

Carnegie Mellon University

Global Communication Center

Designing and Delivering Effective PowerPoint Presentations

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What are your reactions to the following slides?

Serendipitous Drug Discovery

- The use of nitrous oxide and ether as narcotic gases in surgery resulted from the observation that people who inhaled these chemicals [in parties] did not experience any pain after injury.
- The vasodilatory activity of amyl nitrite and nitroglycerin was discovered by chemists who developed strong headaches after inhaling or ingesting minor amounts.
- A wrong working hypothesis on chloral hydrate, which was supposed to degrade metabolically to narcotic chloroform, led to its application as a strong sedative (in reality, the metabolite trichloroethanol is the active form). Similarly, urethane was supposed to release ethanol but is a hypnotic by itself.
- Acetylsalicylic acid was thought to be just a better tolerable prodrug of salicylic acid, but turned out to have a unique mechanism.
- Phenolphthalein was considered as a useful dye for cheap wines; after a heroic self-experiment, a pharmacologist experienced its drastic diarrhoic activity.
- Warfarin was used a rat poison.



Hoaxes . . .

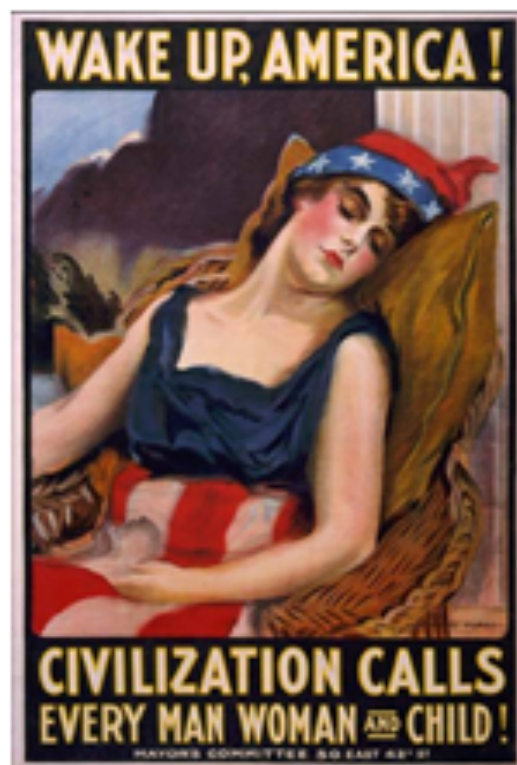
Too Good to be True

You receive an e-mail telling you that:

- There is a problem with your PayPal account. Your personal information is needed to correct it.
- The government has discovered a problem with your census or tax records. Your personal information is needed to correct it.
- You just won a lottery that you didn't even know that you had entered. Send a handling fee to receive your winnings.
- A deposed government official in a foreign country wants to share his wealth with you. Send a handling fee to receive your money.



World War I 1914-1918



The majority of PowerPoint presentations actually *reduce* audience comprehension



Outline


1. The Problem: Conventional Slide Design
2. The Solution: A New Model of Slide Design
 - i. Example Revised Slides
 - ii. Practice Revising
3. “Sell” Your Project
4. Public Speaking Strategies

The Problem: Conventional Slide Design

Slides often suffer from too much text,

Serendipitous Drug Discovery


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confusing or unnecessary visuals,

Rational Drug Discovery

Neurotransmitters

Steroid Hormones

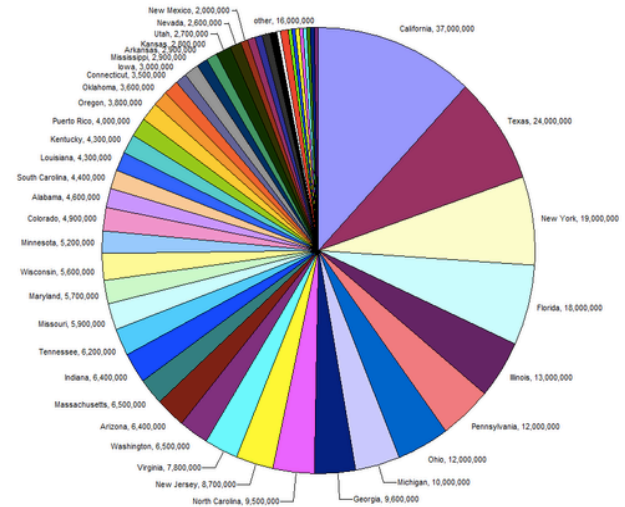
Cleavage Site
Peptides

Compounds with
modified activity &
selectivity

Protease
Inhibitors



Population By State



or, the primary culprit, fragmented bulleted lists with phrasal headings

Mineral Economics

- Free Market:
 - Plentiful mineral resource
 - cheap
 - supply exceeds demand
 - Resource becomes scarce
 - price increases
 - Demand exceeds supply

Digital Acquisition System

- Accelerometer outputs an analog voltage
- Hardware converts analog signal to digital
- Computer samples a number of points
- Data is exported to popular applications
 - o Microsoft Excel
 - o Matlab

Fragmented bullets with phrasal headings help the speaker – not the audience

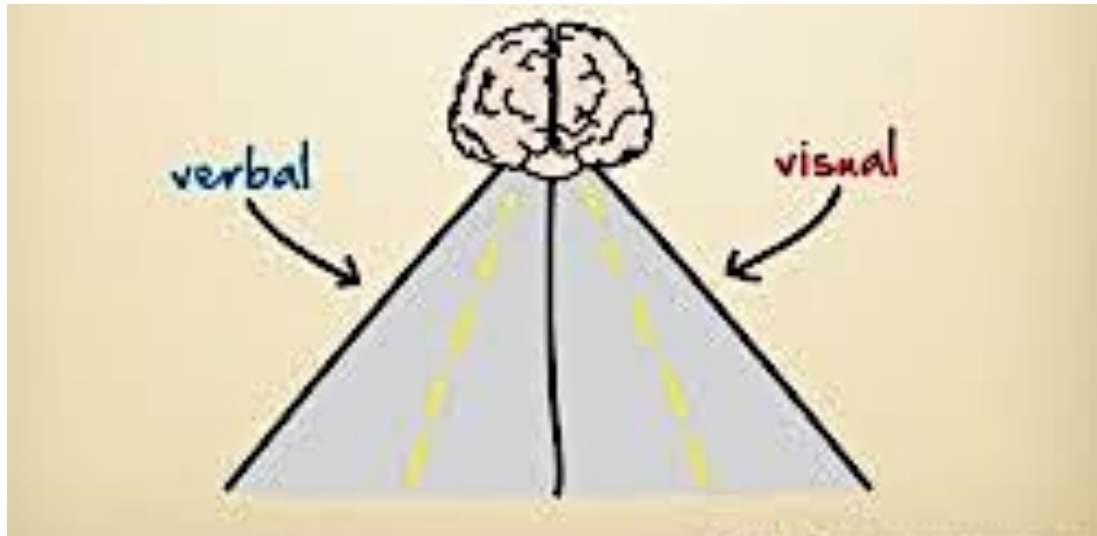
Digital Acquisition System

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Verbal Narration and Screen Text

- While speaker talks with text heavy screen
- Physically and cognitively unable to simultaneously process verbal narration and text on screen
- Two separate inputs in brain
- Option 1: Will be listening and not truly comprehending text
- Option 2: Will be reading text and zoning out speaker
- Option 3: Will be toggling back and forth
- See which option you chose

Dual coding theory suggests memory is enhanced when verbal and visual inputs are paired



A New Model of Slide Design

Recent research has proposed the assertion-evidence approach

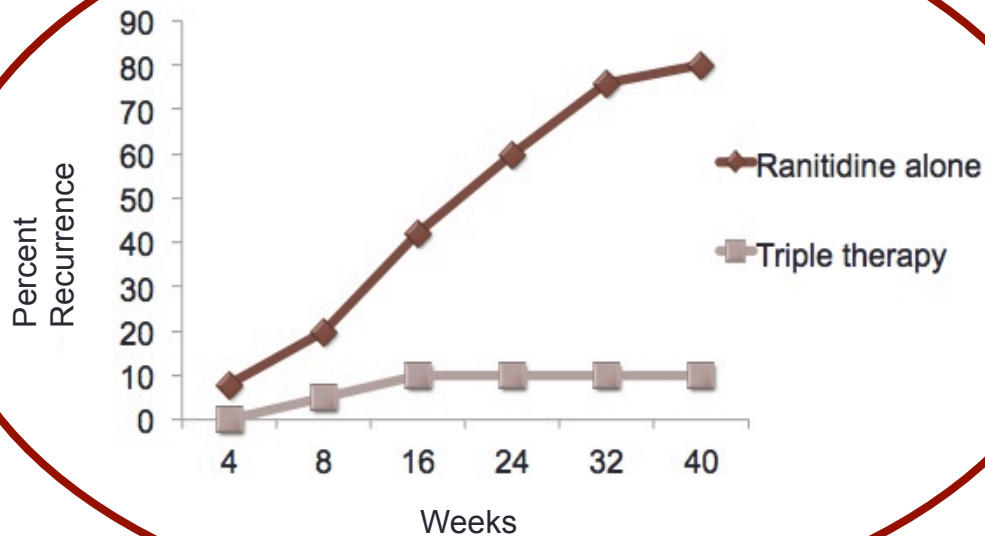
Results

- Gastric ulcer patients
- Gastroesophageal reflux disease (GERD)
- Double blind
- Recurrence over 40 weeks
- 13% triple therapy
- 75% ranitidine (alone)

Before

Recent research has proposed the assertion-evidence model

Triple therapy reduced gastric ulcer recurrence by 60% over traditional ranitidine treatments



Message distilled into a complete sentence heading

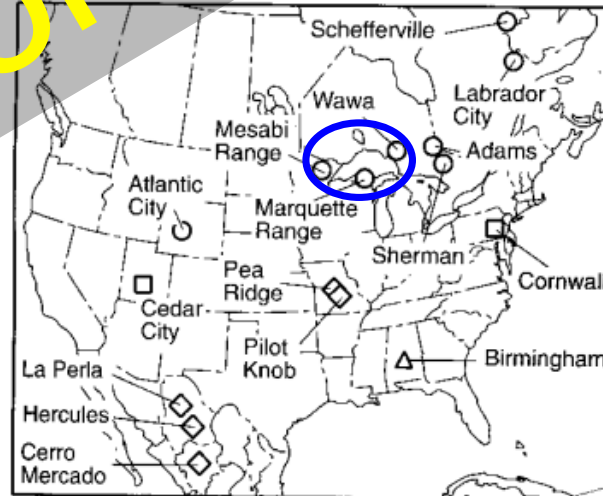
Visual evidence emphasizes message

Alley et. al found that revising a slide from the fragment-bullet approach...

Iron

- An abundant metal, makes up 5.6% of earth's crust
- Properties:
 - shaped, shaped, welded
 - strong, durable
- Accounts for >25% of metals used
- Iron ores discovered in 1844 in Michigan's Upper Peninsula
- Soon found other ores in upper Wisconsin and Minnesota

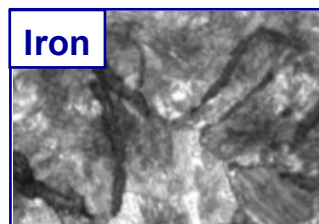
Iron Ore Distribution



Kesler 1994

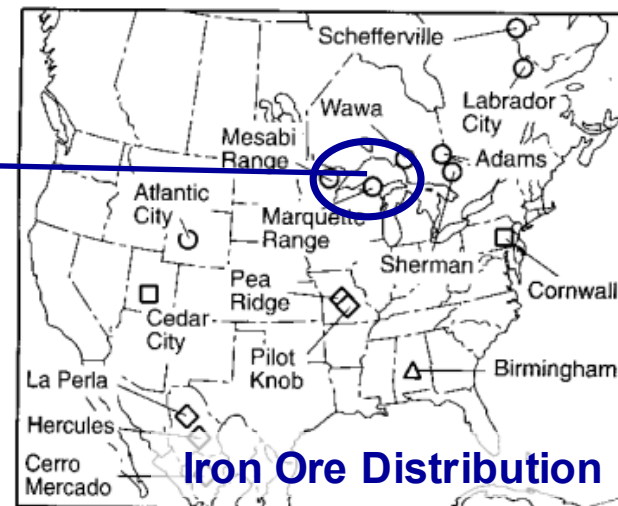
To the assertion-evidence model...

Iron ores make up 5.6% of the earth's crust and account for 95% of the metals used



**Is strong
and durable**

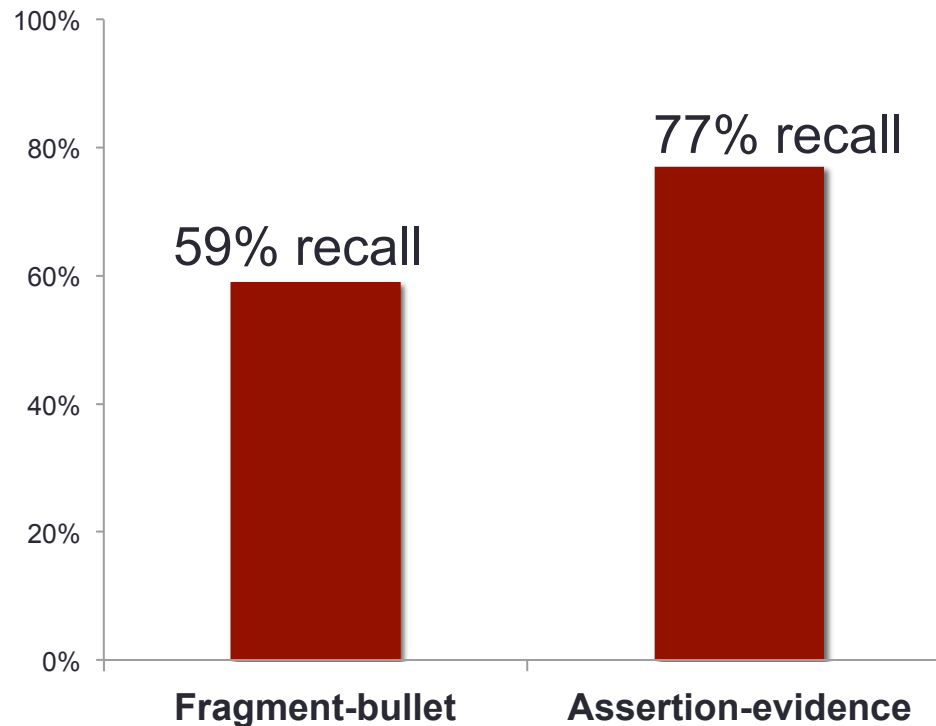
**Can be shaped,
sharpened, and welded**



[Kesler 1994]

Led to an 18% increase in retention (or more)

Q: How abundant is iron in the earth's crust?



Iron

- An abundant metal, makes up 5.6% of earth's crust
- Properties:
 - shaped, sharpened, welded
 - strong, durable
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Iron Ore Distribution

Kesler 1994

Iron ores make up 5.6% of the earth's crust and account for 95% of the metals used

Iron ore

Iron

Is strong and durable

Can be shaped, sharpened, and welded

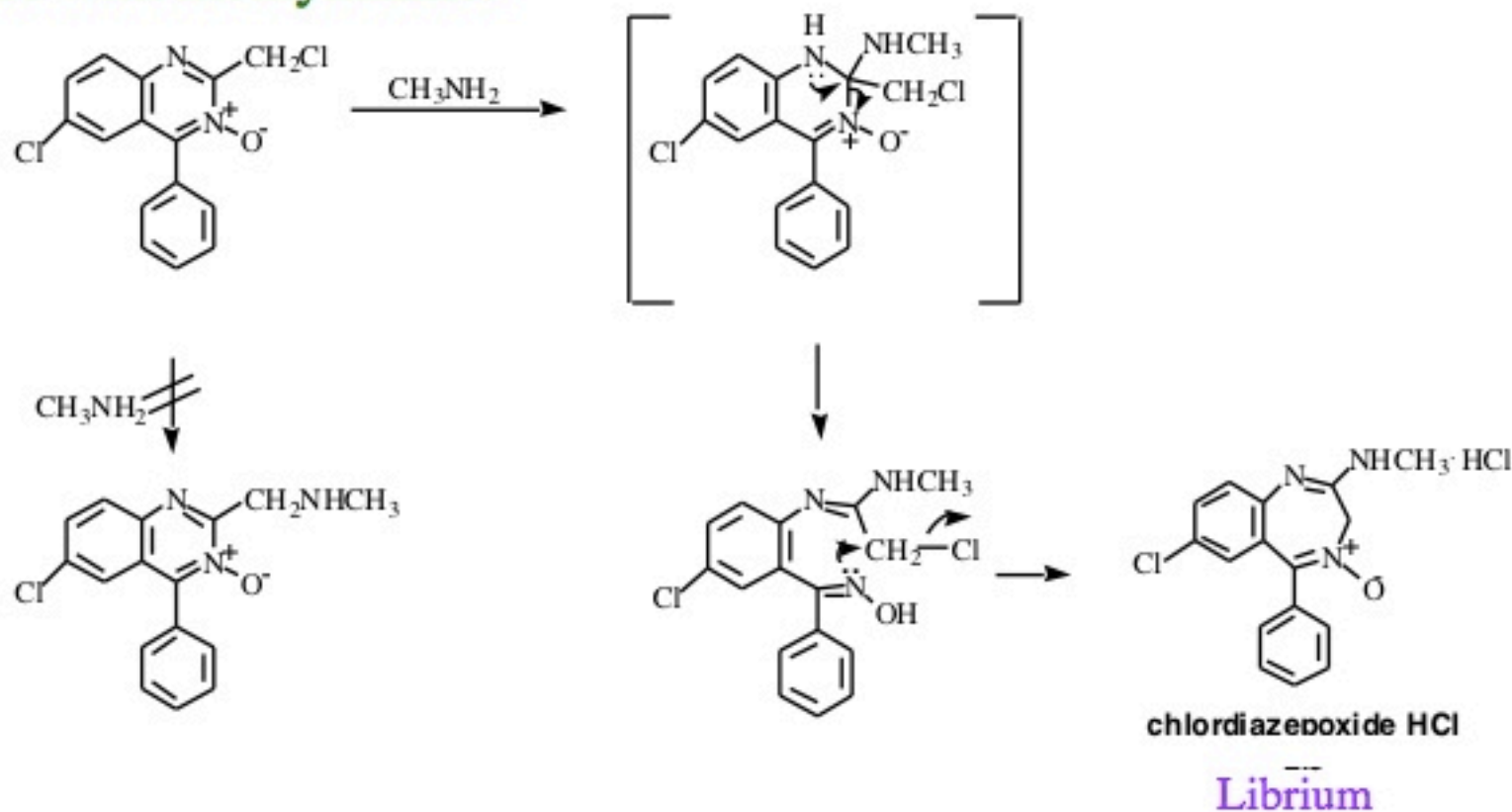
Iron Ore Distribution

[Kesler 1994]

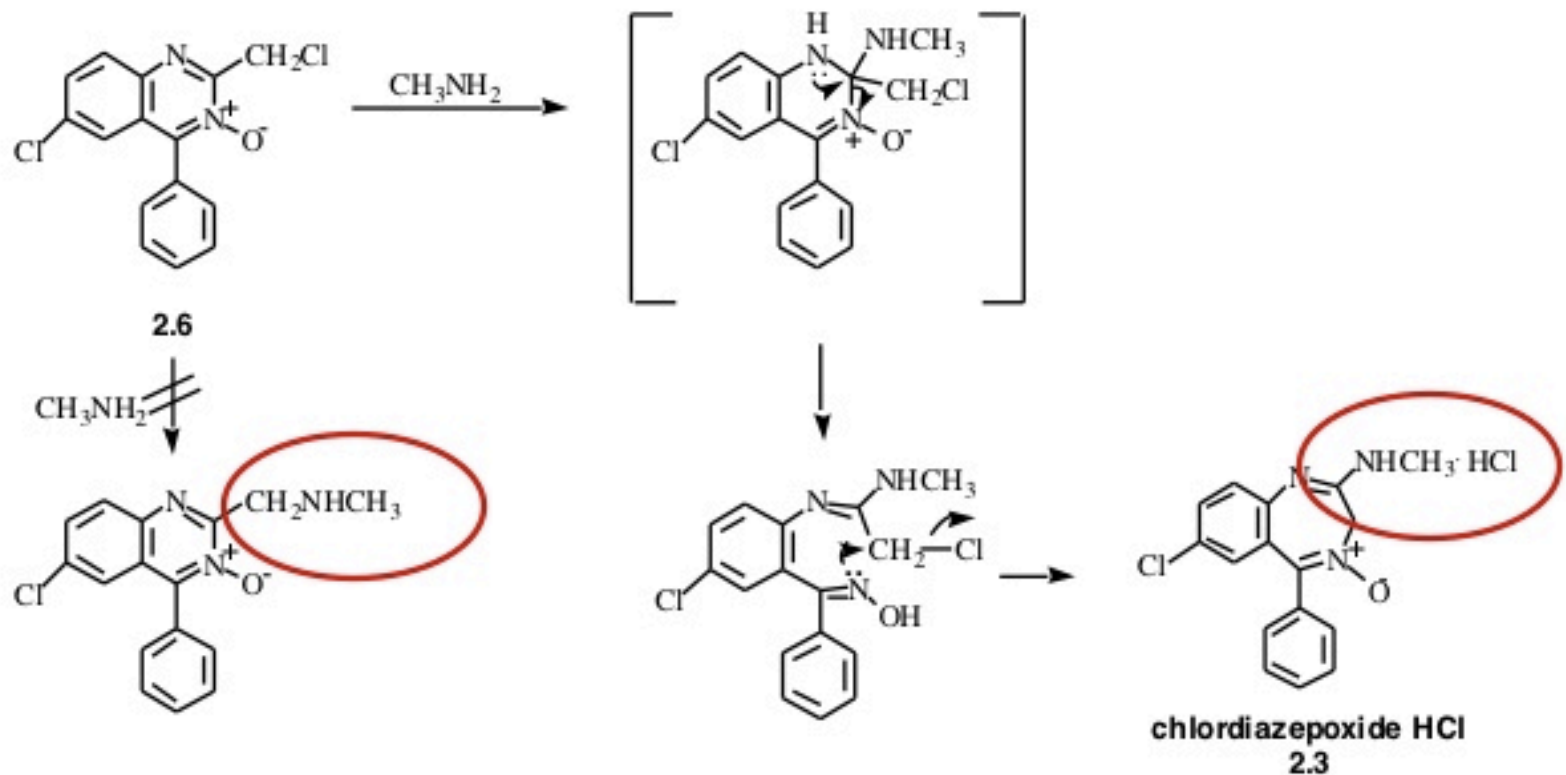
Example Revised Slides

In 1957, during a lab cleanup, a vial containing what was thought to be the latter compound ($X = 7\text{-Cl}$, $R^1 = \text{CH}_2\text{NHCH}_3$, $R^2 = \text{C}_6\text{H}_5$) was sent for testing, and it was highly active.

Further analysis showed that the actual structure of the compound was the benzodiazepine 4-oxide, **Librium**, presumably produced in an unexpected reaction of the corresponding chloromethyl quinazoline 3-oxide with methylamine.



An accidental test during lab cleanup led to the discovery of Librium, a highly active structure



Expected: Methylmethanamine

Found: Librium

Fog warning and education system

- Average vehicle speed before implementation = 45.4
- Average vehicle speed after implementation = 45.7
- Standard deviation in vehicle speed before imp. = 9.4
- Standard deviation in vehicle speed after imp. = 7.2
- Major cause of accidents

The system reduced deviations in speed, thus decreasing potential car accidents

Table 1: Results of Fog Warning System Implementation

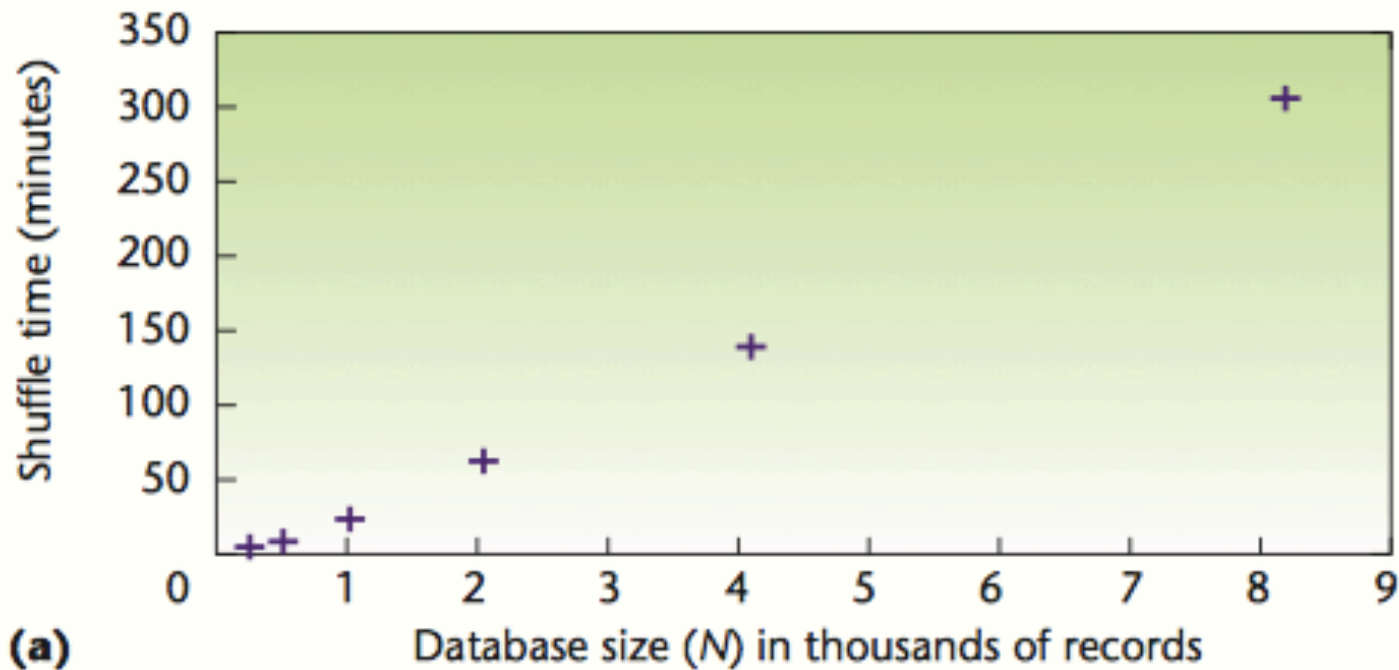
<i>Implementation</i>	<i>Before</i>	<i>After</i>
Standard deviations in vehicle speed	9.4 mph	7.2 mph
Average vehicle speed	45.5 mph	45.7 mph

Accident reduction related to speed standard deviations

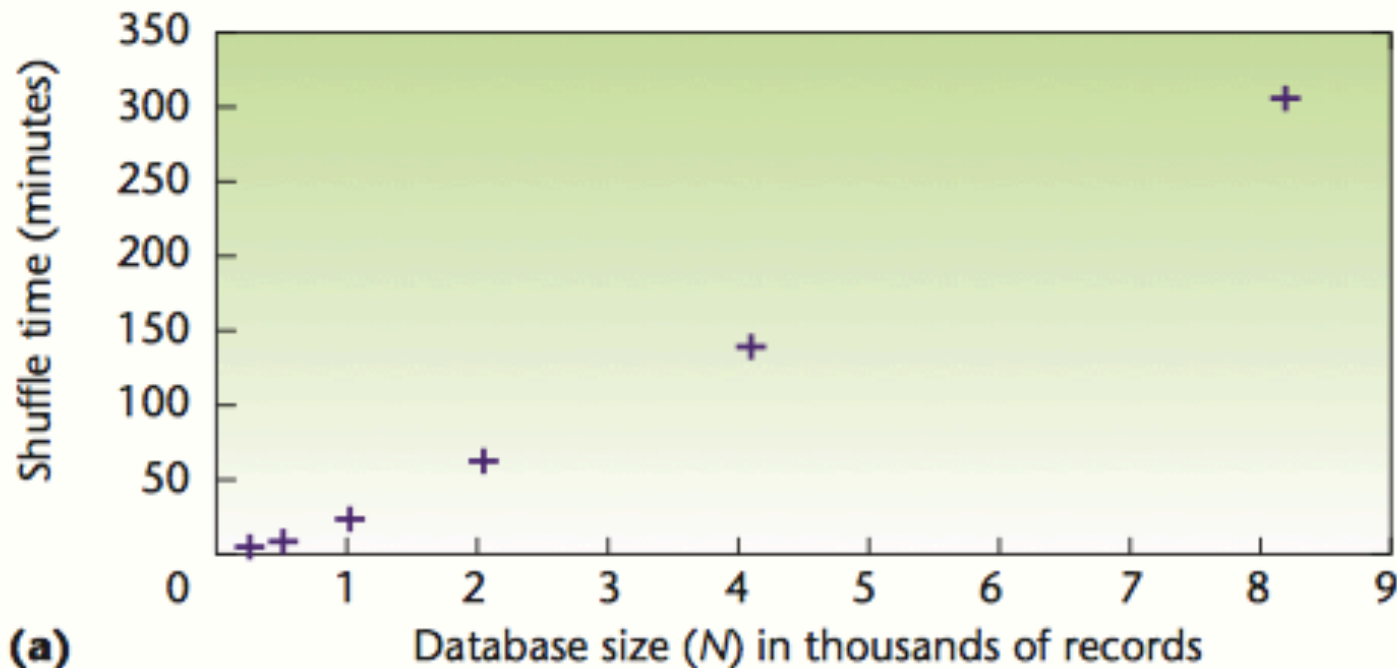
Table 1: Results of Fog Warning System Implementation

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Standard deviations in vehicle speed	9.4 mph	7.2 mph
Average vehicle speed	45.5 mph	45.7 mph

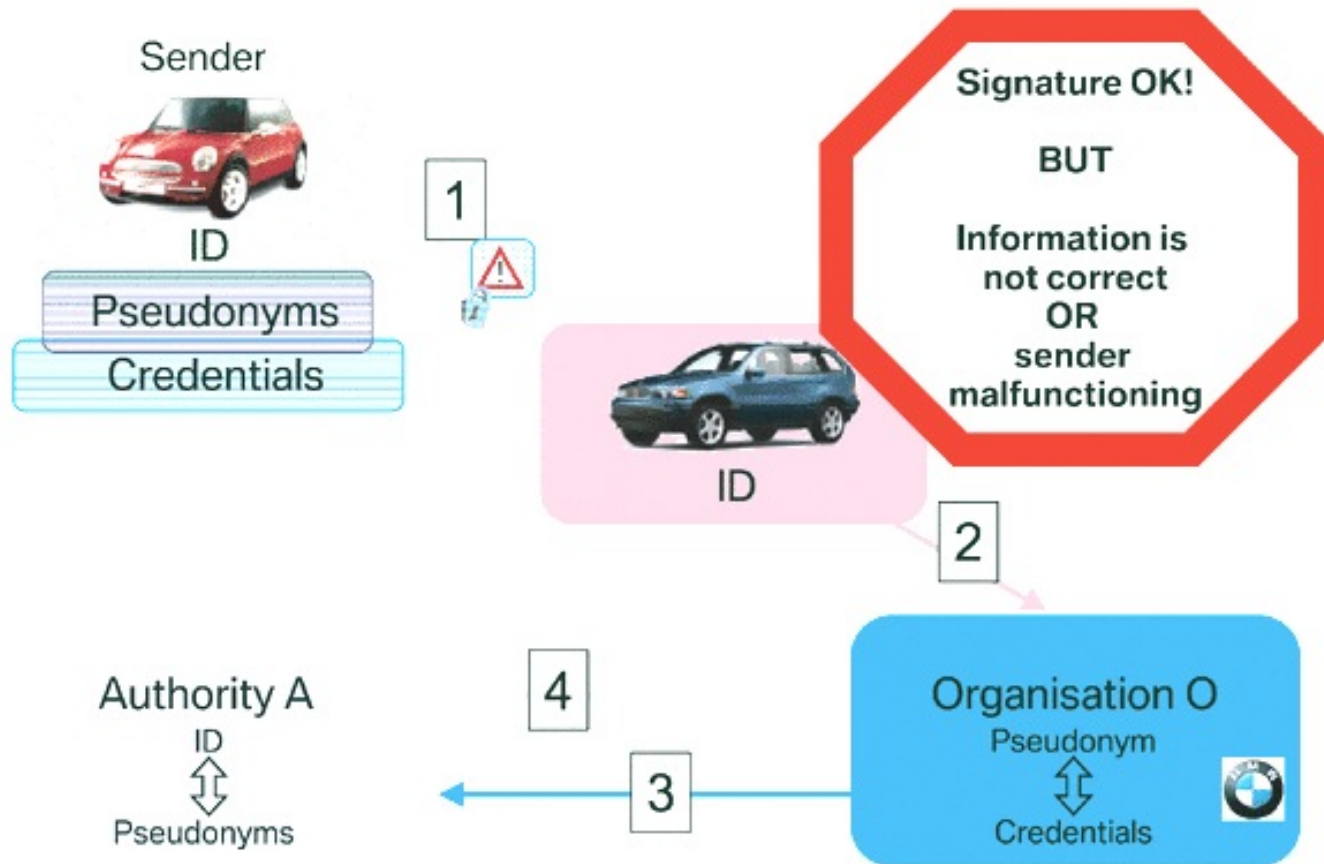
Prototype for distributed LDAP clients



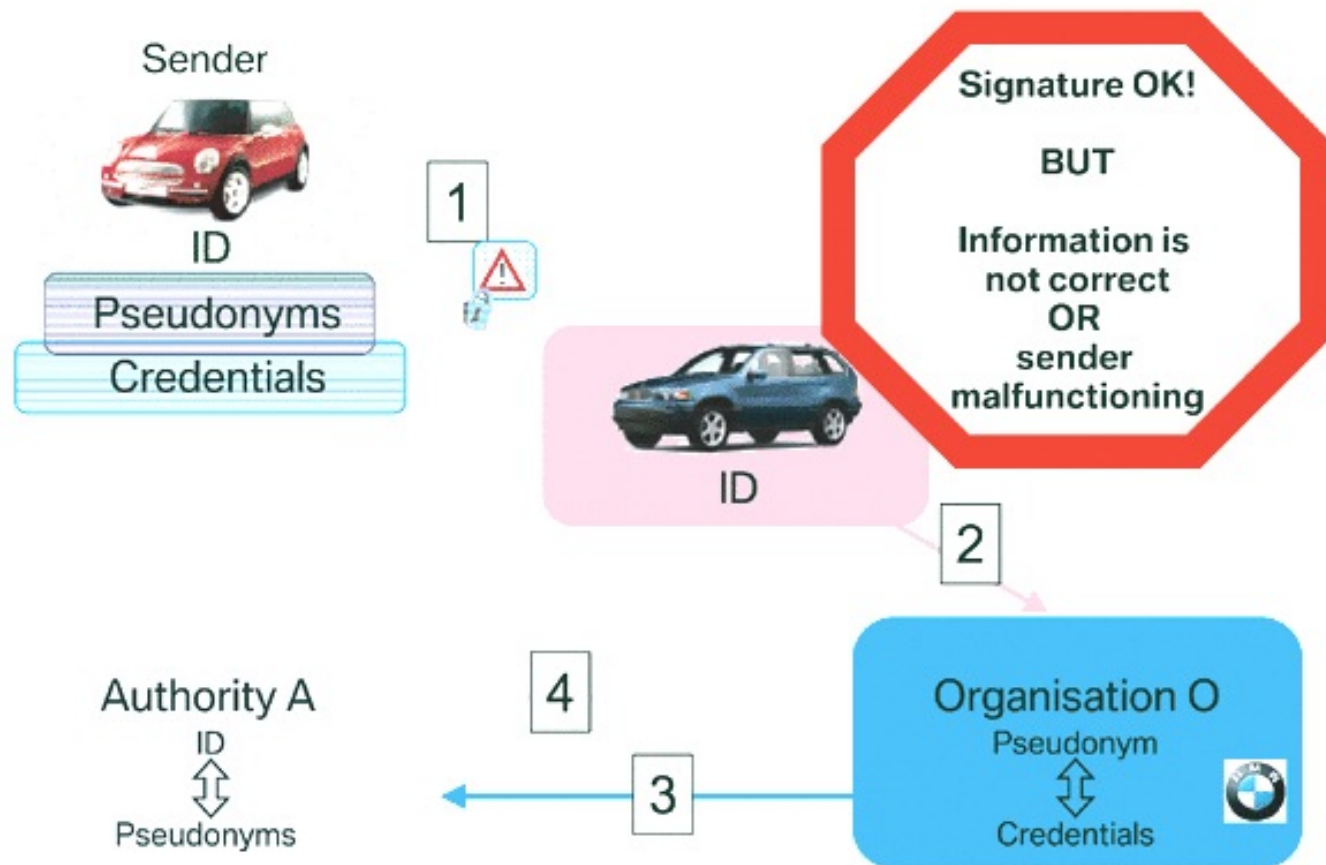
The system can handle one query every 8 seconds, with a worst case time of 8 seconds.



Disclosure of Sender ID



If vehicle sends wrong data, organization O can locate malicious nodes and maintain system



If vehicle sends wrong data, organization O can locate malicious nodes and maintain system



Cardinality of T^*

$$\begin{aligned}\beta_{(q,s,T^*)} &= \frac{n_{(q^*,s)} \frac{f(q,s)}{f(q^*,s)}}{\sum_{s' \in S} n_{(q^*,s')} \frac{f(q,s')}{f(q^*,s')}} \\ &= \frac{n_{(q^*,s)} \frac{f(s|q)}{f(s|q^*)}}{\sum_{s' \in S} n_{(q^*,s')} \frac{f(s'|q)}{f(s'|q^*)}}\end{aligned}$$

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Our algorithm calculates Alice's belief about Bob's private data after she has seen T^*

$$\begin{aligned}\beta_{(q,s,T^*)} &= \frac{n_{(q^*,s)} \frac{f(q,s)}{f(q^*,s)}}{\sum_{s' \in S} n_{(q^*,s')} \frac{f(q,s')}{f(q^*,s')}} \\ &= \frac{n_{(q^*,s)} \frac{f(s|q)}{f(s|q^*)}}{\sum_{s' \in S} n_{(q^*,s')} \frac{f(s'|q)}{f(s'|q^*)}}\end{aligned}$$

Required Expression

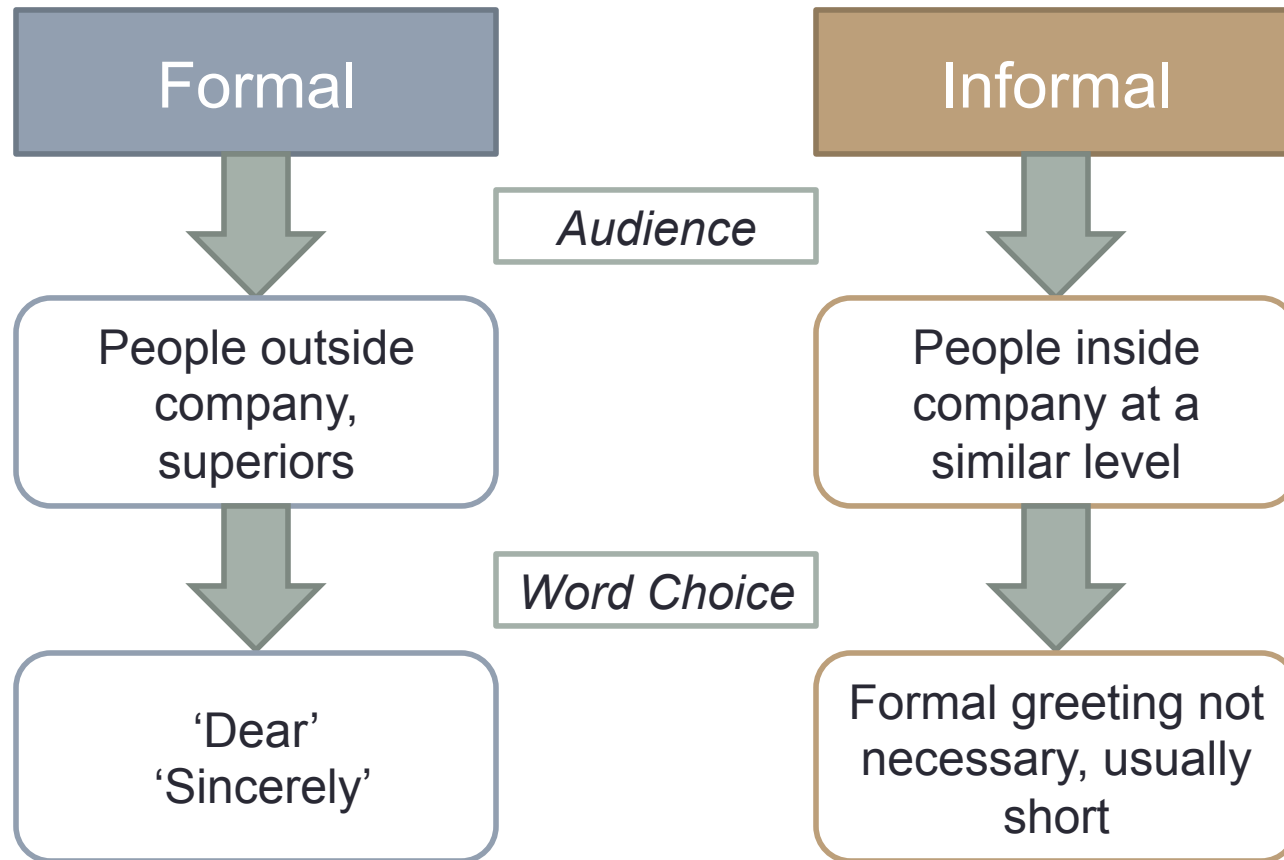
$$\begin{aligned}\beta_{(q,s,T^*)} &= \frac{n_{(q^*,s)} \frac{f(s|q)}{f(s|q^*)}}{\sum_{s' \in S} n_{(q^*,s')} \frac{f(s'|q)}{f(s'|q^*)}} \\ &= \frac{n_{(q^*,s)} \frac{f(s)}{f(s)}}{\sum_{s' \in S} n_{(q^*,s')} \frac{f(s')}{f(s')}} \\ &= \frac{n_{(q^*,s)}}{\sum_{s' \in S} n_{(q^*,s')}}\end{aligned}$$

Simplified Expression
(when S & Q are
independent)

Formal vs. Informal Email

- Formal
 - Audience
 - People outside company
 - Superiors
 - Word choice
 - “Dear,” “Sincerely”
- Informal
 - Audience
 - People inside company at similar level
 - Word Choice
 - Formal greeting not necessary
 - Short

The distinction between formal and informal email is important for new employees to grasp



Keep heading left aligned, two lines max, and at least 30 point font

WAIT. Isn't this model too radical?



Questions?

Practice Revising

Revise slides 3, 4, 5 and 10

Procedure

- Each person was shown 3 different media types...
 - A Political Ad
 - A Band Flyer
 - A Magazine Cover
- Each different media flyer was designed in with the 5 fonts chosen for this survey
- The participants job was to select the most appropriate font for each media flyer and the least appropriate along with an adjective to describe each font they chose.

The participants viewed three media types designed in different fonts



Magazine Cover



Political Ad



Band Flyer

Participants selected the most and least appropriate font for each media, and characterized the font

Fonts

Impact

Tempus sans

Haettenschweiler

Comic Sans

Palatino Linotype

Adjectives

Bold

Fun

Weak

Strong

Stylish

Results – Magazine Cover Most Appropriate



- The most appropriate font for the magazine cover was found to be **“Impact”**
- The adjective most people described this font as was **“Strong.”**

On the magazine cover, “**Impact**” was most appropriate and was described as “strong”



Results – Magazine Cover Least Appropriate



- The least appropriate font for the magazine cover was found to be “Tempus Sans”
- The adjective most people described this font as was “Weak.”

“Tempus Sans” was the least appropriate font and was described as “weak”



On the magazine cover, **Impact** was most appropriate and Tempus Sans least appropriate



“Strong”



“Weak”

Discussion:

- **Impact** and **Haettenschweiler** were described mostly as strong and bold. Tempus Sans and Comic Sans were more fun and stylish fonts.
- Palatino Linotype seemed to be the least ‘flavored’ font. It was mostly neutral and received neither substantial votes for the best font or worst font of any of the three mediums to be considered influential.

Certain fonts are better suited for certain media types

(or other main implication??? Not sure here)



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1. The Problem: Conventional Slide Design ✓
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“Sell” Your Project

Researchers use four introductory moves to highlight the importance of their work

1. Explain Significance

*Why should we care?
What is at stake?*

2. Describe the Status Quo

*What is currently known?
What is current practice?*

3. Identify a Gap

*What is the problem?
What is missing or unknown?
What is the flaw?*

4. Fill the Gap

*How am I solving the problem?
How am I filling the gap?*

Text based passwords remain the predominant way to protect a wide range of personal and financial information. To combat attackers, sysadmins are currently adopting complex password composition policies to encourage stronger passwords. However, little is actually known about the practical effect of such policies on password strength. Moreover, recent work has not tested how such policies affect user behavior, such as a user's tendency to write down their complex password. This project seeks to measure the effect of policy on password strength and usability. We also aim to evaluate information entropy as a measure...

Significance

Status Quo

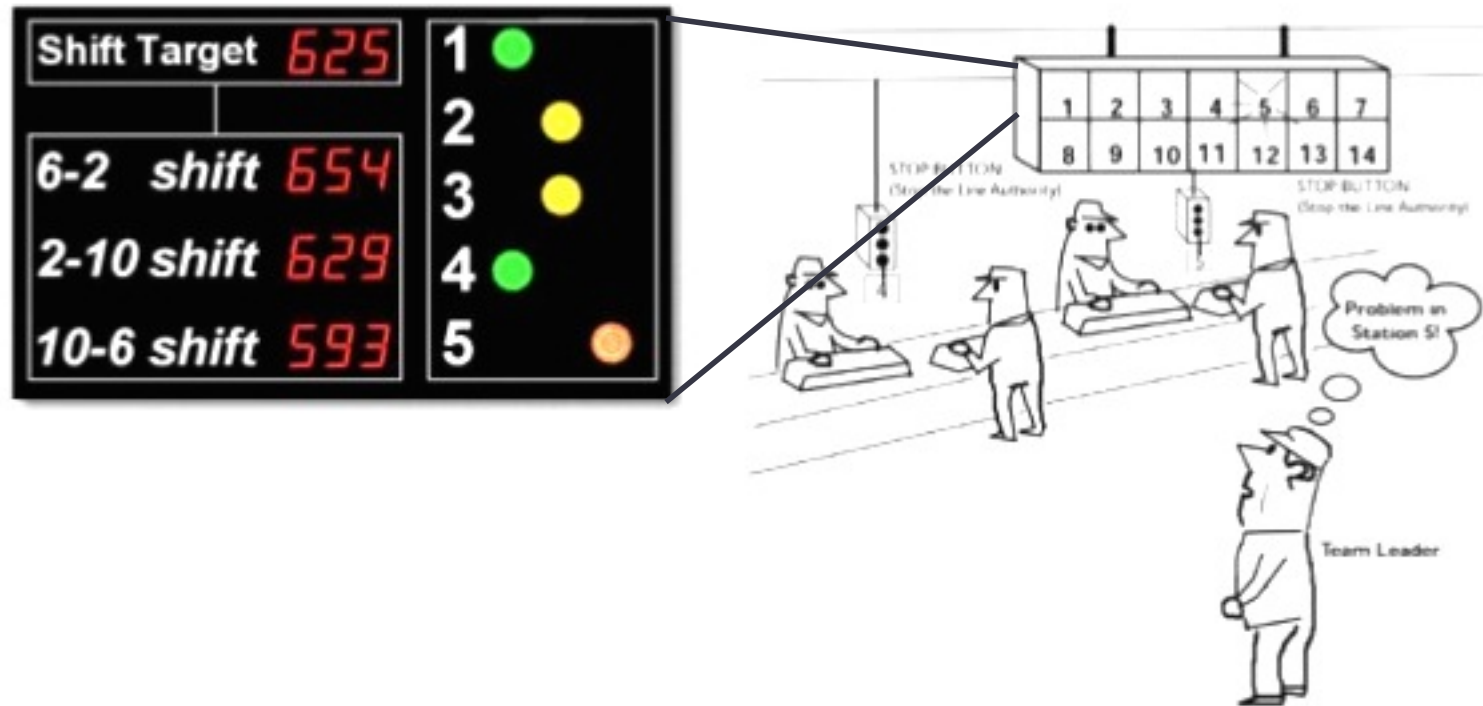
Twofold Gap

Fill the Gap

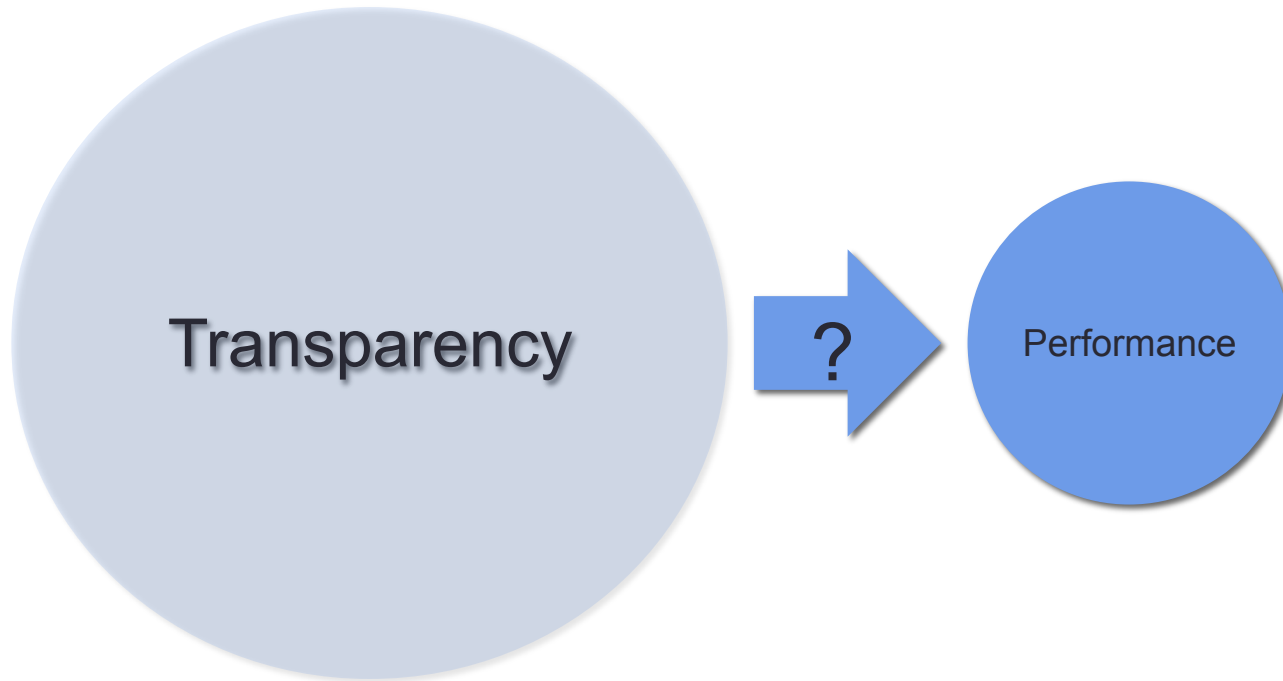
- Transparency is the number one trend in modern day factories. The maxim of the day is that organizations that are open, perform better. This is also true for Toyota, which has achieved near perfect observability of the performance of every employee and function in the Toyota production system. In fact, Toyota's seventh principle is use visual control so no problems are hidden. Nonetheless, the implications for organizational performance of increased transparency remain surprisingly unstudied, both in factories and more broadly. We do not have sufficient empirical, field-based evidence of a causal relationship between observability and performance. Thus, we aim to help keep Toyota a leader in the field by spearheading the investigation into how exactly transparency impacts performance.

(delivered verbally)

Toyota's seventh principle promotes transparency:
"Use visual controls so no problems are hidden"



We lack empirical, field-based evidence of the effect of transparency



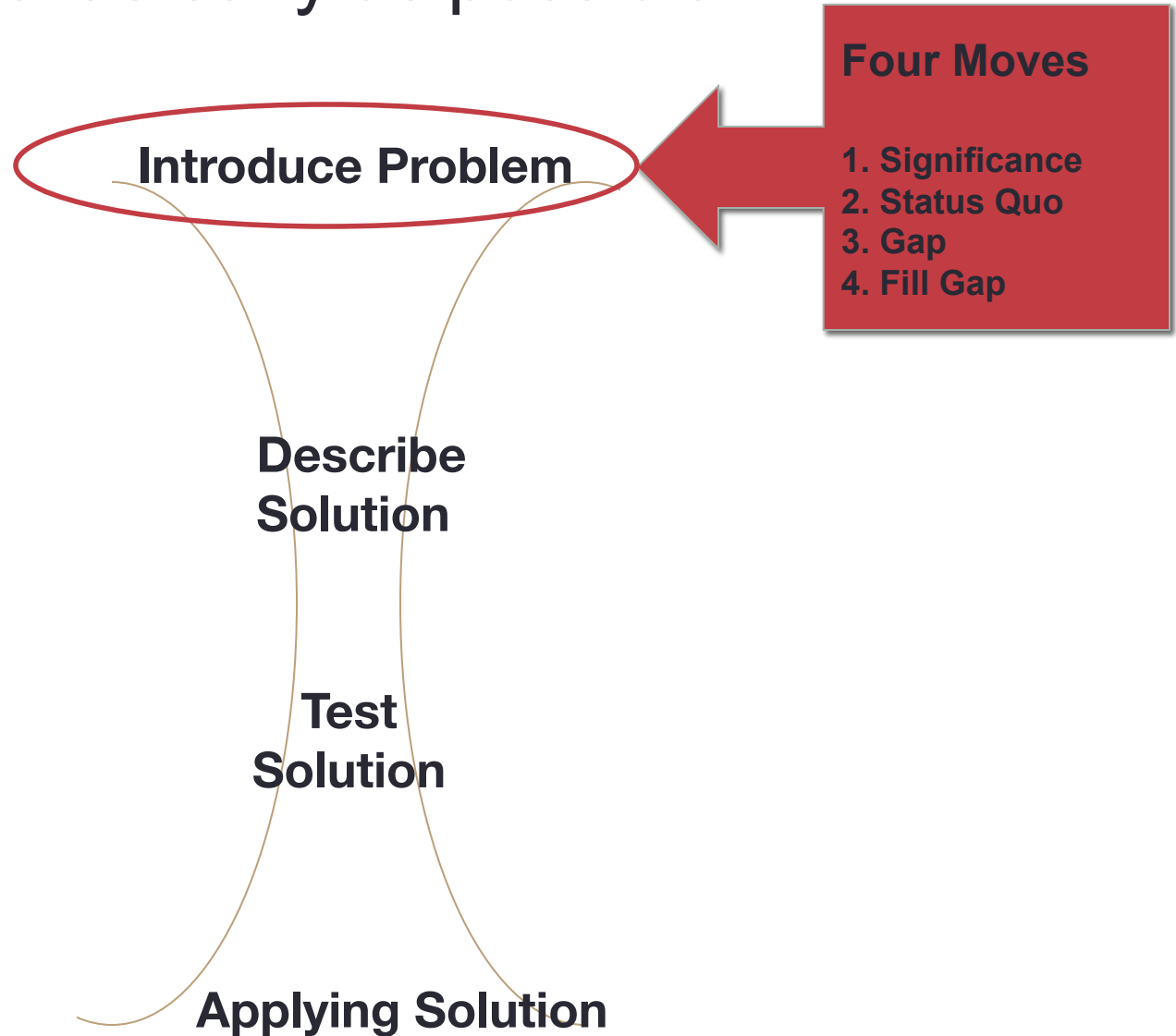
1. Establish significance

2. Describe status quo

3. Identify a gap

4. Fill the gap

Sell your project as early as possible



Public Speaking Strategies

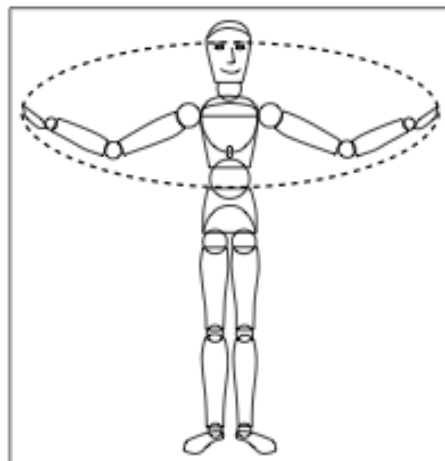
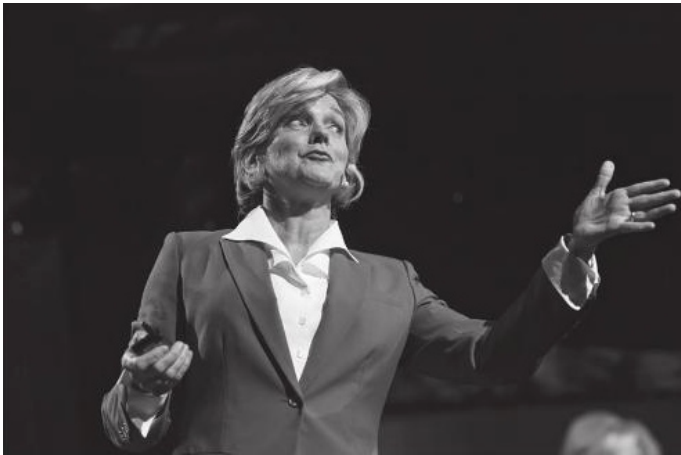
A presenter's confidence dramatically
impacts audience's perception of message

A presenter's confidence dramatically impacts audience's perception of message

“Vocal delivery and body language do make up the *majority* of a message's impact.”

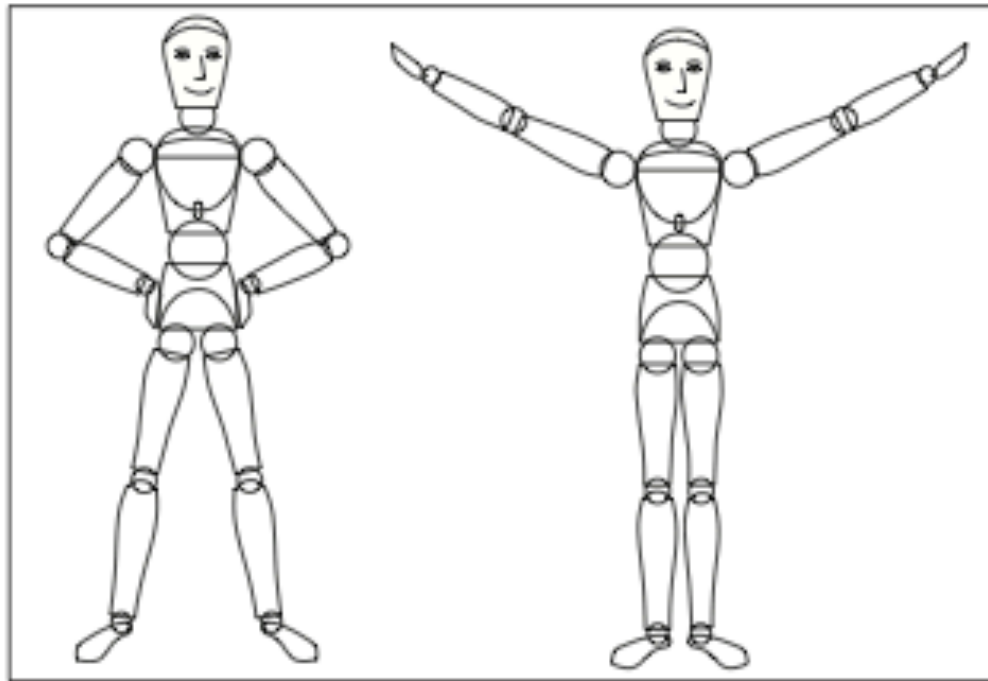
Carmine Gallo, TED Speaker Coach

Use natural gestures within your “power sphere”



Your Power Sphere

Doing a “power pose” for 2 minutes can increase testosterone and decrease cortisol



Power Poses

To reduce filler words (um, uh, so),
concentrate on adding pauses



Imagine you are having a conversation with each person in the audience



Oral presentations require more road-mapping and sign-posting

“My presentation today will start by X. I will then discuss Y and Z.”



Outline Slide

“Now that I’ve covered my results, I want to talk about some of the implications of this work.”



Transition Slide



gcc

**Make an appointment at the
Global Communication Center**

Email

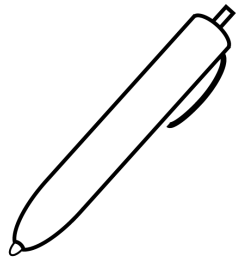
gcc-cmu@andrew.cmu.edu

Website

www.cmu.edu/gcc

We support CMU students for any academic and professional communication project

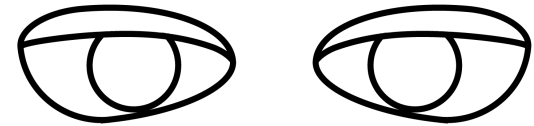
Written



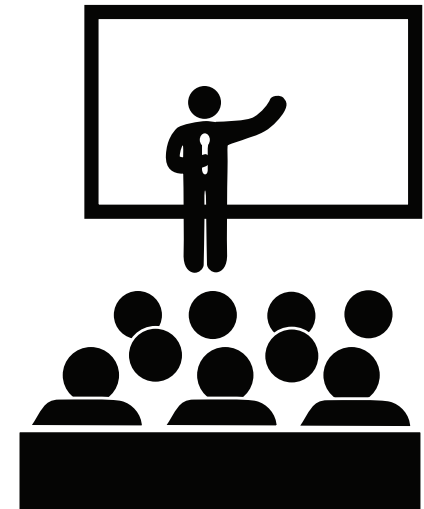
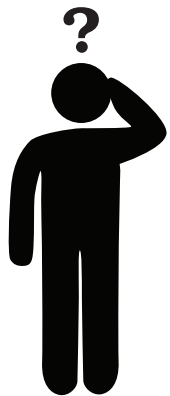
Oral



Visual



A GCC tutor can assist you at any point:
brainstorming, writing, revising and rehearsing



GCC tutors are trained to work with grad and undergrad students in the sciences and humanities



The GCC is located on the first floor of Hunt Library






Summer Hours:
Monday-Thursday 10:00-5:00

*subject to change



You can see when tutors are available and schedule your appointment online

Get on our waitlist if the slot you want is unavailable

 07/07: WEDNESDAY	12:00pm	1:00pm	2:00pm	3:00pm
Mary G 				
Juliann R 				
 08/08: THURSDAY	12:00pm	1:00pm	2:00pm	3:00pm
Nisha S  eTutoring appts. only				

Time:
REPEAT APPT.

Wednesday, June 03: 12:00pm to 1:00pm

Client:

Shanmugaraj, Nisha (nls@andrew.cmu.edu)

Is this your first
visit to the GCC?

-- please select -- *

Describe your
assignment:

Describe your
*communication
goals* (please be
specific):

What is the stage
of your draft?

-- please select --

What sections of
the text would you
like to focus on?

When is your
project due?

Other comments,
i.e., group project
(25 word limit):

What is your
status at the
university?

-- please select -- *

What is your



gcc

**Make an appointment at the
Global Communication Center**

Email

gcc-cmu@andrew.cmu.edu

Website

www.cmu.edu/gcc