inexperienced PAT Leadership*



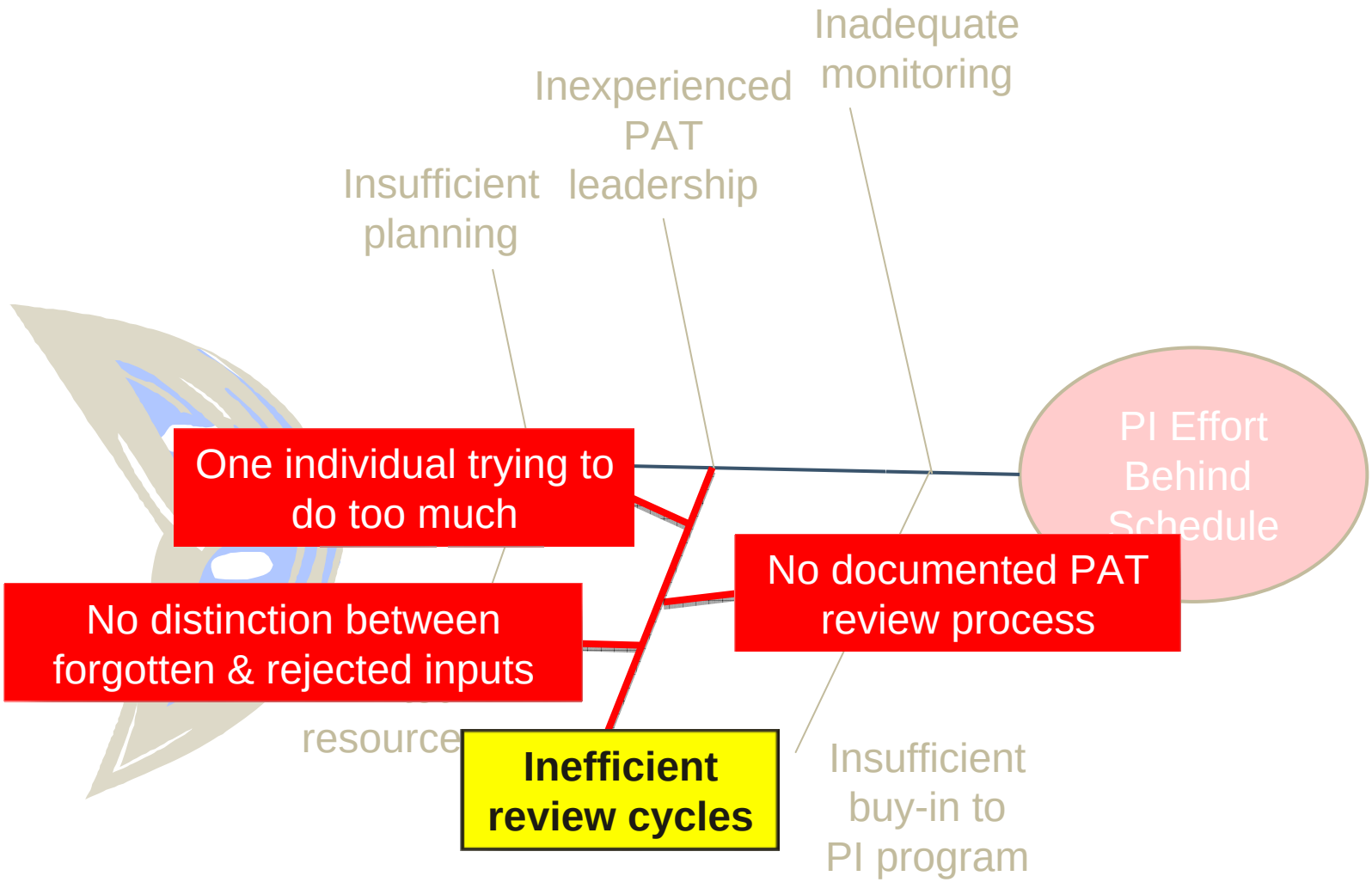
Cause: *Inadequate Monitoring*



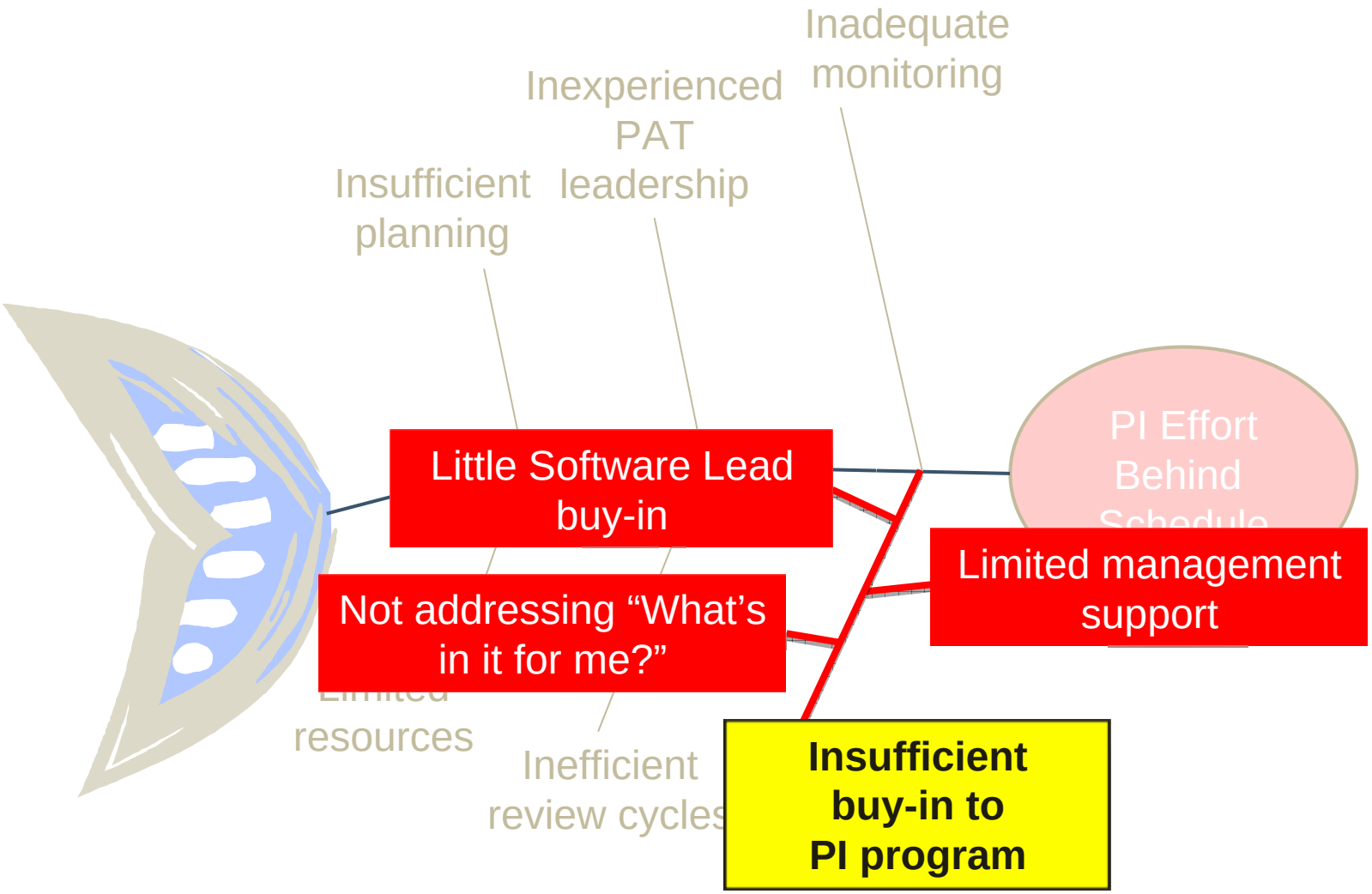
Cause: *Limited Resources*



Cause: *Inefficient Review Cycles*

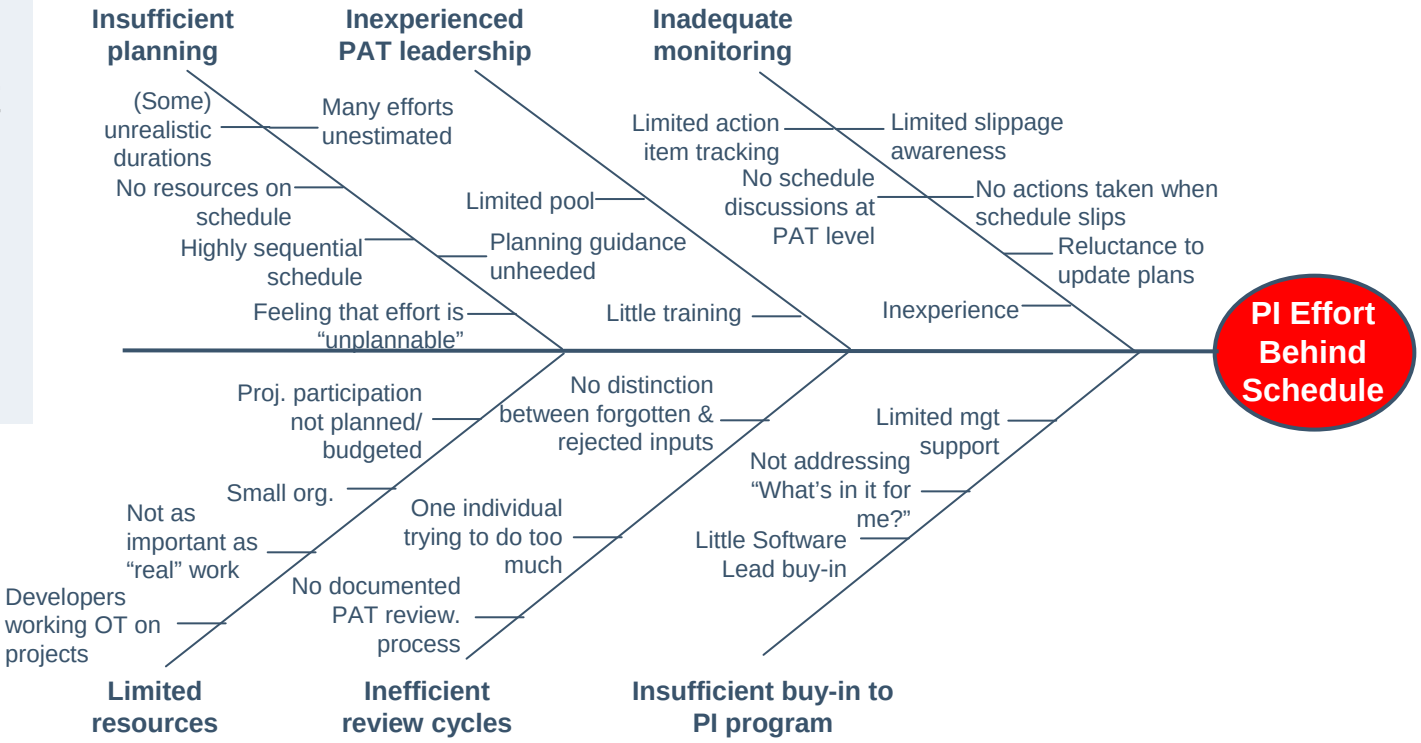


Cause: *Insufficient Buy-in to PI Program*



Final Fishbone Diagram

Our actual diagram was a bit more complex. The one we present here has been ***sanitized*** and ***simplified***.



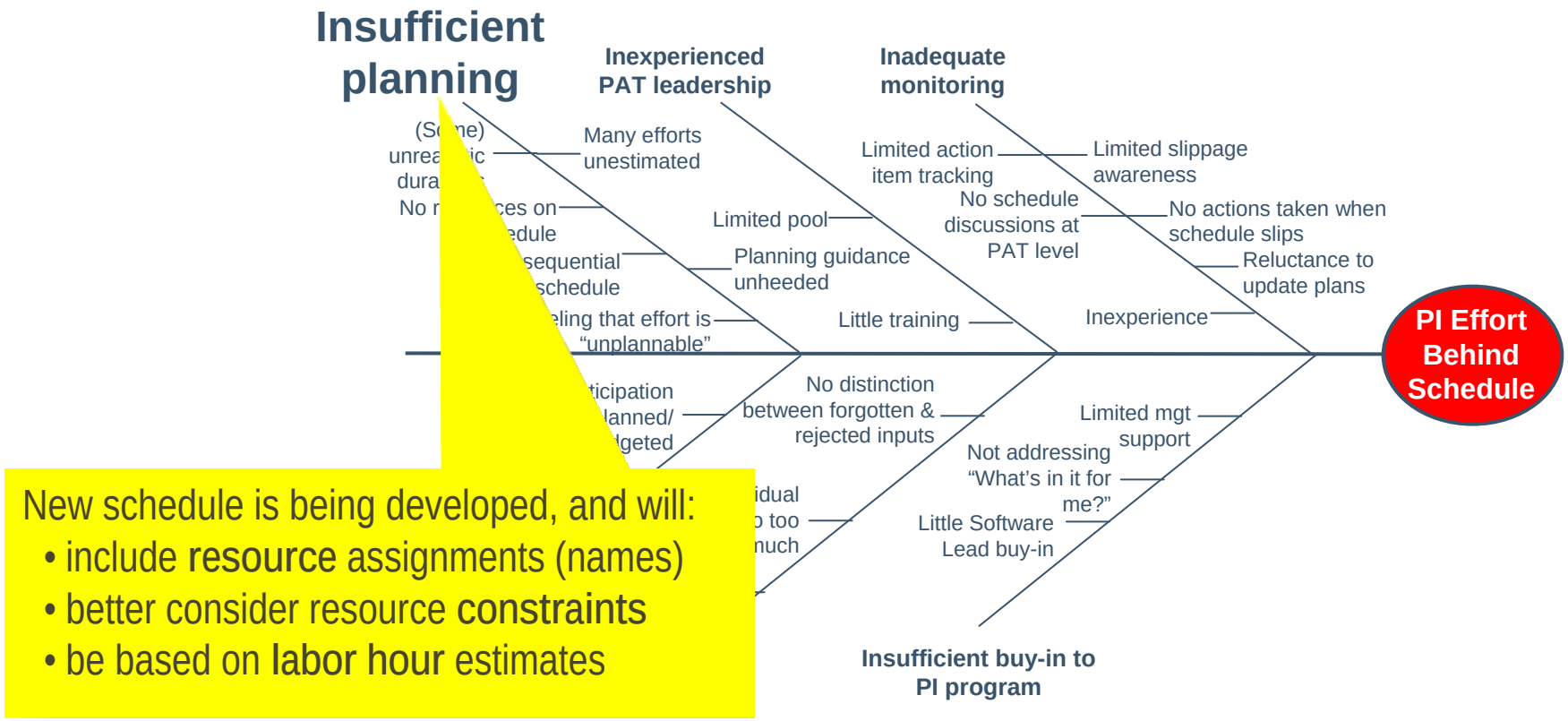
We've Identified Causes… Now What?

We brainstorm solutions…

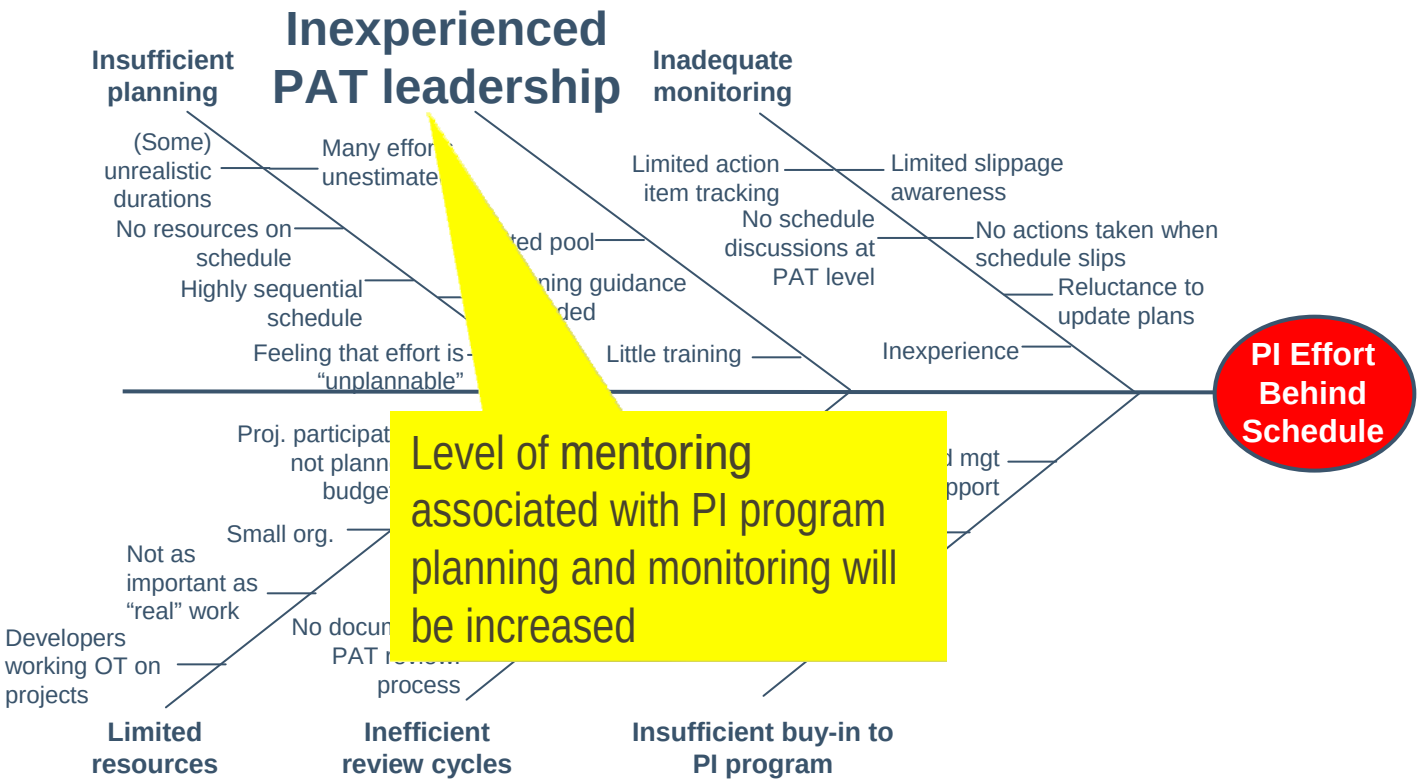
SP 1.2 Analyze Causes
Perform causal analysis of selected defects and other problems and propose actions to address them.

and run these by the appropriate people.

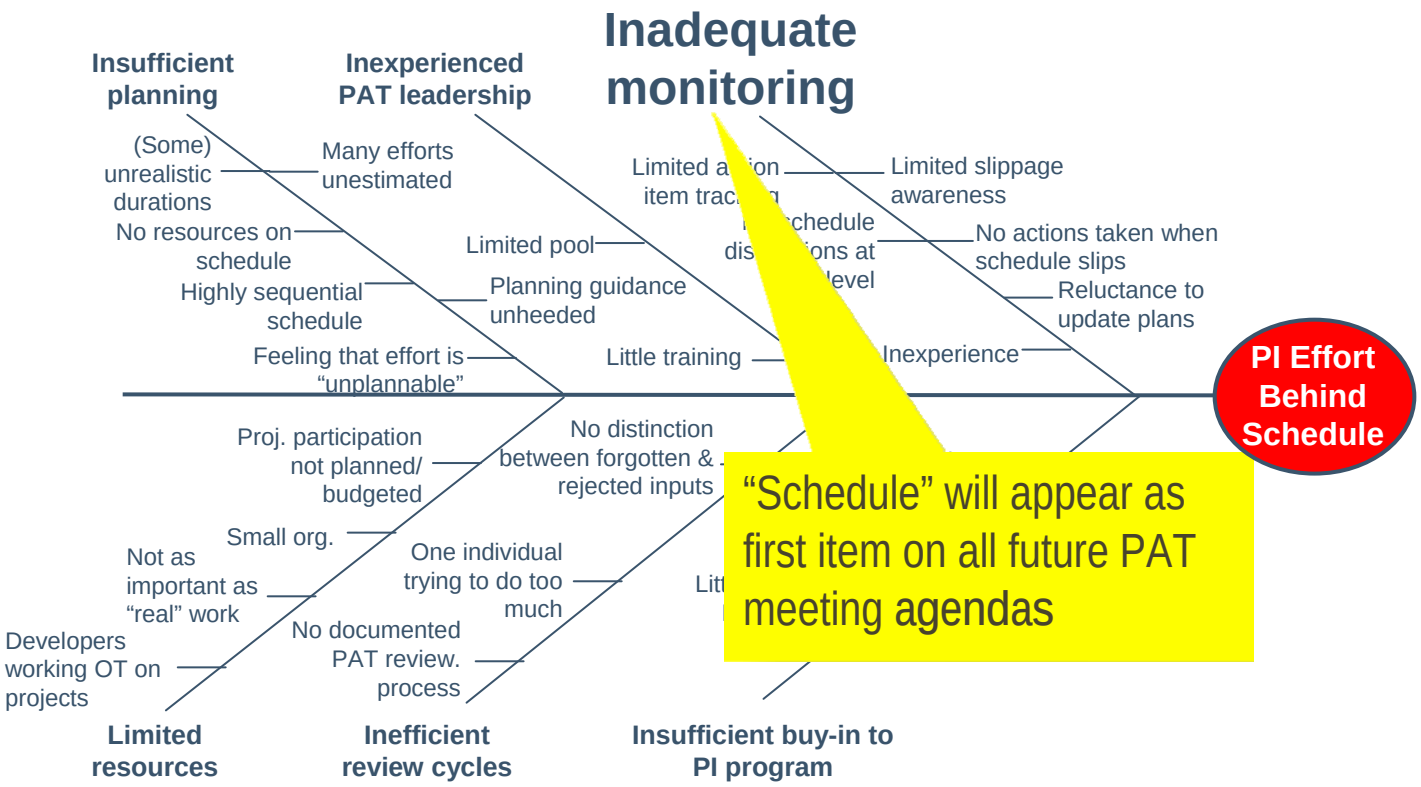
Insufficient Planning: Action



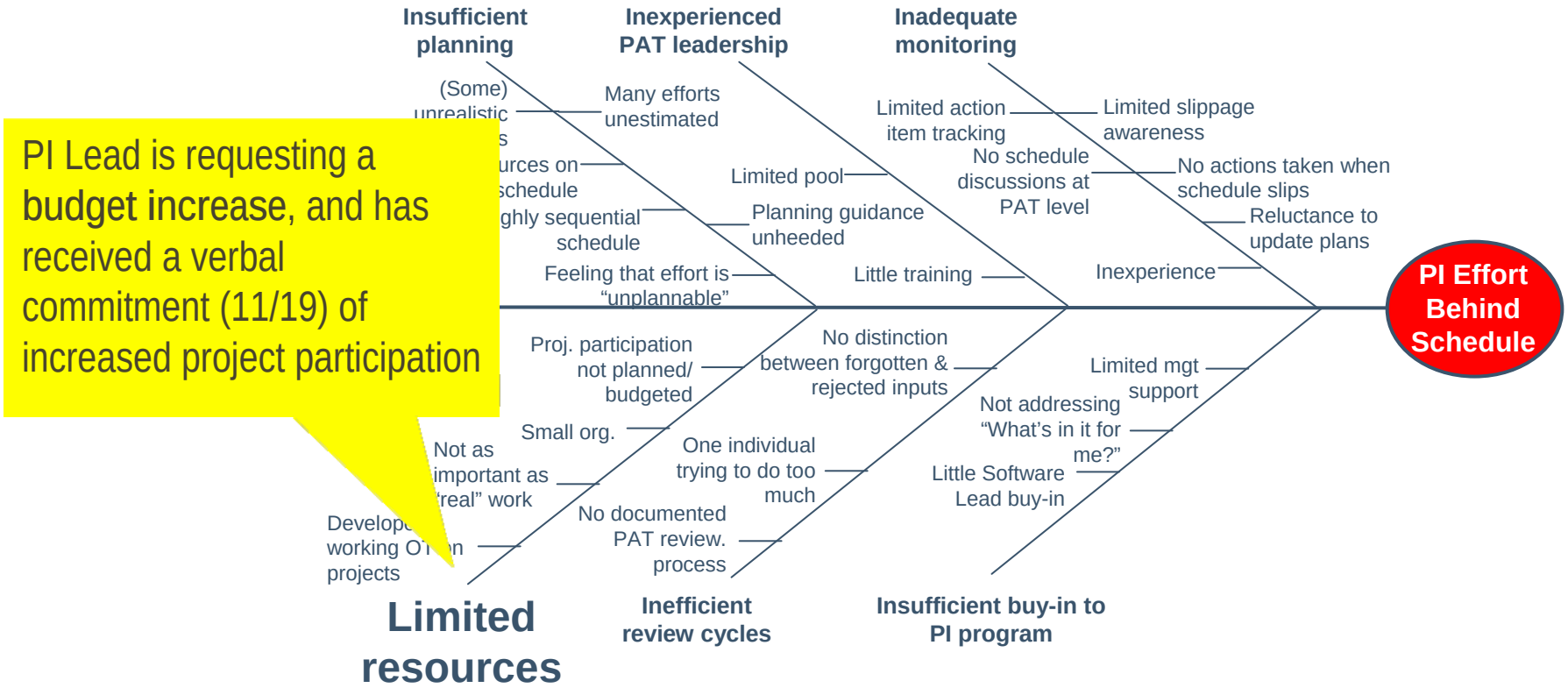
Inexperienced PAT Leadership: Action



Inadequate Monitoring: Action

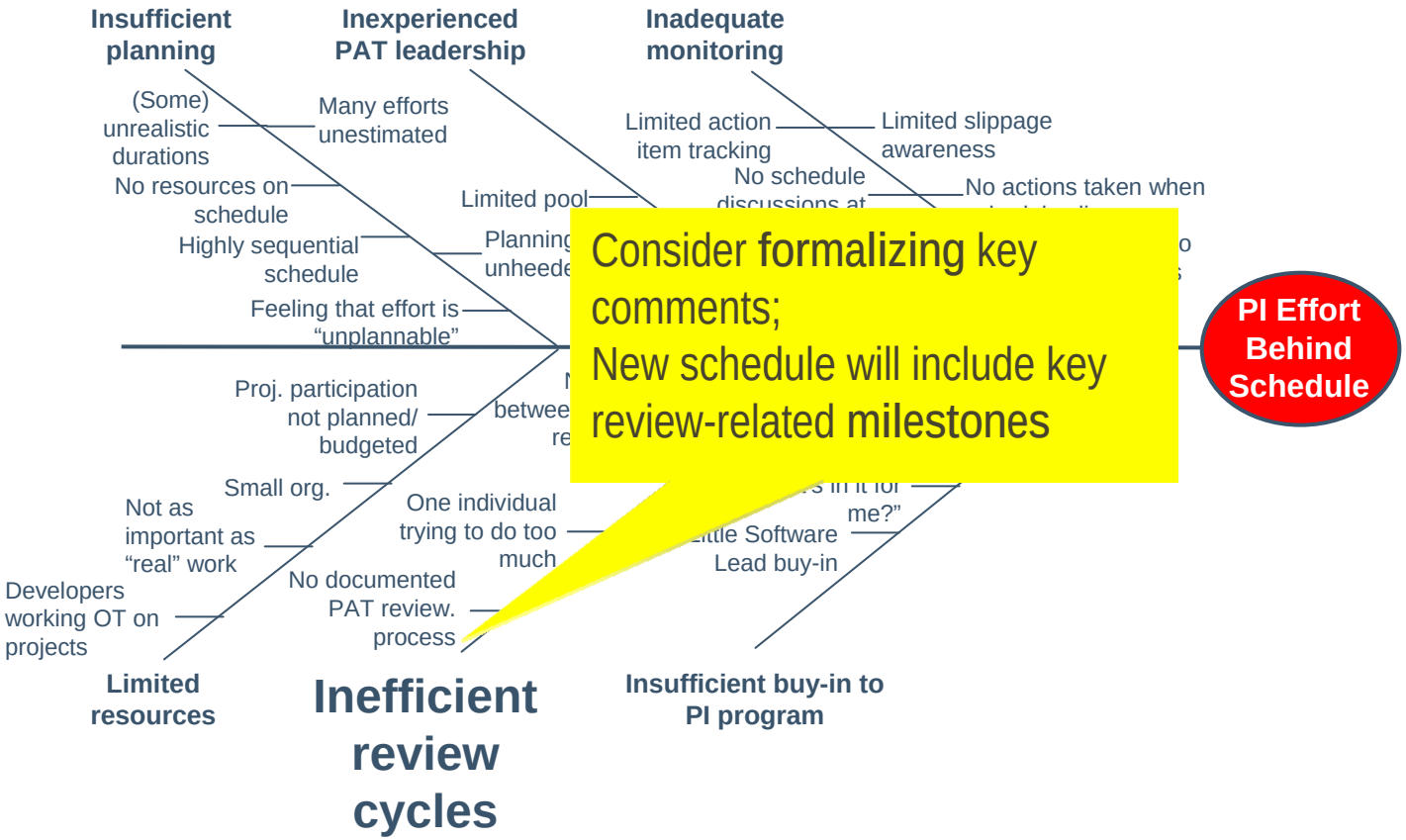


Limited Resources: Action

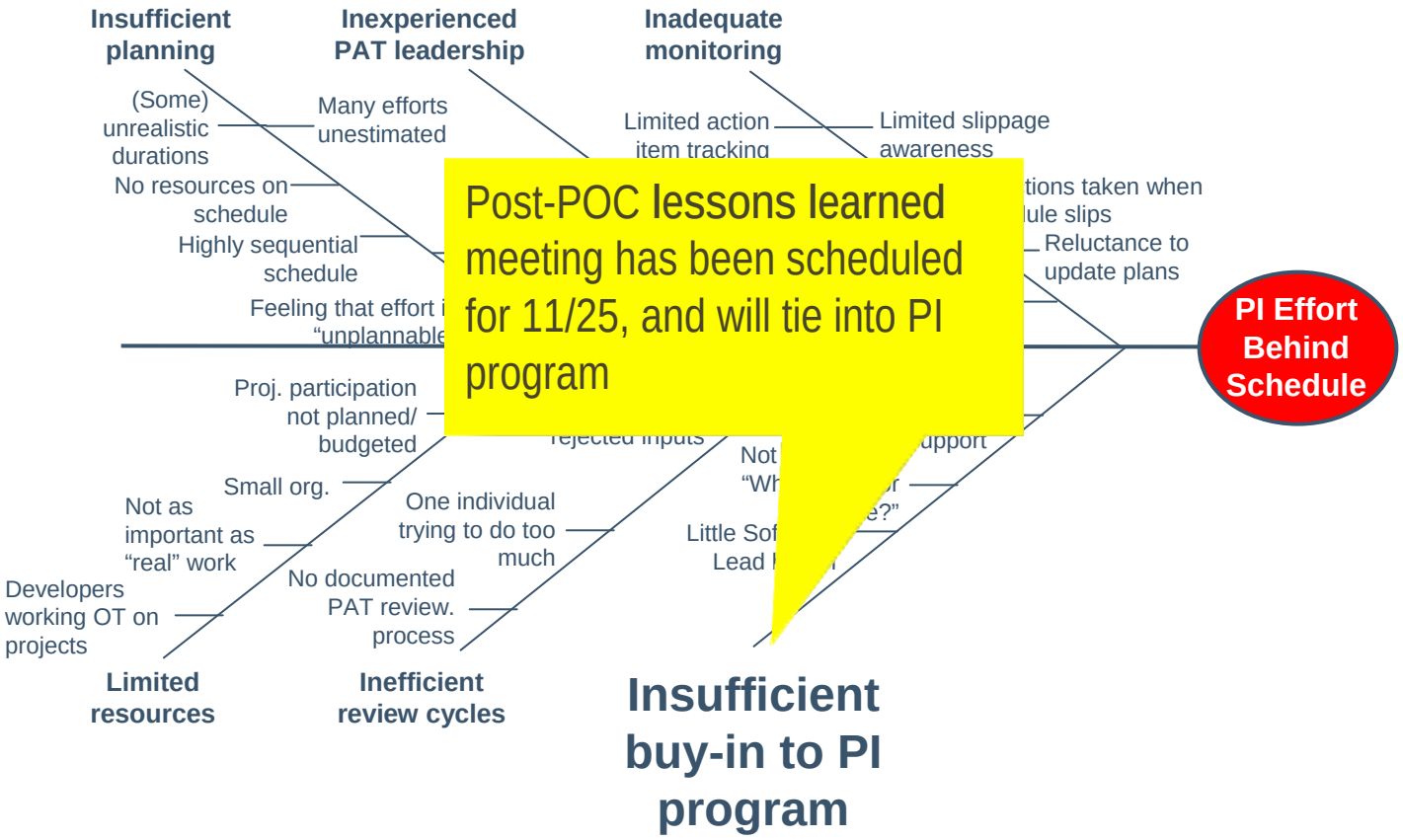


PI Lead is requesting a budget increase, and has received a verbal commitment (11/19) of increased project participation

Inefficient Review Cycles: Action

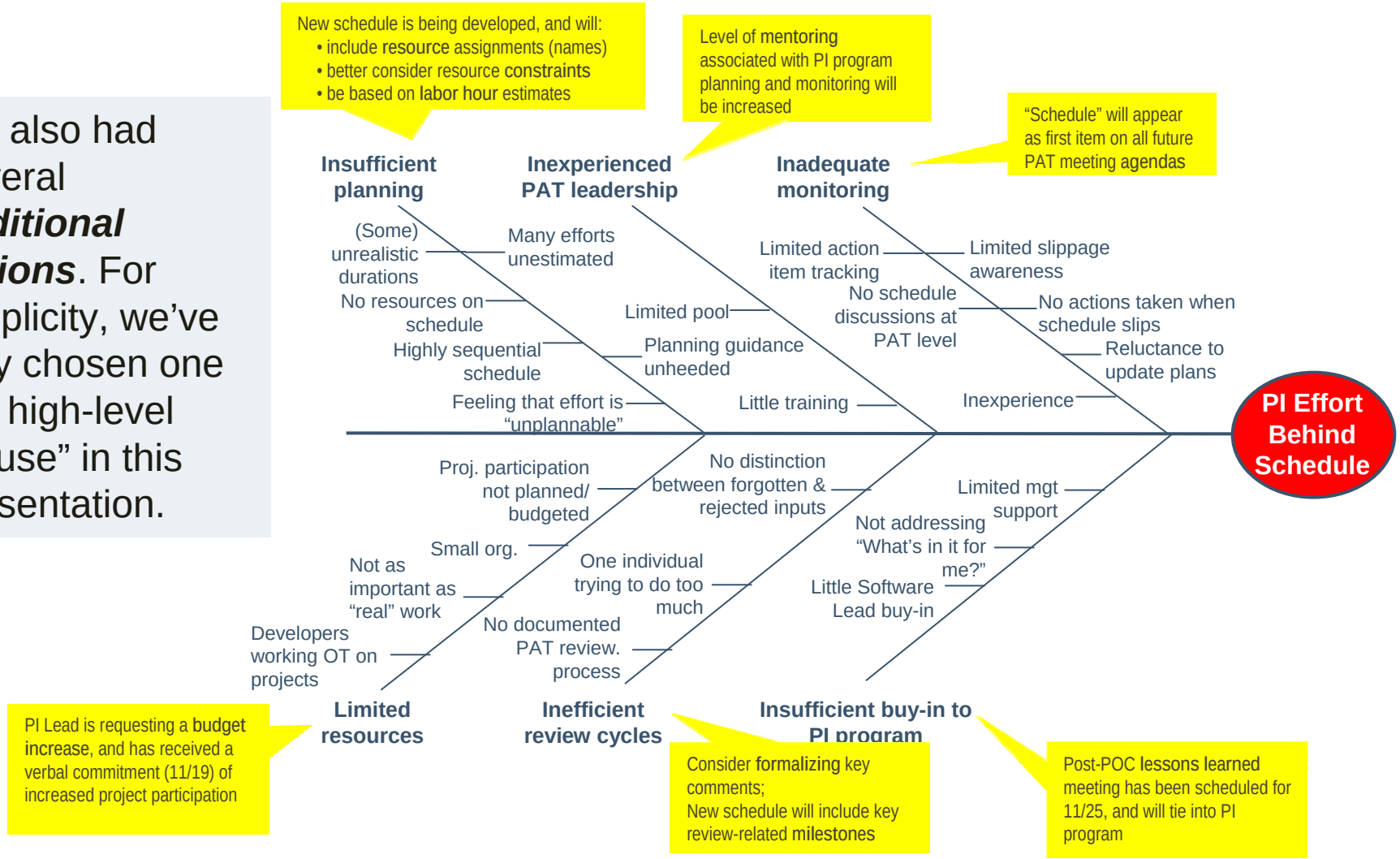


Insufficient Buy-in to PI Program: Action



Fishbone Diagram with Selected Actions

We also had several ***additional actions***. For simplicity, we've only chosen one per high-level "cause" in this presentation.



Finally… Time for *Action*

SP 2.1 Implement the Action Proposals
Implement the selected action proposals that were developed in causal analysis.

SP 2.2 Evaluate the Effect of Changes
Evaluate the effect of changes on process performance.

Measuring Our Results

The health of the PI program improved significantly.

Several months later we were able to quantify the effect of the changes:

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The organization was evaluated at SW-CMM Level 3 in March 2004 via an independent Software Capability Evaluation (SCE).

Conclusions and Recommendations [1 of 2]

- Our application of CAR was **imperfect** and **abbreviated**, but extremely useful nonetheless.
  - *Walk before you run; don't pursue perfection as a short-term goal*
- Several root causes were beyond our direct **control**, but we were still able to successfully exert **influence** to ensure many of these were addressed
  - *Don't give up when you find many causes are beyond your control; apply WIFM ("what's in it for me?") to gain support*
- We could have saved additional time by involving some **key stakeholders** sooner in the CAR process
  - *You'll need buy-in from all key players eventually; do it sooner rather than later – it's cheaper!*
- his organization's process improvement problems were certainly **not unique**
  - *A cause-and-effect diagram can become a re-usable asset!*

Conclusions and Recommendations [2 of 2]

- Many of the causes were related to the process improvement program not truly being planned and managed **like a project**
  - *Apply basic project management principles to your PI program (minimally, see PP and PMC)*
- **By using causal analysis and resolution techniques, we were almost certainly able to reduce the schedule and overall cost of the process improvement program.** (Overall time from organization's initial exposure to SW-CMM until successful Level 3 rating: 16 months.)
  - *Applying a healthy dose of CAR to your significant process improvement –related problems*

Questions?

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