

Creating Change one “Tic-Tac” at a time

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**Develop Software
With Confidence**

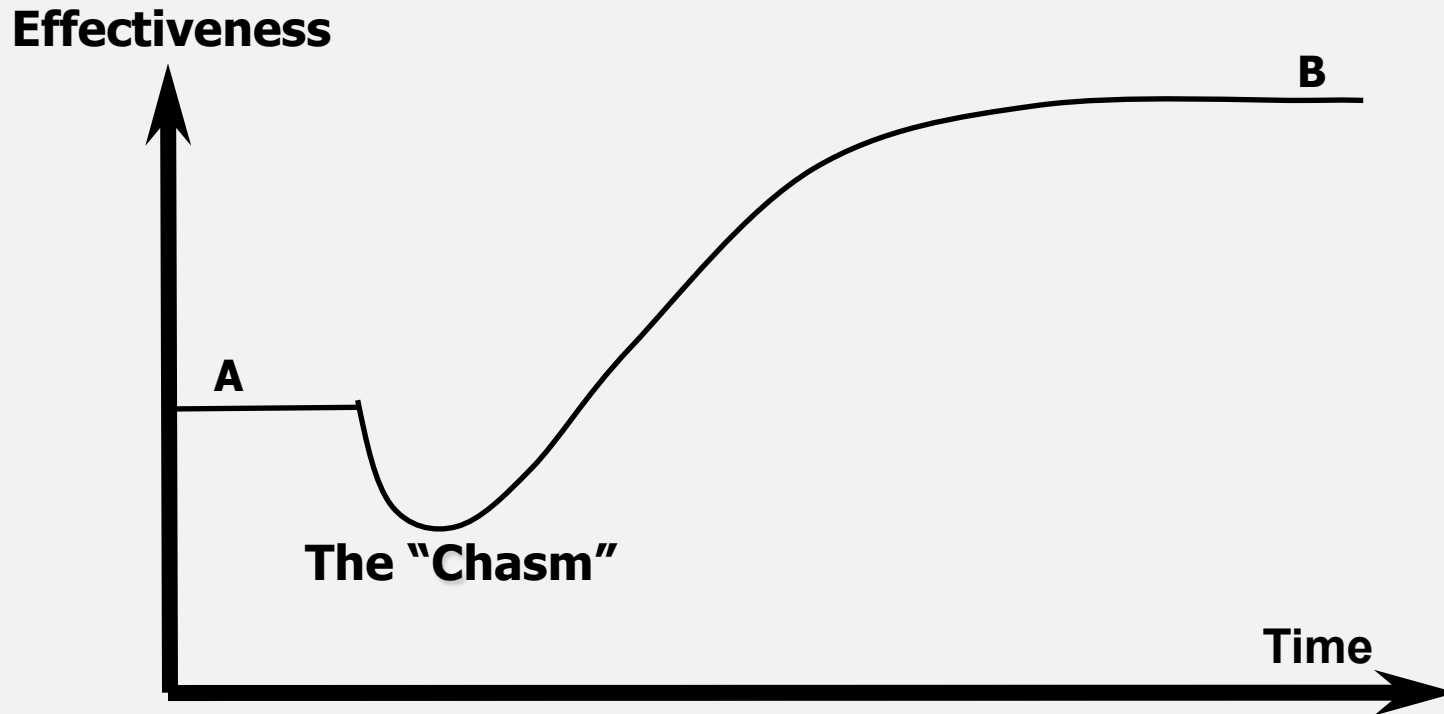
Alistair Cockburn

<http://Alistair.Cockburn.us>



Q: How do you move the maximum number of people from habit A to habit B?

Some people will change freely, just for the fun of it.
Some people won't change, no matter what you do.
Some people need help to change. How can we help?



Structure of talk:

- Understand why people resist change
- Understand why people abandon change
- Familiarity, small wins, the process miniature
- Clicks, tic-tacs, small rewards
- Peer pressure, commitment, visibility
- Social and high-tech anchors
- Positive better than negative feedback
- Anchor small changes

Agile = Change

So we need to understand it

- If you aren't yet doing agile development, you need to change to start doing it.
- If you're already doing agile development, you need to keep changing to keep doing it.

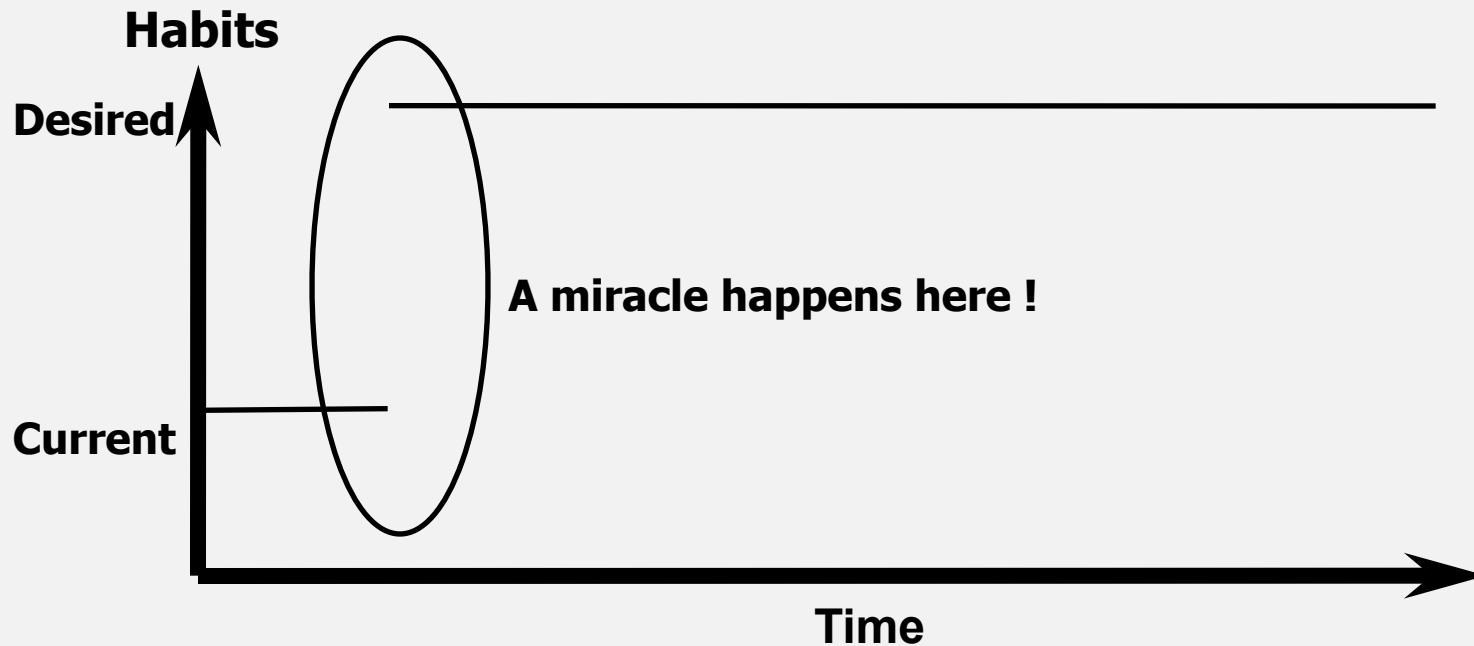
We would rather be ruined than changed,
We would rather die in our dread
Than climb the cross of the moment
And let our illusions die.

--- W.H. Auden, "The Age of Anxiety"

People resist change for really strong (and valid) reasons.

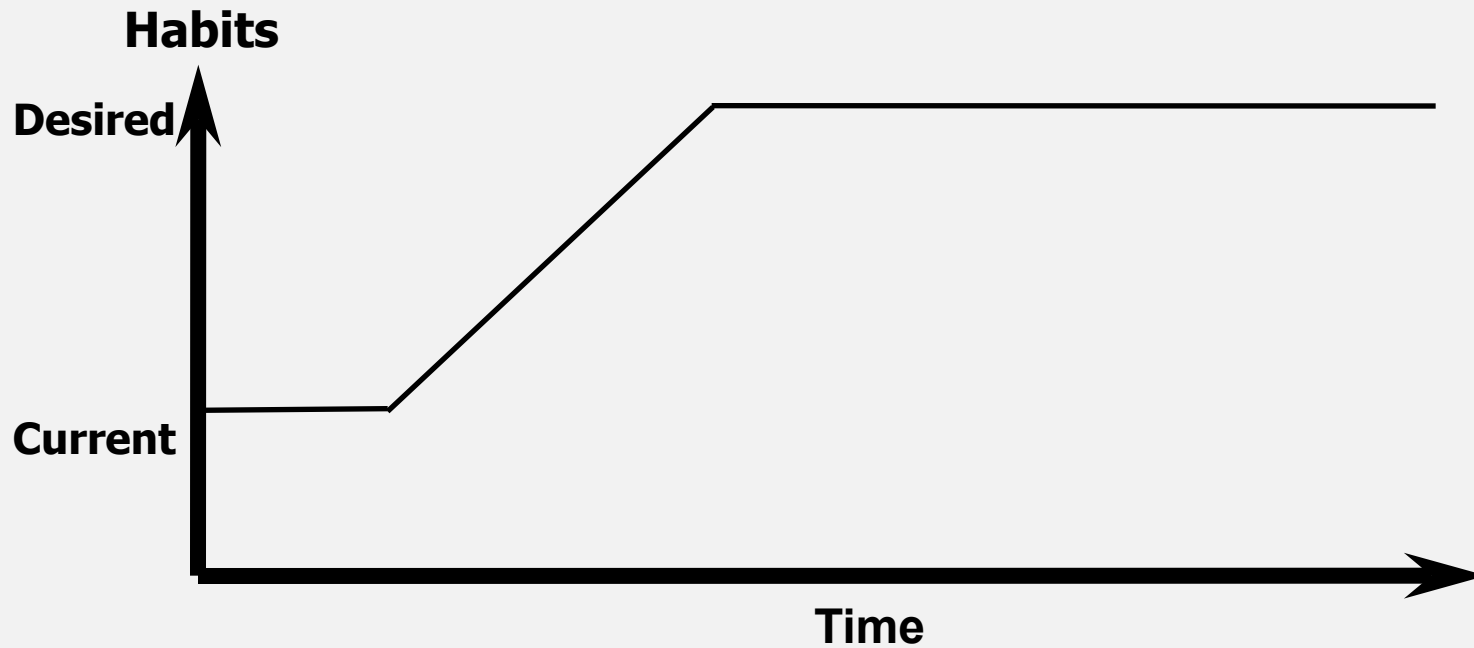
- (1) "You're telling me I've been wrong for all my life?"
- (2) "I'll be different, stand out, and the lions will eat me."
- (3) "If you're different, I'll stand out, and the lions will eat me."
- (4) "If it fails, I'll get blamed (and eaten by the lions)."
- (5) "It will be less efficient to start out."
- (6) "It's unfamiliar, and uncomfortable (and scary)."
- (7) "I'm tired of changing."

Efficiencies rarely show up as a single step



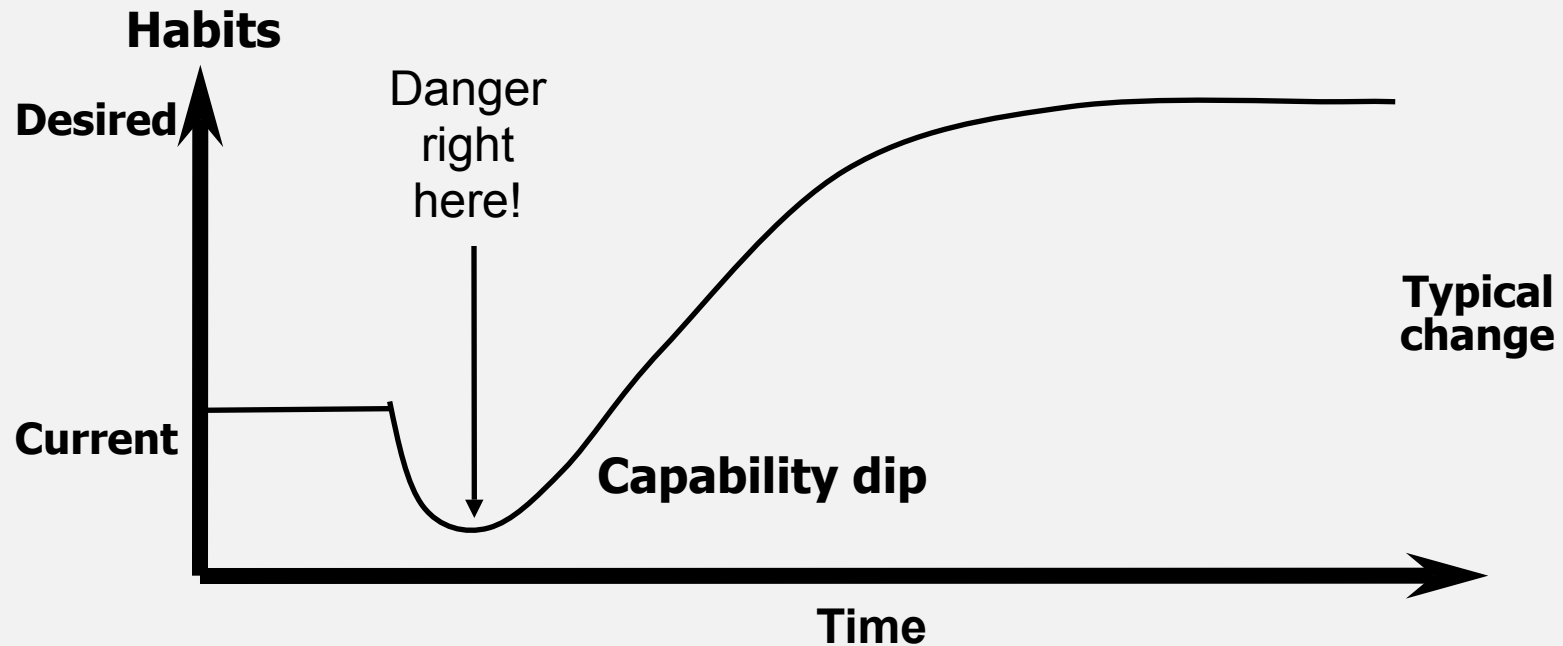
Wishful thinking, unrealistic expectations, which lead to disappointment

It isn't even linear



Still wishful, still leading to disappointment.

Changing skills involves a loss, before the improvement shows.



Too long before payback can result in abandoning change

What can we do?

- Get permission for the initial inefficiency.
- Make the new thing familiar.
- Make small, not big changes.
- Find the “small wins” with the change.
- Anchor the small changes with frequent small rewards.
- Make small wins public and shared.
- Use success of small change to help make next small change.

You need some help from your boss with this.

- Need to have expectation of “the dip”
- Need permission from self and others to take the hit
- Need to stick with it until it becomes familiar
(Make it habitual, a practice not an event)
(Familiarity with it becomes our ally)
- Use reciprocation to gain commitment
- Use public commitment to invoke consistency
(“Influence: The Psychology of Persuasion”, R. Cialdini)

Permission from the boss helps but is not enough
(Necessary but not sufficient)

“Lack of familiarity” is a major roadblock

“Familiarity exerts a powerful pull. What we have observed and experienced day after day exerts a powerful influence. Most people will choose the familiar, even though uncomfortable, over the unfamiliar, because of that power.”

Virginia Satir, *The New Peoplemaking*

Process Miniature helps with the “familiarity” problem.

Run through the new process with a small problem in a short period of time.

- Develop a gestalt (map) of the process/technique
- Gain familiarity quickly, before it is important

Examples:

- Extreme Hour

“Small Wins” help motivate people (sociologist Karl Weick)

Small Win = Small completion of an accomplishment.

First ...

- ... green-bar for first test case
- ... successful system integration
- ...Walking Skeleton operational
- ... delivery

Reward tokens mark that a small win occurred. Animal trainers use “clicks” as *small win tokens* to animals.

- “Clicker trained animals are more alert and more engaged.”
 - (K. Pryor, “Don't Shoot the Dog!: The New Art of Teaching and Training”)
- Birds, Horses, Elephants, Killer whales !?

Is it possible that humans are like birds, dogs, horses, elephants, killer whales?

Small win tokens also work with humans **(we call them ‘tic tacs’)**

- Children: Tic-tacs, “Minute Of Wants” (MOWs) (Jtf)
- Children: Gameboy points (Deanna), Boy scout beads (Catalina)
- Adults: Moving completed story cards at standup meetings.
- Adults: JUnit green(/red) bar
 - CruiseControl to green(/red) lava lamp
- Adults: Even just stickers, for automated tests (K. Johanssen)
 - Stickers have social value
 - Consistency principle means my view of self changes to be consistent with my actions.
 - Big rewards can demotivate (Once the bonus goes away I stop)
 - ... but I won’t stop writing these tests just ‘cuz you took the silly stickers away. (I am a person who writes tests.)

We're looking for both social and technological "Tic-Tacs"

- People are social animals, status is a primary concern
 - Evolutionary psychology: social status → reproductive success
 - We act different when people are watching
- Technology can provide surrogate for social interaction
 - Broadcast your actions/status to the others in the group
- Technology can provide enablement, sense of agency
 - They see what I've done, increases my status in the group

Peer visibility and peer pressure are powerful social reinforcers

- Daily standups,
- pair programming (cf. pairs in foxholes in WW II),
- peer code reviews

Peers remind of us of social expectations, & prior commitments.

When uncertainty is high is when we are most influenced by “social proof”.

Moving a task to the Completed column gives a *small win socially*.



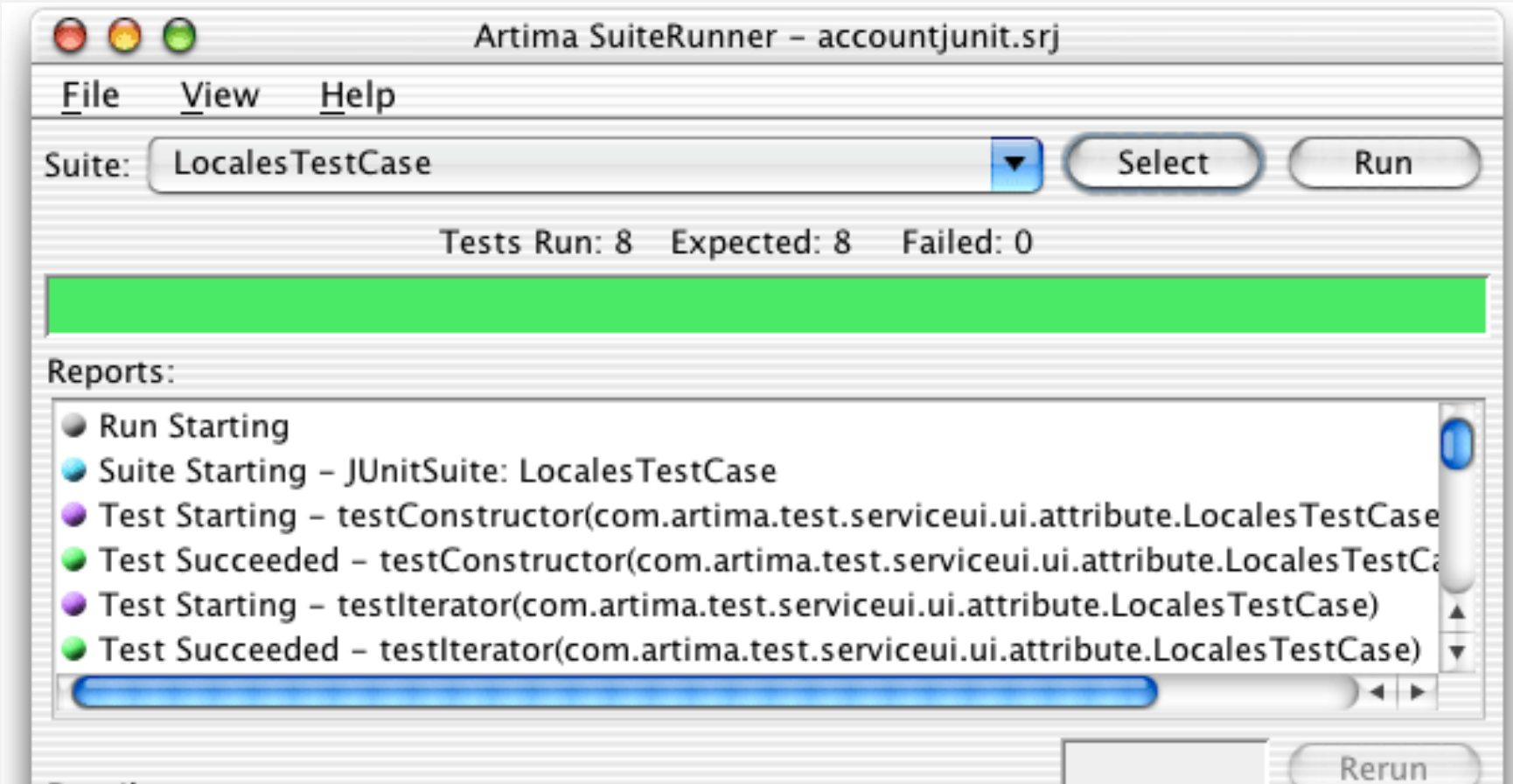
Gery Derbier, Solystic, at the weekly status update.
(Most powerful is when the task-doer, not the boss, moves the token.
Social reward, not mere token.)

Small win: Getting your tests to run

```
Testsuite: com.textuality.UstrTest  
Tests run: 27, Failures: 0, Errors: 0, Time elapsed: 0.015 sec  
  
test-report:  
test:  
BUILD SUCCESSFUL (total time: 1 second)
```

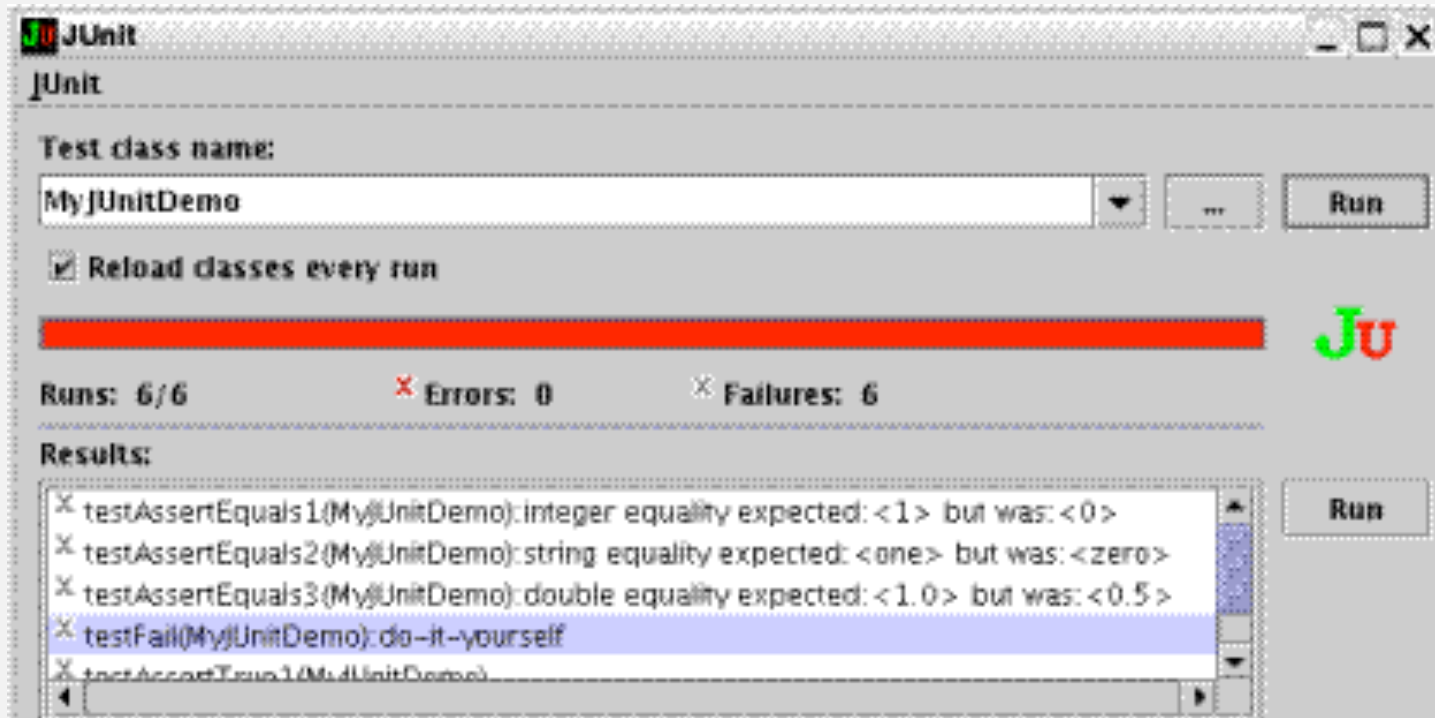
Too small . . . not yet powerful enough for great effect

Get all tests to run 100% with a big Green Bar !

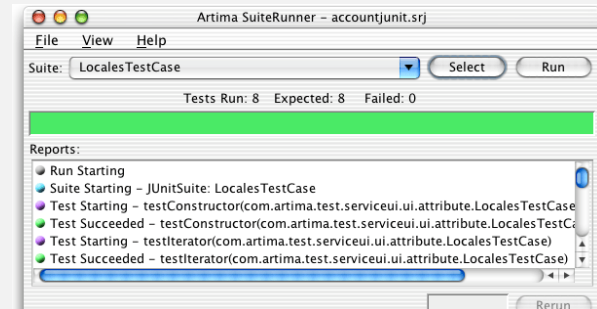


Now powerful

Positive reinforcers are better than negative reinforcers

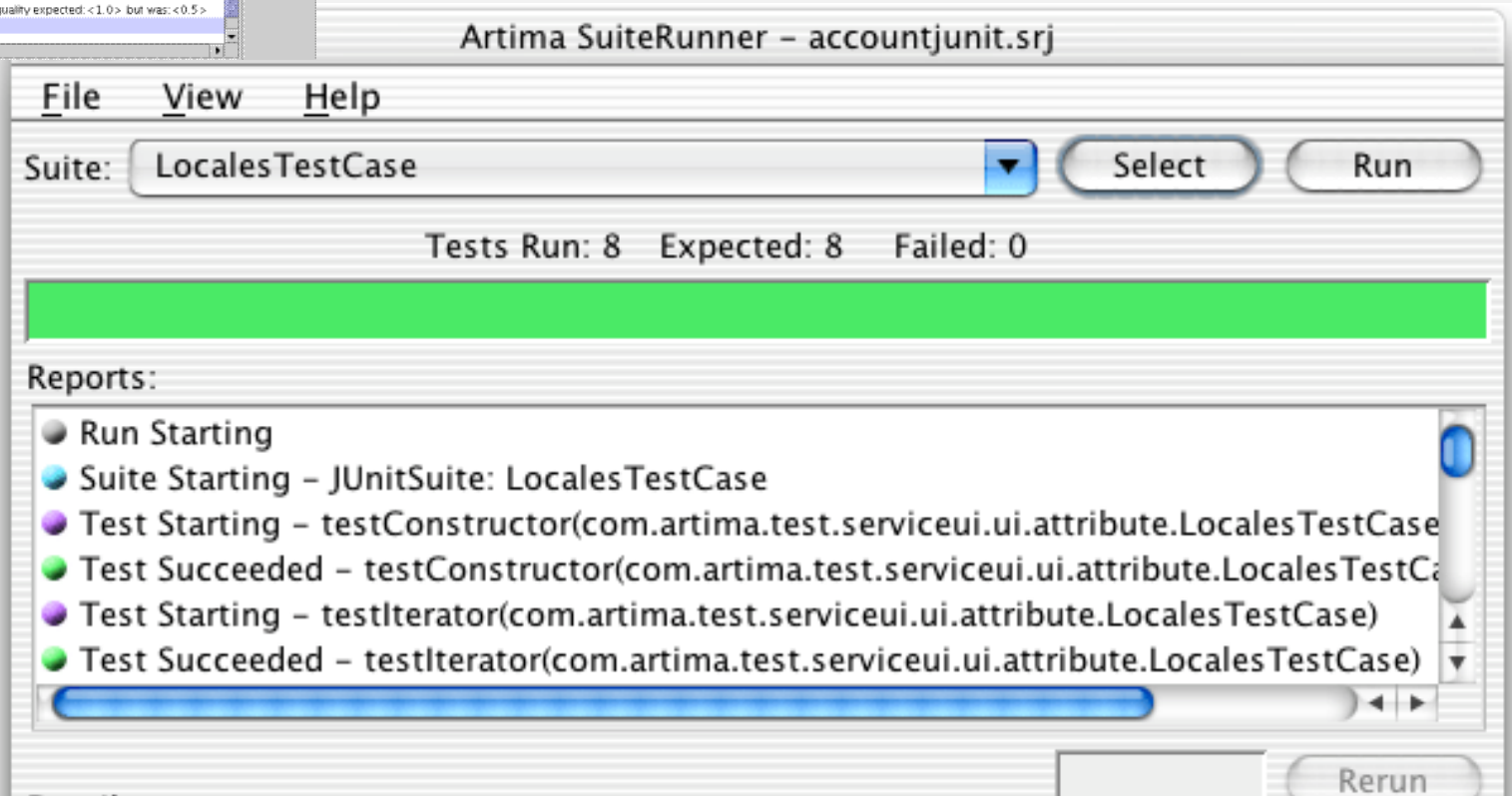
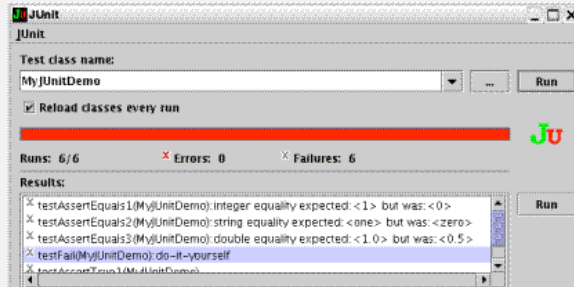


Always seeing the red bar is depressing.
People just stop running the tests.



Very small steps and *many* Green Bars is almost addictive

Hooked on Green Bars, people fight to get their tests to pass!

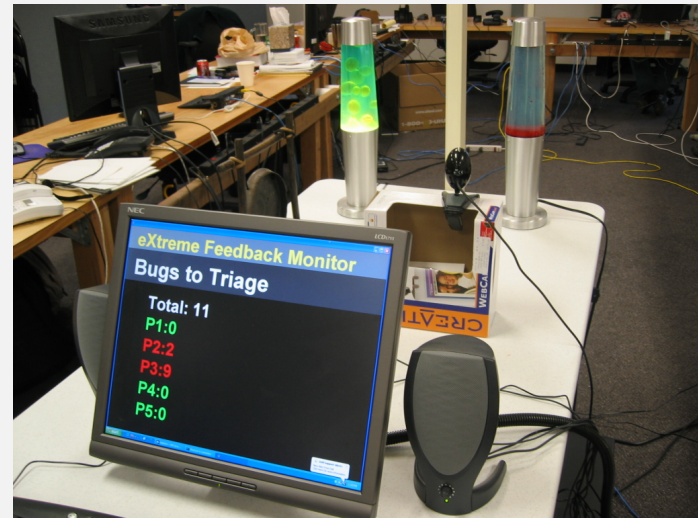


Make the displays bigger, more visible, more public (“information radiators”)



Publicly placed lava lamp, ambient orb, xfd
combine social and technological reinforcers

← Images from
Mike Clark's blog



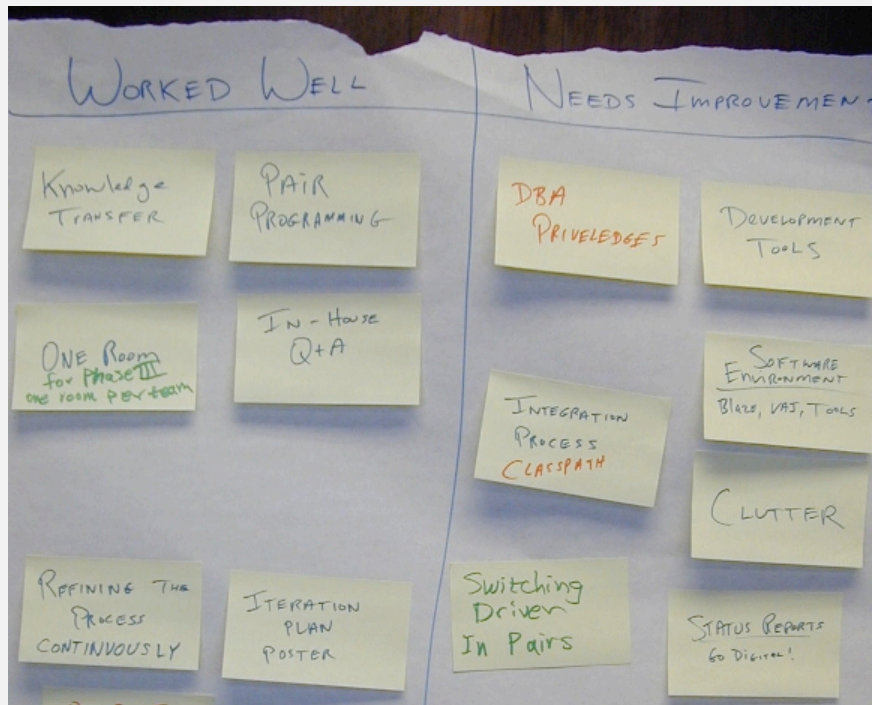
Agitar →
workspace



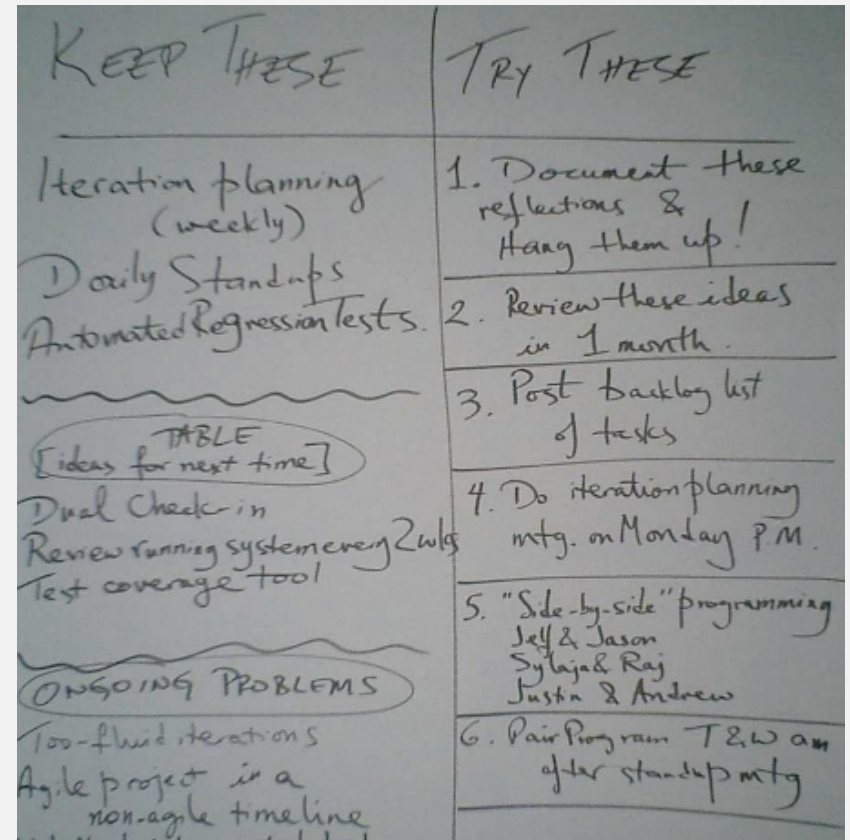
N.B., Always seeing the red lamp is depressing.
People just disconnect it.
Seeing the green lamp is heartening.

Focus on what to Do, not what failed

This has team thinking about last iteration's failures



This has team thinking about this iterations initiatives



Computers are strong on repetitious tasks; weak on judging. People are the opposite.

- Failures: auto-correcting tools;
successes: warning tools
 - “expected” values can only come from humans
- “Semi-automated” tools provide feedback while the human provides judgment
 - compiler warnings the old example
 - code “Agitator” the current example
- Feedback focuses attention where skill is needed
 - valuable with new, not-yet-habitual skills


Use automation to drive feedback loops

Feedback showing progress increases sense of agency

- CruiseControl results attached to lava lamp / ambient orb
- Assertion and build failures emailed to the key people

Note - choose what is worthy of feedback or the feedback will become noise !

To help teams adopt developer testing, send targeted emails with failures, progress, unexpected results to developers...


Management Dashboard

Project [cc_agitator](#) [3/19/05 9:51 AM]

Failures for [kevin](#)

Assertion Failures

Class Name	Method Name	Outcome Name	Failing Assertion
com.agitar.factory.FactoryReader	read(Element)	NORMAL	@EQUALS(elem.getNodeName(), "factory") P:6 F:1
com.agitar.lib.factory.CalendarFactory	get(int)	EXCEPTION --> java.lang.IllegalStateException	@THROWS(verify(), IllegalStateException) P:181 F:241
com.agitar.lib.factory.CalendarFactory	get(int)	EXCEPTION --> java.lang.IllegalStateException	this.m_verified == false P:181 F:241

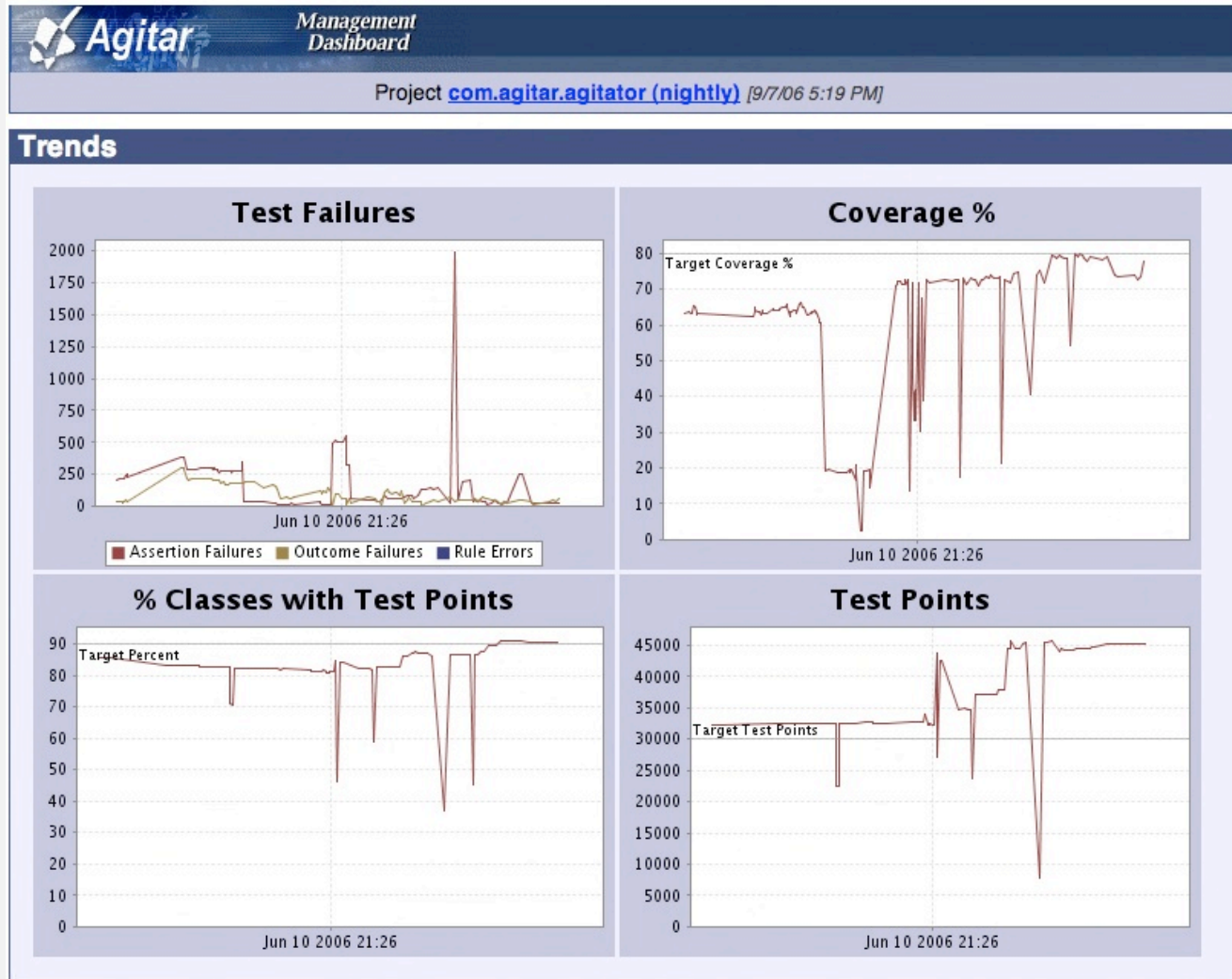
Outcome Failures

Class Name	Method Name	Outcome Name
com.agitar.lib.Observers	isSorted(Object[])	EXCEPTION --> java.lang.AssertionError Unexpected
com.agitar.lib.factory.CalendarFactory	get(int)	EXCEPTION --> java.lang.IllegalArgumentException Expected
com.agitar.lib.factory.URLFactory	next()	NORMAL Expected
com.agitar.util.Scope	match(SolveScope)	EXCEPTION --> java.lang.IllegalArgumentException Unexpected

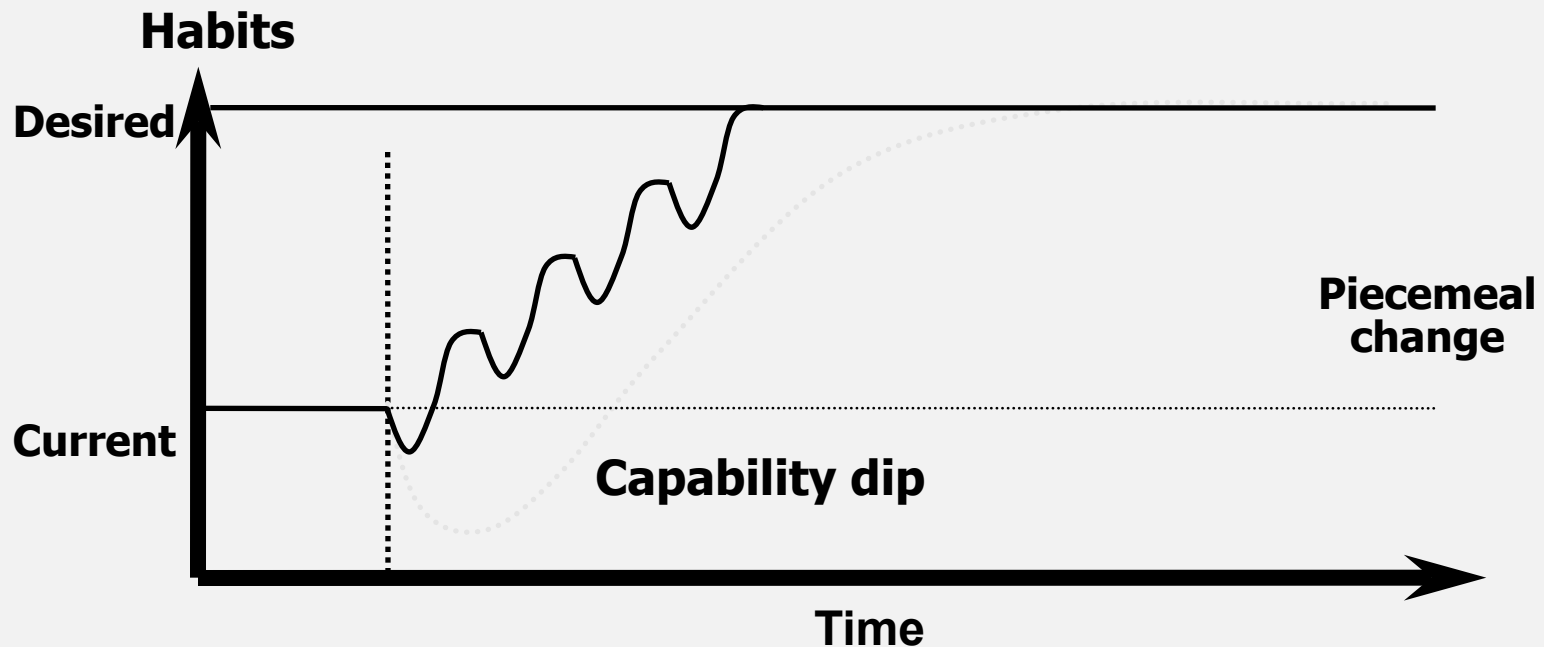
Developer Status

Name	Classes	Test Classes	Coverage	Test Points			Failures
				Classes	Methods	Outcomes	
alberto	8	0	0.0 %	12.5 %	8.0 %	0.0 %	0
ashish	15	0	81.9 %	73.3 %	77.9 %	68.6 %	3

...while managers (and the team) have a view of the overall trend.



Develop change in small, not big steps



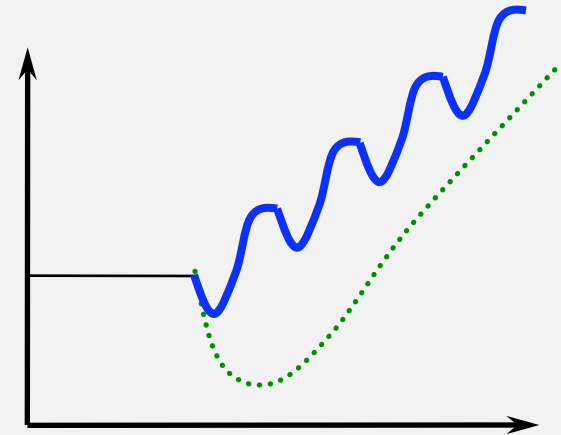
Smaller steps can be faster
Reduced time to payback investment causes virtuous cycle
Anchor success on each small change

Reinforce the small changes with frequent small rewards.

- Face-to-face acknowledge progress
- Automate updates to lower energy cost, make it consistent
- Use trends to show progress
- Use progress to anchor the change, enable next push
- Repeated successful change lowers the fear and uncertainty for the next change request
→ how you create a learning organization

You can help those willing to change, change faster (some people won't change anyway)

- Change fails in the capability dip
 - Get management support for the drop
 - Change in small steps
 - Use process miniature to get familiarity
 - Give small, frequent rewards (even 'tic tacs')
- Use positive markers
 - positive markers
 - socially visible markers
 - social peer pressure
- Remember,
 - the big prize is counterproductive
 - get people to do it for itself, not for the reward



Yes, you can alter the rate of change
(No, it won't always work)

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