

## Connecting Principles of Process Improvement to Farm Safety & Resilience

Dick Wittman, Wittman Consulting  
[www.wittmanconsulting.com](http://www.wittmanconsulting.com)

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## Biosketch

- ◆ Ag Lender – FCS (1972-1980) – Spokane, WA & Washington, DC
- ◆ Partner in 20,000 acre diversified family farm business (1980-present)
  - **New title – Jan. 1, 2017 – Board Chairman/Transition Coach**
- ◆ Farm management consultant (1980-present)
  - Farm family transitions and formalization of governance structures, financial planning, managerial accounting, process improvement, consultant training
- ◆ Industry boards/affiliations
  - Farm Financial Standards Council – Past President.
  - PNW Direct Seed Association – Director, Past President
  - Director – numerous commodity group and bank boards
  - Faculty member – TEPAP Program (fin mgmt. & process improvement); Texas A&M King Ranch Institute (MA)

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## IQ Test – What do following have to do with Process Improvement?

- ◆ Tractor rollover – flat tire (no fluid); spraying on steep ground; no seat belt; roll bar taken off
- ◆ Skidder kills operator – 500' slope; no seat belt
- ◆ Employee gets caught spraying ineligible chemical near creek
- ◆ Combine kills grandpa (SK 2010) – grandson kid hits button in cab; 2<sup>nd</sup> wife sells farm defying sons farm plans
- ◆ Fuel spill – employee fueling implement with auto-shutoff nozzle leaves scene; nozzle fails; big MESS!
- ◆ Employee talking on cell phone while winging out self-propelled sprayer – hits power lines & fries tires!
- ◆ Employee talking on cell phone; tips logging truck over!

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## Answer...When you have:

No clearly defined company culture for:

- Documenting and following SOPs
- Auditing Process Improvement objectives
- Rewarding/incentivizing improvements

→ Bad things happen!

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## Agenda - MRASH

◆ What is "process management" & how does it fit into your vision & culture as a "professionally managed business"

◆ What comes first:

- Creation of Robust SAFETY POLICY & SOP
- Creation of Professional Management Culture & 100% Buy-in?

◆ Models, Applications and Case Studies for putting concepts into practice

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## 100 Yr History of Process Improvement

Resource providers doing it for years...never had a Harvard MBA term for it!

◆ Scientific Engineering – Frederick Taylor (1911) – summarizes 30 years of study in steel industry

◆ 1<sup>st</sup> exposure to term – ***Cheaper by the Dozens***

- Movie about time and motion studies - Frank Gilbreth

◆ Total Quality Management (1980's) → Six Sigma → Business Process Re-engineering → Business Process Re-design... and dozens of other buzzwords

◆ Bottom Line: deciding what to **measure & manage**

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## Pig Iron Case Study

Principles applied to steel millworkers handling pig iron.

- Assessed motions, capacity of workers
- Developed process, picked 1<sup>st</sup> class handlers

◆ Baseline – workers loaded 12 ½ tons of steel /day

◆ Results–

- handled 47 T/day – ↑ productivity 400%
- Worker pay ↑ 60% (\$1.15 → \$1.85/day)
- Cost of production dropped 56% (\$.072 → \$.033/T)

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## Frank Gilbreth – father of “Time & Motion Studies”

◆ Studied motions of bricklayers

- reduced movements from 18 to 5
- positioned materials, support systems for maximum efficiency

◆ **Results**

- 350 bricks/hour vs. 120 industry average
- Bricklayers selected based on performance; given substantial pay increases

→ *Gilbreth's techniques still used today to increase efficiency.*



Trivia ? “Calculate savings (time/\$) laying 800,000 bricks at college health science bldg (360 man-days)”

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## Lessons from Gilbreth/Taylor

◆ One man alone can't improve when working with team (“soldiering”)

◆ Takes management working with employees where **both benefit:**

- Owners: lower cost production
- Employees: increased pay; better work conditions (more time off, **safer environment**)

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## Modern Applications of Process Improvement Successes

Health care/pharmacy, fast foods, seeding systems, dairy, timber harvesting, crop production

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### Happy Days Corp

Meet my friend Bruce Finch  
Fast Food Vendor *par excellence!*

- ◆ Multiple Taco Time outlets
- ◆ Observed time from order window to departure ...*not happy!*
- ◆ Challenged staff to identify solutions...gave \$ incentives
- ◆ Sets new records annually for volume, speed, quality
- ◆ Exemplifies lifetime commitment to Process Improvement
- ◆ **Project:** engaged Time/Motion team to study Cinco de Mayo



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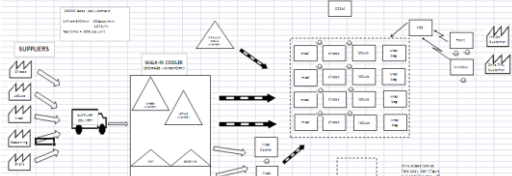
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**Imagine clock like this in your shop, drill or sprayer!**

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### Process Improvement – Wittman Farms

<p><b>Baseline - 1980</b></p> <ul style="list-style-type: none"> <li>◆ 6 partners, 2,500 ac farm, 2,500 pasture, BIG crew</li> <li>◆ 4 combines; 6 trucks</li> <li>◆ Farming implements covered ground 6-8 times/year</li> </ul>	<p><b>Today</b></p> <ul style="list-style-type: none"> <li>◆ 4 partners, 20,000 acres</li> <li>◆ 100% Direct Seeded</li> <li>◆ Efficiency compared to 1980             <ul style="list-style-type: none"> <li>■ 1 combine replaces 6</li> <li>■ 1 semi replaces 4-2T tks</li> <li>■ Sprayer = "8x" acres/day</li> </ul> </li> </ul>
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### Definition – *Process Improvement*

Systematic approach to closing of process or system performance gaps through streamlining and cycle time reduction, and identification and elimination of causes of below specifications quality, process variation, and non-value-adding activities.

source: [google.com](http://google.com)

... *doesn't this sound exciting!!!*

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*Dick's Definition:*

## Process Improvement is...

- Identifying jobs that are repetitive
- Documenting how jobs are supposed to be performed (SOP, GAP, BMP)
- Evaluating how to **do it better:**
  - **More Efficient**
  - **Safer**
  - **More Economical, and**
  - **Environmentally sustainable**
- Auditing how you're doing & rewarding gains

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## Where can Process Improvement be applied?

... and how do we put principles into practice?

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Wittman's Rule –

Safety is not a Management Island...

It's part of a systems approach and culture of a professionally managed business.

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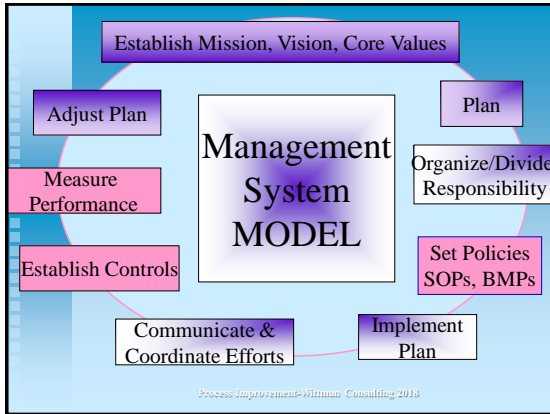
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**SOP's, GAPs\*, BMPs\***  
**16% have SOPs in place!**



What are they? guidance documents and standards for repetitious or routine jobs  
How are they used?

- Training – new hires
- Leverage communication for multiple employees
- Assures jobs done following BMPs, GAPs
- Increases **safety** & lowers cost of production
- Basis for measuring job performance, auditing
- Accessing markets, value-added premiums

*GAP=Good Agric Practice; BMP=Best Mgmt Practice*

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**Consequences of Undocumented SOPs**



- ◆ Inconsistent work
- ◆ Accidents
- ◆ Inefficient processes
- ◆ Food safety hazards → health risks, fines
- ◆ Market demand destruction & loss of market access
- ◆ Excessive turnover

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## Applications of SOPs/GAPs

- ◆ Office functions
- ◆ Harvest operations & servicing
- ◆ Crop agronomic practices
- ◆ Timber harvest & manufacturing processes
- ◆ Fuel and Supply Storage
- ◆ Worker safety guidelines
- ◆ Food safety practices
- ◆ Herd health & stock handling procedures
- ◆ Value added market access

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## Office Management Functions

- ◆ Database management
- ◆ Computer access protocols
- ◆ Internal controls/security
- ◆ Data Backups
- ◆ Network and internet
- ◆ Financial function SOPs



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## Equipment Operations & Servicing

- ◆ Maintenance checklists
- ◆ Operating instructions – key equipment
- ◆ Shop protocols
- ◆ Seasonal work flow planning
- ◆ Harvest crew orientation
- ◆ On farm grain storage protocols

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## Herd Health/Stock Handling

- ◆ Areas of application
  - Stock handling
  - Animal identification/traceback
  - Herd Health (BQA – Beef Quality Assurance)
  - Confined Animal Feeding Operations (CAFO)
  - Waste Management
- ◆ Resources

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## Food Safety, GAPs, BMPs

- ◆ Dual drivers pushing growers for implementation
  - Defensive (food safety, water quality, etc.)
  - Offensive (market access, premiums)
- ◆ Process for putting GAPs in place
- ◆ Resources available to minimize cost and avoid “re-inventing” wheel

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## Safety Procedures

- ◆ Exposures – too many to list
  - PTO, conveyors, hoists
  - Grain bin deaths
  - “riders” – truck, combine, tractor
  - Equipment rollovers – dozers, skidders, tractors
  - Transport – cargo strapping
  - Runaways – vehicles, implements
  - **Story:** Partner’s wife & kids driving potato truck
- ◆ What is your “safety policy”?



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## Think Proactively ...what's this? →



Lee Gilbert, ID St Insurance Division

- ◆ Conducts safety audits, on-site training
  - 4-5 hour Safety Training Sessions
  - Supervisor Workshops on Accident Investigations
  - Shop Audits – inspects for potential hazards
- ◆ "...supervisor needs to communicate on near misses/close calls"
- ◆ For every \$ in insurance claim, employer spends \$4-5
- ◆ Incentives for thinking proactively
  - safe work place
  - Insurance premium modifications

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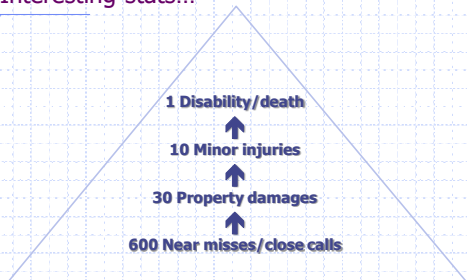
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## Interesting stats...



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## "Predictable Surprises..." – Mike Mullane, NASA Astronaut, author of *Riding Rockets*

- ◆ Success = doing things well over & over consistently
- ◆ Recipe for success = managing "processes"
  - Be aware of "normalization of deviance" – human tendency to deviate from standards
  - Take responsibility for adherence to standards
  - Be courageous leader in alerting to deviations
  - Beware of "false feedback" – absence of something bad happening ... (it didn't cause wreck last time!)
  - Listen to people closest to the scene or front line
  - Archive, review and learn from "near misses" and disasters

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## What is your Cell phone policy?

- ◆ Rules on texting or calling while on job
  - ◆ Technology free zones
  - ◆ Setting time and place for use
  - ◆ Consequences for violating policy
- What's driving increases in auto insurance



Are you asking for predictable surprise?

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## Grain Bin SOPs

- ◆ SOPs for storing at proper moisture
- ◆ Rules for entry & monitoring
  - Harness, extraction equipment
  - Buddy systems
- ◆ Rules for riding in grain boxes and grain transport implements

### Grain Entrapment Deaths

- 2010 – 59
- 2011 – 33
- 2012 – 21
- 2013 – 33
- 2014 – 38

Source: Purdue University

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## What are your SOPs for entry and working in manure storage facilities?

### Gas From Manure Pit Kills 5 On Dairy Farm



PMC full text: J Emerg Trauma Shock. 2012 Jul Sep; 9(3): 253-256. doi: 10.4239/jets.v9i3.25326. Copyright © Wolters Kluwer. Request permission to reuse.

Table 1

Case series associated with sewage or livestock waste handling

Case	Age	Sex	Occupation	Type of incident	Cause of death
1	36	Male	Sewage plant manager	Replacing sewage pipe in the basement of a sewage plant	Asphyxiation and drowning
2	27	Male	Hog farm worker	Entered empty liquid manure transport tank	Asphyxiation
3	23	Male	Hog farm worker	Entered empty liquid manure pit in rescue attempt	Asphyxiation
4	52	Male	Hog farm worker	Entered empty liquid manure pit	Asphyxiation
5	23	Male	Hog farm worker	Slipped and fell hitting his head while falling	Asphyxiation and/or drowning
6	44	Male	Sewage plant worker	Opened sewage storage tank door to check sludge level	Asphyxiation
7	25	Male	Sewage plant worker	Checking underground sewer for debris with male co-worker	Asphyxiation and drowning
8	19	Male	Sewage plant worker	Checking underground sewer for debris with male co-worker	Asphyxiation and drowning
9	42	Male	Hog farm worker	Collapsed on hog building after agitating manure pit	Asphyxiation

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## Implementation Strategies for Safety Process Improvement (SOPs)

- ◆ Identify hazards unique to farm situation (get examples from peers & fine tune)
- ◆ Document SOPs – Include rewards for “quality improvements” and punishments for “violations”
- ◆ Defined protocol for employee training, orientation (incl. meeting dates, agenda, participation logs)
- ◆ Appoint safety officer
- ◆ “Safety audits” (i.e. State Workmen’s Comp)
- ◆ Define Zero Tolerance Policy – worksite rules

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## Job Site Safety SOPs – Think like Seattle, WA contractor

- ◆ Pocket size “little red book” with rules
- ◆ No access to jobsite until go thru training & sign-off
- ◆ Once on site, hard hat with “sticker” required
- ◆ Zero tolerance for violations of rules
- ◆ Lesson to farmers: is your farm a playground or work site?
- ◆ Challenge: how maintain our “culture” AND be safe?



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## Resources – Safety SOPs

- ◆ iAuditor – build checklists, conduct inspections, file reports
  - <http://sfty.io/q4Af/LOcHr6VzOx>
- ◆ Farm Safety Hazard Checklist
  - <http://fyi.uwex.edu/agsafety/employer-resources/farm-hazard-inspection-checklists/>
- ◆ Great Plains Center for Ag Health
  - 10 health centers focused on farm safety/health
  - [www.cdc.gov/niosh/oep/agctrhom.html](http://www.cdc.gov/niosh/oep/agctrhom.html)

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## 2 New Apps – WA State Department of Labor and Industry

### ◆ *Good Observation, Near Miss and Accident Reporting*

- Documents safety incidents in workplace
- Uses: training, hazard recognition, risk analysis, process improvement

### ◆ *Safe Me (Retail industry focused)*

- Tool for on-boarding new employees
- Uses: safety lessons, videos, hazard ID

<https://ohsonline.com/articles/2017/02/27/wisha-touts-new-safety-apps.asp>

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## Safety Models – Putting Principles into Practice Progressive Ag Foundation (PAF)

- ◆ PAF supported by CHS Foundation
- ◆ Role model: Brian Kuhl, volunteer
- ◆ Father injured in fall on farm; recovered
- ◆ Organization hosts 400 safety days/yr for kids age 4-12
- ◆ What local resources can we tap in our local communities?



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## "Safety Is Not a Management Island..."

- Support based in → Mission, Vision & Core Values
- Creation addressed in → Operational & Strategic Planning
- Responsibility fixed in → Organization chart & role definition
- Criteria for lead role → Communication culture, personality type
- Commitment fixed in → Board Policies
- Execution Platform → SOPs
- Enforcement rests with → Management control system, Performance Reviews, Compliance Audits

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# Human Resource SOPs

- ◆ Job announcement, application, interview  
[20 Interview Questions](#)
- ◆ Job descriptions, training & orientation
- ◆ Safety Guidelines
- ◆ Performance Reviews
- ◆ Compensation Policy and Payroll Procedures
- ◆ Employee benefits, vacation, sick leave
- Are these ALL addressed in Employee Handbook/ Management System & Governance Manual?

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see an all example of each flow in a portfolio

Questions: *Does the partners really "report" to the others? If so, how? If not, if someone "steals" the job, it's better to give it up and complete the job.*

**What does your organizational structure look like?**

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**Board of Directors**  
Policy, Management Direction, Owner ROE & Financial Control

**Advisory Board\***

**Pres/ Gen Mgr**  
Finance, Mktg

**Office Staff**     **Peer Group**

**Cattle & Hunting Manager**     **Crops Production Manager**     **Specialty Enterprises Manager**     **Equipment Support Manager**

**Seasonal Pool:** Tom, Dick, Suzie, Harry, Sam & Glenda

**Asst Mgr**  
Rsp. Improvements and Rentals

\*Advisory Board: Insurance Agent, Loan Officer, Crop Scout, Attorney, Real Estate, Peer Board: Clearwater Direct Seeders, Investment Advisor, Marketing Advisor, Accountant, Cattle Breeding Advisor, Wildlife Expert

*Does structure reflect authority & accountability flows?*  
Board → Management → Responsibility Center Mgrs

**The Missing Pieces**

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## Sample Job Description – Precision Ag & Safety Manager

Precision Ag & Agronomy Responsibilities – 7 duty areas

Administrative/Field Staff Support – 4 duty areas

### Shop Operations & Safety Responsibilities

- Primary backup to Service Manager in planning, coordination and direction of shop operations
- Assist Equipment Support Manager and other shop personnel in maintaining equipment
- Develop and maintain maintenance logs for service scheduling and safety compliance
- Oversee farm safety program; establish SOPs, stock safety supplies, monitor compliance and ensure training and consistent implementation throughout workforce
- Oversee environmental compliance and waste disposition
- Monitor fuel and lube inventories, and coordinate restocking
- Prepare quarterly fuel and road tax return
- Audit and stock shop supply inventory to perform maintenance and repair activities
- Oversee winterization of equipment and headquarters facilities

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## Impact of Personality Styles on Attitudes Toward Safety

### ◆ DISC Styles

- D's (Dominance) – run the bus; focus on results; impatient with safety SOPs
- I's (Influence) – cheerleaders; team focused; like the idea...not the discipline of implementation
- S's (Steadiness) – concerned for others; will support safety
- C's (Conscientiousness) – like structure, accuracy and implement methodically

◆ Which personality style is best for a Safety Officer?

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## What incentives are you using?

"...avoiding concrete"

- ◆ Rewards for clean inspections
- ◆ Share in premiums gained over market
- ◆ Gift/bonus for attending safety meeting
- ◆ Bonuses for days without accidents
- ◆ Recognition for developing more efficient or safe process
- ◆ Other incentives?
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**Process Improvement Audit Checklist**  
 This worksheet is designed to assist you in identifying areas in your business where it may be appropriate to standardize process and document SOPs, GAPs, or BMPs. Inventory which of these apply to your business, place an "X" in columns that apply, and note which organizational unit in your business has lead responsibility to initiate and/or administrate the topical area.

Process Improvement Area: (Place an "X" in the columns that apply.)	Applies to Us	Have it in place	Organization Unit or Person with Lead Responsibility
<b>Management System</b>			
Vision, Vision and Core Values			
Farm History			
Goals and Objectives-updating process			
Strategic Planning Process			
Organization Chart/Job descriptions			
Policy Handbook			
Critical agreements documentation buyout agreements, estate plans & wills, lease arrangements			
<b>Human Resource Mgmt</b>			
Job Announcement, application & interview process			
Job Descriptions, org. charts & Performance Standards			
Training and orientation			

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*Time to wrap up...*

Have you taken inventory of your Process Improvement elements?

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## Summary pts

- ◆ Ag business = LOTS MOVING PARTS
- ◆ Must excel at **process mapping** and **costing**
- ◆ Define "culture & attitude" in your business toward SOPs and Process Improvement
  - Will you be "proactive" or "reactive"
  - Fix responsibility for "process improvement" on org chart
  - Promote culture of 100% buy-in
  - SOP implementation
- ◆ Checking box not the same as living it!
  - Make sure there's NO gap between **board** and **break room**
  - Audit for compliance, punish and reward strategically

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## Resources

- Guidebook aids clients in working through implementation process
- DVD allows participants to "take story home"



For free resource downloads, articles & Guidebook/DVD order forms, see: [www.wittmanconsulting.com](http://www.wittmanconsulting.com)

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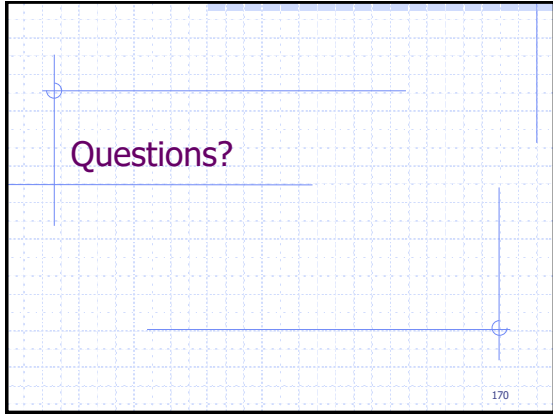
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