

Leadership for Statisticians

The Bridge from Idea to Innovation

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Slides from the RISW Leadership Course

Thank you for attending the course. As discussed, please do not share these slides as they are only intended for those who registered for the course.

If you want to share your learning, I suggest that you put together a presentation summarizing your key takeaways from the course. This is a good exercise in persuasive communication and thinking about the action you want to provoke in the audience.

For those interested in additional training, follow me on LinkedIn for notifications. Go to [TheEffectiveStatistician.Com](https://www.TheEffectiveStatistician.Com) for information on our on-line leadership course for statisticians. More information on this program is included on slide 61.

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Statisticians can help decide the opening of pandemic-ravaged economies if anybody would listen

1. Statisticians can help decide the opening of pandemic-ravaged economies if anybody would listen



[Hrishikesh Vinod](#)

Posted 2 days ago

Epidemiological models do not provide death forecasts. Statistical models using inverse Mills ratio, gene Poisson link for death count data plus autoregressive distributed lag (ARDL) models can provide improve states.

See details at <http://ssrn.com/abstract=3637682> and <http://ssrn.com/abstract=3649680>

“I Just Can’t Seem to Get My Point Across”

- “I’ve got a great idea, but they won’t listen.”
- “They just want to do things the way they’ve always done them.”
- “It’s hard for me to change people’s thinking.”
- “I could really help if they invited me to join the team.”



Statisticians are creative and want to innovate

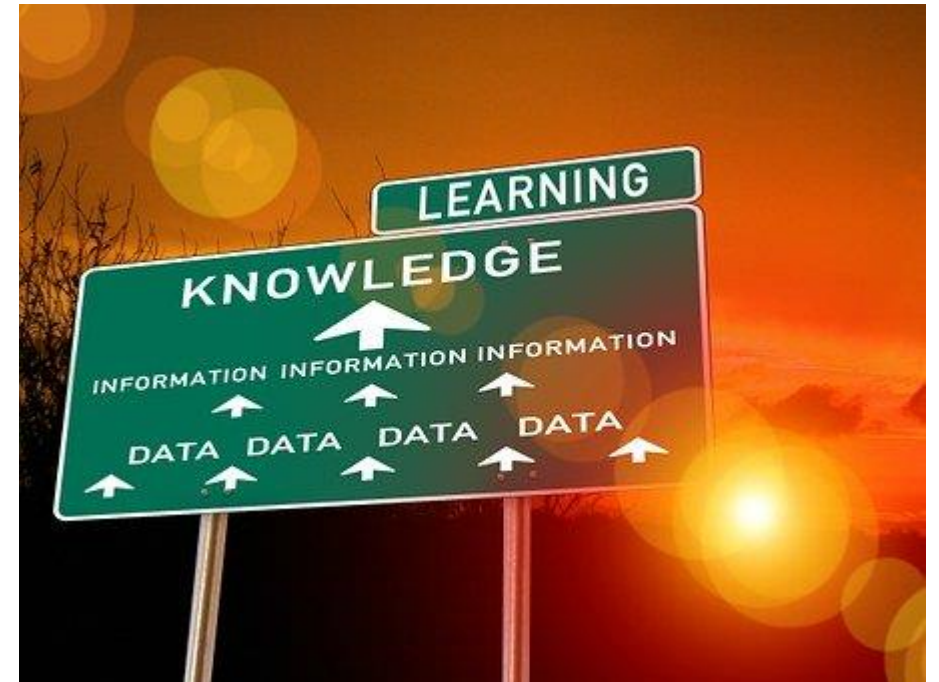
- We are passionate about developing new methods
- We look for applications of new ideas and for novel applications of existing methods
- We believe new approaches can bring value to our organizations



But we often struggle to get our collaborators to listen ... Why and what can we do about it?

A failure to lead

- A learning experience from early in my career
- My “innovative” idea
- Moving the idea forward ... or not
- Lessons learned



A learning experience from early in my career



Bioprocess Research & Development

- Develop and scale processes to produce the API for large molecules
- Make product to support clinical trials
- Transfer process and knowledge to manufacturing

The standard approach for process development and transfer at that time

- Use ad hoc methods to optimize the Active Pharmaceutical Ingredient (API) process
- Determine the best operating conditions
- Attempt to run those conditions at manufacturing scale
- Troubleshoot, make ad hoc changes until it scales



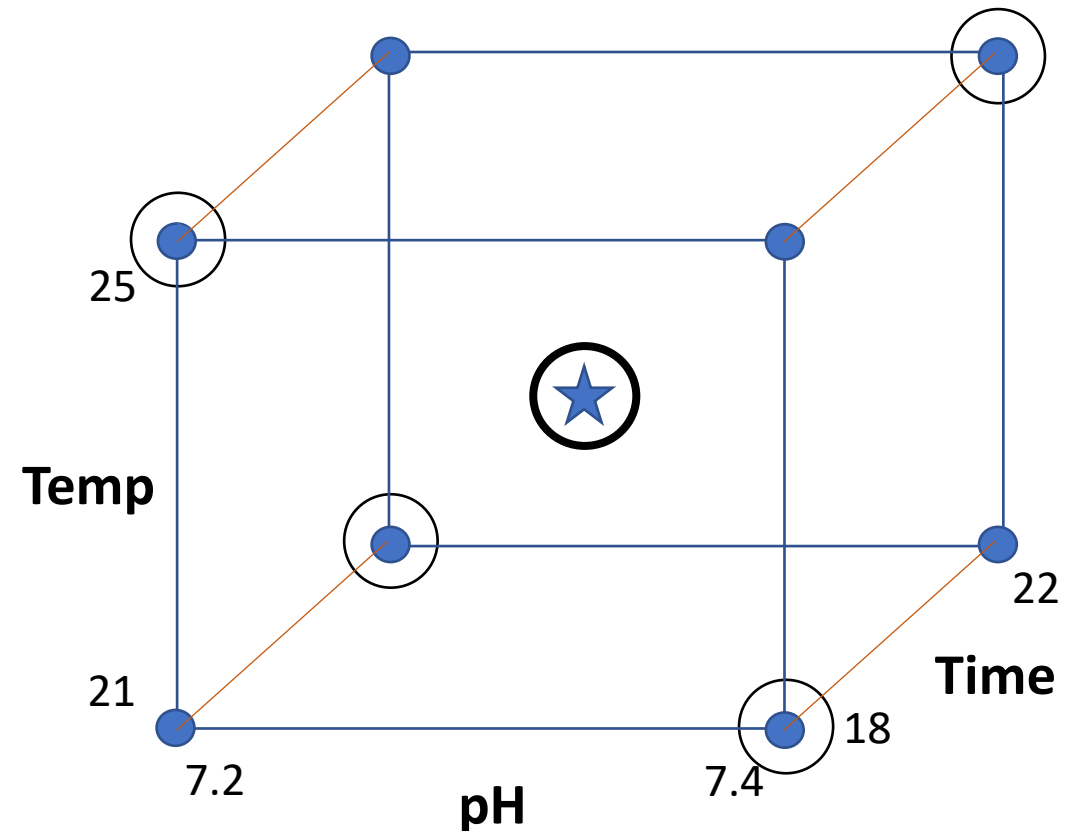
My idea: Use experimental design to demonstrate robustness and create a data-based transfer to manufacturing

The Use of Experimental Design to Confirm Operational Space

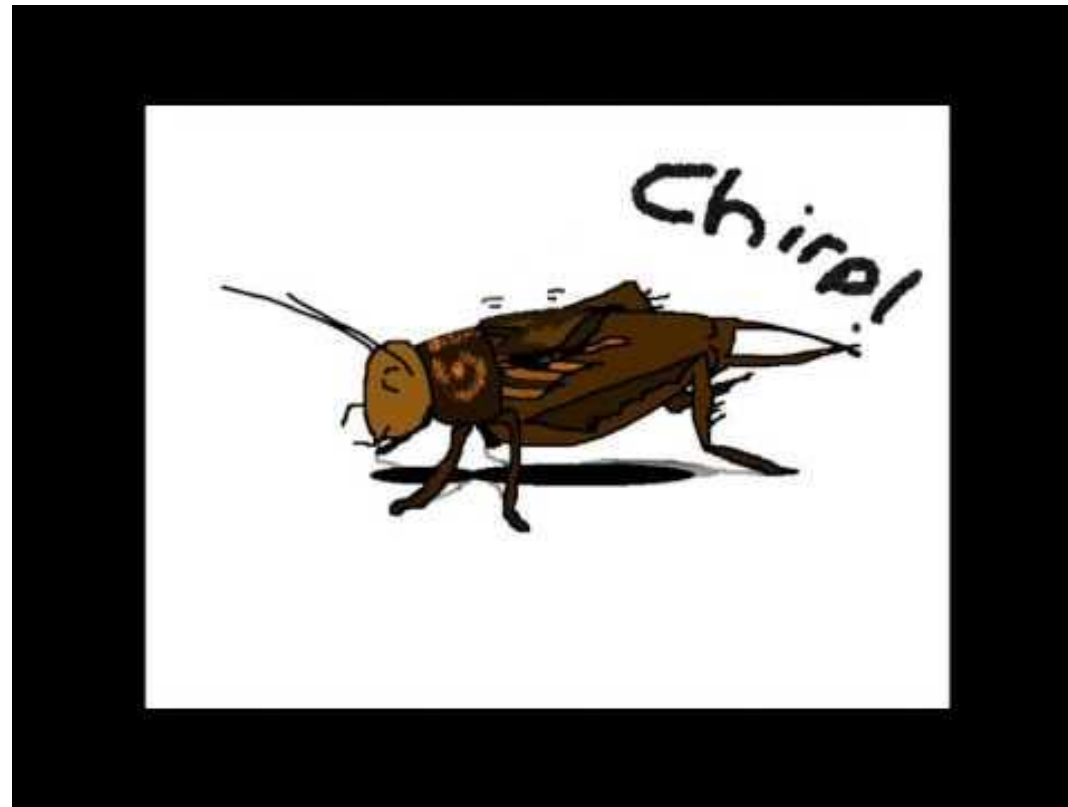
Factor	Low	Target	High
pH	7.2	7.3	7.4
Time (min)	18	20	22
Temperature (°C)	21	23	25

Fractional Factorial Design with Center Point

pH	Time	Temperature
7.2	18	25
7.2	22	21
7.4	18	21
7.4	22	25
7.3	20	23



Shared the idea with my Senior Director



Where did I go wrong?

- Not my management's job to take forward my ideas
- Wasn't able to convince him to support it
- Didn't connect with the thought leaders in the stakeholder areas
- Little understanding of the regulatory implications
- Hadn't thought through strategically how to make it happen

→ Communication, Networking, Business Acumen

Our outline for today

- Leadership fundamentals
- Communication: The foundation for leadership
- Networking: Investing in relationships
- Business Acumen: Understanding beyond statistics
- Executive Presence: Impacting the business
- Getting to Action



Other Logistics

- Concepts and Examples
- Breaks
- Mini-assignments
- Questions
- Discussion
- Taking notes



Let's lay some groundwork

- What is Innovation?
- What is Leadership?
- What's the connection?
- What will leadership require?
- Emergent leadership



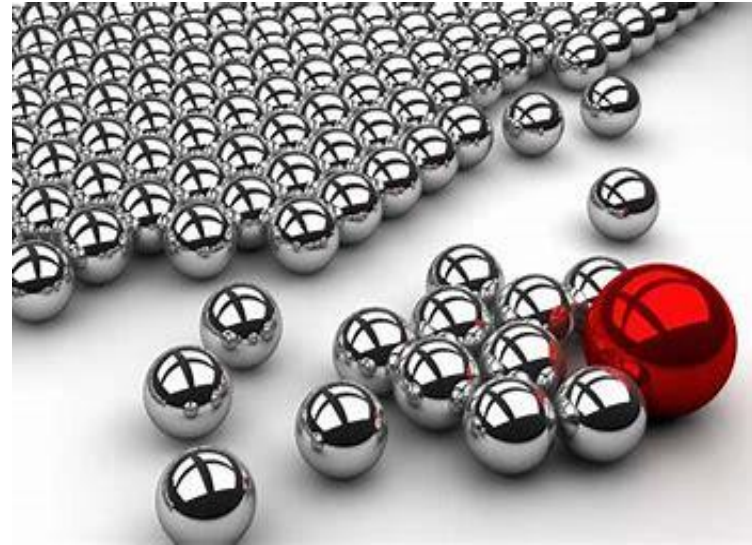
Innovation and Leadership

- Innovation:
 - Delivering value through new ideas/concepts or the novel application of existing ideas/concepts
- Leadership:
 - The ability to consistently deliver value to your organization by inspiring others to take a specific direction when they truly have the freedom or choice to do otherwise.
 - The ability to consistently deliver value to your organization by persuading others to act on your ideas.

Innovation = New Idea + Leadership

All leaders emerge

- Consider the role of a technical statistician
 - Authority?
 - Leverage?
 - Power?
 - Money?
 - Knowledge?



Emergent leaders demonstrate skills, thinking and behaviors that create “follow-ship” or influence without authority

What does it take to become a leader?

- Commitment/Sacrifice

“Leaders are made, they are not born. They are made by hard effort, which is the price which all of us must pay to achieve any goal that is worthwhile.”

- Vince Lombardi

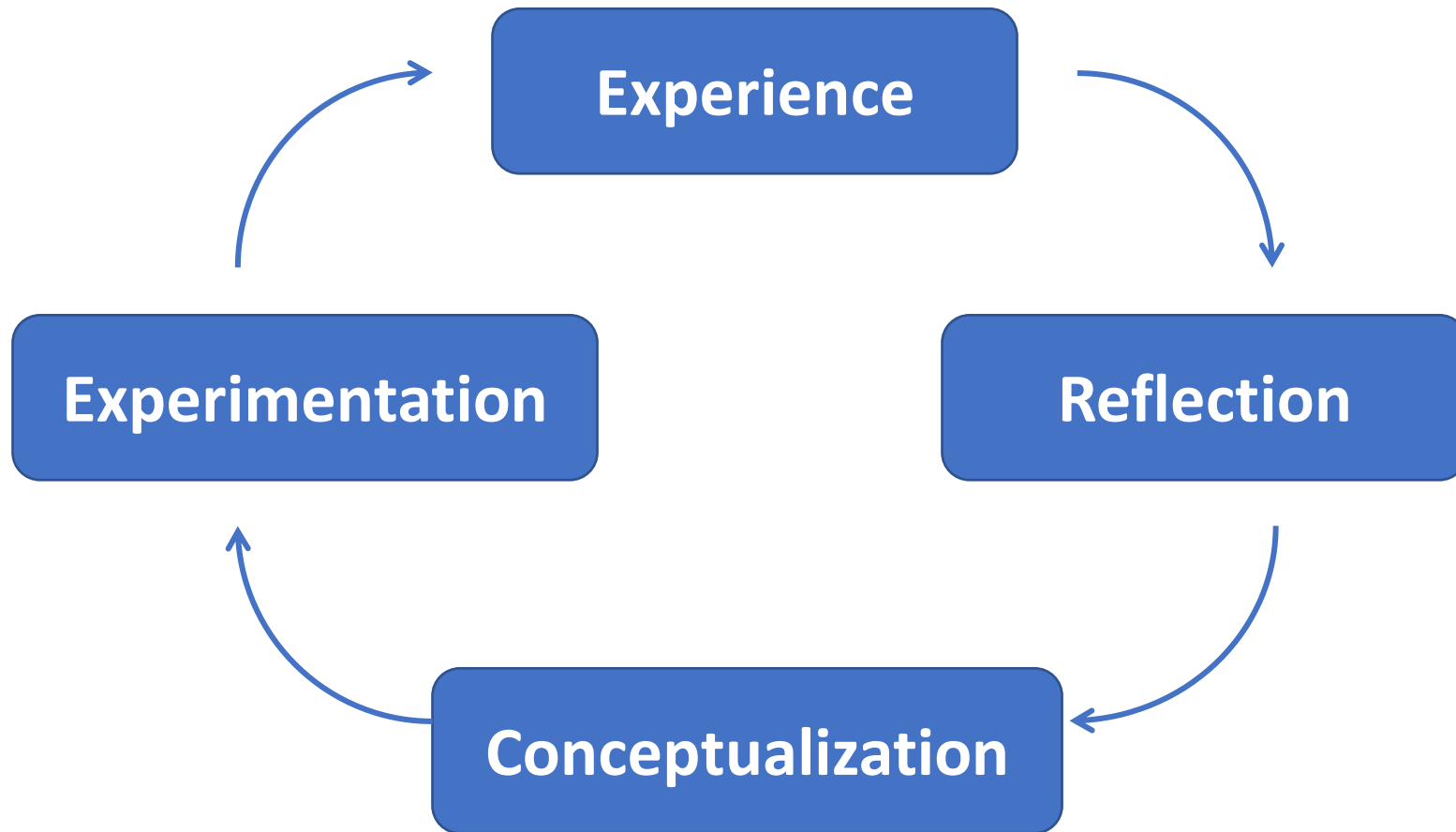
- Vulnerability

“Nothing would be done at all if one waited until one could do it so well that no one could find fault with it.” -- Cardinal John Henry Newman

- Authenticity

- “Be yourself – not your idea of what you think somebody else’s idea of yourself should be.” -- Henry David Thoreau

Experiential Learning Model



Questions





The foundation for leadership
Communication

Some important professional communications

- A strategic proposal to some business partners/collaborators
- Product/molecule decision committee presentation
- Critical analysis in support of change in scientific direction
- Job interview for your current position

What do these all have in common?



What does it take to successfully communicate?

- Attentive listening
- Speaking persuasively
- People interactions
- Preparation
- Re-think communication!



What is Communication?

From Merrianwebster.com:

- A process by which information is exchanged between individuals through a common system of symbols, signs, or behavior

From *The Power of Communication* (by H. Fred Garcia)

- An act of will directed toward a living entity that reacts

Strong Leaders are Excellent Listeners



We do more listening than talking

- Meetings, 1-1's, presentations, updates, proposals
- Ears and eyes!

How do you benefit from listening?

- Gain information and knowledge
- Establish your “brand”
- Identify influencers and decision-makers
- Advance your ideas

Leadership is a Process

Listening and Influence



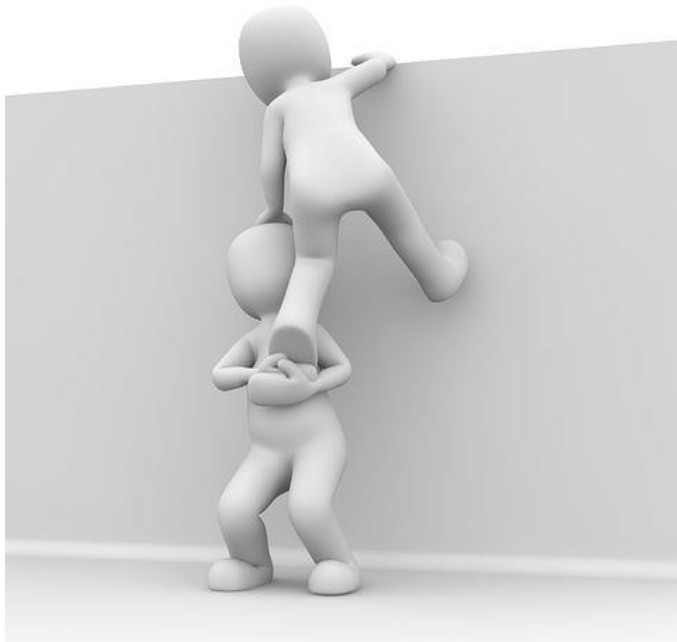
- For most people, you've got to show interest, understand and invest in what they are doing before you can expect them to be interested in your ideas.

Innovation in Bioprocess Development

- What: Fermentation of an antibiotic drug
- Who: Lead scientist (Andy) ... history collaborating with him
- New problem: Optimize the process media
- How: Try a hybrid approach: PSO + DOE
- Result: Increased the yield by 75%

Why was Andy easily convinced to let us try this approach?

The C's of Building Trust



- Competence
The ability to apply/practice a skill one possesses
- Care
To show or demonstrate concern for
- Character
Moral excellence and firmness

Persuasive Speaking



“The only reason to engage an audience is to change something, to provoke a reaction. Effective communication provokes the desired reaction; ineffective communication doesn’t.” -- **Fred Garcia**

Every Interaction is an Opportunity



It's not just "another meeting"
... it's an opening to:

- Build trust and brand
- Gain and demonstrate knowledge
- Establish relationships
- Identify opportunities

Preparing for any Communication

- What's the goal or opportunity?
- Who's the audience/stakeholders? Where do they stand?
- What do we need them to think, feel, know or do to get to our goal?
- What do they need to see us do, hear us say, or hear others say?*
- How do we make this happen?

*Note: ~~What do I want to tell them?~~

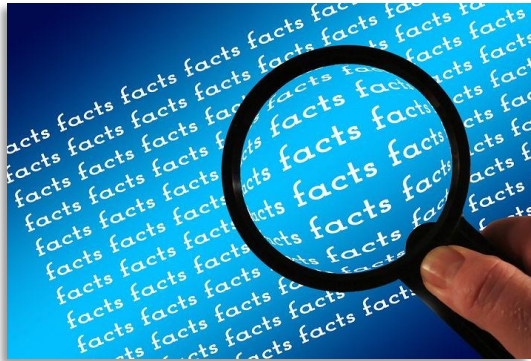


Break and Mini-Assignment

- Let's take a short break
- For part of that time, think about a recent or upcoming communication. Could be a presentation, team discussion or a 1-1. Think thru the concepts just discussed regarding the communication. Did you/are you taking all these into consideration? Most importantly, the goal, the audience and the reaction you want to provoke?
- Type any insights you gained into the chat

Questions





Three Modes of Persuasion

Logos ... Reasoning, facts, logic
Important ... but “It’s not enough to be right”



Ethos ... Personal character, morality, credibility
“Why should I believe you?”



Pathos ... Emotional appeal
What’s in it for the audience? How do you
win their hearts and minds?

Don't treat all audiences the same!



- Typical Audiences for Statisticians
 - Functional management
 - Statistical colleagues
 - Project/Team decision-maker(s)
 - Collaborators
 - Strategic decision-maker(s)
- Audience + Goal → Message + Content



Frames



- Analytics and data science are all the rage
- Lots of data and easy to use software
- Many looking for a competitive advantage from “Big Data”
- Quantitative specialists are in high demand

What is the title of the slide?

... It depends on the frame

Lead the audience to your thinking!



- Be clear about what you are stating
- Don't simply rely on the facts!
- Use frames and assertions

Prepare, Stand and Deliver

“The body always speaks well before the mouth ever opens.”

- Charlene Barshefsky, chief trade negotiator US State Dept

- Preview your surroundings
- Project confidence
- “Win” the first 30 seconds
- Engage the audience ... immediately!
- Prepare and practice





People Interactions

Meeting dynamics can present challenges for statisticians

- Non-native speakers
- Cultural differences
- Scientific/business terminology
- Other personal tendencies

What to do???



Here is some guidance for people interactions

- Prepare ... if possible
- Listen ... identify the issue or problem
- Be curious ... gain clarity and information through questions
- Be concise ... offer your thoughts with focus and intention

“Don’t let perfect be the enemy of good.”

-- Voltaire



How to improve your ability to interact

Take small steps ...

- Ask at least one question during meetings
- Practice in 1-1's or in small groups
- Observe others

It's time that we re-think communication

- Every communication is an opportunity
- What reaction do you want to provoke?
- Prepare and practice!



Some Communication Book Recommendations

- *The Power of Communication* – H. Fred Garcia
- *Resonate* – Nancy Duarte
- *The Soul of Communication* – Perch Ducote

Questions





Investing in relationships

Networking

Networking has many advantages

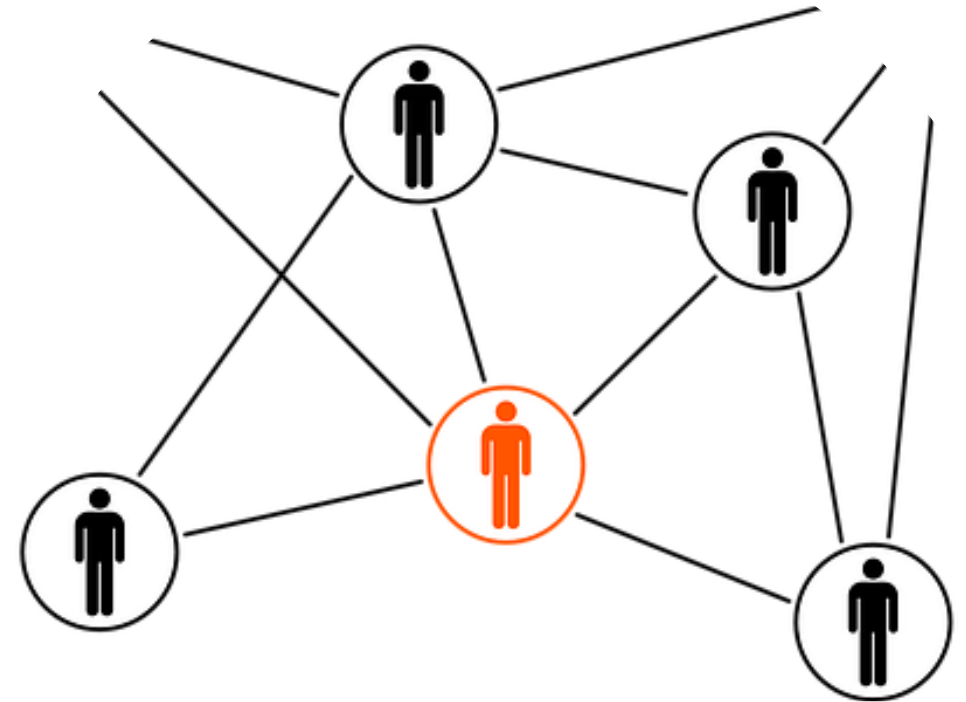


Definition ...

- Interacting with others to exchange information and develop professional contacts

What can you gain?

- Information
- Opportunity
- Visibility
- Trust





Some tips on networking

- Remember basic communication preparation:
 - What's your purpose?
 - Who is your audience?
 - Prepare a list of questions
- Be curious ... don't over-filter your thoughts
- Reflect afterwards ...
 - How did it go? What could be better?
 - Is this someone you want to continue to connect with?

One “Don’t” and two “Do’s” of networking

- Don’t start by trying to sell them on your ideas
- Do seek out their knowledge and experience
- Do ask them about their challenges (e.g., what keeps them up at night?)

“If I honor you with my ears, you’ll be more likely to reciprocate.”

Break and Mini-Assignment

- Let's take a short break
- Think about your network. Which of your collaborators or business partners do you need to build trust with? Who might you meet with to gain knowledge, build a relationship, and perhaps create opportunities?
- List at least three people and plan to schedule a meeting with each of them.

Questions





Understanding Beyond Statistics Business Acumen

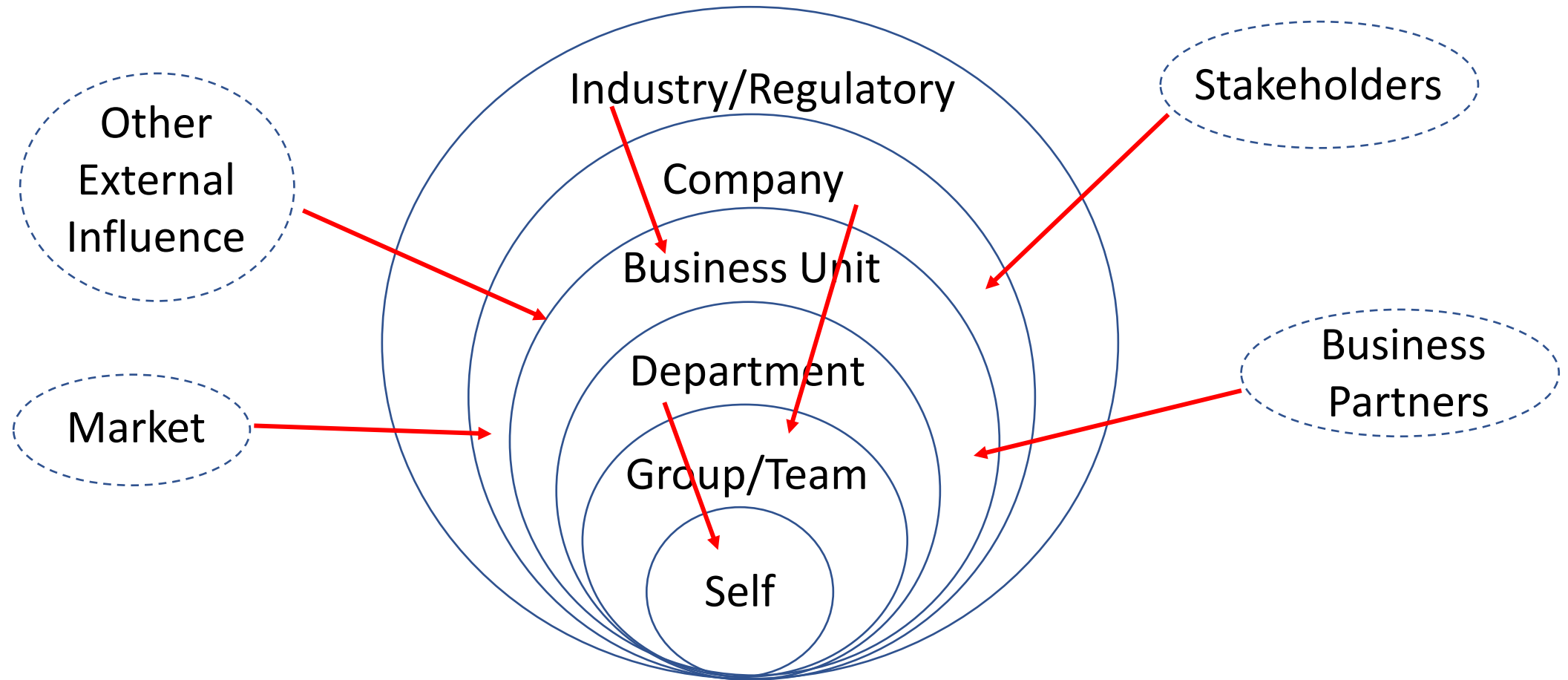
What is Business Acumen?

- A fundamental, cunning insight into how your organization functions (operationally, scientifically and politically), how it delivers value and how it sustains and adapts its purpose, now and in the future.

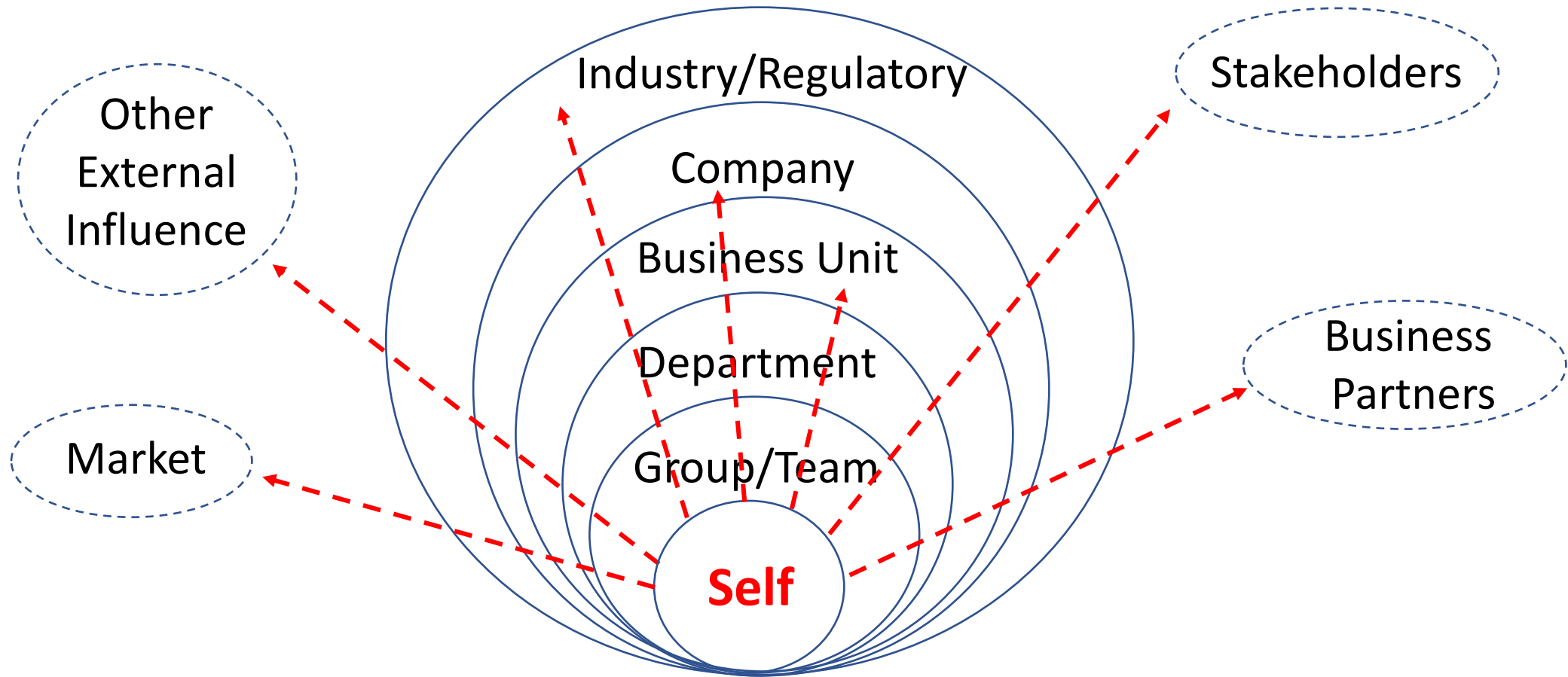
(Adapted from Kevin Cope's *Seeing the Big Picture*)



Normal Hierarchy/Flow of Information for Big Pharma



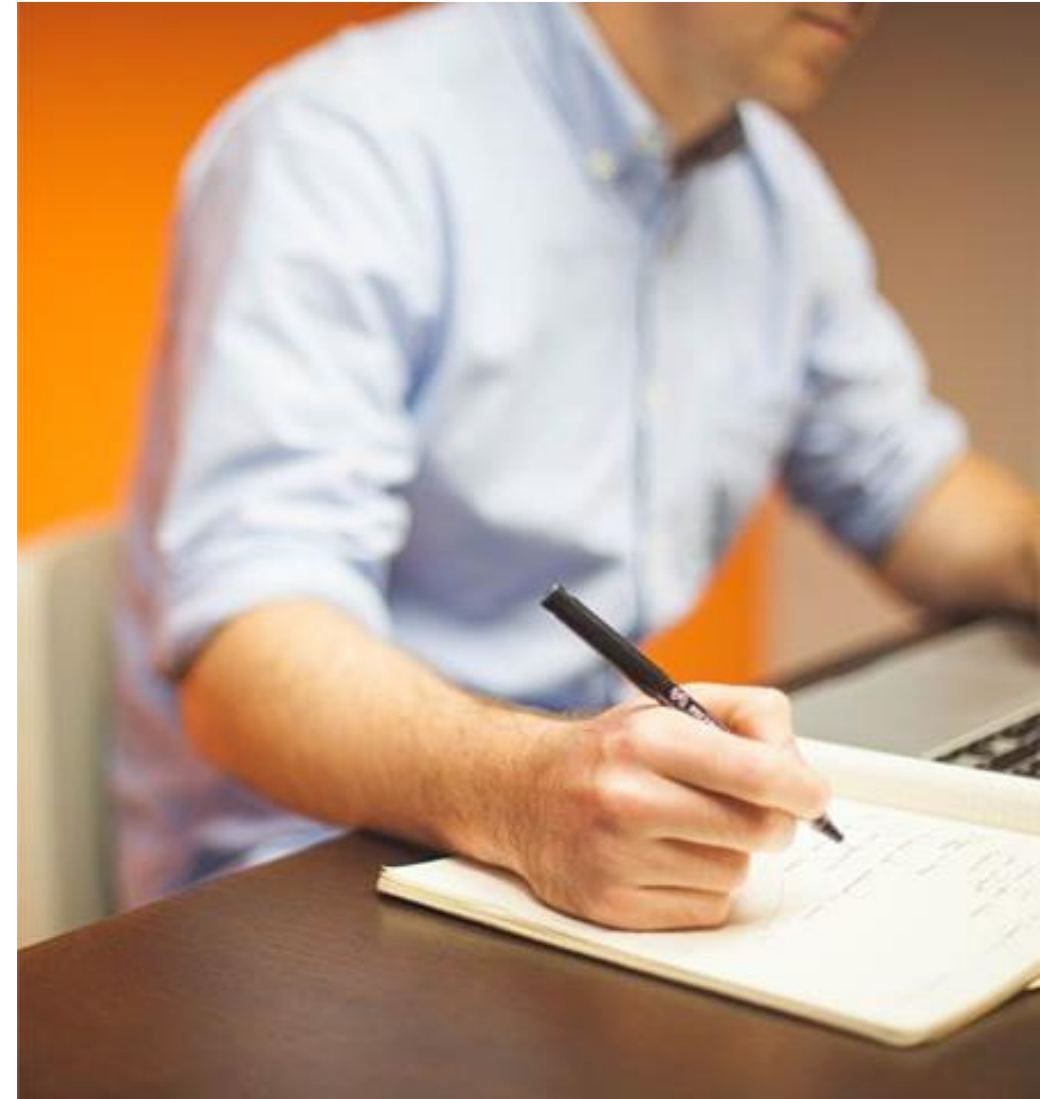
Changing the Flow of Information



Getting to Business Acumen

Some starter questions:

- How is my statistical work going to impact the “business” and ultimately deliver value to the organization?
- What bigger problem is my collaborator trying to solve beyond my statistical task?
- How is my work contribution helping my skip-level organization achieve its goals?



Other ways to build business acumen

- Organizational communications ...
 - Seminars, quarterly updates, employee meetings, portfolio reviews
- Training/conferences ...
 - how drug development works, finance 101, scientific conferences
- Reference materials ...
 - books, articles, industry blogs, websites, etc.



Other Critical Knowledge

- **Financial Acumen** – what drives budget, profitability and cash flow ... “Follow the money”
- **Market Orientation** – understanding the external environment ... competition, regulators, economic trends, political changes, etc.
- **Strategic Perspective** – what choices is your organization making to “win in the marketplace” or “deliver value for its stakeholders”?

Consider these questions at a micro and macro-level



Organizational politics exist

- What is “politics” or “organizational politics”?
 - When people choose their words and actions based on how they want others to react rather than based on what they really think (from Patrick Lencioni’s *The Five Dysfunctions of a Team*)
- Know the politics ... don’t become entrenched in them

Questions



Leadership is an active, ongoing process

- It is not an event
- The best leaders invest in their development
- Leadership is a choice

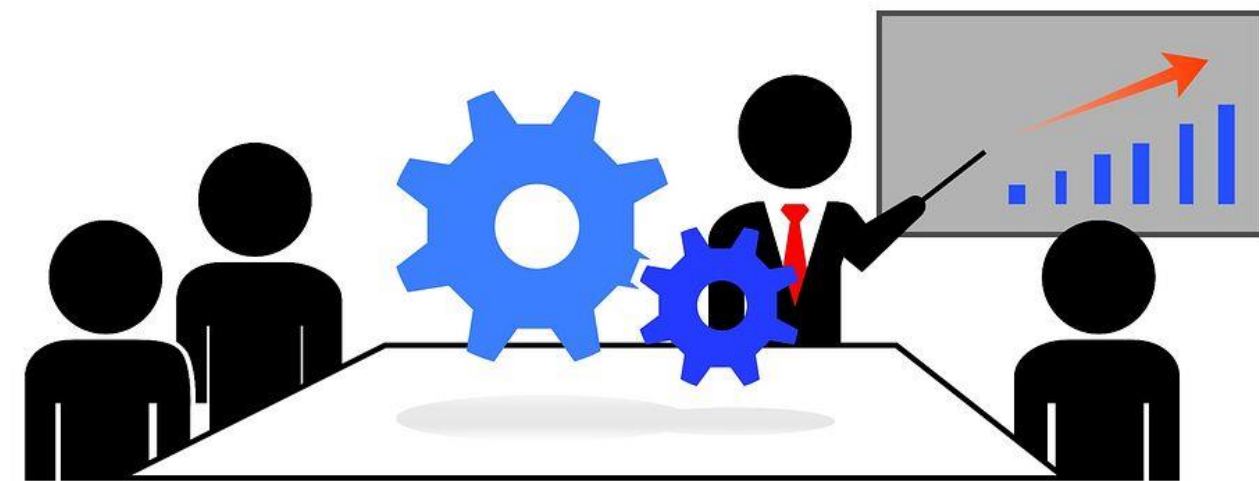


Interested in leadership development or training?

- Feel free to contact me:
 - Gary.R.Sullivan55@gmail.com
 - Gary@EspirerConsulting.com
- Services: Training, consulting, advising
- LinkedIn: I'll share upcoming leadership training and learning opportunities
- EspirerConsulting.com

The Effective Statistician On-Line Leadership Program

- Self-paced, on-line leadership development program
- Approximately 12 hours of content in three modules:
 - Includes concepts, examples, guidance and assignments
 - Communication, Trust, Teamwork, Conflict Resolution, Negotiation, Business Acumen, Influence, Decisions
 - Optional discussion groups
- Instructors: Gary Sullivan and Alexander Schacht
- Program available October 19 with free promotional webinars on September 29 and October 1
- Go to TheEffectiveStatistician.com for information



Contributing to the business
Executive Presence

Executive Presence: What it is and what it is not

Star Trek – The Original Television Series (1966-1969)



Dr. McCoy

Captain Kirk

Mr. Spock

Contrasting Dr. McCoy and Mr. Spock on Executive Presence

Dr. McCoy

- Chief Medical Officer
- Irritable, Quick-tempered
- Humanistic, confidant
- “I’m a doctor, not a ...”
- “Oh my gosh!”

Mr. Spock

- Chief Science Officer
- Logical, measured
- Decisive, problem solver
- Generalist
- “Fascinating.”

Who do you want in your board room?

What is Executive Presence?

- Gravitas ...
 - Origin – Latin: weight, heaviness
 - “Pull”
 - Dignity, presence
- Practically, what does that mean?
- Can we define it in terms and concepts more concrete?

Executive Presence

- The ability to engender trust and confidence in people, through skillful communication, business competence, timely decision-making and calmness, under pressure, in a wide range of situations and challenges, resulting in the respect of senior leaders/executives and an inspired team/organization who are loyal, engaged and committed to shared goals.



Executive Presence: What Does It Take?

- Skillful Communication
- Trustworthiness
- Enduring Confidence*
- Decisiveness*
- Business Competence*
- Composure



Enduring Confidence

- Preparation
 - Are you ready for assignments, meetings, discussions, presentations, etc?
- Knowledge and/or Skill
 - Are you technically competent and are you able to adapt?
- Belief
 - Do you believe in yourself? Do others believe in you?
- Experience
 - Have you had diverse roles and been able to successfully navigate a variety of situations and challenges?
- Success
 - Do you have demonstrated achievements in your organization or field?

Business Competence

- A breadth and depth of understanding in your business or organization demonstrated through consistent achievement
- Deep Expertise + Big Picture Thinking
- How?
 - Commit to your ideas and intentions
 - Move them forward or act on them
 - Learn from the process and outcome



Decisiveness

In the moment or in a timely manner, are you able to respond to:

- Where do you stand on this proposal?
- What will you do in this situation?
- What action or approach will you take?
- What do you recommend?
- Who will you pick or how do you vote?
- What is your strategy?
- ... and can you defend/explain it?



Executive Presence is a “Brand”

- General “picture” of what leadership looks like
- Like leadership, it requires ...
 - Skill development
 - Focus and self-awareness
 - Commitment
- What is your “picture” of the leader you want to be? What are your guiding leadership principles?

Questions



Where do you go from here?



- From the course description ...

“Although this course will not turn you into an instant leader, it will provide you with knowledge of what it takes to improve as a leader and an initial direction & focus to get you started on your leadership journey.”

How will you move your leadership forward?

High level guidance:

- Effort ... Commit time to your leadership development
- Vulnerability ... Get out of your comfort zone ... take risks
- Authenticity ... Be true to who you are

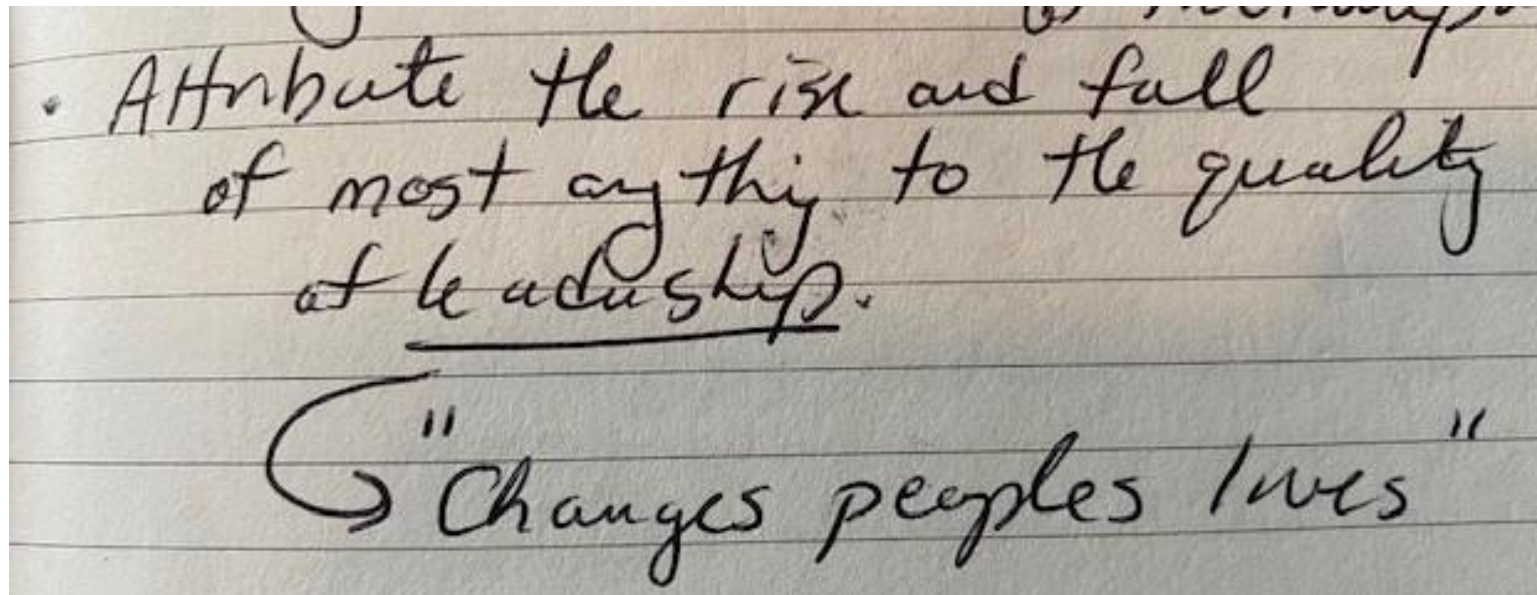
Here's a path forward:

- Follow-up on the mini-assignments from this course
- Take one action ... whether an idea, a role, or an assignment that will help you develop leadership
- Invest in one skill ... what area do you need to improve in for your current role and/or a future role?
- Identify a mentor who can help and guide you

Encourage others to invest in their leadership!

Leadership is a journey

- Pace yourself
- Capture memorable moments
- Celebrate along the way



• Attribute the rise and fall
of most anything to the quality
of leadership.

↳ "Changes peoples lives"