



Continuous Improvement Breakfast Club

THE | PERSIMMON | GROUP

Introductions

KRIS REYNOLDS

The Persimmon Group

- Vice President of Project Management & Continuous Improvement
- Sr. Consultant
- Project Management, Business Analysis, PM Methodologies, Business Consulting, Continuous Improvement and Organizational Design
- PMP; Six-Sigma Black Belt

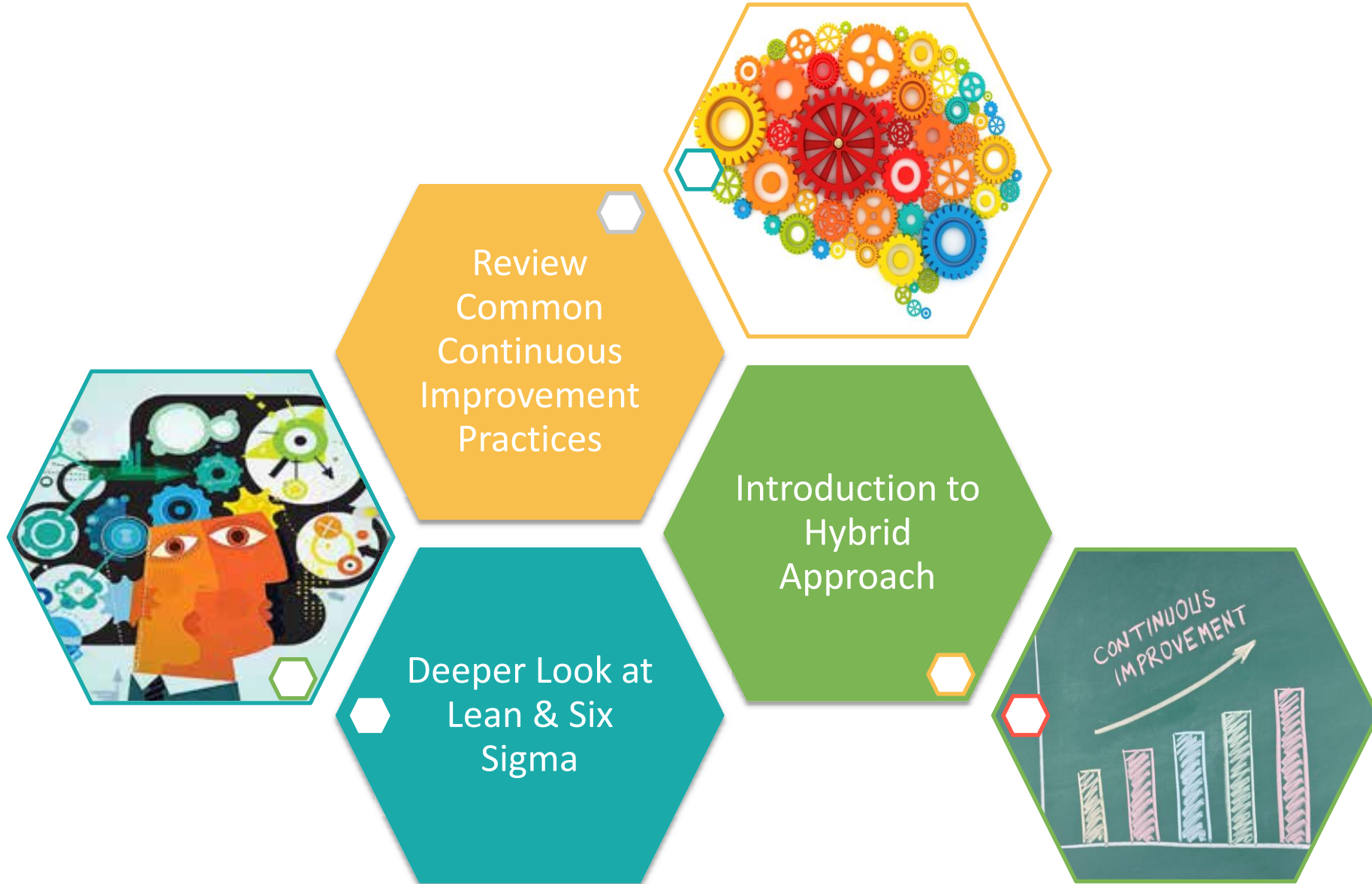
BA–Business / BS–Economics / MBA-Marketing

Adjunct Professor @ TU

National “C” License Soccer Coach

Creator of PM for Youth (PM4Y™) Program

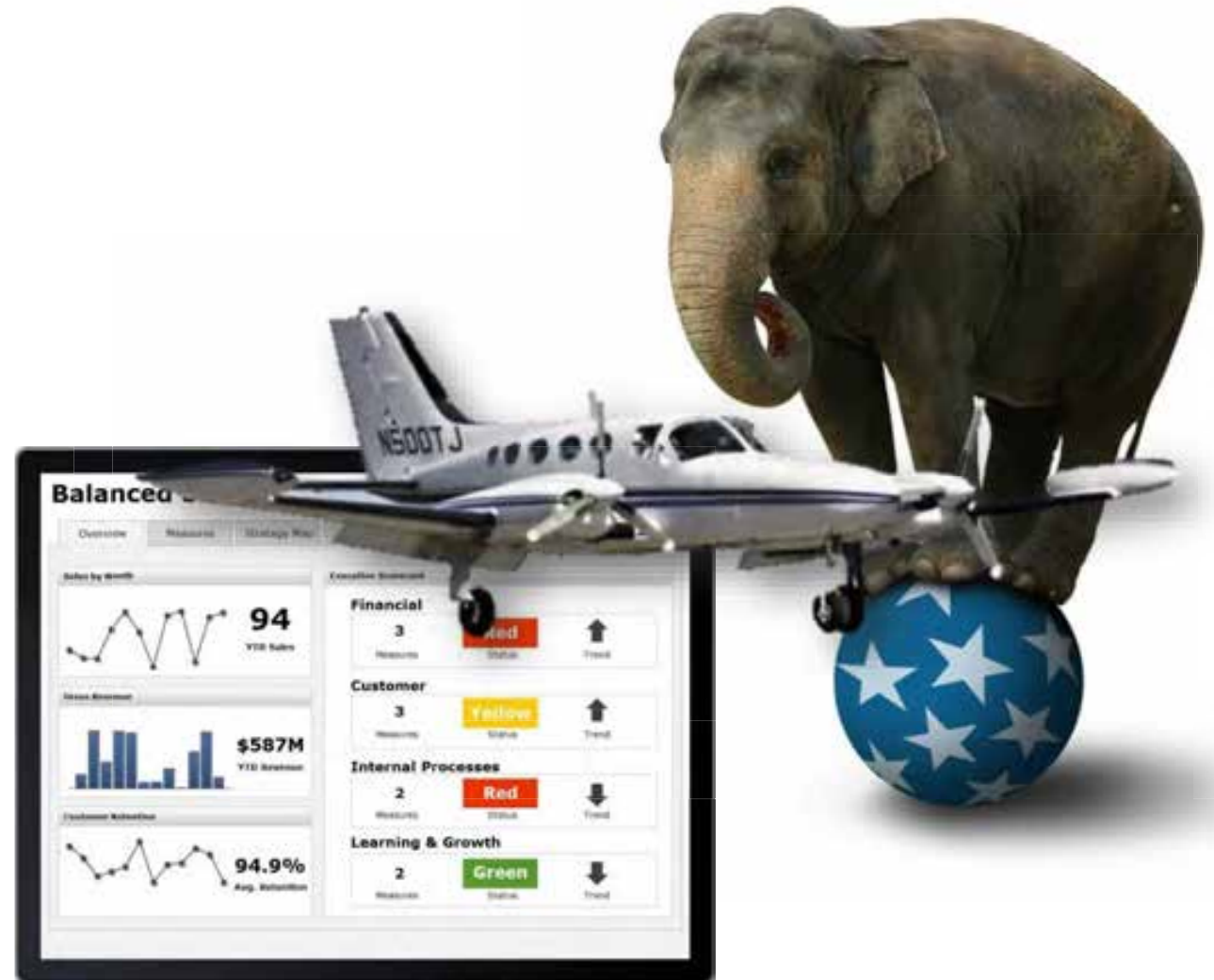
Learning Objectives



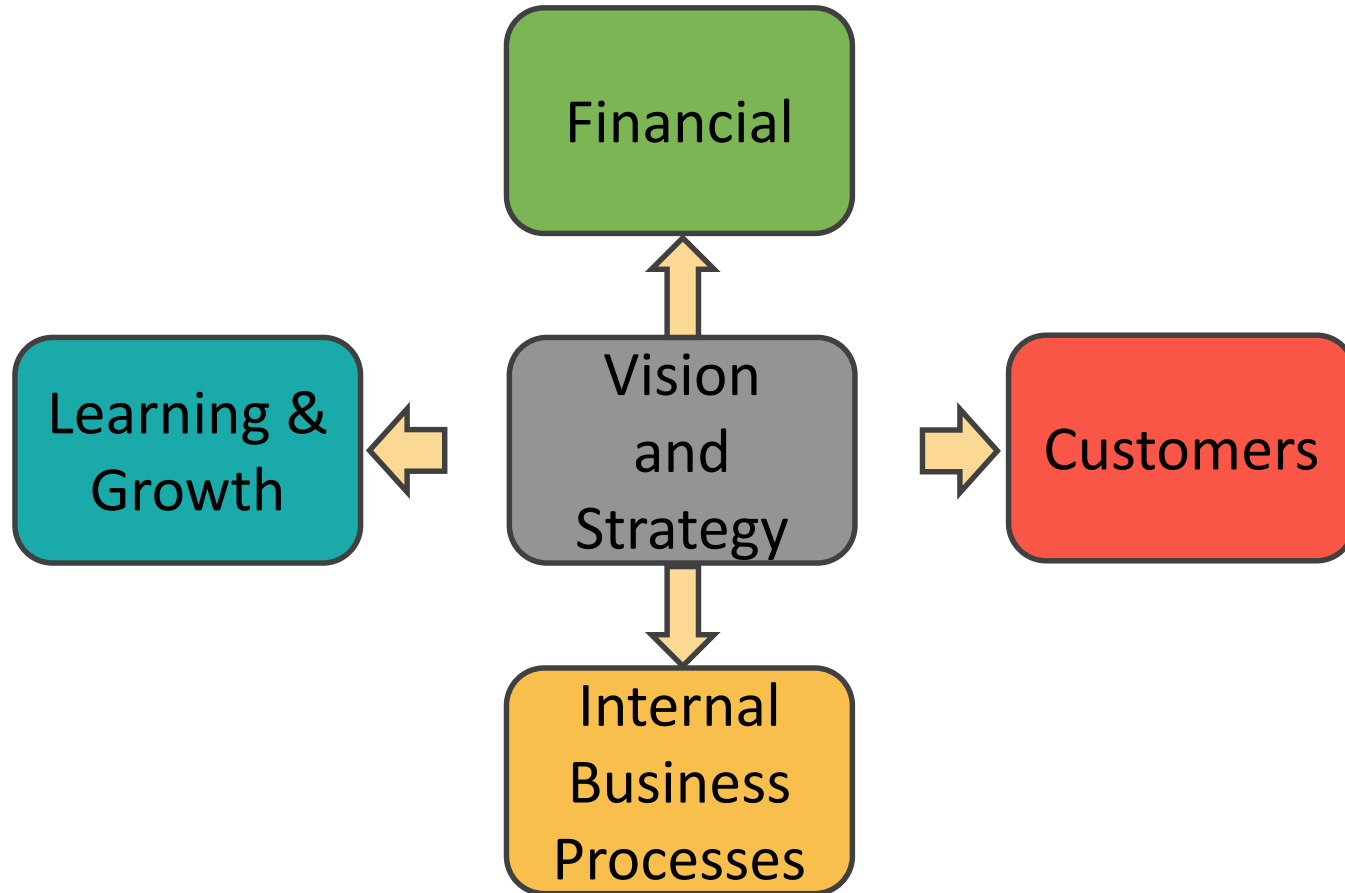
Balanced Scorecard

What is a Balanced Scorecard?

- Piloting an airplane
- Organized set of performance measures
- Grouped by general category
- Measures of success – tangible



Structure



- Scorecards drive better performance
- Scorecards support strategy implementation
- Help ensure you have the right metrics
- Encourage a balanced, system view
- Point out what's missing
- Encourage good management

Theory of Constraints

Theory of Constraints

Focus on bottlenecks

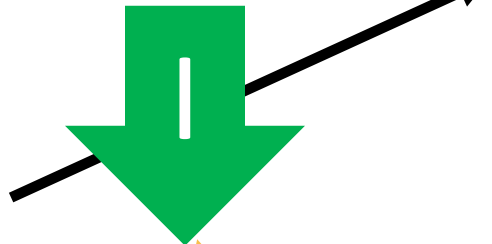
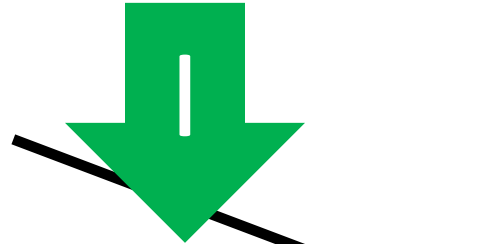
- Any limiting factor = constraint
- Maximum speed of the process is the speed of the slowest operation
- Any improvements are wasted unless the bottleneck is relieved
- Bottlenecks must be identified and improved if the process is to be improved



TOC Metrics

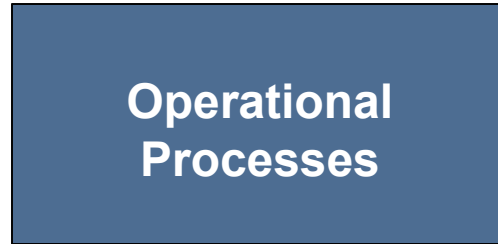
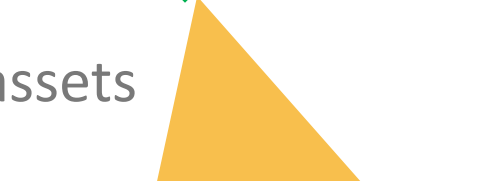
Input

Raw materials,
inventory

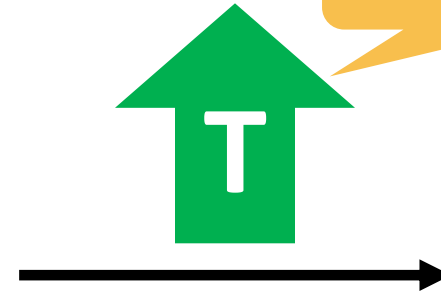


Input

Equipment and assets



Operating Expenses



Throughput

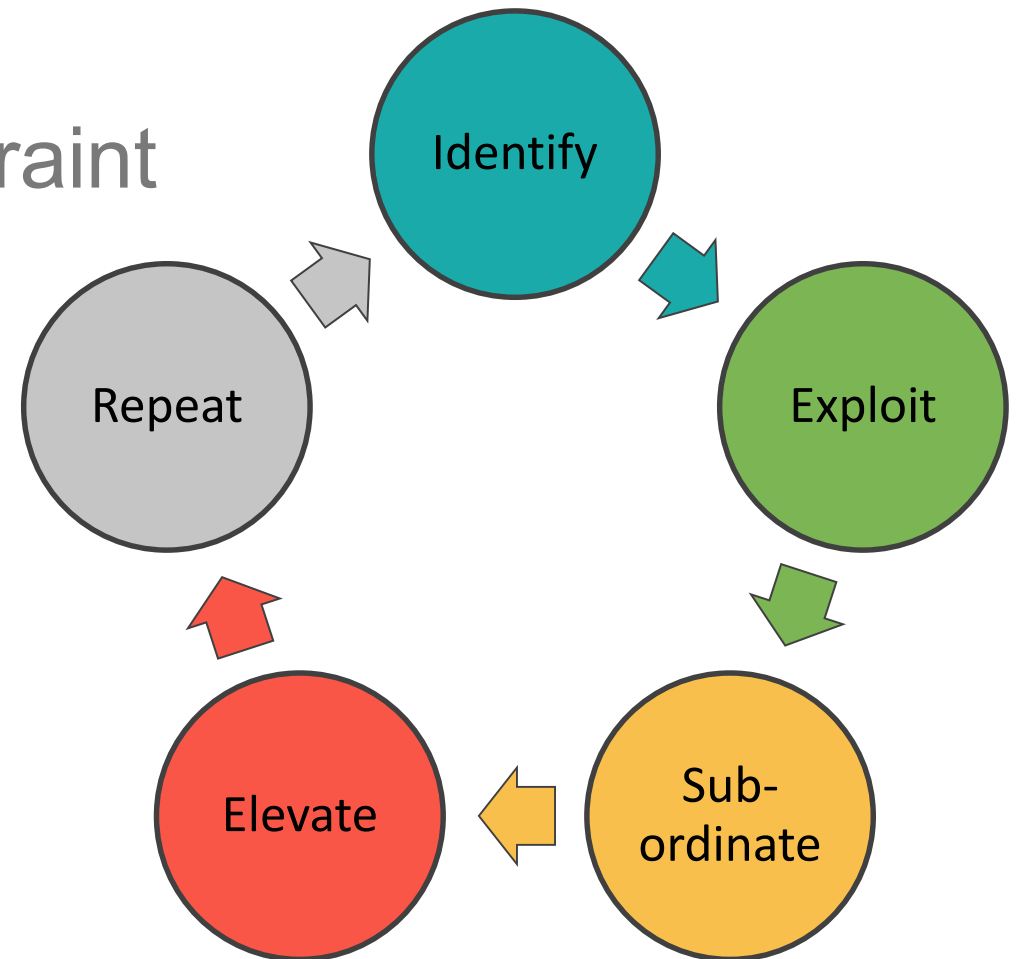
Output
Sales

Inventory/Investment

Any proposed project **MUST** change one of these

The TOC Improvement Process

0. Define the goal of the system
1. Identify the system constraints
2. Decide how to exploit the constraint
3. Subordinate everything else to the bottleneck
4. Elevate the constraint
5. Repeat the process



Lean

Roots of Lean

Toyota Production System

Deliberately secretive to rest of the world
Decades to evolve

Once revealed – revolution

Manufacturing
Moved into the office, services
Focus on waste elimination & work flow



What We Want to Show

- Forms of waste
- Value Added / Non-Value Added
- 5S
- Work cells



8 Forms of Waste

- Over-production
- Waiting
- Over-processing
- Unnecessary transportation
- Inventory
- Motion
- Defects
- Knowledge



Value Added vs. Non-Value Added

Value Added

- Customer recognizes importance & willing to pay for it

Non-Value Added

- Waste the customer not willing to pay for

Required Non-Value Added

- No value to the customer, but necessary for the organization

5S

Sort
Set in Place
Shine
Standardize
Sustain

Before



After



6S - Safety



Work Cells

Multi-skilled worker
Single piece flow



Is that all there is to Lean?

The focus is always on eliminating waste and improving work flow using a variety of tools

- Value Stream Mapping
- Kanban
- Leveled Production
- JIT (Just In Time) Inventory
- Poka-Yoke (Mistake Proofing)
- Visual Workplace
- Gemba
- Flow

Six Sigma 6σ

Foundations of Six Sigma

If you cannot express what you know in numbers,
you don't know much about it.

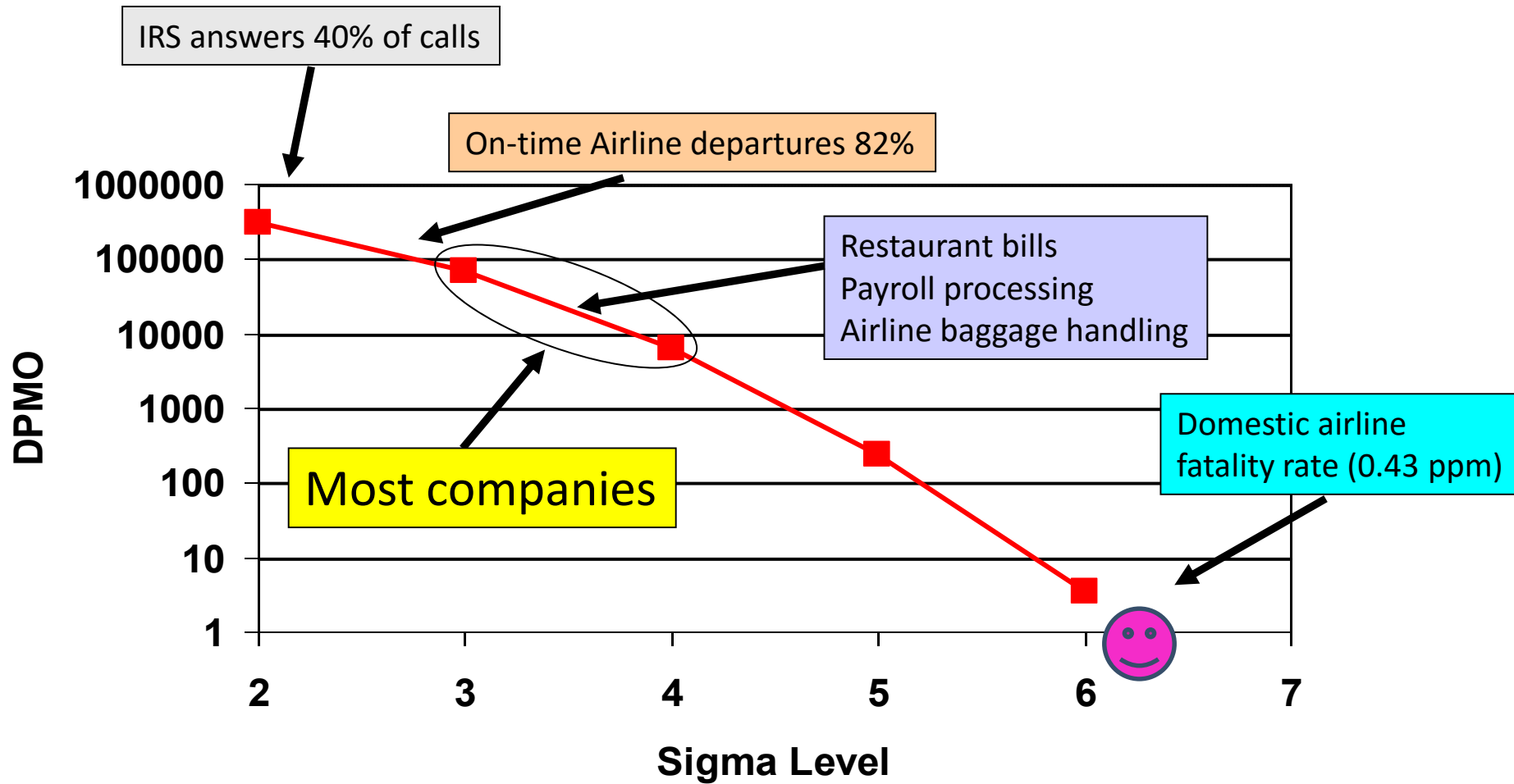
If you don't know much about it,
then you can't control it.

**“If you can't control it,
you are at the mercy of chance.”**

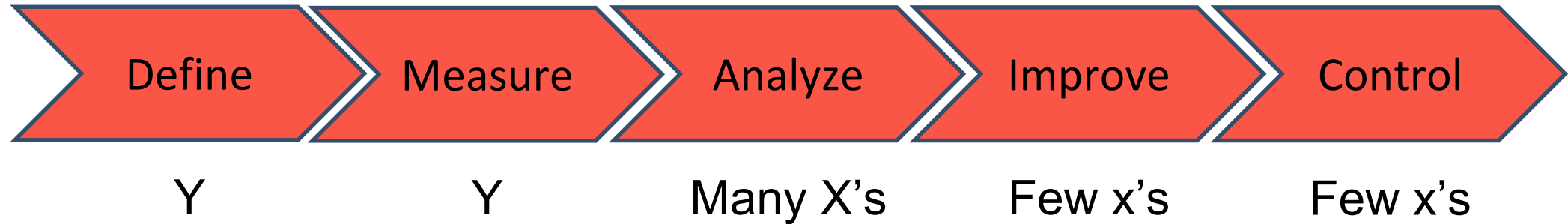
- Dr. Mikel Harry (Motorola)



Performance Levels We Deal With



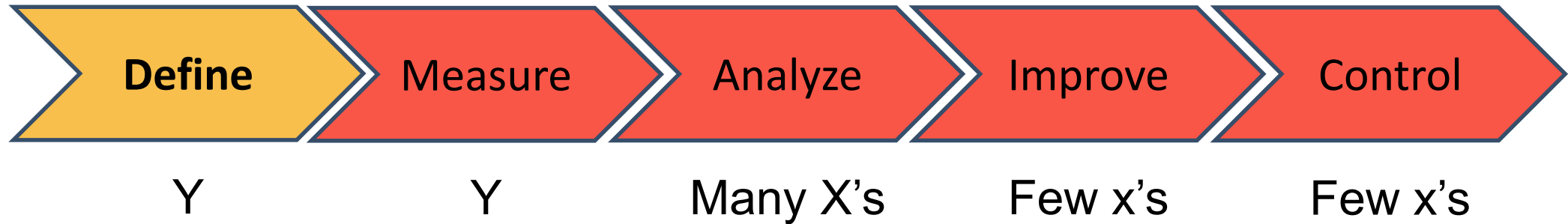
The DMAIC Process



The basic “engine” for Six Sigma

$$Y = f(x)$$

The DMAIC Process

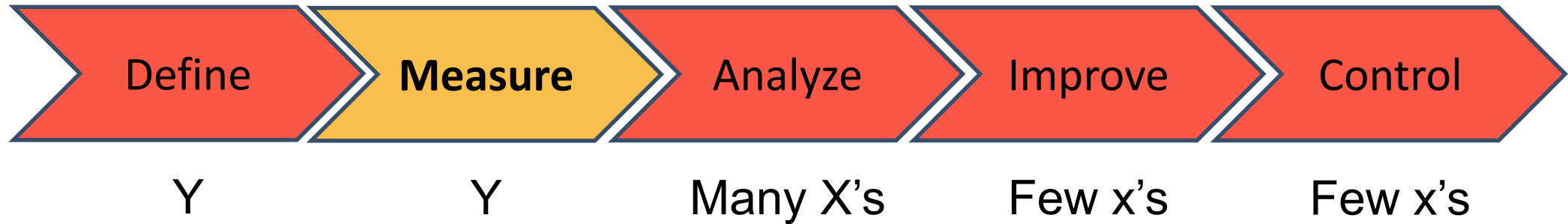


Key Actions

- Identify the problem
- Define project scope
- Establish team
- Identify customers
- Set goals

The Question: What are we working on?

The DMAIC Process



Key Actions

- Identify how you will measure success
- Identify and measure key steps/inputs
- Evaluate process stability
- Implement “low hanging fruit” improvements

The Question: How will we know what is happening?

The DMAIC Process

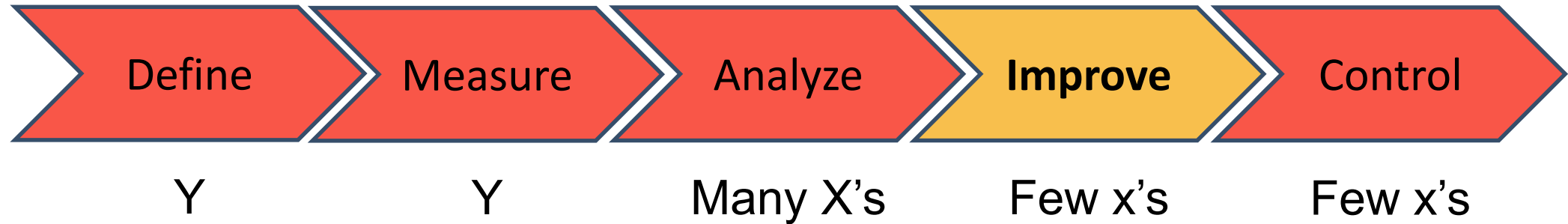


Key Actions

- Understand the data
- Identify sources of the problem
- Identify the “vital few” root causes

The Question: What does the data tell us?

The DMAIC Process

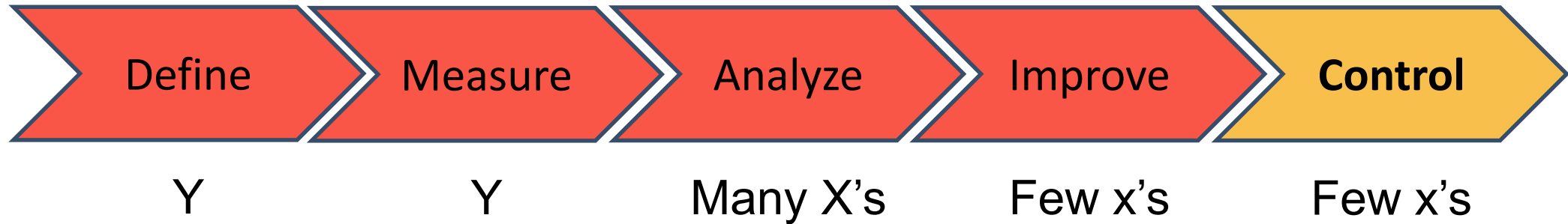


Key Actions

- Develop ideas to remove root causes
- Implement solutions
- Demonstrate improvement

The Question: How will we fix it & did it work?

The DMAIC Process



Key Actions

- Standardize methods
- Establish standard measures to maintain performance
- Implement a Control Plan

The Question: How do we keep the gains?

Is that all there is to Six Sigma?

DMAIC vs DFSS

Many many many tools

- College statistics class (t-Test, ANOVA, Regression...)
- Failure Mode & Effects Analysis
- Design of Experiments
- Voice of the Customer, Voice of the Process

What did you see as it relates to....?

- Lean
- Six Sigma
- Theory of Constraints



Continuous Improvement Approaches

Program	BSC	Lean	Six Sigma	Theory of Constraints
Theory	Meaningful Metrics	Remove Waste	Reduce Variation	Manage Constraints
Focus	Strategy effectiveness	Flow improvement	Problem elimination	Bottleneck removal
Primary Effect	Comprehensive view	Reduced flow time	Uniform process output	Faster throughput
How It Is Done	<ol style="list-style-type: none"> 1. Define vision & strategy 2. Define success 3. Develop metrics 4. Track over time 5. Use for guidance 	<ol style="list-style-type: none"> 1. Identify value 2. Identify Value Stream 3. Improve flow 4. Pull system 5. Seek perfection 	<ol style="list-style-type: none"> 1. Define 2. Measure 3. Analyze 4. Improve 5. Control 	<ol style="list-style-type: none"> 1. Identify constraint 2. Exploit constraint 3. Subordinate processes 4. Elevate constraint 5. Repeat cycle
Assumptions	<p>Success of Vision & Strategy can be measured</p> <p>Metrics indicate progress</p> <p>Better decisions will results</p>	<p>Waste removal improves org performance</p> <p>Many incremental improvements are better than system analysis</p>	<p>A problem exists</p> <p>Data is valued</p> <p>System output improves due to variation reduction in all processes</p>	<p>Emphasis on process speed and volume</p> <p>Uses existing systems</p> <p>Process interdependence</p>
Criticisms	<p>Does not provide clear recommendations</p> <p>Challenging to apply to nonprofits and government sectors</p> <p>Time consuming to create & maintain</p>	<p>Statistical or system analysis not valued</p> <p>Employee stress due to mgmt obsession</p> <p>Lean is more of a culture than a method</p>	<p>System interactions may not be considered</p> <p>Processes improved independently</p> <p>Over-reliance on data analysis</p>	<p>Minimal employee input - management owns it</p> <p>Data analysis not valued</p> <p>"Only one constraint at any point in time" can lead to wrong focus</p>

A Unified Approach to Continuous Improvement: BSC + TOC + Lean + Six Sigma

Why Combine the Approaches?

2.5 year study in multinational corporation – US locations

- Manufacturing plants
- Lean (4), Six Sigma (11), Integrated Model (6)

Results – integrated method outperformed individual methods

- 4X better financial results
- 89% of total savings
- 179 projects vs. 89 for Lean and SS combined
- Less effort needed for each project (fewer people need to be trained)
- Plant Managers believed projects delivered tangible bottom line results



What is Needed?

- Focused improvement efforts
- Improve costs and efficiency *rapidly*
- Determine how to use available capacity and other internal improvements to generate:
 - Additional revenue (highest priority)
 - Lower priority: shorter lead time, better quality, better on-time delivery, lower operating costs
- A reliable model to use for a roadmap

Unified Approach



Unifying the Methodologies

1 Mobilize & Focus	2 Exploit the Constraint	3 Eliminate Sources of Waste	4 Control Process Variability	5 Control supporting activities	6 Remove the constraint & stabilize	7 Reevaluate the system
<ul style="list-style-type: none"> • Mission • Balanced Scorecard • Identify problem • Define objectives • Set scope • Select team • Define deliverables • Define benefits, ROI • Project time line 	<ul style="list-style-type: none"> • Focus on constraint • Value Stream Map • Identify value added • Remove Non-Value Add • Scorecard metric • Root cause analysis • 5S • Retrain 	<ul style="list-style-type: none"> • Measure processes • Analyze-verify sources of waste • Establish buffers • Cause & Effect • FMEA • Implement changes • Identify VOC & VOP gaps • Train 	<ul style="list-style-type: none"> • Identify process control parameters • Establish control plans • Variance analysis • Implement changes • Define new quality/financial/Ops controls • Update VSM • Train 	<ul style="list-style-type: none"> • Subordinate feeder activities to constraint • Implement control metrics • 5S feeder areas • Revise SOPs • Implement audits • Retrain 	<ul style="list-style-type: none"> • Mistake Proofing • Prevention systems • Establish monitoring dashboards • Standardize Monthly Operating Report • Standardize Quarterly Business Review • Implement Throughput Operating Strategy • Train & educate 	<ul style="list-style-type: none"> • Close project • Evaluate, verify contributions • Post mortem • Best practices • Go to Step 1 • Identify and prioritize next bottleneck
BSC + TOC	Lean		Six Sigma		Lean	TOC + BSC

Which is the Best CI Approach?

It Depends.....

What is your most pressing need?

What is your current performance level?

Which people are able to commit to this initiative?

What type of processes do you have?

What is your organization's culture?



Thank you!

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